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AN

ILLUSTRATED WEEKLY JOURNAL

OF

HORTICULTURE IN ALL ITS BRANCHES.

FOUNDED

*W. Robinson, F.L.S., Author of "Alpine Flowers," etc.*

"You see, sweet maid, we marry  
A gentle scion to the wildest stock;  
And make conceive a bark of baser kind  
By bud of nobler race: This is an art  
Which does mend nature; change it rather:  
The art itself is nature."—*Shakespeare.*

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TO

DAVID MOORE, PH.D., F.L.S.,

*Director of the Royal Botanic Gardens, Glasnevin, Dublin,*

THIS THIRTEENTH VOLUME OF "THE GARDEN" IS DEDICATED

IN RECOGNITION OF HIS LONG AND FRUITFUL SERVICES

TO HORTICULTURE:

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1878 v. 13

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## DAVID MOORE, PH.D., F.L.S.

To those who have the pleasure of a personal acquaintance with the excellent Director of the Royal Gardens at Glasnevin, near Dublin, it needeth not to be said that he is of Scotch descent; indeed, we believe that his native home is in Forfarshire, and that his young days were spent not far from the Brees of Angus. Early showing a remarkable taste for floriculture, he was sent very early in his life to Dublin, to be a pupil of Dr. Mackay, then Director of the Botanical Gardens belonging to the University of Dublin. As we write the name of Mackay we are tempted to a digression to tell of the genial, pleasant Scotchman who was the very founder of these gardens, and whose "Flora Hibernica" was a work well up to the standard of its day. Under such a master all young Moore's tastes for Natural History were cultivated, and he rapidly became an authority on the Irish plants. About 1834 the Ordnance Survey of Ireland was commenced, and David Moore was appointed on it. In 1837 the first volume of its memoirs was published, under the title of the "Ordnance Survey of Londonderry," and contained a memoir on the geology of this district by Capt. Portlock, on its political and antiquarian history by Geo. Petrie and J. O'Donovan, and on its botany by D. Moore. This was Moore's first contribution to science, if we except the assistance he gave to his old master, Dr. Mackay, in the production of the "Flora Hibernica," an assistance gratefully acknowledged in the introduction to that work. The projected survey of Ireland was, however, commenced on far too elaborate a scale to be in like manner continued; and although a vast amount of material was collected towards elucidating the history of others of the Irish counties, yet these were never published, and the botanist of the survey soon after this date resigned his post, and was elected Director of the Gardens at Glasnevin, then belonging to the Royal Dublin Society, with the improvements of which the name of Dr. Moore will ever be connected. Often sorely hindered for want of funds, with but few sympathetic spirits to cheer him on, the Doctor laboured long and hard, until he has, as now, made these gardens to hold their own amid the gardens of Europe. Pleasantly situated by the bank of the little Tolka, associated with the memories of Tickell, Swift, and similar men, Nature had done much for them—the gardener's art but little. It is now a story too well known to need repeating—how Moore, working in unison with Nature, made these gardens useful to the practical gardener, useful to the scientific botanist, ah! and useful, too, to the hard-worked citizen who, amid their gay parterres, shady walks, or by their river's side, shakes off some of that sad accumulation of week-day dust, and feels himself the better thereby. Moore, despite his Scotch descent, had learned in his adopted country that the Sabbath was made for man, and he welcomed the thousands who wandered over these grounds on a fine summer's Sunday. Time would fail us to tell of all the experimental work either carried out or superintended in these gardens by Moore. Many of our readers will recollect the numbers of new plants first introduced to our gardens from Glasnevin, the numbers of interesting plants first flowered or fruited here, and the numbers of new hybrid forms first raised there, all of which well merited the honourable mention of his name by the now President of the Royal Society and Director of Kew in the dedication to Dr. Moore of the 29th Volume of the Third Series of the Kew Journal of Botany, "to one who, maintaining a very rich and beautiful Botanic Garden at a high standard of excellence, has advanced Botanical Science by many original observations and experiments." Of Dr. Moore's more original botanical work we can here only mention the "Cybele Hibernica," undertaken conjointly with A. G. More, F.L.S.; his works on the Irish Mosses; on the Irish Liverworts; and on the Irish Grasses. For a record of his practical researches, of his many tours to Russia, Italy, Spain, France, Germany, and Norway in quest of botanical information, we have left ourselves no space. Still in the prime of life, now surrounded by many grateful and attached friends, we trust he may long be spared to preside over the beautiful gardens which owe so much to his labours.





CHARLES LAWSON.

## CHARLES LAWSON, OF EDINBURGH.

CHARLES LAWSON, whose portrait forms a frontispiece to the present volume, was born in 1794, and had, therefore, at the time of his death, which took place on the 21st of December, 1873, attained the age of seventy-nine. He was the son of Mr. PETER LAWSON, the founder of the nursery in connection with which the name was destined to become so well known, not merely in Scotland, but throughout the world. Established in 1770, the firm of PETER LAWSON & SONS had acquired a stable footing before the removal of its original partner. In 1821, CHARLES LAWSON, who had for some years been associated with his father in the business, succeeded, on the death of the latter, to its sole management. The energy and intelligence which he brought to bear on its affairs soon placed the firm in a most prominent position, rendered it, in fact, a power in matters agricultural as well as horticultural in this country, and extended its ramifications into all parts of the civilized globe. It was Mr. LAWSON who in 1833 introduced the Italian Ryegrass. To his enterprise, also, we owe, among other obligations, the introduction of the Austrian Pine and the Lawson Cypress, a species named after him, a compliment well bestowed. Besides his services in the way of introducing useful plants, he was a valued contributor to the literature of gardening, agriculture, and arboriculture. The horticulturist and the agriculturist are indebted to him for the "Agrostographia, or Book of Grasses," which has gone through many editions, and is still regarded as the standard British book on the subject, not only for the guidance of the seed trade, but for other purposes. The "Agriculturist's Manual," published in 1836, was a familiar description of the agricultural plants cultivated in Europe, with practical observations respecting those suited to the climate of Britain. This work has also proved its usefulness by running through several editions. The "Pinetum Britannicum" was a description of the hardy trees of the Pine tribe cultivated in our gardens, beautifully illustrated, and dedicated to H.R.H. the late Prince Consort, who was one of the original subscribers to the undertaking. Of this splendid book, which contained coloured plates of the various trees described, with enlarged drawings of their flowers and fruit, only one hundred copies were printed. In addition to the above, several other publications of a practical nature bespoke the unwearied attention that Mr. LAWSON bestowed on all departments of the business in which he was engaged. As a young man he joined with a few others of kindred views and interests in an endeavour to break down what was then known as the "Mark Lane monopoly," by which the seed trade was seriously hampered. This movement was successful, and Mr. LAWSON also did good service in securing the abolition of the duty on seeds imported into this country. His well-earned eminence in his business secured for him the appointment of seedsman to the Highland and Agricultural Society of Scotland—an office which he held for many years. He was likewise entrusted with the curatorship of the Agricultural Museum, formed under the auspices of the Highland Society, which at one time occupied a portion of the premises on George IV. Bridge, but for which some years ago more suitable accommodation was found in the Museum of Science and Art. In this connection, it may be mentioned that for the Great Exhibition of 1851 the LAWSON firm made a complete collection of all the Grasses and other vegetable products of Scotland, accompanied with a synoptical statement of much interest and value. This contribution to the Exhibition attracted great attention, and was deemed worthy of a Council Medal. The collection was ultimately divided between Kew Gardens and the Highland Society's Museum above referred

to. Mr. LAWSON's knowledge of seeds and plants was further turned to account in connection with the first Great Exhibition, in his appointment to the Chairmanship of the Committee charged with the duty of examining and reporting on that class of contributions. The Exhibition of 1862 was enriched by the LAWSON firm with a great collection of British vegetable products, which was subsequently acquired by the Russian Government. Mr. LAWSON's active participation in the business of his firm may, we believe, be said to have ceased about 1850. He never withdrew from partnership, but handed over the reins to his sons, by whom the business was carried on until, they being engaged in other pursuits, it was in January 1873 handed over to a limited liability company. It must have been about the time of his withdrawal from business that Mr. LAWSON began to take a leading share in the public affairs of his native city. As was to have been expected of one who had been so extensively engaged in trade, he became a prominent member of the Chamber of Commerce, of which body he became Chairman in 1859. The business of the Merchant Company also engaged a considerable share of his attention, and after the usual term of service in the lower grades of office, he was elected to the Master's chair in November, 1861. In connection with the proceedings of both these important corporations, he showed himself a clear-headed, sagacious man, resolute to concentrate attention upon matters of real public importance, and laying hold of these with a firm and comprehensive grasp. As Chairman in the one case and Master in the other, he further distinguished himself by his liberal conduct both in his town mansion and at his country residence at Borthwick Hall, a place which he had at considerable expense converted into a beautiful property. By a unanimous vote of the Town Council he was elected Lord Provost of Edinburgh in 1862 a position which he filled with credit to himself and to his fellow-citizens. In Edinburgh, whose Council Chamber is adorned with his portrait, Mr. LAWSON will long be remembered, and it is pleasing to think that when misfortune had overclouded his brilliant career, there were found a goodly number of eminent citizens to band themselves together to secure peace and comfort for his declining days.





## THE GARDEN.

VOL. XIII.

### A WEST OF IRELAND GARDEN.

BEAUTIFUL is this Christmas-day morning! The sun is fast transmuting the crystals of silver, formed by last night's feeble frost, into glittering iridescent pearls, and hanging them in myriads on countless blades of Grass—at the same time brightening with his rays the many flowers and leaves that adorn the small garden which I am about to describe. Situated immediately in front of the cottage occupied by the writer, this favourite resort of his and his belongings is enclosed for the most part by two crescent-shaped Boulderies that form a broken semicircle 208 ft. in length, and from 3 ft. to 8 ft. in height, made up of the remains, intermixed with earth, of old walls, which formerly partitioned the adjacent field into Potato plots; such old walls have made the suburbs of Galway famous in song and prose; but they are rapidly disappearing under the hand of ruthless culture. Little more than ten years ago, before this place was taken by its present occupant, there was no enclosure; four-footed domestics—the ordinary adjuncts of a country house in the west of Ireland—had free access to the "hall door."

The boulderies have the side which the cottage faces irregularly sloping; but the outer side is perpendicular, or wall-built. Fixed in the stones and earth of the sloping sides are large, much-weathered, erratic boulders of granite, many of them weighing several hundredweights each, irregularly piled one on the top of another, as if they had been shot off from a small glacier, and formed its terminal moraine; but the erratics, instead of being imbedded in an iceberg, or a glacier, as doubtless was once the case, are now embosomed amongst shrubs—mostly evergreens. These consist of *Escallonia macrantha*, partly in flower; *Cotoneasters*, loaded with coral berries, affording food for thrushes and other birds; *Berberis Darwini*; *Veronica Andersoni*, highly floriferous, and other species; *Myrtles* major, Japanese Honeysuckle, Sweet Brier, its branches suspending clusters of scarlet tips; *Yucca filamentosa*, and others; large-leaved *Myrtle*, in flower; *Phygelus capensis*; variegated form of *Euonymus japonicus*, Himalayan Cedar, too much exposed to become a tree; *Rhododendron hirsutum*, and other varieties of that genus; variegated *Osmanthus ilicifolius*, *Fuchsia gracilis*, and other varie-

ties, in their last stage of flowering and leafage; while interspersed here and there are perennial Candytufts, various Saxifrages, *Helianthemums*, *Lithospermum*, *Heaths*, *Aubrietias*, variegated Lemon Thyme, a spreading *Campanula*, still in flower, Ferns of hardy sorts, and a profusion of other plants. A projecting portion of the ridge has been made into a rockery, formed of time-worn blocks of limestone, between which are growing the Maiden-hair Fern, retaining its green fronds, and other tiny evergreen Ferns, and perennial *Mesembryanthemums*, the pretty *Lycopodium helveticum*, vying with the surrounding Moss in colouring with bright green the stony recesslets.

The enclosed parterre contains fourteen beds of various shapes and sizes, separated by broadish Grass verges, and set off with herbaceous plants and evergreens. Standing conspicuously are *Yucca gloriosa*, nearly 7 ft. high; a good-sized variegated *Y. aloifolia*, a large *Chamærops Fortunei*, *Retinosporas* of different kinds, and a noble *Cordyline australis* nearly 18 ft. in height (planted in too exposed a place, when quite young, eight years ago). This gem, which has not flowered yet, has braved many a bitter blast from the Atlantic. All who see it give expressions of surprise, and ask, how high will it grow? Associated with these, arranged somewhat in the "wild garden" style, are the herbaceous plants, generally in full foliage, and a good number of them bright with flowers. Here may be found *Pompeone Chrysanthemums* of various colours; *Schizostylis coccinea*—a glowing clump of which is growing in almost every bed; *Erodium Manescavi*—as bright and purely coloured as it has all along been since early spring; *Anemone Hortensis* and *Primulas*, too premature in their blooming; double and single *Stocks*—gaily dressed as in spring; and an *Iris reticulata*, nearly ready to unfold its purple and golden flowers!

On some trellis work, passing an uncovered or *al fresco* portico, *Rhodochiton volubile*, in its second winter, is hanging in festoons, which are strung with rosy-purple bells—rather uncommon for outside decoration at the present time of the year. *Rose Victor Verdier* is below with some imperfectly-developed buds (a full-blown one was taken from it the other day); in close companionship is a *Tropæolum*, bearing green

leaves, and a few flowers, wonderfully fresh. Adjacent, with its large leaves standing boldly erect, is a largish specimen of the so-called "Lily of the Nile," that gave birth during the past summer to nearly a dozen and a-half of its glorious flowers.

In the little arboretum, into which the garden gradually merges, there are growing *Coniferae*, *Arbutus*, *Evergreen Oaks*, *New Zealand Flax* in noble masses, *Benthamia fragifera*, and several more trees and shrubs—all green and fresh as though it were a summer day. Other plants I have tried, but they failed to grow. Doubtless, success would attend the trial of many that I have not been able to procure. I see no reason why some hardy kind of Tree Fern (perhaps *Alsophila australis*), with a little attention to it for a few years, could not be made to ornament a sheltered nook close by. My kind friend, Dr. Moore, of Glasnevin Gardens, has succeeded in growing in the open air, for some years past, a specimen of an *Andesia Palm*, *Jubaea spectabilis*, which promises much for this mild-wintered spot. I shall never be content until the *Lagerflora*-flowering-like *Phlœsia buxifolia*, and some other recent introductions, are flourishing on the boulderies. What a different aspect is presented by the place under description to that which the gardens of my early days, in the north of England, exhibited at this season! In summer, however, the gardens there make ample amends for their wintry dreariness.

I am now reminded of certain drawbacks, of which an amateur florist in this part of Ireland has some ground to complain. The Atlantic warms his winters and cools his summers, and the great amount of rain he experiences spoils many of his favourites. In all probability, insufficient heat in summer, and the large rainfall, combined with a not over grateful soil, prevents his garden being enriched during the full flowering season with that wealth of floral beauty, which, developing itself spontaneously as it were, adorns even the humblest cottages in England—especially in Devonshire, Dorsetshire, and Cornwall. Nevertheless, how lovely may a neglected spot in those favoured counties could be made if the aesthetics of natural scenery and a scientific knowledge of plants were more generally cultivated than is the case by those of whom, from their position in life, such is to be expected.

Returning to a regrettable theme, often do I complain of my inability to grow Roses. *Maréchal Niel* and others have gone; *Gloire de Dijon*, which I have endeavoured to train over the portico, will, to all appearance, soon follow; only one exception to these misfortunes can be recorded, which is afforded in the prolific and rampant *Félicité Perpetuelle*—justly so named. *Pampas Grass* seems to be a failure. Several of my *Fuchsias*, *Pelargoniums*, including a *Clematis*, are often attacked by that vile pest, the *Peronospora*, which shrivels up and blackens their flower-buds and young leaves, leaving them converted to tinder. As to *Pentstemons*, and most of the sub-tropical plants, such as I saw growing luxuriantly in *Battersea Park* in September last, they would only succeed here in a greenhouse, under which *Flora* is wont to smile freely and joyously.

It need, therefore, be no surprise that, influenced also by other and higher considerations, I am longing to meet with an inexpensive place on the south-west coast of England, drier and sunnier than it is in this district, and where dull, leaden-grey, impenetrable clouds more frequently give place to bright blue skies. Still, dear old Galway has charms, of which many other towns with higher pretensions may reasonably be envious.

WILLIAM KING.

*Glenoir, near Galway.*

### HERBACEOUS PHLOXES IN POTS.

GROWERS of herbaceous *Phloxes*, who wish to make a fine display during the coming summer, are reminded that now is the best time for setting about the necessary arrangements for effecting that end. As a rule, *Phloxes* are planted out in borders, where they are allowed to grow on year after year (often without even dividing them), the natural consequence being that the flowers grow small by degrees, and beautifully less as regards size, and the markings, as a matter of course, are not so well defined as when grown in a proper manner. *Phloxes* when grown in pots are impatient of shifts, and great care

should be exercised in such operations. Presuming the grower to have some good two-year-old plants, a careful shift should be given to pots one or two sizes larger than those which they are now in. This should be performed at once, and when they commence to push up their growths a judicious use of the knife, in removing all with the exception of the three or four strongest shoots, is necessary. Care should be taken in potting to leave sufficient room for a top-dressing of rotten manure later in the season; as, unless this be given them (from the fact of the roots rising to the surface) incalculable mischief will be done, both as respects flower and foliage. If the pots be plunged, well supplied with water, and frequent doses of very mild liquid manure be given (the latter simultaneous with the forming of the flower-buds), a grand display cannot fail to be the result. Those who intend growing these *Phloxes* for the first time are reminded that to expect a large head of bloom from plants as usually sold, would be fallacious; but if application be made to a nurseryman for two-year-old plants (costing but a trifle more than plants just rooted), a very satisfactory display will be the result—one well worth the time devoted to them. One drawback belonging to these plants for purposes of exhibition is the occasional opening of the individual blooms; but even this can be obviated by giving the plant a thoroughly good soaking of water and shutting it up in a close greenhouse; in this a few days will cause all the flowers to expand at once. To give a selection is unnecessary, as most nurserymen can supply good kinds at a reasonable rate, and many of the Continental and home-raised varieties differ only in name.

*Plumstead.*

F. T. DAVIS.

**Premature Spring Flowers.**—There is something singularly pleasing in having a fine, sunny day for the last of the year, and in being enabled to walk about one's garden in comfort to see the charming *Primroses*, *Polyanthuses*, *Aubrietias*, *Pansies*, and other plants coming freely into flower, and reminding one of the beauties to be looked for in April. The *Primrose* and *Polyanthus* varieties of the *Primula* family are the earliest and most beautiful of all the race, rich and varied in colours, and coming into bloom when the majority of hardy plants are at rest. A few dozens of these, lifted from their beds into pots and put into a cool house, will be found to rival the Chinese *Primrose* in floriferousness, and to excel it in colours and variety.—D.

**Berberis Darwini a good Hedge Plant.**—We have here a hedge of this *Berberis* 250 yards long,  $\frac{1}{2}$  ft. high, and  $1\frac{1}{2}$  ft. through, and well furnished from bottom to top. In fact, one can scarcely see through it, even at this time of year; but in spring, when studded with thousands of bright racemes of flowers, it is an object of special beauty, only requiring to be seen to be appreciated. In autumn, too, it has a fine effect when covered with myriads of purple berries, of which the birds are very fond. In short, a hedge of this *Berberis* will hold its own against all comers, and will be equally pleasing either in a large or small garden. There is no need for making the soil in which it is to grow rich, for here it is quite robust in common loam. After planting, all that is required is to clip it once a year, which it withstands quite as well as the common Thorn. In some places, *Privet* is planted along with *White Thorn*, so as to make an evergreen hedge; but *Berberis Darwini* would, in many respects, make the best hedge. There would be no difficulty in getting it 6 ft. or 7 ft. high, and well furnished from bottom to top, capable of resisting cattle and sheep. *B. Darwini* is, therefore, really one of the very best plants for making garden hedges.—C. PENFORD, *Powerscourt*.

**Some Uses of Birdlime.**—The Holly has its economical uses. The middle bark, under proper manipulation, yields birdlime, which, however, may also be obtained from the *Mistletoe*. The Japanese find some curious uses for this substance. Traps for rats are made in the simplest possible manner, by placing pieces of board or card smeared with it near their holes. Spread upon Bamboo leaves it is used for catching flies and other insects. Even fleas are no match for Japanese ingenuity, for they are trapped in bed by birdlime spread on pieces of board, the board being arched over with bent Bamboo to prevent the birdlime from adhering to the bedding. Possible uses of this viscid article, such as a snare for cockroaches, mice, &c., will at once suggest themselves to our readers. Even animals as large as monkeys are caught by its means in Japan. Ornithologists may take a hint as to bird catching from the Japanese method. Long stems of *Wistaria* are smeared with birdlime and floated out in estuaries, and even on the sea, in parts frequented by birds, and wild fowls are in this way bagged in considerable quantities. Many other uses are given in an interesting report on this subject from Mr. Consul Annesley.

## NOTES OF THE WEEK.

**Kew.**—This week there are several very beautiful *Oreobida* in flower, in addition to many which have been previously noticed. One of the handsomest is a very fine variety of *Dendrobium primuminum*, the pendulous, deciduous stems being clothed all their length with two rows of lovely flowers, so delicate as to appear semi-transparent. The ground colour is a very pale primrose, suffused with a pleasing rosy-purple. *Dendrobium nobile* var. *pendulum*, has larger and more richly-coloured flowers than the type; it comes from India, although China is given as the head-quarters of *D. nobile* itself. *D. Pierardi* has a drooping, deciduous habit, and white and lilac flowers; its strong constitution and free-flowering properties render it a favourite with *Orchid* growers. Given a sufficient number of plants, this species could be had in flower all the year round without any great trouble. *D. Wardianum* is a magnificent species from Assam; it has knotted stems somewhat similar to those of the next species. The sepals and petals are white, tipped with magenta; the lower part of the lip is rich orange, with crimson spots. *D. crassinode* is a very handsome species from Moulmein; the waxy-white sepals and petals are tipped with rich purple, and the lip is white, with a blotch of orange at the base. *Barkeria Skinneri* is a very useful winter-flowering *Orchid* from Guatemala; its compact habit, and deep rose-coloured flowers make it particularly valuable. Perhaps the most showy species of the genus *Polystachya* is *P. grandiflora*, from Sierra Leone; it has large flowers of a pale greenish colour, relieved by two purplish blotches. The habit of the plant and the general structure of the flower of *Angrecum pertusum* are identical with those of *A. aburneum*, notwithstanding the vast difference in the size of the flowers of the two species. In spite of the lack of colour, there is much grace and elegance in the drooping spikes of compact, greenish-white flowers. *Epidendrum xanthinum* has tall leafy stems (in the *Fl.* specimen from 3 ft. to 4 ft. in height) resembling those of *E. ellipticum*, and terminal racemes of small orange-yellow flowers. This species has been found wild in various parts of Brazil.

In the *Cactus*-house there is a good specimen of *Kalanchoe laciniata*, a beautiful succulent from Tropical Africa and the East Indies; it belongs to the *Crassula* family, and is a near relation of the genus *Bryophyllum*. The flowers are a fine citron-yellow, and are freely produced, a single plant affording a succession for a considerable time. The thick, fleshy, lacinated leaves are, in themselves, pretty. As a winter-flowering plant this is certainly worth a place in any greenhouse. *Iris fimbriata*, from China—one of the most striking species of that very beautiful genus—is also in flower; the broad, glossy, arching leaves, contrast finely with the flowers, which are blue, with the exception of a variegation of deep purple and yellow on the waved outer segments; the petaloid and fringed stigmas are erect. This is almost too tender for the open air, unless a good, dry, sheltered spot can be commanded. As a pot plant, either in a warm or cold house, or in the window of a dwelling room, this is most desirable.

*Amphicome Emodi*, a remarkably handsome *Bignoniaceous* plant, may be seen in the coolest compartment of the New Range. It is a dwarf, herbaceous perennial, with unequally pinnate leaves, the radical ones being composed of from five to eight stalked, toothed leaflets; the peduncles are terminal, and the large, trumpet-shaped flowers have a bright orange tube and a spreading limb of five rounded, rose-coloured lobes. Under cold frames treatment this plant, which comes from the Emodi Mountains of Northern India, makes a very pretty object.

*Abutilon vexillarium* is certainly most attractive as a rafter plant; in that position the drooping flowers show to more advantage, and the vivid contrast between the red calyx and the sulphur-coloured corolla is more easily seen. South America is said to be the native country of this species, although nothing definite is known as to its origin. A fine specimen has been very conspicuous on one of the rafters of house No. 4 for a long time past.

In the Winter Garden there is a very handsome *Taconia* in flower; it belongs to the same section as *T. mollissima* and *T. ariantia*, but is much finer than either of those species. Hartweg first discovered it in ravines near the city of Quito, whence its name, *T. quitenis*. The tube is very long—much longer than in *T. mollissima*, and the limb is of a very beautiful rose-crimson colour.—†

**Mr. Noel Humphreys** is now engaged in drawing the new hardy winter-flowering *Iris*s, and will be very much obliged to any one who will send him specimens to 7, Westbourns Square, Hyde Park.

**Enkyanthus japonicus.**—The *Enkyanthus japonicus* is a native of Japan. It is very hardy, and probably flowered for the first time in Europe, in 1877, at the nurseries of M.M. Thibaut & Ketseler, the well-known horticulturists, at Seaux. It flowers in the spring,

about the beginning of April, in fact, just as the leaves begin to appear. The plant is grown in coarsely-broken, turfy, heath mould, and, if possible, facing the north. In other respects its cultivation closely resembles that of the *Rhododendron*. It may be propagated by cuttings and half-mature buds, which are placed under a bell-glass in a propagating-house.

**All the Year Round Roses.**—On Christmas morning I gathered from the open air several excellent flowers of *Souvenir de la Malmaison* and *Clou de Dijon* Roses; and at this moment there are scores of buds on the plants as vigorous as they are in May and June. Our plants are on their own roots, and receive very little pruning, with the exception of what they get by constantly cutting the flowers for bouquets.—W. W. H.

**Monochætum eusiflorum in Winter.**—For conservatory decoration this plant deserves extensive culture. It is easy to grow, and its lively purple flowers, which are produced freely in winter, have a fine appearance. For furnishing the front rows of stages, plants grown in 5 or 6 in. pots are very useful, and it might also be grown in baskets with advantage. It is now flowering freely in several places.

**Aphelandra Roezli.**—This is one of the most attractive plants now in flower in the London nurseries; its bright scarlet blossoms are produced for many weeks in succession, and when plants of it are well grown in small pots, they have a fine appearance, associated with Ferns and similar plants. It requires stove temperature in order to grow it successfully, but, when in flower, the plants may be removed to a cooler situation, in which they will last in good condition for a longer period than if left in heat.

**Masdevallia tovarensis.**—The beautiful white flowers produced by several good specimens of this *Masdevallia* are now very attractive in Messrs. Veitch's nursery at Chelsea, and they are this year much larger, whiter, and of better substance than hitherto, a fact doubtless due to the increased strength of the plants.

**Ruellia rosea.**—This is a pretty winter-flowering plant lately introduced by Mr. Bull, of Chelsea. It grows freely and flowers abundantly, even during the dulllest months of the year. In the same house are also examples of *Tillandsia Lindenii*, bearing numerous spikes of rich blue blossoms.

**National Auricula Society.**—This Society's exhibition of Auriculas will be held in the Crystal Palace this year on Thursday, April 25; and, in order to enable the Committee to frame the schedule, an early return of the form sent to each subscriber will be gratefully esteemed by the hon. secretary, Mr. E. S. Dodwell, 11, Chatham Terrace, Larkhall Rise, Clapham, S.W.

**Dahlia Maximilliana.**—The first flower of this *Dahlia* opened this morning, the only one, I believe, which has as yet expanded in this country; but, owing to the dull weather and the bad condition the plant is in, no proper estimate of its beauty can be formed. *D. Maximilliana* is quite a tender species, requiring similar treatment to *D. arborea*, imperialis, and others of that class. I may add that *Pansies* and *Primroses* are flowering freely out-of-doors. *Narcissus Clusii* and *Iris alata* in frames are also at their best.—A. PERRY, *Hale Farm Nurseries, Tottenham.*

**Rhinopetalum Karelini.**—This miniature gem, a *Liliaeaceus* plant from the Ural Mountains, is now in flower in the New Plant and Bulb Company's nursery at Colchester. The flowers, which are pinkish-lilac, are borne on stems that scarcely rise 2 in. above the ground. *Narcissus Clusii* and *Iris Histrio* have also been in flower in the same nursery for some weeks.

**The White Buck Bean at Christmas.**—The flowers of this are very useful at this season, when every white flower is an acquisition. They may easily be obtained by lifting plants from the open pond, potting them, and placing them in a warm temperature. The pots should be set in pans of water, or immersed to their rims in a tank. Instead of the plants going to rest, as is natural in winter, they start into growth and flower profusely. Treated in the way alluded to, numbers of plants in one of the houses in Messrs. Rollison's nursery at Tooting, are now throwing up flowers in abundance.

**Oncidium leucochilum at Ferrières.**—A plant of this variety was in bloom last month in the *Orchid*-house of Baron Rothschild, at Ferrières. It had two spikes each 15 ft. long, with twenty laterals, each spike having from 100 to 110 flowers on it in excellent condition.—B.

**Japanese Plants in Paris.**—A few days ago I had an opportunity of inspecting the collection of Japanese plants, to which allusion was made last week (see p. 607). The packing of the plants was no doubt faultless, but the long journey of at least two months had very

materially damaged the collection. Although there may be (to those who are acquainted with the plants of that country) nothing new from a scientific point of view, yet the interest attached to their manner of cultivation will be appreciated at its proper value. The Japanese have not as yet put into practice the botanical nomenclature to which we are accustomed. The tallies are at present illegible, except to the Japanese scholar. The plants being generally without foliage, it was with difficulty that one could distinguish the various Maples, Magnolias, Pæonias, &c. It is to be hoped that, before the opening of the Exhibition in May, the skill and industry of the two Japanese gardeners will have effected much to restore them to their native luxuriance.—W. MELLES.

**St. Pancras Gardens.**—The Baroness Barette-Conte is about to erect, in the St. Pancras Gardens, a sun dial as a memorial to illustrious dead lying in the grounds, which used to be the old St. Pancras and St. Giles graveyard. The memorial will probably cost £3000. The Baroness has also erected a monument to the memory of John Walker, the author of the "Pronouncing Dictionary," and has given £100 to erect a greenhouse in the same grounds.

**Cuphea Roezlii.**—This new and beautiful species, which has been introduced into the market by M. Charles Huber, nurseryman at Nice (Maritime Alps), was discovered in the district of Tepic, in Mexico, by M. Roezli, who sent the seeds to M. Ortgies. The first sowing was made by M. Charles Huber in August, 1875. The plant forms a soft-wooded very vigorous shrub, often growing to the height of 3 ft., or even more. The flowers are extremely abundant; they are covered all over with light down, and are slightly gibbous, or slipper-shaped. From its vigour, the abundance of its bloom, and the length of time it keeps in flower, the *Cuphea Roezlii* will be much sought after for the ornamentation of cold greenhouses in the climate of Paris, and for gardens in the open air in the south of France. If grown properly, there is no doubt that this plant will soon be common in our markets. Planted in good time in the open air, in a well-sheltered and sunny position, the *Cuphea Roezlii*, which is a very free flowering plant, will begin to bloom in the course of the summer, and continue to do so without interruption right into the winter. The plants, however, must be well protected from frost. This species of *Cuphea* may, according to circumstances, be cultivated as a biennial by leaving the plants in the open air, as is already done in the case of several greenhouse plants, such as Pelargoniums, or it may be looked on as a greenhouse plant proper, and re-potted and pruned in the spring according to the purposes for which we intend it.

**Exochorda grandiflora Root-grafted.**—It is not often that Americans claim to vie with the skill of French horticulturists, but Mr. Trumpy, of Messrs. Parsons & Sons, Flushing, Long Island, has long successfully root-grafted *Exochorda grandiflora*, which we now hear from English and French authorities, through the "Gardener's Monthly" of August, has been first employed by Monsieur J. Goujon. That others in various parts may have done the same, I do not question, only when our French brethren undertake to sound their trumpets over some feat at last accomplished, it may be gratifying to learn that America has long been doing the same thing quite successfully. We do not wish to depreciate the value of the achievement, for it is undoubtedly the best method of propagating *Exochorda grandiflora*. All difficulties will not, however, vanish on this discovery, for much skill and judgment are required to select the proper roots and grafts to ensure success. In fact, it will probably long remain a plant somewhat difficult to propagate. This beautiful hardy shrub should receive more attention, and perhaps, with increased demand, improved methods of propagation may be devised.—S. P.

—Mr. E. F. Luckhurst, foreman to Messrs. Hance & Son, Red Bank, New Jersey, writes as follows:—"I noticed in the 'Gardener's Monthly' of August last, an account of propagation of *Exochorda grandiflora* by a French horticulturist. He says the end of winter or commencement of spring is the most suitable time for putting in the grafts. All I have to say is, I grafted, two years ago last January, several hundreds, and raised about 80 per cent. of them."—"Gardener's Monthly."

**Dean Stanley on Industrial Work.**—At the opening of the Westminster and Pimlico Working Classes Industrial Exhibition, which took place the other day, Dean Stanley said, among other things, that he had been reading the life of the late Prince Albert, and remarked that it is impossible to read that life without seeing that the Prince was one of the most indefatigable and industrious of workmen. He was extremely fond of gardening when he had any leisure, which was rarely; and there is a very beautiful letter of his addressed to one of his daughters, the Crown Princess of Prussia, in which he commends her very much for the time she bestows on sculpture and making models. Gardening also appears to me, he

said, to have great advantages, because you can see how the things which you arrange and put in order really grow under your hands; you can look after them and begin to have a love for them, and in that way you will have the very best result out of the work you are doing.

#### HOME-GROWN ORANGES FOR DESSERT.

We have grown Oranges in pots, and have fruited them successfully, for at least a dozen years. No fruit is more valued, not alone for its flavour, which has always been superior to that of any imported Oranges that could be obtained at the same time, but because of the interest that is attached to the trees themselves, loaded as they are with large fruit almost bursting with juice—indeed, we have had specimens of St. Michael's that did actually burst. At the present time, we have a tree of St. Michael's in a 13-in. pot, which ripened its fruit—about four dozen in number—in December; they varied but little in size; the largest were  $8\frac{1}{2}$  in. in circumference, and weighed over 9 oz. each. This crop of fruit was set before the whole of the previous one was gathered in March last. We grow three varieties only, the Tangierine, the St. Michael's, and the Maltese Blood. The culture of these fruits is very simple. From the time the trees are started in February until the fruit ripens, as long a period elapses as is required for a house of Pine-apples or Muscat Grapes. The temperature and atmospheric conditions of the Pine-house suit Orange-trees admirably. Ours are grown on the back stages in the Pine-house, the plants being in pots of various sizes. The *modus operandi* of their culture may be summed up in a few words. A good foundation must be laid, by placing the tree in the right kind of compost. They are not over-particular as to this, but to do them well, tough, fibry, yellow loam must be procured from an upland pasture. It is best to use this before the fibre is too much decayed; pull it to pieces by the hand, and to five parts of loam add one part of rotted stable manure, and to each barrow-load an 8-in. pot full of crushed bones. If the trees are large, 1-in. bones are the best, but for small trees we prefer the bone meal or dust that is sifted through a  $\frac{1}{2}$ -in. sieve. It is also desirable, though not absolutely necessary to ensure success, to add a portion of broken charcoal to the compost. Drain the pots well by placing clean potsherds at the bottom, and over them a layer of fibre from which the finer particles of soil have been sifted; this is to keep the drainage perfect, by preventing the finer particles of the compost from working down into it. After the tree has been turned out of the pot in which it had been growing previously, with a pointed stick pick out the old material that had been used for drainage, and most of the old effete soil. The tree should not be potted deeper than it had been previously, and the compost must be pressed firmly round the ball with a wooden rammer. After potting the plants must be placed in a warm house, but it is not well to water the soil for a day or two, especially if the roots were not in a very healthy condition at the time of potting. The house may be kept rather close, and the trees be syringed until the roots begin to work into the new compost: this care is applicable to summer potting; in winter it is unnecessary. When the roots are active and have taken firm hold of the sides of the pots, plentiful supplies of water are necessary, and the trees ought to be syringed well twice daily.

The insect pests that attack Orange trees are scale and mealy bug, both of which will thrive on them. A clammy formation also gathers on the upper surface of the leaves in consequence of the presence of scale. To remove them we do not find any better plan than to wash the leaves and wood with tepid water, in which soft soap has been dissolved. The constant syringing keeps the trees healthy, but this must be discontinued when the fruit begins to change for ripening. A rather dry atmosphere is desirable when the trees are in flower, as the fruit does not set well in a moist close atmosphere early in the year.

There is another variety of dessert Orange besides those already named that ought to be in every collection. It has been grown by some persons for many years, and when cultivated under the best conditions it is superior in flavour to any other. This is named the Prata or Silver Orange. By following the above cultural directions success will be ensured, and the pleasure to be derived from successfully cultivating these fruits is very great.—"Florist."

**New Chrysanthemum.**—I have a fawn-colored sport from that justly-admired Chrysanthemum Lady Hardings, and, as it partakes in every particular of the good qualities of its parent, it will doubtless prove to be a valuable addition to our list of exhibition Chrysanthemums. It is characterised by breadth, depth, and smoothness of petal, very large size, and perfectly incurved—in fact, in the latter respect it stands unrivalled. It has been exhibited at the South Essex Chrysanthemum Show, and was highly commended. F. T. DAVIS, *Zark Nursery, Plumstead Common*.

## THE FLOWER GARDEN.

### HYBRIDIZATION OF LILIES.

TEN or twelve years ago, I began a series of experiments in hybridizing Lilies, and have continued them at intervals up to the present time, with results some of which are worth recording. My first attempt was to combine the two superb Japanese Lilies, *L. speciosum* (lancifolium) and *L. auratum*. The former was used as the female parent. Four or five varieties of it, varying from pure whites to deep red, were brought forward in pots under glass. This was necessary, because *L. speciosum* does not ripen its seed in the open air in the climate of New England. When the flowers were on the point of opening, the anthers were carefully removed from the expanding buds by means of forceps. As the pollen was entirely unripe, and as pains were taken to leave not a single anther in any of the flowers, self-impregnation was impossible. The pollen of *L. auratum* was then applied to the pistils, as soon as they were in condition to receive it. Impregnation took place in most cases. The seed-

until some time after; and when the buds at length appeared, they were precisely like those of the female parent, *L. speciosum*. The first bud opened on the 7th of August, and proved a magnificent flower, 9½ in. in diameter, resembling *L. auratum* in fragrance and form, and the most brilliant varieties of *L. speciosum* in colour. In the following year, it measured nearly 12 in. from tip to tip of the extended petals, and in England it has since reached 14 in. The stock of it has been placed in the hands of Mr. Anthony Waterer, of Knaphill, Woking, who has given it the name of *L. Parkmanni*. In this one instance, the experiment had been a great success; but of the remaining fifty hybrids, not one produced a flower in the least distinguishable form that of the pure *L. speciosum*. The influence of the alien pollen was shown, as before noticed, in the markings of the stem, and also in a diminished power of seed-bearing; but this was all. Next year, wishing to see if the male parent would not make his influence appear more distinctly in the second generation, I fertilized several of these fifty hybrids, with the pollen of *L. auratum*, precisely as their female parent had been fertilized. The crop of seed was extremely scanty, but there was enough to produce eight or



Landscapes of the Great Painters: River scene at sunrise, by Theodore Rousseau.

pods swelled, and promised an ample crop of seed; but the experiment was spoiled by the bad management of the man in charge of the greenhouse, in consequence of which the pods were attacked by mildew. In the next year, I repeated the attempt, with the same precautions. This time the seed was successfully ripened. Being sown immediately, a portion of it germinated in the following spring, and the rest, a year later. In regard to this seed, two points were noticeable; first, it was scanty, the pods, though looking well, being in great part filled with abortive seed or mere chaff; and, next, each good seed as there was differed in appearance from the seed of the same Lily fertilized by the pollen of its own species. The latter is smooth, whereas the hybrid seed was rough and wrinkled. About 50 young seedlings resulted from it, and their appearance was very encouraging, because the stems of nearly all were mottled in a manner characteristic of *L. auratum, speciosum*. Here, then, was a plain indication of the influence of the male parent. The infant bulbs were pricked out into a cold frame and left there three or four years, when, having reached the size of a pigeon's egg, they were planted in a bed for blooming. This was in 1869. Towards midsummer, one of the young hybrids showed a large flower-bunch, much like that of its male parent, *L. auratum*. The rest, about 50 in all, showed no buds

ten young bulbs. Of these, when they bloomed, one bore a flower combining the features of both parents; but, though large, it was far inferior to *L. Parkmanni* in form and colour. The remaining flowers were not distinguishable from those of the pure *L. speciosum*. While making these experiments with *L. speciosum* and *L. auratum*, I made similar attempts to produce hybrids of other Lilies. In the spring of 1867, I planted twenty or more strong bulbs of *L. superbum* in a favourable spot, and, when they began to bloom, fertilized them with the pollen of *L. speciosum, L. auratum, L. tigrinum, L. chalesoncum, L. umbellatum, L. Thunbergianum, L. longiflorum, and L. tenuifolium*. All the anthers were previously removed before ripening, by slitting the sides of the still unopened bud and extracting them with forceps. There were no other plants of *L. superbum* in the garden, or in its neighborhood; so that in this case, as in the former, fertilization by the pollen of their own species could not take place. Seed-pods, large and well shaped, were formed in abundance; but when they ripened in October some of them contained nothing but chaff. Others had a few imperfect seed, while others gave a fair supply of seed as good as could be desired. It was sown in pans, germinated in due time, and produced several hundred young bulbs; but when these came into bloom, not a single flower of them

all was in the least distinguishable from the pure *L. superbum*. Of eight different male parents, not one had impressed his features on his hybrid offspring. Not only in their flowers, but in their leaves, stems, and bulbs, the young plants showed no variation from their maternal parent. In the following year, I set some of them apart from the rest, and applied to them, as to their mother before them, the pollen of several species of Lilies. This time, the seeds were extremely scanty. A few, however, were produced; but the plants and flowers that resulted from them, were to all appearance, *L. superbum* pure and simple.

Another subject of experiment was *L. umbellatum*, which I fertilised with the pollen of *L. auratum*. Seed was produced in abundance, and the young plants began to bloom in the second year. Many of them were not to be distinguished from the pure *L. umbellatum*. Others showed unmistakable marks of their hybrid origin in the defective condition of the organs of reproduction, the anthers being abortive or wholly wanting, as were also, in a few cases, even the pistils. In some instances the corolla was deformed, some of the petals being absent, and others small and ill-shaped. But while the influence of the alien pollen was shown in these defects, no features of the male parent appeared either in form, colour, scent, or manner of growth.

No Lily seems to offer better prospects to the hybridiser than *L. longiflorum*. The species itself is not a good seed-bearer in our climate; but one of its varieties, known as *L. longiflorum Takesima*, bears seed very freely. This variety is also distinguished by superior vigour of growth, and by the dark markings of its stem; the pure white of the large trumpet-shaped flowers seemed peculiarly fitted to receive impressions of colour from an alien parent. I therefore fertilised them with the pollen of a deep red variety of *L. speciosum*. The operation was performed under glass and with the greatest care. The seed was abundant, and, being sown immediately, it all germinated in the following spring. When the flowers opened, two years after, they showed no sign whatever of the male parent; the pure white was without tint or spot, neither did the foliage and stem show the slightest trace of foreign influence; the plants were in pots. I removed a number of them to the greenhouse, and, having no pollen of *L. speciosum* at hand, fertilised them with that of *L. auratum*; several refused to bear seed, while others produced it freely. The young plants resulting from this last experiment bloomed in the greenhouses of the Bussey Institution in the spring of 1874. Neither *L. speciosum*, their grandfather, nor *L. auratum*, their father, had produced any effect whatever on the pure white of their petals; they showed differences of habit among themselves, some being very tall and vigorous, and others compact and bushy, with a tendency to bloom in clusters, but these may have been mere seedling variations, with which the hybridisation had nothing to do. Yet distinct evidence could be seen of the action of the alien pollen. Some of the anthers were small and abortive, and some of the pistils were imperfect; but what was more to the purpose was the changed colour of many of the former; the white petals had completely resisted the foreign influence, but the yellow anthers had undergone a marked change; about half of them were turned to a chocolate colour, approaching that of the anthers of the male parent, though not so deep.

I determined to try the effect of fertilisation in the third generation, and applied the pollen of both *L. auratum* and *L. speciosum* to ten or twelve of the young hybrids whose organs of reproduction appeared to remain perfect; not one of them would bear seed. In the present summer (1877) I repeated the experiment on a larger scale, and fertilised about fifty flowers after removing the anthers before they had ripened. Nine of these produced seed-pods, all of which were small and deformed, except two; these two contained, along with chaff, a few seeds of promising appearance; the remaining seven were full of chaff alone. The reproductive power had been nearly destroyed by hybridisation repeated through three generations. What will result from the few seeds obtained remains to be seen. Some Lilies refuse to be fertilised by the pollen of certain other Lilies. Thus I have found that *L. speciosum*, so readily fertilised by *L. auratum*, will give no seed to the pollen of either *L. Browni*, *L. longiflorum*, *L. canadense*, *L. tenuifolium*, or *L. umbellatum*. Yet the converse does not always hold true, for several of these last-named species will bear seed when fertilised with the pollen of *L. speciosum*.

A great number of subtle influences may modify the results of experiments in hybridization; yet those described above were so various, and extended over so many years, that the general facts to which they point may, I think, be regarded as assured. An eminent botanist has suggested to me that the tenacity with which Lilies fertilised by Lilies of other species retain their characteristics unchanged, may be explained by supposing that the offspring are really no hybrids at all, but results of parthenogenesis, that curious pheno-

menon which sometimes occurs in the lower orders of animals, and by which a single impregnation continues to take effect in several successive generations; in other words, that a Lily of which the flower was fertilised in any one year by its own pollen may bear seed in the next year without being fertilised again. There are two good reasons for believing that parthenogenesis had nothing to do with the cases in question. In the first place, some of the Lilies subjected to experiment were young plants that had never bloomed before, and consequently could not have been fertilised before. In the next place, every species fertilised by me with the pollen of another species showed, with the single exception of *L. superbum*, evidence of hybridity, which, though slight, was convincing. This evidence consisted in markings of the stem resembling those of the male parent, in a changed colour of anthers, also resembling that of the male, and in the frequent occurrence of abortion in both anthers and pistils, with consequent sterility. That the seedlings were really hybrids, there can be no reasonable doubt, though nobody would have suspected it from casual observation. The conclusion is that Lilies, or at least the principal species of the genus, when hybridised, produce offspring which show the features of the male parent very slightly, or only in exceptional cases. These exceptional cases are, nevertheless, so remarkable at times, that the rarity of their occurrence ought not to discourage the hybridist. FRANCIS PARKMAN.

#### MY TOWN GARDEN.

In addition to the hardy border plants which I have before named (see p. 491 Vol. XII) as being desirable for a town garden, I may now mention:—

**BUPHTHALMUM SALICIFOLIUM.**—This is a very showy plant. Its stems are erect and clothed with leaves, and they bear large bright yellow flowers, with broad spreading rays, height  $1\frac{1}{2}$  ft. It flowers in July, August, and September, and succeeds in ordinary garden soil. It is propagated by division of the roots.

**HARPALIUM RIGIDUM.**—This has bright orange yellow blossoms with large conspicuous brown and orange centre. The flowers are from 4 in. to 5 in. in diameter, and are borne in great profusion from early in July to October, height 4 ft., and habit neat, very effective in the mixed border, and will grow in any good soil. It is increased by divisions of the roots in autumn or spring.

**DICTANUS ALBUS** (known as *Fraxinella*).—The stems of this rise stout and erect to a height of about 2 ft., and bear a spike of pretty creamy-white flowers (there is a variety with dark coral red flowers). It succeeds best in rich, deep, but dry loam; it is a handsome border plant which flowers in spring, and which may be propagated by division.

**GAURA LINDHEIMERI.**—An elegant plant, producing beautiful masses of light flexible stems about 18 in. or 2 ft. high. The stems terminate in long open spikes of pink or red and white flowers, produced in July and August and onwards, in mild seasons and places, till October. It does best in sandy loam, and is propagated by division.

**ZAUSONHERIA CALIFORNICA.**—Grows about 1 ft. or  $1\frac{1}{2}$  ft. high, in an erect graceful style. Its flowers are produced in the axils of the leaves on short stalks. They are bright red or crimson, and appear in summer and autumn. It requires a warm situation, and rich, light well-drained soil. It is increased by division in early spring.

**ENOTHERAS.**—*Æ. Youngii* is without doubt one of the showiest perennials in cultivation, and one which can be highly recommended. It forms a pyramid of blossom about  $2\frac{1}{2}$  ft. in height, continuing in beauty for a long time; the flowers, which are large, are of a deep golden yellow colour; a grand plant for a light sandy loam, and one which may readily be propagated by division in early spring. *Æ. extima* is a pretty dwarf growing plant with large Magnolia-like blossoms of the purest white, and deliciously fragrant. *Æ. speciosa* is a very showy and effective species, and one which should be in every garden. It is a free-growing, hardy perennial, usually attaining from  $1\frac{1}{2}$  ft. to 2 ft. in height, and forming neat tufts composed of many erect stems, which are covered from June to October with numerous large white fragrant flowers. As a border plant few can be found to equal it. Propagation and soil same as above. *Æ. riparia* is another showy species, and one of the best; it grows about 2 ft. in height, and consists of a number of slender branching stems that produce abundance of showy yellow flowers.

**POTENTILLA**.—*P. formosa* is a beautiful plant which should be found in every garden. It is of neat, erect habit, about 2 ft. in height, and bears an abundance of Cherry-red flowers. It will thrive in ordinary loamy soil, and may be propagated by division in autumn or spring. *P. calabra* is a neat and pretty species with elegant silvery foliage, and large lemon-coloured flowers. *P. nivalis* is a very pretty white blossomed dwarf plant, the foliage of which is covered with long satiny hairs.

**POLEMONIUM CERULEUM** (JACOB'S LADDER).—A well-known plant, which has long been cultivated in gardens of all classes, but now rarely seen except in those of the cottager or amateur. It grows about 2 ft. high, and bears pretty soft blue flowers, which appear in June and July. It succeeds best in moist deep loam, and is benefited by being annually transplanted into new or fresh soil, and by being divided. A variegated variety of this plant is one of the most elegant hardy plants in cultivation. It has all the grace of fern that belongs to a delicate Fern, along with a distinct and beautiful variegation.

**STOKESIA CYANEA**.—A showy autumn-flowering perennial, about 2 ft. in height, with large blue flowers, from 3 in. to 4 in. across, something like those of an Aster. It succeeds perfectly in any ordinary garden soil, if well drained, and may be propagated freely by division of the roots.

**ERODIUM**.—*E. Manescavi* is a handsome plant, indeed one of the best of its family. It forms a tuft of graceful, much-divided foliage, about 1 foot in height, from which issue numerous stems, bearing umbels of large purplish red flowers, each 1 in. across. It keeps in flower from early summer until late in autumn, and grows freely in any tolerably good soil. *E. macrademum* is a graceful little plant, which produces tufts of Fern-like foliage, with numerous flowers, on stems about 6 in. in height. The two upper petals are of a pale rose colour, with a blackish blotch at the base, while the lower ones are of a flesh colour veined with purple. Ordinary garden soil will answer for both; they may be divided in the autumn.

**CEDRONELLA CANA**.—This grows about 2 ft. high, erect and graceful. The flowers, which are of a lively red, in compact whorls are arranged closely on the upper half of the stems, and appear in July and August. Light rich sandy loam suits it perfectly. *C. mexicana* is taller than the last, and more luxuriant in every way. The flower spikes consist of interrupted whorls of red flowers which open in September and October. These two Cedronellas are both choice border plants.

**ERYNGIUM AMETHYSTINUM**.—A very striking plant. It grows about 3 ft. high, and has stout woody stems clothed with deeply-out and jagged hard leathery leaves, grey, green, or glaucous below, but growing gradually blue, as do also the stems and every part of the plant, a colour which increases in depth as the flowers are reached. The latter are light blue; they appear in July, and last for a month or two. *E. bromeliifolium* is also a distinct and striking plant, which has long Yucca-like leaves, very spiny at the margins. It grows 3 ft. high, and produces numerous white flowers. *E. maritimum* is one of the most attractive plants in cultivation; it has glaucous rigid foliage of great substance, and very spiny along the margins. It grows about 1 ft. high, and bears numerous small blue flowers, which appear in July and August. It succeeds well in light sandy soil, and is readily propagated by division. L. E. X.

#### CLEMATISES FOR LOW WALLS.

It has been said that Clematisses are unsuited for planting against low fences, but that is a mistake. I have a low west wall not more than 4½ ft. in height, against which I have planted several kinds of Clematisses, and by means of a little careful training they are made to cover the wall with blooming wood, and they present a charming sight from July on to quite late in the summer. In the first place, the wall is covered with a galvanized wire-netting of a two-inch mesh. Being securely fastened at top and bottom, it greatly aids the proper training of the branches, and saves an immense deal of labour in the way of nailing, &c. It is not necessary that the plants be young, for those to which I am referring were planted three years ago; they are cut down quite close to the surface of the

ground in spring, after being well mulched with manure during the winter.

The plants generally make an early growth, and throw up seven or eight strong main shoots. These are stopped just beyond the first joint, and are tied out in a horizontal position as close to the ground as possible. Then from each of the two eyes another shoot pushes, and these are again stopped and similarly tied out. This is done again and again, until the surface of the wire-work is covered with young flowering wood from the bottom to the top, and when in bloom the plants present the appearance of a perfect surface of flower.

Two things result from this mode of treatment: the individual flowers are not so fine, but they are much more numerous, and this makes up for lack of individual size; secondly, the time of blooming is somewhat retarded; but it is in its turn compensated for by the fact that it is much more prolonged. This past season I had Clematiss flowers right up to the beginning of November, and, it is not too much to state, in perfect sheets. The lateness of blooming is not of much moment, because the wall is also partly covered with other things that bloom earlier in the summer, such as *Fuchsia Riccartoni*, *Gum Cistus*, and climbing *Tropæolums*. The *Jasminum nudiflorum*, too, flashes out in golden-yellow at mid-winter, in company with the Orange berries of *Cratægus Pyracantha*, and *Pyrus japonica* in early spring. Some of the spring-flowering section of Clematisses might be employed with advantage where the aspect is warm and sunny, but my wall, not being this, I have refrained from planting them.

What are the best varieties? it may be asked. I recommend *Alexandra*, pale reddish-violet; *Jackmani*, deep violet-purple; *Lady Bovill*, greyish-blue; *Magnifica*, purple, shaded with crimson; *Rubella*, rich claret; *Rubro violacea*, maroon, shaded with reddish-violet; *Star of India*, reddish-purple, with purple bands; *Tunbridgensis*, dark blue, shaded with purple; *Velutina purpurea*, rich blackish-mulberry; and *Viticella rubra grandiflora*, a very near approach to a red Clematis, the flowers not large, but freely produced, and of a fine, bright puce-crimson colour. All the foregoing are vigorous-growing varieties, and I have not included any of the more delicate of the lanuginosa type, and those that are intermediate between the spring and the summer-flowering type. These can be introduced at any time by any one adopting this method of growing these fine climbers. New ones are constantly appearing, and a little change is advisable at times.

Now is the time to plant Clematisses. Every nurseryman grows them because they are so much in demand. They should be had in pots, but the ground in which they are to be planted should be deeply dug and well manured before planting is carried out. Clematisses are gross feeders; they throw out a large number of stout, wiry roots, and these roots need abundant nutriment. During the summer months all Clematisses, and especially those planted against walls, need abundance of water when the season is at all dry, and a good surface-mulching with fresh cow manure materially assists them; soap suds are also of advantage, and a little guano-water at the flowering time. D.

#### NOTES AND QUESTIONS ON THE FLOWER GARDEN:

**Hardy Chamerops**.—I shall be glad if any reader of THE GARDEN will inform me whether *Chamerops excoela* and *C. Fortunii* are one and the same Palm, and if not, whether they are equally hardy. Under the impression that they are, I have recently imported some large specimens of *C. excoela* from Algeria, with the view of planting them out permanently in a wild garden in the north of England, but some dealers here, I perceive, quote them in their catalogues as distinct Palms, whilst Messrs. Backhouse & Sons and the Societè Algerienne class them as *synonymous*.—T. B.

**Plants in Bloom in Sussex**.—The following plants are now in flower in this and neighbouring gardens, viz., *Scabiosa*, *Paeonias*, *White Rocket*, *Wall-flower*, *Erythronium*, *Marginal*, *Purple Verbena*, *Mignonette*, *Silene*, *Carration*, *Gladiolus*, *Aranthus*, *Myrtle*, *White Heath*, *Erica carnea*, *Berberis*, *Yellow Alyssum*, *Lanterninus*, *Andromeda*, *Christmas Roses*, *Violets*, *Garden Anemones*, double and common *Primroses*, *Polyanthuses*, *Tritoma Uvaria*, *Sweet William*, *Rose-buds*, *Candytuft*, *Ceanothus*, *Fuchsia*, and *Forget-me-nots*; Ferns are untraced in some gardens, and *Gloire de Dijon* roses are well in flower.—S., *Waverleyfold*.

## GARDENING FOR THE WEEK.

## Orchids.

NEXT in importance to the treatment requisite to promote good growth amongst Orchids during the active season, are the conditions under which they are kept through this, their period of rest. It often happens that comparatively little thought is bestowed upon the important, yet necessarily somewhat varied treatment to which the different groups and individual species should be subjected during the winter season, the prevailing impression amongst inexperienced growers being, that if the plants be submitted to a certain period of dry treatment, frequently carried out, without sufficient discrimination being exercised as to the requirements of the various families and kinds, by which the system pursued is anything but in accordance with the well-being of a great portion, all is well. There can be no doubt that the treatment which Orchids receive through their time of rest, both as to temperature, and the more or less dry condition of the roots, as well as the atmosphere, requires to be regulated to a very considerable extent by the conditions under which they have existed during the growing season; for instance, where plants are subjected to a high temperature, far away from the glass, and closely shaded, with comparatively little air—such conditions, in fact, as are calculated to produce a collective maximum growth, with large leaves of that deep green colour so much prized by many, they are anything but calculated to bear the severe drying ordeal to which they are often submitted; nor will they, under such conditions of growth, bear without injury so low a temperature as might be hazarded in the case of plants, the growth of which had been produced under treatment of a nature such as to give a promise of better permanent results. From long practice and observation, I have, indeed, come to the conclusion that in the case of no other family of plants is the fatal mistake of too much heat, with a moist, coddling atmosphere, so much committed as in that of Orchids. Coming, as many of them do, from hot, excessively damp regions, where the atmosphere during a great portion of the year is charged with moisture almost up to the point of saturation, led many to suppose that under our necessarily highly-artificial conditions of cultivation it was requisite to imitate this, which, no doubt, to a certain extent is correct, but the extremes in these directions have been carried so far as to result in the ultimate death of hundreds of thousands of plants, worth in the aggregate immense sums of money. It should ever be borne in mind, that in the cultivation of plants under glass, and more especially such as in the continuous application of artificial heat, with the limited admission of air consequent upon the necessity of confining the moisture in the atmosphere requisite to maintain the required humidity, a given temperature resulting from fire-heat will have a much greater influence in promoting, or perhaps more correctly speaking, forcing growth, than a similar temperature would have in the open air, where the plants existed in a wild state. This, so far as I have been able to judge from the temperature during the growing season of the localities from which many species come, and the progress the same plants make under the lower artificial temperature of the Orchid-house, will make a difference of 7° or 8°; hence it follows that a summer temperature of 75° or 80°, resulting from fire-heat in the Orchid-house, will exert as great an influence upon a plant of *Saccolabium Blumei* or *gottatum* from Java or Ceylon, as the higher range of 84° or 88° would have on them in a wild state. This is a subject to which I have given particular attention, not only so far as it relates to Orchids, but other heat-requiring plants as well; and I have noticed that the difference in the effects resulting from an artificial temperature, and that produced by the sun in the open air, was correspondingly greater in proportion to the lessened admission of external air to the structures in which the plants were grown. Even in one's own case, the feeling produced in a glass-house with a high temperature and a moist atmosphere with comparatively little external air admitted, the oppression experienced is such as often to lead us to suppose that greater heat existed than was really the case when the thermometer was looked at, and I have not the slightest doubt that heat under such conditions has a like influence in forcing growth; and a few year's experience in the cultivation of these plants will not fail to show those who are at all observant, that in Orchid-houses in which a high temperature is maintained during the growing season, the plants assume a character in accordance with this view. Yet, however fresh and vigorous the plants so treated may appear at the end of the growing season, they are anything but calculated to bear an ordeal of several drying up through the winter. The large-leaved *Vandas* of the *suavis* and *tricolor* sections, too, often show the effects of coddling treatment through the growing season by losing a disproportionately large number of their lower leaves when the atmosphere, and particularly the material in which their

roots exist, are subjected to the severe drying process in the winter, by many deemed essential to their flowering sufficiently, a consumption which would be much better insured by a lower temperature whilst growth was being made, accompanied by more light, more air, and less moisture than they are frequently subjected to. *Saccolabium* and *Ardisias* are alike, though not quite to the same extent, influenced, and where plants have been grown in a way that renders the foliage unable to bear a considerable amount of drying up, it is better to be content with a less display of flower at the blooming season than to treat them in a manner that will cause a loss of too many leaves; the drying should not be carried so far as to make the foliage shrink, or destruction will be the result. *Phalaenopsis* have suffered to an incalculable extent through the maintenance of too high a temperature during the winter season. I have invariably observed that where these plants have continued for any number of years in a healthy, flourishing condition, it was where they were submitted for a considerable length of time during the winter months to a lower temperature than, judging from the countries from which they come, it might be supposed they could bear. This has sometimes happened in houses in which the heating was insufficient in cold weather to keep the temperature within a good many degrees so high as the grower would have liked; they do best with a night temperature of 60° during the winter, and a longer rest than many Orchids from countries where a high temperature exists require. At the same time, care must always be taken to prevent these plants from getting too dry at the roots, existing as they do without pseudo-bulbs or strong fleshy stem—little, in fact, excepting leaves and roots; therefore, if the latter be allowed to get over dry, the lower leaves are certain to decay sooner than they ought. T. BAINES.

## Stove and Greenhouse Plants.

Camellias cannot withstand dryness at the roots, and when this happens, particularly when they are making their growth, they become stunted, the roots are weakened, and the flower-buds fall without opening; this will also occur if the atmosphere be too dry when they ought to be expanding. They must not, however, be over-watered. Sow Palm seeds, as soon as imported in pans or boxes of loamy soil; the boxes may be kept in any odd corner until the seeds have germinated, when they must be placed in a more prominent position. Rooted cuttings of *Stephanotis*, *Gardenias*, *Bouvardias*, *Aralias*, *Ixoras*, *Dracaenas*, *Dieffenbachias*, *Pavettas*, &c., must be potted singly, plunged in bottom heat, and kept under hand-lights or bell-glasses. Sow some *Anthurium* and *Aglaonema* seeds in some damp, spongy material, in heat. Gather the seeds of *Aroids*, *Ardisias*, *Solanums*, &c., as soon as ripe. Sow some *Cyclamen* in an intermediate temperature, and keep the pans containing the seeds near the glass. Sow Fern spores in rough peat, either in pans or pots, under bell-glasses, &c. Pot off the seedlings as they become fit for that operation, and also give older seedlings a shift. Cuttings of soft-wooded Heaths may yet be struck, as may also the young points of *Boronias*, *Polygals*, and other hard-wooded greenhouse plants. Cut over a few *Euphorbias* and place them in a moderate heat, to yield young shoots for cuttings. Separate and pot singly autumn-struck cuttings of *Azaleas* and *Camellias*. Place last autumn's struck *Camellias*, or those now sixteen months old, on a shelf near the glass, for grafting on in February and March. Repot some of the Heaths, in order that too much work may not occur at a time when it cannot be overcome. Introduce *Pelargoniums*, *Verbenas*, *LOBELIAS*, *Tropaeolums*, *Lantanas*, *Coloneses*, *Iresines*, *Alternantheras*, *Mesembryanthemum cordifolium*, and similar plants into a brick moist temperature, to start them into growth for cuttings. Keep roots of *Cannas* in pots dry by building the pots one above another in some dry, cool place. Gradually dry off roots of *Dahlia imperialis*. If seeds of the silver-leaved *Centaureas* be now sown in heat they will make fine plants by bedding-out time; they should be sown in shallow pans in fine soil, containing a little sand and well-rotted leaf-mould; let the seeds be only just covered with soil, and keep it slightly damp. *Ageratum* which have to be raised from seeds may be treated in the same way. Golden *Pyrethrum* is best raised from seed, as propagated in this way, the plants have not such a disposition to flower, and are finer than those obtained from outtings or division; sown now in warmth they will soon be up, they can then be placed in boxes or pots. For carpet bedding such subjects as *Alternantheras* and the crimson *Iresine Lindeni* are almost indispensable; their propagation should be at once attended to. *Verbenas*, more particularly the white kinds, are very liable to the attacks of mildew; on its first appearance they must be dusted with sulphur. It will be well now to put the store plants of *Verbenas* in a little heat to cause them to push young growth for outtings; 50° by night will suit them well; let them be on a shelf or in some place where they will receive plenty of light, and keep them regularly supplied with water; an application of liquid manure once a week will be

beneficial to them, and will cause the production of more cuttings. Heliotropes, Lobelias of the speciosa section, and Ageratum should also be put in warmth, for if the cuttings be not soft and young they do not root so readily. *Humes elegans* sown last summer have plenty of roots, shift them now in pots big enough to serve till planting-out time arrives. Aphides must be guarded against, for if left for any length of time undisturbed they spoil the leaves.—T. B.

#### A Vase of Flowers.

It may have been noticed in the various engravings from flower pictures we have published in THE GARDEN, how free and open the compositions usually are. They are arranged, in fact, by no means in the close-headed bouquet plan as yet so common, notwithstanding considerable recent improvements in arranging flowers. In these Cauliflower-like nosegays, &c., we get too many flowers, so that one destroys the good effect of another, and the individual grace of any one plant is lost "in the mass." Boldness of form is rarely allowed in such compositions, whereas in the painter's productions we see it



A Vase of Flowers.

allowed full play. The ideas that guide the artist may well be followed by the gardener. A few flowers shown with all their beauty of form and foliage, in addition to the flower, will afford a better effect than many crowded together, and the crowd is much more difficult to arrange well than the few.

#### Flower Garden.

In order to have a garden enjoyable, the roller, broom, and rake must be frequently at work. Use the hoe amongst growing plants, for a loose and open surface is congenial to their health. Prune deciduous shrubs; but the pruning of evergreens should be deferred until spring. All kinds of trees may still be transplanted, especially such as are deciduous. Proceed with any alterations that may have been previously determined upon. Any ground yet unreturned should be dug over as soon as practicable; if for Dahlias, Foxgloves, Hollyhocks, or other strong growing grass-feeding plants use plenty of manure; but if for Pelargoniums, or other plants that are required to produce abundance of flowers and to keep dwarf in growth, a dressing of leaf-mould will be more beneficial. Lay up the ground quite roughly, in order that the frost, wind, and sun may ameliorate and sweeten it. Break up the surface of gravel walks, but not so deeply as to disturb the rubble in the bottom; and, if necessary, apply a coating of fresh gravel. Roll Grass verges, so that they may not appear too high above the gravel when cut. Protect all tender plants with

mulchings and temporary light coverings against frost. In the case of flower beds, the surface soil should be slightly loosened whenever the weather is dry, but not so deeply as to injure bulbs planted therein. Push forward, as much as possible, such operations as involve the removal of soil or the wheeling of gravel, compost, and manure; remove overgrown or superfluous trees from the lawns or elsewhere during dry weather. Shrubberies may also be thinned out by the removal of unnecessary plants. When the weather is such as to stop the progress of all operations in the open-air, attend to the preparation of stakes, labels, and birch besoms, &c., all of which will be found useful as the season advances. Many bulbs and hardy herbaceous plants cultivated in the open border disappear altogether during winter, and their crowns are not infrequently injured by being trampled upon, unless they are all distinctly labelled; but where this is not considered necessary, a stout oak peg should be fixed in the centre of each group or patch of bulbs or herbaceous plants of any kind which disappears, and this peg should stand some 4 in. or 5 in. above the surface of the soil, and will serve to indicate the whereabouts of the plants, and prevent them being injured when the borders are dug or pointed over early in spring. Hardy annuals in pots intended to be planted out early, with the view of producing an early display, should have, for the present, the protection of a pit or frame, and are not unlikely to be injured by slugs or snails, to prevent which they should be frequently examined and occasionally dusted with quick-lime, if found to be necessary. Protect also such winter-flowering plants as the *Chimonanthus fragrans*, and the Christmas Rose, which will now be in full bloom if protected by a frame or a hand-glass.

#### Hardy Fruit.

This is a very good time for the planting of all kinds of hardy fruits, and, if weather permits, the sooner it is done the better; but on no account attempt to plant when the ground is in a sodden condition. Do not plant too deeply; as a rule, trees should never be planted deeper than they originally were in the nursery. After planting, mulch with either rotten manure or litter. This mulching is of the greatest importance, for, in the first place, it protects the roots from drying winds and frosts; and, secondly, it matures the ground. The pruning of Apples, Pears, Plums, and Cherries should be done as opportunity offers; and, in the case of strong growers, it may be necessary to root prune to get them into a fruitful condition, which operation is best performed by entirely lifting and replanting trees of a manageable size, and, in the case of larger ones, digging out a trench a reasonable distance from their stems, and gradually working round them, taking care to cut the tap roots especially. The pruning of Gooseberries and Currants should yet be delayed, as frequently the birds make such havoc of them when the buds first begin to swell, and immediately after severe weather, that it is better to wait till food is more plentiful for the birds than lose the entire crop by early pruning. Strawberry beds that were trimmed and dug in the autumn ought now, if not previously done, to be well manured, leaving the material on the surface of the ground as a protection to the plants. Draining, levelling, soil carting, and otherwise preparing ground intended for fruit trees, may be done when the ground is not in a fit state for planting, and advantage should thus be taken to forward all operations of this nature in anticipation of the busy time approaching. Proceed with the pruning and nailing of wall trees, such as Plums, Pears, Cherries, and Apricots. Moss growing on the stems of old trees should be scrubbed off, and afterwards the large branches should be washed with a mixture of lime-water, soot, and brine. Cut off shoots to be used as scions in grafting, and insert their ends in soil in some well-sheltered situation, and head back stools.

#### Indoor Fruit Department.

In starting Vines, the chief point to be kept in view is a moderately strong bottom heat to stimulate the roots into action. To ensure this, therefore, form new beds of fermenting material, both inside and out on the top of the roots of Vines newly started; make these beds of sufficient thickness to raise and retain a heat of 90°. The inside bed will greatly assist in keeping up the temperature to 55°, which is quite high enough for the first week or two. When a portion of the fermenting material is turned over daily, it gives off a warm steam, which is very beneficial to the Vines during hard firing. Cover the outside bed with glass sashes or boards, to keep out wet and wind, thus economising the heat. Add fresh lings to outside beds made up a month or two ago, should they need such attention. The root temperature must, on no account, be allowed to decrease at this stage of growth, or a severe check will be the result. The fermenting material may now be removed from the inside of houses which were started in October or on the 1st of November. Tie in the young shoots as they require support; any which have

grown in an upright manner should only be brought at first half way into their proper positions, but at the second tying with strong matting, bring them into their right places. Those who propagate Vines in pots put in the eyes about this time. Select the eyes from the best ripened prunings preserved for that purpose; cut the wood straight through, directly above the eye, leaving about 1½ in. of it underneath the eye, out off slantingly, and make an incision opposite the eye, and the operation is complete. Three-inch pots should now be prepared for their reception; these should be dry and quite clean. A few small crocks should be put in for drainage, and the rest of the space should be filled up with good loam. A hole should then be made in the centre of the soil, and filled with silver sand, and the eye should be firmly pressed into position with the hand until the notch made opposite the eye is covered. This will leave the eye only above the soil, into which roots will be pushed from the notch. The whole should be gently watered, and then set in some cool spot, from which frost is excluded, for a month before being placed in heat. Look over all Grapes still hanging on the Vines or in bottles, and remove all decayed berries. Keep the air of the house dry and airy, and the water bottles regularly filled. Great care and attention will be required in every stage of Pine-apple culture for the next six weeks to be successful with the plants when in blossom, and with fruit that is up, to prevent any kind of abortion to a single pip, or the uneven swelling so easily produced at this season. There must be no check or hurry, either by attempting to drive or retard those fruits that are in any stage of swelling.

#### Kitchen Garden.

In ordering seeds for the coming year, reliance should principally be placed upon old well-tried varieties; at the same time, in order to keep pace with the times, a few of the novelties introduced may be tried. Take advantage of the present wintery weather to finish wheeling the manure to uncropped land; place it in large heaps in the centre of the plots, to avoid loss from the drying influence of the atmosphere, and do not level it down till just before the land is in a fit condition for digging. Prepare fresh stable manure and leaves for making hot-beds by thoroughly shaking and mixing the material together. Where leaves cannot be readily obtained, it will be a very great advantage in making hot-beds if cow or pig-manure can be had to mix with the stable-manure. Horse-manure is hot and fiery, and the addition to it of about one-third, or even a fourth, of its bulk from the cow-shed or pig-stye—which is of a cooler nature—will cause the heat to be more steady and permanent. Where hot-beds are depended on for the first early Cucumbers, a bed large enough for a one-light frame should be put up now for raising the young plants, should no other means exist for bringing them forward. In cold situations, where it was not thought desirable to sow Peas in autumn in the open-air, preparations should shortly be made for fetching up lost time, by sowing some under glass for planting out when the weather becomes more favourable. They may either be sown in 48-sized pots or in troughs, which any unskilled workman, who has a few rough boards, can put together, or they may be sown in fibry squares of turf, hollowed out in the centre. It is not advisable to start them in too high a temperature, as there is plenty of time without undue forcing. A frame placed on a bed of leaves, where they can be near the glass, will do well, or, if more convenient they may be placed in any house where forcing has just commenced. Loosen the soil amongst Cabbages, Coleworts, Lettuces, Parsley, transplanted Onions, and similar crops. Get August-sown Onion beds thoroughly cleaned. When finished, slightly dig or loosen the alleys, and transplant Lettuces or Cabbages therein. Get all empty quarters manured and trenched, throwing the soil into ridges 2 ft. apart. Vacant ground under fruit trees manure and dig for Radishes, and be sure to have the trees thinned or pruned before the ground is interfered with. Radish beds sown early in December should be uncovered every morning, replacing the litter at night. Warm borders which contained Tomatoes in summer are best adapted for winter-sown Radishes. Under fruit trees the beds receive a little shelter, whilst the shade caused by the naked branches does no harm. Remove hand-lights and sashes from Cauliflowers, Lettuces, and Onions during the daytime, but replace them at night. The smallest amount of rain must be excluded from the Lettuces, as they are so apt to damp off if they become wet; therefore rather tilt up the sashes than altogether remove them. Thin and weed the plants, and stir the soil a little amongst them. Scatter some lime over all kinds of crops, more especially over those transplanted permanently, such as Cauliflowers transplanted under hand-lights. If ground be required, lift the Jerusalem Artichokes and store them; if land is not wanted, merely cut over the stalks and spread a layer of litter along the top of each drill. Dig the ground between lines of Rhubarb, and place a forkful of litter over each crown. Any Eadie plants to spare plant in front of palings or walls. If the ground be required in which

the general crop is growing lift the plants, tie a piece of matting around each, and lay them in thickly in a bed for a time. Protect them from severe weather by shaking some rough litter over them.

#### Trees and Shrubs.

Prepare stakes for steady and supporting any plants that have been recently transplanted, or that may require such assistance. Trench and prepare large holes, if the ground has not become too frost-bound. Care should be taken to clear off all snow from the surface before opening the trench, for, if buried in the soil, it is a long time thawing, and considerably reduces its temperature. In severe weather, in the absence of snow as a protector, a load or two of straw rubbish should be kept at hand to throw over the surface of the ground to be trenched, as it will prevent frost penetrating, and the work of trenching can then be carried on without interruption. At this late season it is better to defer planting all kinds of evergreens till April, unless the plants to be removed are of small size, and are to be transferred to very sheltered situations. The last few mild winters have induced many to continue planting evergreens much too late, and many have been killed in consequence. All recently transplanted trees should receive a heavy mulching, so as to prevent the ground about the roots from becoming frozen. In planting very large deciduous trees, the stems and main branches should be bound up, either with bands of Hay or Moss, but the latter is preferable, as it is neater and more retentive of moisture. If the trees are to be planted in exposed situations, this protection will be found of the greatest assistance in keeping the bark plump till root action takes place. Plants of questionable hardiness should at once receive protection by shaking a quantity of dry leaves round their base. These should be afterwards covered with Laurel branches or Brakes, to prevent them being blown away. Numbers of shrubs and plants, that would otherwise be killed or greatly injured, will stand severe winters if protected in this way. Take advantage of favourable weather to push on the planting of all kinds of deciduous trees and shrubs, for if frost again sets in, it may throw this work too far into the new year. If any trees are received from the nurseries during frosty weather, they should be placed in a close damp shed till a thaw takes place. For ornamental planting, few deciduous trees excel the *Taxodium distichum*, as it is always beautiful, from the first opening of the bud to the fall of the leaf. Its light, elegant, pale green foliage equals in beauty many of the Fern fronds, and might be used to great advantage in lieu of them for dressing out flowers. In the autumn nothing can surpass the warmth of colour the foliage of this tree assumes, and even at this late season the trees are not yet bare. For rich autumnal leaf colouring, the Liquidambar is one of the most striking, and should have a place in every shrubbery, where, associated with variegated Hollies, &c., it will show off its lovely hues of rich colouring most effectually. The different varieties of Rhus are invaluable for the foreground, especially the lovely *R. Cotinus*, with its richly-coloured silky plumes, and lacinated, which makes an effective plant for the sub-tropical garden. *Ampelopsis japonica* is another desirable plant on account of its richly coloured leaves, and *A. Veitchii* is valuable for covering walls. If planted alternately with white variegated Ivy, the effect is most pleasing.

#### Cottage Gardening for January.

FLOWERS.—Plants in pots in rooms, the pit, or small greenhouse must be watered with a careful hand in the mornings of fine days, so that all damp may quickly dry up; all dead leaves must be removed, and everything pertaining to them should be kept scrupulously clean. During severe weather, sheets of paper laid over half-hardy plants in the turf pit will be a great protection, and if placed over plants on the shelves in the glasshouse will economise fuel. Hardy plants growing in boxes outside the windows, when the weather is very severe, may be sheltered by having a few evergreen branches laid over or amongst them, or by some other temporary expedient. Many plants that would be safe planted in the open ground may perish in an exposed window from having the whole mass of soil in a shallow box frozen through. Hyacinths in glasses that have been placed in a dark situation to start them should be examined occasionally, and, as soon as the roots nearly touch the bottom of the glasses, they should be gradually inured to the light. Keep the base of the bulbs, as well as the roots, free from all decaying matter, and have the glasses filled up with clean water till it nearly touches the bulb. If at any time the water smells offensively change it, but a bit or two of charcoal will help to keep it pure, and, at the same time, impart strength and colour to the blooms. Bulbs in pots that have been plunged in ashes should, as soon as the pots are full of roots, be moved where they can be protected from frost, and be brought on to flower in the room as required.

FRUIT.—All pruning and training should be pushed forward during mild weather, but do not prune during frosty weather. If any old

trees are much subject to the attacks of insects, well wash them with some insecticide, such as Gishurst Compound (8 oz. dissolved in 1 gallon of soft water); it should be well brushed in to all the cracks and crevices of the bark. A good sprinkling of quick lime will be beneficial in eradicating Moss or Lichens; it should be dusted on when the trees are damp. Vines and Peaches on walls should also be dressed with Gishurst before the buds get too prominent. Where there is a Vinery the Vines should be dressed, and the paint and glass cleaned in good time. The inside borders should be examined, and, if very dry, should be watered, unless the house is full of plants. In the latter case the watering had better be left till next month; then choose a bright day for doing it, and, when finished, scatter a little dry soil over the surface to prevent the damp rising too much. All plants in houses should have abundance of air given them on all favourable opportunities.

**VEGETABLES.**—Although this is generally looked upon as a leisure month, yet an industrious person can always find employment in a garden, no matter how small it may be. During frosty weather manure heaps may be turned over and prepared for the land. All the corners where rubbish of any kind has accumulated should be overhauled, and everything that is sufficiently decayed made ready to go on the land. All sticks, roots, or cuttings should be charred or smother-burned. All wheeling should be done in dry, frosty weather, when it can be done cleanly. Vacant plots should be ridged or trenched up deeply whenever time will permit. If during the long evenings a rough plan is made of the garden, and an estimate formed of the space that can be devoted to each crop, a better idea can be formed of the quantity of seeds that will be required of each kind. A well thought out plan is of great assistance during a busy season. Cauliflowers, Lettuces, and Cabbages on the early border should, in very severe weather, be sheltered in some way. If any place exists where a little artificial heat can be had, Rhubarb, Seakale, and Chicory can be brought forward without much trouble by lifting the roots and planting them in some light soil nearly close together. Broad Beans may be planted thickly in some warm sheltered corner, to be transplanted early in March, or sown thickly in boxes and placed under glass. Beans transplant with the greatest ease and certainty, and a week may be gained without much trouble. If not already done, place the early Potatoes in shallow boxes or trays in some light place, from which frost can be excluded, to sprout for planting.

E. H.

**Diary.**

**January 7.**—Getting into the Muscat-house a ridge of manure and leaves, in order to assist the Vines in breaking. Sowing a three-light frame with Woods' Early-frane Radishes. Getting into the Mushroom-house more Rhubarb; also a little Dandelion and Chicory. Turning over leaves and manure for making hotbeds. Pruning Lady Downe's Vines.

**Jan. 8.**—Sowing Cucumber and Melon seeds. Getting into the forcing pit more Lilies of the Valley, Delytras, Deutzias, Hyacinths, Tulips, and Narcissi. Early Peach-house in full bloom. Getting into a pit previously prepared for them another batch of Strawberries. Pushing on with the pruning and nailing of Pears and Plums; also with digging and trenching whenever the weather will permit.

**Jan. 9.**—Putting in Vine eyes, also cuttings of Chrysanthemums. Making up a hotbed for Carrots and Potatoes. Forking over the ground between Gooseberry and Currant bushes. Getting manure on to land where it will be required whilst it is dry. Looking over Grapes in bottles, and removing any berries that may be bad, and filling up the bottles where required.

**Jan. 10.**—Putting off Cucumbers and Melon plants. Getting Heliotropes, Petunias, and Fuchsias into gentle heat for cuttings. Looking over netting and getting it repaired, also Tiffany used for the walls. Washing over the paint in late Vinery with soft soap and warm water.

**Jan. 11.**—Sowing 100 pots with Osborn's Early Forcing French Beans, and earthing up a more forward lot. Covering up another bed of Seakale, and getting in another three light frame of Asparagus. Getting into the early Peach house a quantity of turfs, 12 in. by 7 in., in which to plant William the First, Little Gem, and Unique Peas.

**Jan. 12.**—Sowing a pan of each of Carter's Dwarf Crimson and Dwarf White Celery. Covering up Celery to protect it from frost. Clearing up pleasure grounds and rolling down all gravel walks. Clearing out all vegetable refuse, and cleaning up kitchen garden walks. Looking over fruit room and removing any that are decaying, also Onion stores, and watering Pines.

W. G. P.

**Poppies in India.**—It is stated that the Poppy monopolises 1,000,000 acres of the most fertile land in India. Thus, while the people die for want of food, they have the satisfaction of knowing they can produce the means of stupefying and poisoning about a tenth of the race, with the encouragement of a paternal Government.

**THE FRUIT GARDEN.**

**THE MOUNT ATLAS NUT.**

(*CORYLUS ALGERIENSIS*).

The very fine Nut, of which the annexed is an illustration, was imported some twenty years ago from a Continental nursery by my father. Its native country is the slopes of Mount Atlas, a district particularly rich as regards fine Nuts. The tree is vigorous and hardy when mature, but I have noticed that the young layers are liable to be slightly injured by frost. It is singularly fertile, and the fruit is borne in large clusters, covered by a hairy, spreading, and handsome husk longer than the Nut, and furnishing a very ornamental design for the electro-type



The Mount Atlas Nut.

makers of baskets and epergnes. The nut itself is large, full, and well flavoured.  
T. FRANCIS RIVERS.  
Sawbridgeworth.

**FRUIT TREES ON ARCHES OVER WALKS.**

I HAVE often thought that in many gardens where espalier-training is adopted—and a capital system it is—the trees are too much cramped by the espaliers being too low, especially in this the case, where both soil and climate are fairly suitable for fruit culture. In inferior soils it may be necessary to restrict growth, in order to retain sufficient control over the trees to secure fertility, but in favourable situations it would certainly pay better to allow a fuller and freer development. As a rule espaliers are pretty much the same height everywhere, and the soils that are capable of developing and sustaining large fertile trees are placed on the same level as those of an inferior character where the trees are shorter lived. It may be said, of course, that the trees should be planted wider apart, and so permitted to extend themselves laterally, and this is done, no doubt, to some extent; but espaliers might be raised much higher than they now are, with advantage to the fruit crops, without any corresponding disadvantage worth serious consideration, as the shade will be only nominal; and there are many light crops in summer that would be benefited by the partial shade of a line of espaliers. Were it not for the cost of erection, wire arches over the principal paths would be an interesting way of growing Pears and Apples, especially the former, and, if they were trained as five-branched vertical cordons, a good sized arch would soon be covered, and if the arches were substantial there would be but little cost afterwards, beyond an occasional coat or two of paint. Most of the work of training and attention to the trees could be carried out on the under side with a pair of steps on the path

cleanly, and without treading the borders into mortar. The trees, of course, would be planted close to the edge on each side of the walk, without any intermediary borders. I was in a kitchen garden, about a month ago, where the centre-path was covered with such an arch, on which was trained an interesting collection of some 50 kinds of Pear trees, in capital health and condition. Probably, a less number of kinds would be more profitable. Still the planter of a large number of different kinds of fruit trees in any district may be looked upon as a public benefactor, owing to his showing his neighbours which are the most profitable kinds to grow. Not only may Pears and Apples be treated in this way, but some of the hardest Plums and Cherries, as well as Gooseberries and Currants. This is an excellent plan for suburban gardens, where land is valuable, and the kitchen and fruit gardens must necessarily be small. If the fruits be trained over the walks, the open squares or quarters could be wholly devoted to vegetable culture, unshaded but not altogether unsheltered by the fruit trees. And in cold springs a shelter of a simple, efficient kind might easily be applied to protect the blossoms. At any rate, to say the least of it, there would be a good chance of securing a crop of fruit by this mode of training as by any other. No doubt the first cost will deter many from attempting it, but those who are fond of their garden, and who wish to make the most of a small space will find these fruit bowers or promenades exceedingly interesting and, in the end, profitable.

E. HOBDAY.

#### An Apple Tree Killed by Mistletoe.

In confirmation of the statements made as to the injury caused to fruit trees by this parasite, I may mention a case of death of a tree on which it grew here. Mistletoe being very rare in Cornwall, I accepted the offer of a young Apple tree from a friend some fifteen years ago, having a healthy plant of the parasite upon it, and young enough to bear transplanting. The tree was carefully planted in a walled garden, and grew vigorously after the first season, the parasite also growing steadily. In the course of a few years, the juices of the Apple tree had become so thoroughly impregnated by that of the Mistletoe, that young shoots of the latter continued to show themselves on different parts of the tree, and at distances from the original plant of the parasite, until at length the Apple tree ceased to bloom, and gradually died, for no apparent reason but that the parasite had entirely exhausted the vital power of the tree on which it grew. No fewer than 35 separate bunches of Mistletoe had taken possession of the Apple tree in question.—J. N. B., Penrose, Cornwall.

The Victoria Nectarine.—“When doctors differ who shall decide.” We have recently had too opinions as to this Nectarine (see p. 557 and 503, Vol. XII.), and now I as a third, and a grower for years, of the variety in question, wish to endorse all that the first writer advances in its favour, except that of planting it exclusively. Indoors or out a succession of fruit is desirable.—W.

#### PLATE CVIIT.

#### WARD'S ANTHURIUM.

(ANTHURIUM SCHERZERIANUM WARDI).

Drawn by MRS. DUFFIELD.

This is unquestionably the finest of all the varieties of *A. Scherzerianum* yet introduced to British gardens. A few years ago Mr. Ward, late gardener to F. G. Wilkins, Esq., of the Poplars, Leyton, selected a very small plant, showing distinct foliage, from among others just then imported. Under Mr. Ward's culture, this plant developed its brilliant spathes, which exceed 6 in. in length and 4 in. in breadth. It was exhibited at the Royal Horticultural and Botanic Societies' Shows, where its great merits, both as a decorative and an exhibition plant, were acknowledged. It has since passed into the hands of Messrs. Veitch & Sons, of the Royal Exotic Nursery, Chelsea, who possess the entire stock, and by whom it will be distributed this spring.



A Group of Rocks with Ivy and Briers.

#### Rotten Row.

—Michael Scott, we are told, hept his assistant demons in subjection under the condition of finding them never-ending work, the penalty for failing in doing so being his own destruction. He solved the difficulty by setting them to make ropes out of sea-sand. Surely the department having charge of Hyde Park must, according to "Land and Water," be under some similar obligation to the clamorous jobbers, their demons, and meet it by setting the endless and hopeless task of constructing a serviceable road out of broken bricks and rotten plaster. The attempt is now, as it has been for many years past, in progress,

and the result not only a failure but a disgrace and a scandal. The same system goes on year after year. In autumn the Row is closed from end to end; hundreds of laborers, with carts and horses, are employed; the filthy surface and decayed substance beneath are scraped off, picked up, and replaced with loads of similar rubbish, the refuse of condemned houses, a substance which builders in general pay heavily for permission to "shoot," but which in Hyde Park is purchased, doubtless at a high price. About November, the Knightsbridge ride having in the meantime become thoroughly broken up and dangerous, one-half of the Row is opened to the public, and long before the other is ready, as is the case at this moment, it is at least partially worn out. At this moment numerous gangs of men are employed in "darning" it, and so the work goes on, like Tennyson's brook, "for ever." We have heard that this work costs the public £8000 a year. Besides the enormous expense and inconvenience to which the riding public is subjected, another evil arises from the stupid system pursued, which is daily becoming more apparent, and which affects all frequenters of the park. The constant accession of rubbish and sand has so raised the ground that the stems of the Elms forming the avenues have been buried some feet below the surface, and in consequence their tops are fast dying. They are all young trees, but in nearly as



WARD'S VARIETY OF THE 'FLAMINGO PLANT' (*ANTHURIUM SCHERZERIANUM*-VAR.)



decayed a state as the old ones in Kensington-gardens. Elms are, perhaps, not the best trees for the purpose, but they will live and grow into fine timber, if only their roots, which run along near the surface, have room to spread. This the mass of concrete and rubble entirely forbids, and the trees, especially at the east end, are already half destroyed.

## TREES AND SHRUBS.

### A VICIOUS SYSTEM OF TREE PLANTING.

This little cut shows a system of tree planting too often resorted to in Paris, where so much money is spent on trees for city planting. Instead of clearing a portion of the ground, thoroughly preparing, and replanting it with, as a rule, a different species from what went before, young trees are planted in the shade of very old ones. They are planted in pits, into the fresh soil of which the old roots soon after rush, so that neither above nor below have the young trees a chance.



The result is that there is scarcely a fine tree in the place. Our sketch is from the Tuileries Garden.

### IVY ON TREES IN PLEASURE GROUNDS.

Ivy, like the Yew, and the Holly, would appear to thrive with peculiar vigour in this country. It is to be seen in every hedgerow, draping with its never changing deep-hued foliage any tree of sufficient dimensions to afford it support. The Ivy is, in fact, a characteristic feature of this country, and its exuberant development is often a subject of admiration with foreigners. Our shady lanes and moist climate have doubtless much influence upon its growth, and it is the peculiarity which it possesses of adapting itself to circumstances which renders it invaluable for many purposes. Appreciated as it is as an ornamental plant, I venture to affirm that it is not nearly so much employed as it should be. It is, indeed, but rarely seen in its highest development. Its chief employment is to drape old walls and fences, or cover unsightly buildings, and for that purpose it is eminently adapted. There are, however, several other methods of utilising it in pleasure grounds, to which attention may be usefully directed. When Ivy can climb no higher, it branches out and forms irregular masses—assumes, in fact, a shrubby character. In this state of development it is seen to great advantage, as it then flowers and becomes covered in winter with rich purple-black berries. It is comparatively seldom that one gets a near view of Ivy in this stage, as it is only at the tops of trees and on the gable ends of buildings, where it never gets clipped, that this development can take place. It flowers, too, in the month of October, and although not showy, its blossoms are fragrant and interesting, owing to the scarcity of blooming plants at that period of the year. A short time ago I noticed a very pretty effect thus produced by Ivy. On each side of a gateway was a large tree, the trunks of which were completely draped with Irish Ivy as far as the main branches, at which points the shoots had been kept stopped, thus inducing the bush formation. At that period they were loaded with berries, and an unusually bright and cheerful appearance was thereby given to the entrance. Those who may find it needful to thin out forest trees in their

pleasure grounds, should leave here and there a stem, merely lopping away the boughs, and plant Ivy against it. Beautiful green masses will be thus formed, the changing verdure of which will impart an air of warmth and freshness to plantations mainly composed of deciduous tree and shrubs. Occasionally such an effect is seen in a wood where a tree has died and the branches decayed and fallen. Woods, plantations, shrubberies, open spaces even, might be much brightened up in this manner, for Ivy thrives both in full sunlight and in perpetual semi-obscurity. Where rustic bridges are necessary, or considered as such, in the pleasure grounds, they may have Ivy trained about them, which by drooping in irregular festoons therefrom, soften down the formal architectural appearance which such structures more or less present. Ivy should be more employed in park scenery than it now appears to be. In those portions of the park seen from the windows of the house, there might always be arrangements made to admit of the employment of Ivy, either as trailing loosely and unrestrainedly over rock-work, mounds of earth, or used as in the manner above indicated. The English Ivy, too, may be advantageously employed in the place of Grass as an edging. I have seen it used in situations where it was a matter of difficulty to keep Grass alive. It has an extremely fresh and neat appearance when kept pegged down or clipped.

There is one way in which Ivy may be made to play an important part in flower-gardening, and which I would recommend as calculated to give real satisfaction. It is the custom in many places to grow flowering plants in large pots, tubs, or vases, and place them about the grounds. These are often set upon a pedestal, or elevated in such a manner as to enhance and display their beauty. Now pots and tubs, although indispensable, are far from being ornamental, and there is a general desire to so clothe the plant with foliage that such appliances are as much hidden as possible. For effecting this, the following will be found a good plan:—Let the trunk of a tree be cut into pieces—say about 4 ft. or 5 ft. long—one end of each piece to be sawn off quite level. Let these be inserted in the ground to the depth of 2 ft., the level end being uppermost. Then procure some strong Ivy plants, and place them round the stump, nailing them thereto in such a manner as to cover it all over. In the course of a season, if the Ivy be planted either in the autumn or early in spring, the stump will be completely covered. If on this stump the flowering-plant be placed, the question naturally arises, how to conceal the pot that will still be a prominent feature? This Ivy will do effectually; it will partially in the first, and completely in the second season, run up to the rim of the pot, and entirely cover it. When the pot is removed at the end of the summer it will be found that the Ivy will remain in its place and preserve its shape, forming, in fact, a kind of basket, in which the pot has merely to be placed the ensuing summer. As the Ivy increases in thickness it is found sufficient to hold the plant against rough winds, unless the specimens should be very large, in which case it is advisable to pass a string or piece of wire across the top of the pot, fastening it to a staple driven into the stump. This contrast of flower and foliage is very pretty. Large, well-grown Zonal Pelargoniums are very suitable for this purpose. A pretty combination is that of a scarlet Pelargonium with the variegated Ivy-leaved kind or Mangles' variegated planted round it. These latter droop down gracefully amongst the dark foliage, and have a very pleasing effect. A well-grown Hydrangea, with two or three dozen heads of bloom, and allowed to grow in a free, natural manner, is shown off to much advantage when thus placed. If the Ivy is allowed to spread at the base of the stump, some common hardy Ferns, and Fuchsias, and Snowdrops may be planted amongst it; they will spring up through it, and present a very graceful and natural appearance. The protection which they thus receive appears, moreover, to benefit them considerably. In small gardens, where there is not sufficient space for evergreens to develop themselves, or where the space is too limited to be occupied to any great extent by them, the Ivy thus employed is very suitable, inasmuch as it can be kept within bounds. When the clumps get too bulky they can be clipped, having it done early in the year, and cutting every leaf away; and very beautiful is that wealth of tender green foliage with which it is soon again covered. I

do not know of anything more delicately beautiful than the fresh, young growth of Ivy. The pleasure experienced when looking at it bursting into leaf again amply compensates for the short period of unsightliness which the cutting entails.

*Byfleet.*

J. CORNHILL.

#### HODGENS' HOLLY.

THE remarks lately made on Hollies have reminded me of a desire which I have often had of saying a few words about that fine shrub Hodgens' Holly, sometimes called *Ilex latifolia*. This is, perhaps, not only the most noble, but the most hardy of all Hollies, harder even than our indigenous species. Some years ago, our new burying ground, a bleak spot, right in the teeth of the west wind, was planted with various shrubs, four of the above-named Hollies being in the centre, one at each corner of a square Grass plot; every shrub died out, after a struggle, except the Holly, which are now fine, large, handsome bushes; and the almost black green of their ample foliage renders them peculiarly adapted for cemeteries. This Holly is of freer, quicker growth than most other kinds, and as a screen it has no equal. At West Derby, near Liverpool, in a villa garden, is a hedge of this Holly, worth going some distance to see. It stands at the bottom of a lawn, sloping down from the house, separating it from the kitchen garden. It is at least 20 ft. high, and about 10 ft. wide; passages are cut through it giving access to the kitchen garden ground; but, owing to the enormous mass of verdure, these, viewed from a little distance off, are scarcely visible. This Holly has a nobility of its own, and does not associate well in groups with other kinds, forming, as it does, a low, round, dense mass of foliage close on the ground, generally wider through than high; it has not the least tendency to grow spindling, or get naked below, and I should say a free use of this variety, either in parks, or in the vicinity of mansions, would produce an effect that no other shrub possibly could do. It should be planted by the thousand.

T. WILLIAMS.

*Ormskirk.*

#### PODOCARPUS TOTARA.

AMONG collections of Conifers, large or small, we do not remember, with one exception, meeting with this very striking New Zealand Podocarpus. It would seem, also, to be a stranger to nurserymen; for, on examining several of their lists, we looked in vain for this species. Even in Fraser's recently published "Handy Book of Ornamental Conifers" we find no mention of the Totara, though three other species of Podocarpus are enumerated. It appears to us, therefore, that the present planting season should not be allowed to go by without bringing under the notice of our readers who take an interest in Conifers, one of the tribe which appears to be as much a stranger to them as it is in its aspect unlike the forms with which they are familiar. In fact, as regards appearance, the Totara is so unlike the ordinary needle-leaved Conifer that at first sight one would scarcely think there was any relationship whatever. The close, shrub-like form, broadish lanceolate foliage, and pale-green tint of the latter, are altogether so different from the general run of Conifers that one does not wonder at the surprise we have seen manifested by parties when told that the handsome evergreen shrub which they were admiring was privileged to find a place in the Pinetum. That it is quite hardy in the south of Ireland we know; that it should be hardy anywhere may be inferred from its habitats in its own country, where it is found growing "from the borders of rivers to the summit of Tongariro amid eternal snows." It is described in Hooker's "Journal of Botany" as an evergreen tree attaining a height of 80 ft. or 90 ft., and a circumference of from 15 ft. to 20 ft., and as being considered next in diameter to the Kauri Pine (*Dammara australis*). The timber produced from it is of a reddish colour, becoming darker from age and exposure; the wood (of excellent quality, both in plank and in wear), is, we are told, held in high estimation by the natives, particularly for the construction of their canoes, its lightness and durability causing it to be preferred to any other. The value placed on it by the natives of New Zealand has been sometimes the occasion of quarrels, ending in bloodshed, if it is cut down by others than the party by whom it is claimed, for which reason, and as a token of ownership, we are told, a mark is placed on the tree, and it is then reserved until it has grown to a size sufficient to make it of use, so that in this way it is not unusual for these trees to descend from father to son. Even if the Totara never formed a tree, it would be worth growing.

#### OUR WASTE LANDS.

In such times as these it is desirable to consider, says the "Echo, not only whether we make the best use of our cultivated land, but whether we do not allow a great deal that is cultivable to lie waste. In both respects we are wanting. Much of our cultivated land is only half cultivated and a great deal is not at all. It is far too readily assumed that our uncultivated land is uncultivable, while much of it is only so as long as the cultivator is burdened by restrictions. Our American cousins are not only supplying us with corn and meat, but, to a large extent with fruit. The fruit crop of Michigan is worth four millions of dollars per annum. Last year the United States exported to Europe 14,000,000 lbs. of dried fruit and 726,000 dollars worth of canned fruits. In this age of tin there is hardly a grocer but has American fruits on sale. Our small cultivators can compete with them if they only had a fair chance. For example, in the parish of Cadham may be seen a number of large, well-built houses, surrounded by fruit grounds. The men who built them were mostly but ploughmen and shepherds thirty years ago. The late Lord Stanhope cleared some wood lands, and gave these men a chance. Acre by acre they stubbed the land and brought it into cultivation hiring it on a 20 years' lease at 10s. an acre, its average value as woodland. The land was poor, but they had something to work for, and when their leases ran out the rent was raised to 25s., which they gladly paid. To-day these men are cultivators of from 30 to 60 acres, and living in their own houses, built at a cost of from £300 to £400 each. Mr. Henley, the Member for Oxfordshire, has on his estate some large allotments for which men are paying more than double the amount which a large farmer declined to give because the land was naturally so poor. There are hundreds of parishes where men are paying for allotments at the rate of double and treble the rent of the contiguous land. But as a rule, we have shut out the industrious and enterprising man, who has little but his own perseverance and energy. In the towns he may hope to make his way; in the country, born a labourer he must die a labourer, and nothing more. Even the local charity lands are closed as far as possible against such men.

**Care of Newly-set Trees.**—There are various modes for preparing young trees for the winter. If they have been set in the present autumn, they must be well secured against wind, if in exposed places. The best security against displacement consists in long roots in trees which have been carefully taken up. If the trees are of moderate size, and the spade in digging was set 18 in. off from the stem on each side, the roots when spread out in transplanting will brace the tree perfectly. With larger trees staking may be required, but for trees intermediate between large and small, a solid mound of fresh earth around the trees will serve to brace against the wind; such a mound will afford some protection against hard freezing, or operate as a mulch; it will also exclude mice. It must be made of clean, mellow earth, beaten smooth with the spade. Throwing up blocks of turf makes a harbour for mice, and is worse than nothing. Protecting the roots with straw through winter is dangerous and invites mice, unless such mounds of good size (1 ft. or more high) are made. It is therefore better to mulch with coarse, wet manure.

**Value of Screens.**—G. F. B. Leighton, of Norfolk, Va., widely known for his great success in raising large Pears, has a screen some 60 ft. or 70 ft. high, running east and west. He has 1000 Bartlett Pear trees planted on the north side of this screen, and 700 on the south side. There is no perceptible difference in the blossoming of the trees on each side in spring, but the fruit ripens a week sooner on the south side. The principal advantage in the screen, however, is in preventing the blowing off of the Pears by winds. The fact of later ripening also presents a suggestion which might be used to advantage farther north, where the latest Bartlett Pears bring the best prices, after the more southern and earlier supply is exhausted.

**Clapp's Favourite at Norfolk.**—Mr. Leighton states, in a letter to the Massachusetts Horticultural Society, that Clapp's Favourite Pear proves very healthy in that region, but, what is remarkable, it does not grow so large as in Massachusetts, although Mr. Leighton's Norfolk Pears are, however, made up by its handsome appearance. Its ripeness is ten days before the Bartlett, which may be an important advantage at that place. In the north this early maturity would throw it into market at the same time as the Bartlett from a few degrees south. Mr. Leighton says it is a tardy bearer as a standard, but bears early as a dwarf. He has 200 dwarfs, from three to eight years old. They require frequent heading back to give the tops a good shape. He gathers the Pears ten days before maturity, and, thus treated, they never rot at the core.—"Albany Country Gentleman."

## THE INDOOR GARDEN.

### BESCHORNERIA BRACTEATA.

This is a Mexican plant nearly related to the Agaves, and stemless. Its foliage, which is glaucous green in colour, is graceful and spineless, and being flexible the plant is better fitted than some others for temporary indoor decoration. When set on a pedestal its leaves droop down in a very elegant manner. It flourishes under the treatment usually given to Agaves. Its flowers are not remarkable for beauty, but it is a plant well worth growing by even the inexperienced, for even if through bad treatment it loses its foliage, it soon



Beschorneria bracteata.

regains it if given anything like proper attention. It requires plenty of water when young, but it may be kept dry if not wanted for a time.—J. CROUCHER, *Sudbury House, Hammersmith.*

### ZONAL PELARGONIUMS AND THEIR SPORTS.

Amongst the large numbers of Zonal Pelargoniums that have made their appearance during recent years, a few possess new shades of colour, and there are many in which the size of the individual flowers is greatly increased; whether, however, this latter is an advantage or otherwise, when the plants are employed for greenhouse and conservatory decoration, is wholly a matter of taste, some preferring large flowers, others those of a medium size, but for use in a out state, especially in bouquets, for which they are largely used, there can be no question that those with medium-sized flowers, such, for instance, as those of the well-known scarlet variety, *Vesuvius*, are much the best. For the London flower trade there has, in all probability, up to the present time, been very much more of this variety grown than of all other scarlets put together; but if we may judge by the stock that the growers for market are getting together of Wonderful, the semi-double sport from *Vesuvius*—this is likely to supersede all as a scarlet. Red is, however, a colour that in all combinations of flowers should never be allowed to predominate, and the half-expanded buds

of this variety are peculiarly well adapted for supplying that colour for bouquets, being not too large, and their lasting properties unequalled. Some varieties of plants are much more prolific in flower-sports than others, as, in addition to Wonderful, Mr. Cannell has got a white sport from *Vesuvius*—White *Vesuvius*—exhibited at the last meeting of the Royal Horticultural Society, at which it received a first-class certificate. It appears to be an exact counterpart of *Vesuvius* in everything except colour, and as such, may be hailed as an acquisition by all who require cut flowers in winter, independently of what it is likely to be as a flower-garden plant. I have also seen another sport from the same source, which is bright pink in colour, and which, when sufficiently plentiful to be distributed, will give the three principal colours in this flower requisite for general use. Speaking of Pelargoniums, as an instance of how often it happens with the public generally in the case of these as of other flowers, that old varieties of sterling merit are cast into the shade for new comers, frequently inferior to them, I may mention that in one of the largest establishments for cut flowers in London, as a pink Pelargonium, nothing is used except the old *Christine*, which is found superior to all others; and yet we should suppose that there are few private places in which plants are largely grown where this most useful old variety could now be found cultivated in pots. So much for mere novelty! T. BAINES.

### AN AMATEUR'S GREENHOUSE IN MID-WINTER.

THERE is a general tendency on the part of the inexperienced to use artificial heat more than is really required, and also to keep their houses much closer than there is any necessity for; air should be freely given at all times when the weather is mild and open. If a continuance of damp, wet weather happens, a little fire-heat may be furnished in the daytime, at the same time giving air so that the air may dry. Care should always be taken not to allow chilling currents of air to play on the plants; therefore, keep the windows closed on the windward side, and open those on the leeward side. As it sometimes happens that the plants have to be kept close for a time, such as during sharp frost, dirt and other deposits will congregate on the leaves of *Camellias*, *Oranges*, *Myrtles*, *Ficus*, *Nerium Oleander*, and other smooth-leaved plants, which will be greatly benefited and improved in appearance by having their leaves washed with a sponge and warm water. *Calceolarias*, *Cinerarias*, *Pelargoniums*, and other hairy and woolly-leaved plants, can have the dust removed from their leaves by means of a soft brush, followed by a gentle syringing on the first mild, drying, sunny day. After the leaves are cleaned the plants may be further helped by washing the pots, if required, and adding a little fresh surface soil. Any *Calceolarias* or *Cinerarias* that are getting pot-bound should have a shift into larger pots to keep them growing gently; the plants should be near the glass, where they can have plenty of light and air on all favourable occasions. If kept close, the leaves become yellow, and get affected with green fly; then a fumigation with the smoke of Tobacco paper is absolutely necessary. *Camellias* must not be allowed to become dry at the roots, as if neglected the buds fall without opening; the pots should always be well drained, so that water might pass freely from the roots. Large-flowering *Pelargoniums* are a favourite amateur's plant, and, owing to the prevailing mild weather, they are growing freely. It is a good plan to pinch back the leading shoots, and tie out all towards the rims of the pots, so that the air can circulate among the branches. Any store plants of cuttings, such as *Pelargoniums*, *Gazanias*, *Lobelias*, *Tropaeolums*, *Calceolarias*, *Verbenas*, &c., should be looked over, and decaying leaves removed, and any dead shoots, keeping the soil a little dry during the dead season of the year; damp is more dangerous than drought just now. Every amateur's greenhouse should contain a few of the hardier *Solanums* for decoration at this season of the year; the bright coral-red berries supply any lack of flowers at midwinter. D.

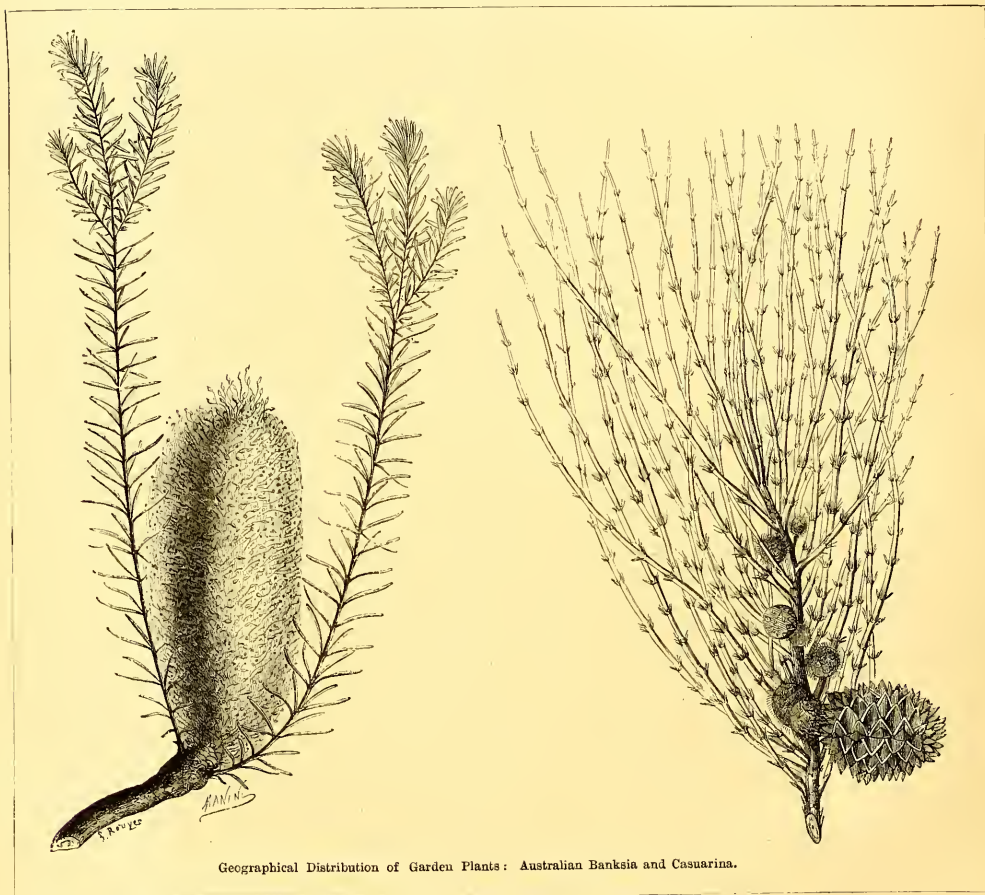
*Libonia floribunda* in Winter.—This is one of the best of plants for winter decoration. We have a dozen or more plants of it that came into flower in October, and they look as if they would flower all winter. Their orange and red blossoms have a pretty effect mixed with such plants as *Epicurises*, *Heaths*, and *Camellias*. As to culture, we grow it in a cold frame all the summer, and give it plenty of water. Liquid manure, too, it likes occasionally when in a growing state. It requires all the sunlight which it is possible to give it, to order to thoroughly ripen the wood, and after the growth is made, water should not be given so freely for two or three weeks as before. Afterwards encourage it in a close frame, and the result will be a mass of flowers all the winter.—W. CULVERWELL, *Thorpe Perrow.*

## THE GEOGRAPHICAL DISTRIBUTION OF GARDEN PLANTS.

### *Australasian Region.*

DEFINITION.—As here limited, this includes Australia (with the exception of the extreme north), New Zealand, and adjacent islands, and has a flora closely approaching 10,000 species. A general analysis of the flora of New Zealand has already been given, and a selection of some of the most noteworthy greenhouse plants from thence is all that is necessary in this place.

ised as dry. Sometimes the drought is of long duration, followed by torrents of rain, causing destructive floods. Large expanses of the interior appear to be nearly, or quite, rainless, and they are almost devoid of vegetation. Succulent plants are almost entirely absent. Nearly all the woody plants are evergreen; but the peculiar bluish-green hue of the foliage of the greater part of the shrubs and trees gives the landscape anything but a refreshing aspect, and umbrageous trees are rare. In the Eucalypti or Gum Trees, which constitute the greater part of the aborescent vegetation in many districts, the



Geographical Distribution of Garden Plants: Australian Banksia and Casuarina.

PROGRESS OF DISCOVERY.—With regard to the botany of Australia, our knowledge of it has progressed almost as rapidly as the colonisation of the country. The first settlement (New South Wales) was made in 1788, and nothing was known of the vegetation of the country a few years previously, when Captain Cook visited it. Sir Joseph Banks with Cook, Robert Brown with Flinders, and Allan Cunningham were among the earliest botanists who collected in Australia.

CLIMATE AND CHARACTERISTICS OF THE VEGETATION.—The climate of Australia varies considerably, as might be expected, in widely distant localities, but in general it may be character-

blade of the leaf is spread vertically instead of horizontally, as in our forest trees, hence they afford only a partial shade. A very large proportion of the remaining shrubs and trees have very small or needle-shaped leaves, and those which are large are usually very dry and bare, and almost woody. There are, however, many exceptions, and some plants have a very elegant and beautiful foliage. The flowers, which are not often of a large size, are, as a rule, very brilliantly coloured, and produced in great profusion. The greatly preponderating element in the flora is, in fact, the almost endless variety of shrubs and trees with conspicuous flowers. The trees alone number nearly a

thousand species. Bulbous plants are not wanting, but they form by no means so large a proportion of the flora as in South Africa. Terrestrial Orchids are numerous, and nearly all endemic, and they exhibit a great variety of curious structure in the flowers.

CHARACTERISTIC NATURAL ORDERS.—Among characteristic families we may name the Dilleniaceæ (Hibbertia), Pittosporæ

CHARACTERISTIC GENERA AND SPECIES.—Briefly examining the numbers and composition of some of the foregoing families, we obtain some interesting particulars of the nature of the Australian flora. The Rutaceæ number about 160 species, belonging to 29 genera, including *Boronia*, of which nearly 50 distinct species have been described; *Correa*, *Crocea*, *Eriostemon*, *Phebalium*, *Zieria*, and several others are represented in



Australian Forest Scene.

(*Sollya*), Rutaceæ (*Boronia*), Stackhousiæ (*Stackhousia*), Leguminosæ (*Acacia*), Droseraceæ (*Drosera*), Myrtaceæ (*Eucalyptus*), Compositæ (*Helichrysum*), Stylidæ (*Stylidium*), Goodeniæ (*Goodenia*), Epacridæ (*Epacris*), Myoporinæ (*Myoporum*), Amarantaceæ (*Trichinium*), Proteaceæ (*Grevillea*), Thymelææ (*Pimelea*), Santalaceæ (*Exocarpus*), Casuarinæ (*Casuarina*), Orchidæ (*Dracæa*), and Restiaceæ.

our greenhouses. The Pittosporæ and neighbouring family, *Tremandrea*, comprise together about a dozen genera, nearly all of which are, or have been, in cultivation, and many of which are exceedingly beautiful. Examples are—*Sollya heterophylla*, *Pronaya elegans*, *Cheiranthra linearis*, *Platytheca galioides*, and *Hymenoporum flavum*. A very numerous, and especially characteristic family, is the Leguminosæ. Upwards

of 950 species are enumerated in the "Flora Australiensis," belonging to 92 genera. Among the genera are *Oxylobium*, *Gompholobium*, *Choriozama*, *Daviesia* (35 species), *Pultenaea* (75 species), *Hovea*, *Dillwynia*, *Goodia*, *Clianthus*, *Kennedyia*, and *Hardenbergia*.

**ACACIA.**—The most numerous genus of this family in Australia is *Acacia*, which is represented by about 300 well-marked species, many of which present a variety of forms. About 270 of the species belong to the phyllodeous section—that is, having no pinnate leaves—the leaves being really reduced to flattened or round, most variously-formed petioles. The arborescent species form entire forests, and those of shrubby growth constitute the principal vegetation of much of "scrub," as the expanses covered with dwarf, woody plants, is termed by the Australians. It is almost superfluous to add, that many of these are exceedingly ornamental, and during the flowering season they form a most striking feature in the scenery of many districts. A small family of herbaceous plants, the *Droseraceae*, deserves mention. The genus *Drosera* numbers 40 species in Australia, and many of them are very curious and beautiful. They are especially abundant in West Australia, where 30 out of the 40 species occur, and 27 of them are there endemic. A less numerous, though more important, family than the *Leguminosæ* is the *Myrtaceæ*. It comprises about 600 species belonging to 45 genera, nearly 30 of which, forming a distinct tribe, are peculiar to Australia and the adjacent islands.

**EUCALYPTUS.**—The largest and most important genus is *Eucalyptus*, the Gum, Mahogany, and Box trees, and Iron-barks, Stringy-barks, &c., of the Australians. The species, of which Mr. Bentham describes 134, are very difficult of discrimination. They are dispersed over the whole of the country where there is vegetation, and many of them are exceedingly valuable timber trees, to say nothing of their other products. Some of them occasionally attain gigantic dimensions, surpassing the famous Mammoth Tree of California. A tree of *E. amygdaliua*, growing in Dandinang, was ascertained to be 480 ft. high. Among ornamental plants belonging to this family are many species of the genera *Darwinia* (syn. *Hedromia* or *Genetyllis*), *Verticordia* (37 species), *Calythix* (34 species), *Bockea* (42 species), *Leptospermum* (20 species), *Callistemon* (the long, brilliant red or yellow stamens are the most conspicuous part of the flowers of these handsome shrubs), *Melaleuca* (100 species), *Beaufortia*, *Calothamnus*, and *Tristania*. The beauty and variety displayed by the species of several of the genera named is almost inconceivable.

**COMPOSITE.**—The next group of importance is the *Compositæ*, of which there are 95 genera and 500 species. A large proportion of the genera are endemic, and 40 of them are monotypic, or represented in Australia by a single species. Only eleven count more than 10 species each; and the only large characteristic genera are *Olearia* and *Brachycome*, having respectively 63 and 36 species. Of the widely-dispersed and large genus *Helichrysum*, there are 52 species. Shrubby species, and a rich variety of annuals of the *Helichrysum*, or *Everlasting Flower* tribe, constitute the bulk of this family. Many of the latter are elegant miniature plants only a few inches high, having relatively large glistening red or yellow flower-heads—*Myriocephalus*, *Angianthus*, and *Calocephalus*, for example. Some of the more familiar species, in cultivation are *Craspedia Richea*, *Ammobium alatum*, *Humea elegans*, *Podolepis gracilis*, *Schoenia cassiniiana*, *Helichrysum bracteatum* (the numerous varieties under diverse names), *H. apiculatum*, *Waltzia corymbosa*, *aurca* and *nivea*, *Helipterum Manglesii* (syn. *Rhodanthe*), and *H. roseum* (syn. *Acroclinium*). Besides those named, there are scores of elegant little species that have never been introduced. Of the shrubby species, few have been cultivated, and those chiefly belonging to the genus *Olearia* (including *Eurybia*), as, *O. argophylla*; and *Ozothamnus* (united with *Helichrysum*, by Mr. Bentham). *Brachycome iberidifolia* and *Vittadinia australis* (Syn. *V. triloba*) are also Australian. The genus *Stylidium*, which constitutes nearly the whole of the family *Stylidaceæ*, is entirely Australian, with the exception of one or two species which extend to tropical Asia. There are between 80 and 90 species, nearly all of which are herbaceous plants. They are interest-

ing botanically rather than as ornamental plants. The neighbouring family, *Goodeniaceæ* is also almost exclusively Australian. It comprises (in Australia) 12 genera, and 187 species, nearly all herbs or small undershrubs. *Leschenaultia*, 16 species, *Goodenia*, 69 species; *Scævola*, 50 species; and *Dampiera*, 33 species, all contain pretty and interesting species.

**EPACRIDÆ.**—Another order, almost confined to this country, is the *Epacridæ*, of which there are 24 genera and 272 species. It is sufficient to name the genera: *Styphelia* (11 species), *Lissanthe* (3 species), *Leucopogon* (118 species), *Epacris* (22 species) and *Drachophyllum* (9 species). The *Myoporinæ* is an order chiefly Australian, consisting of shrubs allied to the *Verbeuceæ*. There is a considerable number of *Amarantaceæ* including about 50 species of the ornamental genus *Trichinium*. The *Chenopodiaceæ* number about 100 species, chiefly salt-water plants; the largest genus, *Atriplex*, is represented by 30 species.

**PROTEACEÆ.**—Another characteristic family is the *Proteaceæ*. It consists of shrubs and trees presenting the greatest variety of foliage, brilliant flowers, and curiously-shaped woody fruits. The Wooden Pear of the early settlers is a member of this family, *Xylomelum pyriformis*. Thirty genera and 575 species are Australian. Of *Banksia*, *Dryandra* and *Persoonia* there are nearly 50 species each; *Hakea* numbers 95, and *Grevillea* 156 species. *Teleopa speciosissima*, *Grevillea robusta*, *Stenocarpus Cunninghami* and *Dryandra carpucea* are some of the numerous species that have been introduced into European gardens. The familiar genus *Pimelea*, belonging to the *Thymelacææ*, is represented by nearly 70 species; and the *Casuarinæ*, or the She Oaks, forming a natural order of themselves, find their head-quarters in Australia. They are leafless trees with slender, erect or pendulous branches, and whorled, jointed branchlets, clothed with minute scales, and inconspicuous flowers. There are about 20 species widely scattered, and giving the landscape a special character in some districts. The small order of *Santalacææ* should be mentioned for the sake of the singular genus *Exocarpos*, some species of which are the native Cherry trees of the colonists. These are what are enumerated in the list of anomalous Australian vegetable productions, as Cherries with the stone outside. The fact is that the true fruit, or seed-vessel, is a dry nut seated upon a fleshy edible stalk. Yet another family to name, the *Orchidææ*, comprising 18 genera and above 200 species, the majority of which are terrestrial and little known in cultivation.

**GRASS GUM-TREES.**—Among other peculiar plants are the Grass Gum-trees, or Black-boys, species of *Xanthorrhoea*, a genus of the *Liliacææ*. Some of them are stemless with a dense tuft of grass-like leaves from the centre of which springs the inflorescence, which reminds one of a giant Reed-mace; and others have a stout trunk, 10 feet, or more, high, and densely clothed with the bases of the old leaf stalks, and pendulous leaves. The flower-shaft of some of the larger species is 15 or 20 ft. long, and, when in flower, these Grass Gum-trees are very conspicuous objects in the landscape. Palms are rare, as are also *Cycadææ*, in Australia; but they are most numerous on the eastern side. For the convenience of being able to see them at a glance, this brief sketch of Australia may be brought to a close with a list of the principal characteristic Australian genera, in cultivation, in systematical sequence.

#### List of Genera of Australian Plants:—

<i>Hibbertia</i>	<i>Burtoa</i>	<i>Beaufortia</i>	<i>Dracopbyllum</i>
<i>Oandolle</i>	<i>Daviesia</i>	<i>Calothamnus</i>	<i>Anthocaris</i>
<i>Phasiporum</i>	<i>Pultenaea</i>	<i>Guayulium</i>	<i>Myoporium</i>
<i>Hymenosporum</i>	<i>Entaxia</i>	<i>Metrosideros</i>	<i>Westringia</i>
<i>Billardiera</i>	<i>Dillwynia</i>	<i>Xanthosia</i>	<i>Prostanthera</i>
<i>Marianthus</i>	<i>Banksia</i>	<i>Actinotus</i>	<i>Trichium</i>
<i>Prozoya</i>	<i>Hovea</i>	<i>Dilicium</i>	<i>Pimelea</i>
<i>Sollya</i>	<i>Goodia</i>	<i>Panax</i>	<i>Grevillea</i>
<i>Comesperma</i>	<i>Clianthus</i>	<i>Eurybia</i>	<i>Hakea</i>
<i>Tetratheca</i>	<i>Kennedyia</i>	<i>Brachycome</i>	<i>Banksia</i>
<i>Leucopetalum</i>	<i>Hardenbergia</i>	<i>Stenocarpus</i>	<i>Stenocarpus</i>
<i>Zoeria</i>	<i>Acacia</i>	<i>Ammobium</i>	<i>Dryandra</i>
<i>Boronia</i>	<i>Ceratopetalum</i>	<i>Humea</i>	<i>Teleopa</i>
<i>Eriostemon</i>	<i>Acrophyllum</i>	<i>Podolepis</i>	<i>Casuarina</i>
<i>Coryca</i>	<i>Cephalotus</i>	<i>Waltzia</i>	<i>Scarforthia</i>
<i>Phætalum</i>	<i>Darwinia</i> (Genus)	<i>Heterotrichium</i>	<i>Areca</i>
<i>Gowanua</i>	( <i>tyllia</i> )		<i>Corype</i>
<i>Pomaderris</i>	<i>Verticordia</i>		<i>Goodenia</i>
<i>Dodonæa</i>	<i>Calythrix</i>		<i>Acroclinium</i>
<i>Oxylobium</i>	<i>Leptospermum</i>		<i>Doranythia</i>
<i>Chorizema</i>	<i>Melaleuca</i>		<i>Gleichenia</i>
<i>Gompholobium</i>	<i>Callistemon</i>		<i>Dicksonia</i>

*South African or Cape Region.*

The South African flora in its general features closely resembles the Australian. Many of the same families are prominent factors in the vegetation of both regions: For instance, Leguminosæ, Compositæ, Proteaceæ, Rutaceæ, Restiaceæ, and terrestrial Orchids. Some large families in the one region, are represented by closely allied families in the other; thus the Epacrideæ of Australia are replaced by Ericaceæ at the Cape. Again, some families forming a conspicuous feature in the vegetation of one country are almost absent from the other, and not replaced by a kindred group. This is the case with the Myrtaceæ, which are 600 strong in Australia, whereas, only 12 species, belonging to 5 different genera, neither of which is

bare of vegetation, when after the rains it is suddenly covered with flowers. But it is in the southern and less elevated part that the richest and most luxuriant flora exists. The extent of extra-Tropical South Africa, which coincides with what we call the greenhouse region, is given as about three quarters of a million square miles, and the flora, from a rough calculation, comprises at least 9000 to 10,000 species, a very large proportion of which are endemic.

CHARACTERISTIC NATURAL ORDERS, &c.—Examining some of the more important orders in their natural sequence, the Cruciferae is the first having a considerable number of species. Of this order there are nearly 100 species, 60 of which belong to the solely South African genus *Heliophila*. The Polygalæ



peculiar, occur in South Africa. As with orders so with genera. There are two and three species respectively of *Pelargonium* and *Mesembryanthemum* in Australia, whilst the former numbers upwards of 160, and the latter about 300 species at the Cape. *Drosera* is a genus in which the contrary obtains; many other comparisons of this nature might be made, but the reader may be left to make them himself. Some other points in which the Cape flora differs from the Australian are the relatively smaller proportion of trees, the abundance of succulent plants belonging to different families, and the large number of petaloid *Monocotyledons*, chiefly bulbous-rooted plants. The country, advancing northwards, consists of a number of successively higher terraces, each one less fertile; The northernmost and highest is, at certain seasons, almost

number 40 species of *Polygala* and 50 of *Muraltia*. *Hermannia* and *Mahernia*, belonging to the *Sterculiaceæ*, contribute about 100 species; and of the *Geraniaceæ* there are about 300, whereof 160 of *Pelargonium*, and upwards of 100 of *Oxalis*; of *Rutaceæ* there are 14 genera, and about 190 species, 100 of which are referred to the genus *Agathosma*; *Leguminosæ*, 82 genera, and 735 species. A majority (60) of the genera belonging to the last named family have less than 10 species, and 32 of them only 1 each. Among the genera most numerous in species are, *Aspalathus*, 150; *Indigofera*, 120; and *Lotononis*, 56.

SUCCULENT PLANTS.—*Crassulaceæ* and *Ficoideæ*, orders consisting mainly of more or less succulent plants, are represented by about 450 species; 100 of *Crassula* and 400 of *Mesembryanthemum*. *Compositæ* number about 1,400 species, referred

to 150 genera. Of large genera we may mention, *Senecio* 180 species; *Helichysum*, 137; *Othonna*, 58; *Pteronia*, 51; *Aster*, 46; and *Sphenogyne*, 44. There are 56 genera of only 1 species each, and of 60 others there are none having more than 9 species.

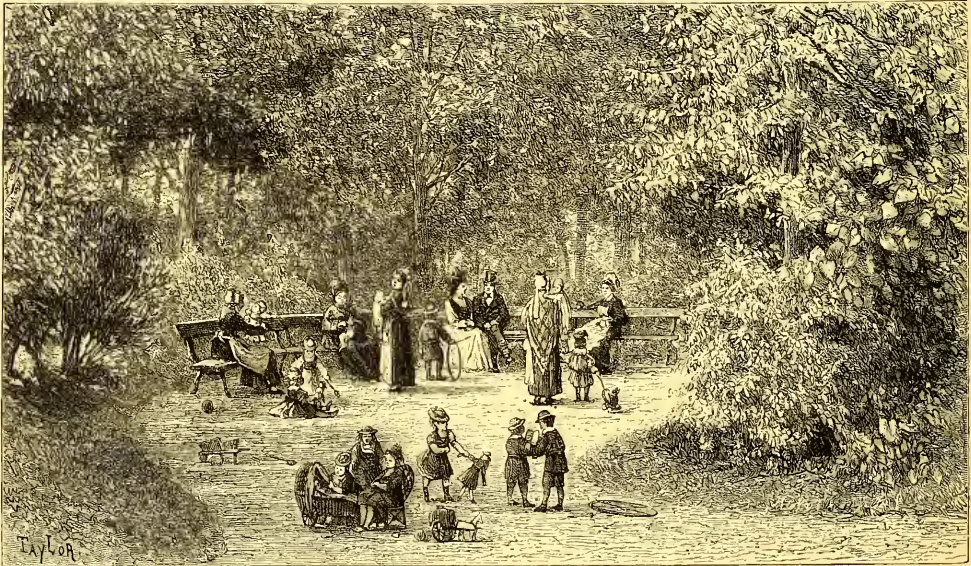
**HEATHS.**—The *Ericaceæ* come next with 500 species, nearly 400 belonging to *Erica* itself. Most of the species are, however, local, and many of them very rare, in striking contrast to the wide range of nearly all the few species found in the northern hemisphere—in the Mediterranean region, Western Europe, and North Asia. The large tropical and sub-tropical order, *Asclepiadiæ*, contributes 45 genera, and 320 species, many being climbing shrubs, and upwards of 100 succulent plants belonging to the *Stapelia* tribe. *Scrophulariaceæ* adds 240 species; *Verbenacæ*, 130; and *Acanthacæ*, nearly 100. A small, but curious group is the *Pedalaria*, to which the "Grapple plant," *Uncara procumbens*, belongs. The seed vessel of this plant is of a most unusual form, being furnished with long ir-

List of Genera of S. African plants:—

<i>Heliophila</i>	<i>Aapalathus</i>	<i>Gazania</i>	<i>Gladiolus</i>
<i>Polygala</i>	<i>Sutherlandia</i>	<i>Lobelia</i>	<i>Sparaxis</i>
<i>Muraltia</i>	<i>Lessertia</i>	<i>Roelia</i>	<i>Ixia</i>
<i>Hermannia</i>	<i>Canonia</i>	<i>Erica</i>	<i>Schizostylis</i>
<i>Mabernia</i>	<i>Grammanthes</i>	<i>Ceropegia</i>	<i>Yalloba</i>
<i>Sparmannia</i>	<i>Rochea</i>	<i>Stapelia</i>	<i>Amaryllis</i>
<i>Pelargonium</i>	<i>Crassula</i>	<i>Phytolacca</i>	<i>Imantophyllum</i>
<i>Diosma</i>	<i>M e a m b r y a n -</i>	<i>Phurabago</i>	<i>Richardia</i>
<i>Colocoma</i>	<i>themum</i>	<i>Gnidia</i>	<i>Massonia</i>
<i>Acmadenia</i>	<i>Pteronia</i>	<i>Protea</i>	<i>Aloe</i>
<i>Alcanonina</i>	<i>Helicrysum</i>	<i>Glycyia</i>	<i>Agapanthus</i>
<i>Barosma</i>	<i>Aphelaxis</i>	<i>Disa</i>	<i>Kniphofia</i>
<i>Agathosma</i>	<i>Phenacoma</i>	<i>Moraea</i>	<i>Sandersonia</i>
<i>Phyllis</i>	<i>Kleinia</i>	<i>Viuenssuxia</i>	<i>Eucornia</i>
<i>Melanthusa</i>	<i>Othonna</i>		

W. B. HEMSLEY.

**Playing Corners in Squares.**—A commendable feature in the Paris squares—so freely open to the public at all hours of the day—are the small spaces provided for play and rest. These are usually formed by widening the out walk of the square at each corner,



Playing corner for children in the Square Montrouge.

regularly-branched, claw-like, barbed appendages. There are 125 species of *Thymelacææ*; the largest, genus *Guidia*, having 40. We now come to the characteristic *Proteaceæ* represented by 11 genera and 250 species; *Serruria* counts 43 species; *Protea*, 60; *Leucospermum*, 23, and *Leucodendron* 49. *Leucodendron argenteum* is the silver tree of the colonists, so called from its handsome foliage. It was formerly very abundant, and formed a very striking feature in the scenery, but it has been nearly extirpated for fire-wood.

**BULBOUS AND TUBEROUS-ROOTED PLANTS.**—Petaloid Monocotyledons form a total of about 850 species, of which about 170 are *Orchids*, nearly all terrestrial, and the majority tuberous-rooted, including the magnificent *Disa grandiflora*, or "Glor'y of the Table Mountain," as Harvey calls it. *Iridææ*, 160; *Amaryllidææ*, 110; and *Liliacææ*, 360 species, are the principal other families contributing to this total. Of grasses, sedges and allied families there are about 650 species. Finally, there are about 130 Ferns, of which only about a score are endemic. Appended is a list of characteristic South African genera, species of which are, or have been, in cultivation.

where trees are generally planted, so as to afford shade. Here the children play and their nurses work. It is one of the pleasantest sights in Paris, to see these playing places with crowds of happy children on fine days. A comparison of such squares with others at home—not the more cheerful or beautiful for being closed to the public, can hardly fail to occur to most persons who have seen our city squares.

**Vesuvius a Good Forcing Pelargonium.**—I find that *Pelargoniums* which flower most freely out of doors are, as a rule, the best forcers. This applies particularly to that now popular outdoor variety, *Vesuvius*. With it in plenty we need never be without an effective scarlet during the winter months. My old plants, which were lifted early in November, potted, and placed in a warmish dry pit, are now flowering in the greatest profusion from the new growth they have made since they were potted, and the flowers are exceedingly fine. They will go on flowering, as they did last year, all the winter. The best way with the plants is to keep them growing slowly, with plenty of air, and just sufficient water at the root, and a dry atmosphere overhead. The best may be placed in the conservatory or cool greenhouse, where they will last for a time; and when they have done flowering, all that is wanted is to move them

back to the same pit again, and fill their place by others. Where they are stored by the hundred or thousand, for bedding purposes, this is easily done. Autumn-struck plants bloom just as well as old plants; and if the cuttings be put into 5 in. or 6 in. pots, they make even a better show than single old plants placed thickly together in the pot. Mostly all Pelargoniums force more or less successfully; but a good deal depends upon management. I find that they do not flower well if forced in a moist Vinery or stove, for example, as they grow too much. On the other hand, the greenhouse is too cool for them; for, though they come on slowly, the flowers never expand perfectly. An intermediate dry and airy temperature is just what suits them; in fact, the air cannot be kept too dry, nor the plants too near the glass.—J. S.

**Domestic Wheat Mill.**—Messrs. Barnard, Bishop, & Barnards have introduced a very effective little Wheat mill, which cannot fail to interest those who seek for pure and wholesome bread. The common brown bread of towns, especially of London, is as unwholesome as it is disagreeable to the taste. It is, as one well-known London physician says, "made to send us patients," being composed of Bran and very ordinary flour, often adulterated. With this little mill one has only to procure some of the best Wheat, and grind it in such quantities as may be desired for baking. The flour, even, seems to be more finely ground than in an ordinary mill. This flour bread, which may easily be made, has only one fault—that of soon making, to those who give it a fair trial—common bakers' bread for ever distasteful.

**Propagating Vines in Gardens.**—Is "Cambrian" (see p. 608, Vol. XII) serious when he writes:—"It is surprising that the propagation of the Vine in gardens is not more generally practised than it is?" Why, I had always imagined that the exception was the rule in this matter. Surely "Cambrian" has never left his native mountains, or he would never have penned such a sentence. With his mode of propagation I have no fault to find; but I must protest against the assumption that Vine raising in private gardens is the exception. Referring to the last sentence of his note, I doubt as to whether there is any other mode of propagation more complicated than the one he gives. Why, everybody knows that no matter how a Vine cutting is put in, it is sure to grow.—W. W. H.

**Apricot Branches Dying** (see p. 564, Vol. XII).—A thorough ripening of the wood of Apricots has no doubt a great influence on them in more ways than one; but, as a rule, I have observed that their branches die when they are growing most luxuriantly, and when they appear to have entirely got over any deficiency in the way of ripening the wood. I am acquainted with a long wall of Apricot trees in one of the wettest parts of Scotland, where the trees never suffer through want of water at the root, and the wood is often fully matured in autumn, and yet I never remember seeing a branch die off one of the trees. I am of opinion that dryness at the root during any period of their growing season will cause Apricot branches to die suddenly, and I believe that more die from this cause than from any other. If we were as careful in watering our fruit trees in the open air as we are those under glass in hot weather, healthier trees and better crops of fruit would be the result.—CAMBRIAN.

**Bottom-heat for Pot Vines.**—For some years past I have grown from sixty to seventy pot Vines for an early crop, and the results have been fairly satisfactory. Until this season, I have always plunged them in leaves; but when they began to break, we have been terribly bothered with slugs and woodlice. This year I determined to use no leaves at all, or anything else in the way of bottom-heat, and I am pleased to say that the ones have broken in a most admirable manner, and in a few days they will be ready for stopping. In the case of early Grapes, I find that in the dark days of winter there is always a humid, close atmosphere wherever heating material is used inside the house. This season, on the contrary, when none is used, the air is always pure and wholesome, with little or no humidity, which, in dull weather, induces mildew, and air cannot at all times be admitted to sweeten the house. Moreover, I am no admirer of that white fungus which always makes its appearance in half-rotten leaves. Many of us are also too fond of saturating early houses with water, which causes warts to arise on the under sides of the leaves. I would recommend the air to be always kept buoyant and sweet. If air can be given but for an hour, the good which it does is incalculable.—R. GILBERT, *Burghley*.

**Fruit Culture in the Rhine Districts.**—Fruit culture is one of the most important industries in the Rhenish Palatinate, many of the municipalities and parishes finding therein their chief source of income. All its towns are surrounded with gardens of fruit trees, and the countrymen take care to plant them in every uncultivated corner in his fields. Chestnuts, Apples, and Pears are the chief crops in the north, Plums and Damsons in the west, and Cherries on

the Rhine border. These last are exported in enormous quantities to Hamburg, Amsterdam, and Liverpool. One small parish alone derived more than 70,000 marks (about £7000) from its Cherry-trees some three years ago; and another still smaller one has netted 12,000 marks (about £1200) from a similar source, in the very unavourable season of last year. No small part of this success is due to the care which is taken to grow superior kinds of fruit only, a policy which might well find imitators elsewhere, since a choice tree occupies no more space than a poor one, and yields an infinitely richer return.

## GARDEN WALKS.

THE comfort and convenience derived from good garden walks can scarcely be over-estimated, as they enable the pedestrian to enjoy a stroll under conditions of weather that would render it anything but a pleasure to make use of them were they not sound and well made. Not only is this the case, but operations are greatly facilitated, as they admit of barrows or other traffic going on at any time instead of having to wait—a very important matter, inasmuch as a few days' delay at a particular time often leads on to another of still greater duration, and throws work sadly behind. This, no doubt, has been the experience of many connected with gardening; and as nothing detracts so much from the general keep and finish of any place as bad walks, independent of the great inconvenience they cause, every effort should be made to improve them. Unless the foundations are firm and solid, slight dressings of gravel, however good and adhesive it may be, is of little avail, for, although it may bind hard and remain so during a dry time, a few days' rain converts it into a perfect quag, that is not at all improved by passing a roller over it. It is better, therefore, with any that have been improperly made to wholly re-form them, which can be most readily be done by beginning at one end and taking out sufficient of the under part to admit of hard broken bricks, slag from furnaces, coarse stones, or anything of that kind being placed on to the depth of from three to six inches, according to the amount of hard wear they are expected to have, or the weight that is likely to pass over them. The great mistake many make when using this rough material is in not filling up the interstices between, thinking that by leaving the bottom loose and hollow they thereby secure free drainage, and lay the walks dry. This is a most erroneous notion, and is a frequent cause of rottenness, as the gravel shifts with the traffic and thus becomes broken, whereas, had it a firm bed to rest on, traffic would improve and consolidate it rather than otherwise. Instead of water passing through, as is the case when the basis is formed in the way noticed above, the top should be made as impervious as possible, that what rain falls may be conducted quickly away and carried off through gratings and drains made for the purpose. Without these no walk, except on a hill side, can remain in good order for any length of time; and therefore in laying out any fresh ones or re-making such as are already in existence, attention should be given to this first; and to save labour and pipes or tiles, the best way is to lay a main drain down the centre, with branches from the sides at about 20 ft. apart leading to it. Each of these should be connected with a small brick cesspool, made somewhat deeper than the drain, so as to catch any sediment that may wash in through the gratings; the neatest and most suitable of which are those cast so as to fit in an iron frame, from which they can be lifted and replaced when necessary for the purpose of cleaning out the cesspool. If these gratings are got about 6 in. long by 4 in. wide, they are not at all conspicuous, and are far preferable to any other on that account as well as on the score of cost, as there is no expense in making frames for them. Where there is a difficulty in getting an outlet for drains, dead wells may be formed at intervals to send the water in; but in all cases where these are resorted to, care should be taken to render them safe by backing up the sides and covering the tops with rough stone slabs or darning them over. These, however, are of little use, unless the subsoil is of an open nature to let the water soak away quickly, and should only be used when there is no other easy means of getting rid of it.

As a material for binding the slag or whatever else is used for the foundation, there is nothing equal to fine chalk, as it not only sets hard and firm, but is likewise most objectionable and impenetrable to worms, which, unless this is used, are

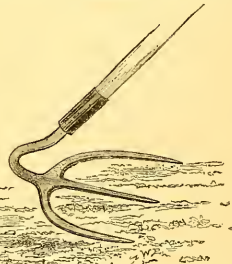
often very troublesome, as they not only disfigure the surface of the walks by the soil they exude, but they are the means of stocking the gravel with weeds, as the seeds of these can only germinate to any extent when so assisted. With a solid, compact mass for a bottom, such as the above-named mixture would form, and about three or four inches of gravel, consisting of two-thirds or so of fine stone, walks may be made that, with an occasional top-dressing, will last sound and enjoyable for any length of time, and such as will incur but slight labour in keeping them clean. In making choice of gravel, preference should be given to that which, when found in the pit, is in a hard compressed vein, as when in this state before being disturbed, it soon, with proper rolling and attention, gets into the same condition again. Any not so firmly imbedded, and therefore of a more sandy nature, may be greatly improved by mixing with it some finely-pulverised clay to give it adhesiveness, but this must not be overdone, or it will work out and be unpleasant to walk on. In sifting the gravel to separate the superabundance of fine material, two sorts should be made, the coarser of which to lay at the bottom and the small at the top, so as to finish off without any large stones cropping through in the way they otherwise would. A sieve of  $\frac{1}{2}$ -in. gauge is the proper thing to use in preparing the material for the surface, as any that will pass a mesh of that size will bind firmer and be more serviceable and agreeable to walk on than if it were coarser. Shingly gravel, or that which has at some time or other been subjected to the action of water, should always be avoided, as it is sure to be loose and constantly shifting under even slight traffic, on account of the smooth round nature of the pebbles it contains, besides which, they are always imbedded in sharp, sandy veins of earth that is totally unfitted for forming good sound walks. Stones that are more angular, and have sharp edges, get a firmer grip, and cannot well be displaced after having been once rolled in, as may readily be seen by any one at all acquainted with such matters.

Walks badly formed are a constant source of trouble and annoyance, ever requiring attention of some kind or other, particularly in the matter of weeding, as, from their loose surface, seeds effect a ready lodgment, and germinate and grow rapidly after every shower that falls. These weeds, in most cases, are difficult to deal with, and the more so where there are live edgings to the walks, as these prevent the use of salt, which is the best and most effectual means of ridding walks of their presence. Where there are Grass verges, it may be applied without doing the least harm, provided a favourable time be chosen for putting it on, which is after heavy rains with a rising barometer, as then there will be no risk of having it washed to the sides and damaging the Grass. The damp gravel and the night dews are sufficient to dissolve the salt slowly, in which way it is far more effectual than if done by a shower, or from watering, as then the strength is carried away from the crowns of the weeds, which are their most vital parts, and where they suffer immediately the sun shines hotly upon them. Not only is salt desirable for the purpose of cleansing walks from weeds, Moss, or other vegetable growth to which they are liable, but it has also a most beneficial effect in brightening and rendering them much more solid; and, if dressed annually about May, they will require nothing further, except the usual rolling and sweeping for the remainder of the season. For kitchen gardens, and places of that kind, where real utility ought to be considered before ornament, dead edgings should always be used, and something that is hard, neat, and durable is greatly needed for this purpose to replace Box, which, although it looks well, is always a harbour and breeding place for slugs and other insects that prey on young tender crops. Walks might then be kept in first-rate order with a tenth part of the labour they now entail, as hand weeding is slow work, and to break them up, as is frequently done, causes them to be rough and unsatisfactory for some time afterwards. Asphalt, when well done, is very durable and serviceable, and does away with the weed nuisance; but when made with tar, the cheapest and best material for the purpose, the colour is objectionable, unless white spar, or something of that kind can be used freely to take off its dead black, sombre appearance. In cases where good binding gravel cannot be obtained at reasonable cost, tar paths form

most excellent substitutes, but they should never be laid without a good solid foundation, or they will heave, from the action of frost, and break up into holes, which, if mended, always have a patchy, unsightly appearance. The bottom for these, as for gravel, may be made with fine chalk and stones, clinkers, or material of that kind most ready to hand, which, when put into its place, should be firmly rammed, to prevent any further subsidence. With such a foundation, walks may be made that will last a lifetime, if only subjected to fair ordinary wear; and, as they require no further expenditure of labour, or means to keep them clean when once formed, they are, in the end, the most economical, although they may cost a little more in the first place when laying them down. One important matter in connection with the formation of these asphalt walks is that they are well supported at the edges, otherwise they do not last sound long, as they break away at that particular part, and a kerb of some kind is therefore necessary, against which they may be finished. Strips of York stone, about 2 in. thick, and rounded off slightly, are the neatest and most lasting kerbs that can be used, and from their grey tint of colour they form a good contrast to that of the tar. S.

#### KITCHEN GARDENING MADE EASY.

I HAVE read with much interest the useful and practical remarks of Mr. Gilbert on this subject; but with reference to his observations (see p. 543, Vol. XII.), I do not think it can be easily understood whether he means that the Celery is planted between the Strawberry rows, or that the Strawberries have been taken up first; if he means that the Strawberries are left in the ground, I do not think it will be a very easy matter to make Celery trenches between Strawberry rows only  $2\frac{1}{2}$  ft. apart without damaging the plants. Mr. Gilbert says he uses a cultivator, or hoe, instead of a spade. I shall be much obliged if he will tell me what kind of hoe it is. I also think that what he says with reference to too much digging being injurious does not



apply to all soils; for instance, the soil of my kitchen garden is a very heavy one, and I am sure that if it were not dug and trenched well every year it would get as solid as a high road.

West Bank, near Macclesfield. C. LINDSAY HERFORD.  
[The annexed illustration is a representation of Mr. Gilbert's Cultivator.]

**Watercresses in Winter.**—From this time until the month of April or even May, Watercresses of really good quality will be scarce. Those gathered from the brook or bed now are good in their way; but a much finer sample may be secured by growing a few pans under glass, and in fact the table should be supplied all the winter through with frame or house-grown Cresses. Prepare the pans with a mixture of light rich loam and lumps of chalk or old mortar, and press the material firm, and heap it up as a pie. Into the pie crust insert the tops of fresh Watercresses one to two inches long, and press them firm, remembering that any sort will serve the purpose, and therefore you have but to buy a bunch to be fairly started. Put the pan into a water-pan, put a bell-glass over, and place the whole affair in a warm place, and the cuttings will be rooted in the course of a few days. A great many have blundered through putting in large cuttings, or through sticking them in sand and shifting them afterwards. The easiest way is the surest way. Put the cuttings into the soil they are to remain in, and when fairly rooted remove the bell-glass and let the plants have plenty of light. Cuttings started now in a warm greenhouse will supply good Cresses from about the end of January to the end of April, when they will be worn out.—S. H., in "Gardener's Magazine."

GARDENS AND WOODS IN BRITAIN.

BLUE BOOKS are not generally attractive reading. Among the most interesting matter in the recently-issued Parliamentary Returns is Table III (p. 467), giving the actual or computed acreage under orchards, market gardens, nursery grounds, and woods in each county in England, Wales, and Scotland in the year 1877. No doubt these figures are often estimates, while the designations to which they are applied, are, in the nature of the case, not easily or exactly defined. The acreage returned under orchards, &c., includes, besides orchards, arable or Grass lands which are planted with fruit trees. Market gardens includes land used by the gardeners for growth of vegetables and other garden produce, and as market gardeners are generally alive to the possibility of obtaining quick returns, and securing the most rapid succession of crops in, on, and above ground, the land so classed supports a considerable sprinkling of trees, and repays its cultivators by the variety of its fruit, root, and surface crops. The land classed as woods—including coppices and plantations—does not include gorse land and garden shrubberies. Taken in groups, the figures stand as under, representing the—

ACREAGE UNDER

	Orchards, &c.	Market Gardens.	Nursery Grounds.	Woods.
England .....	159,095	34,464	9,961	1,325,765
Wales .....	2,619	445	367	136,323
Scotland .....	1,579	2,939	1,624	734,490
Islands .....	1,713	303	73	
	165,003	38,162	12,025	2,187,078

Taken in detail, county by county, the figures in these returns show some curious results. Everywhere, except in the Islands of Man, Jersey, and Guernsey, which form our last division, the woods largely preponderate. These islands, however, return no woods whatever; but, notwithstanding their small extent, they return 1713 acres, or rather more than entire Scotland, under orchard culture, and 303 acres, or two-thirds of the amount returned from all Wales, as market gardens, with 73 acres used as nursery grounds. The islands appear to have turned their land to wise account, for while so large a part of their surface is under trees, these are, in most cases, fruit-bearing trees, furnishing at once a profitable industry for their own employment, and contributing substantially to the food supply of their neighbours. The Channel Islands have been well termed the Garden of England. The Isle of Wight escapes special mention from being included in the county of Hants, while the smaller islands either escape mention or are similarly included in county returns.

The whole acreage under nursery grounds, nearly 10,000 acres of which is in England, and about 367 acres in Wales, barely exceeds 12,000, or rather better than one-third the acreage under market gardens. Wales is far from being so rich in orchards or market gardens as might have been expected. It has little over 3000 acres in orchards and market gardens put together; or considerably less than may be found in the large county of York—which county, moreover, has over 118,000 acres of woodland, where all Wales has not quite 127,000 acres.

As would be expected, the greatest inequalities prevail between the different counties. The small county of Rutland has nearly as much woodland as Middlesex, though the latter has upwards of 5000 acres of market gardens, and 3000 of orchards—items, which in Rutland are barely represented by the figures 18 and 58. Durham, Northumberland, and Westmorland, stand in the tables for 197, 177, and 211 acres. On the other hand, we have Devon, with orchards covering 24,776 acres; Hereford, with 24,885; Somerset, with nearly 21,000; Worcester, with 14,600; Kent, with 13,000; and Gloucester, with nearly 12,000.

The proportion of orchard to the total of woodland varies considerably; fruit trees, of course, abounding most in the southern parts of the island. Thus, while Gloucester has nearly one-fourth of its total woodlands under orchards, Somerset has one-third, and Worcester nearly one-half. Essex follows Middlesex with upwards of 4000 acres of market gardens, with nearly 4000; Yorkshire with 2400; Surrey, with 1682; Worcester, with 1350; and Lancaster and Gloucester, with 1030 and 1002; Hereford returns only 13, and Westmorland 19. In nursery grounds, Surrey comes first, with 1519 acres; Sussex follows with 522; while Yorkshire has 886.

In woods, Yorkshire heads the list, followed by Sussex, with 101,000 acres; Hants, with 87,000; Kent, with 78,000; Surrey, with 68,000; Wilts and Salop, with about 40,000 acres each. Rutland, Middlesex, Huntingdon, and Cambridgeshire, come last, with 2500 to 5000 acres each. Wales shows great variations, from Anglesea, having only 7 acres under orchard, to Brecon 859. Anglesea returns no nurseries, and Radnor no market gardens.

Perhaps the Scottish returns are most curious. The counties of

Lanark and Perth return 493 and 378 acres respectively, under orchards, while Bute, Kincardine, Kinross, Peebles, and Shetland return none. Again, the counties of Edinburgh and Haddington have respectively 865 and 409 acres of market gardens. Nairn, Orkney, Shetland, and Sutherland have none. Then Edinburgh has 382 acres of nurseries, and Aberdeen 199; but again we have Clackmannan, Dumbarston, Orkney, Selkirk, and Sutherlandshire. Shetland, indeed, returns no woodland whatever, while Orkney shows a single acre of orchard land. In woods, the county of Inverness heads the list with 118,818 acres. Perth follows with 83,525, Aberdeen with 93,339, Argyle with 45,641. In Caithness we have 440 acres only.

These returns are in every way worthy of study. It is gratifying to hear that the planting of orchards is on the increase. There is great need that it should be so, and we should heartily rejoice if the thousands of acres of waste, moor, and mountain land now yielding no return, were to be planted with suitable trees—wherever possible with fruit or Nut-bearing trees—but planted certainly they ought to be by every intelligent proprietor, or leased by him, if indoped to discharge his own responsibilities, on such terms as to allow others to fulfil this imperative and patriotic duty. It is to be regretted that the returns from Ireland cannot be included for purposes of comparison with the larger island.

R. BAILEY WALKER, F.S.S.

**Paper from Asparagus.**—Those who are fond of making experiments, says the "Globe," may, if they wish to make a fortune in a novel way, start a company for utilizing the ends of Asparagus. The world has yet to learn that these despised bundles of white stalk, from which the tips have been bitten, are good for something else besides being thrown to cats and pigs, or cast into the dust heap. A man of science, writing to the "Patrie," explains what is the principal use to which they may be put. They may be made into paper, and that not ordinary brown paper, or even foolscap, but letter paper of the finest description. It appears that in a few favoured places there are manufactories where the Asparagus ends are used in this way, so that the only course which would seem likely to promise success would be that of starting some such thing as an Asparagus End Company (Limited).

**Propagating Crotons.**—Though Crotons are easily struck from small cuttings, where it is desirable to obtain good plants of them in a short time, the method usually adopted in the case of *Draecenas* and *Ficus elastica* may be practised with good results as regards Crotons. Any one having old straggling plants, should stop the leading shoots, and when they begin to break again surround the stems with a flower pot which has been split in two, securing the halves by means of wire or string. Fill the pot with sharp sandy soil, make a slight incision all round the stem under the pot, and in a few weeks roots will be emitted into the soil. Then gradually cut through the stem until the portion in the pot is finally severed from the plant, plunge the pot in a little bottom-heat, and when well rooted shift into a larger pot. In this way dwarf bushy plants for table decorations may be secured in three months, whereas from cuttings it would take at least two years to produce them. The old plant, which will break freely if placed in a moist heat, will make a lovely specimen, and may be used, if desired, for a further supply.—C. S.

**New Potato Granpian.**—This variety, just now being put into commerce here in the south, is of Scotch origin, and has for the past two years occupied a prominent position on exhibition tables. It has a pale red smooth skin, yellowish-white flesh of good quality, and boils mealy. Although not so handsome as Red Emperor, and wanting its rich deep red tint of skin, it nevertheless bids fair to displace that old kind as a show red round. In the north it is described as early, but here in the south it is quite late, indeed, one of the latest sorts to ripen which we have. The main stem attains a height of 2 ft. and is spreading.—A. D.

**Rhopala elegantissima.**—This is a useful plant for table decoration; it is dwarf in habit, and its elegantly cut leaves are produced on each side of long graceful stalks, close down to the pot. I saw neat plants of it the other day in Mr. Fraser's Nursery, at Lea Bridge.—S.

**Niagara.**—The Horseshoe at Niagara, the "New York Tribune" states, is now a right-angle rather than a curve. The rocks in the centre have been eaten away from year to year, and now the side walls are crumbling. On November 17th a large section of rock toward the Canada shore fell with a tremendous crash, and during the night a still larger area went down.

The average annual yield of a Tea plant is said to be about twenty ounces. The plants live from twenty to thirty years, and when old are frequently cut down and a young shrub grafted into the old stock.

## THE LIBRARY.

## THE ROSARIAN'S YEAR BOOK FOR 1877\*.

A small handbook of fifty-seven pages, edited by the Rev. H. Doubrain, secretary of the National Rose Society. It is a well got up little book, but, nevertheless, somewhat disappointing, no fewer than twenty-four of its pages being devoted to dry reports of Rose shows—merely long lists of names of Roses. Short reviews of recent Rose literature are, however, also given, and lists and descriptions of new Roses for 1877. Mr. George Paul contributes to its pages a useful article on Rose stocks, from which we extract the following:—

“The Dog Rose seems to have been naturally the first used, and we hear of the first imported standards coming for sale here from Paris at high prices. Since then we have learnt to work our own, but have made but slow progress in standard Rose culture. More careful knitting—the gradual adoption of shorter stems—are mere details. The old hedge-gathered standard Brier seems to remain the only stock here used successfully for standards. As far as the writer has seen, we gain nothing in allowing seedling Briers to stand long enough on quarters to throw up suckers fit to work upon. The four years they have to stand lead to coarse and more immovable rooted plants than Briers which have only stood two years after planting, and which consequently have, if properly grown, a good stock of young, freshly formed roots. The Dutch see some of the climbing Roses. The Garland, as tried here, is the best, but there is a zigzag form in the stem which does not compare favourably with a well-grown Brier stock. Taken altogether, while the supply lasts, the hedge Brier must be the stock for standard or half-standard Roses. One word more: Will not experience show that only vigorous sorts should be grown as standards? It wants good growth on any tree to bring the sap up through a long unfurnished stem. For dwarfs there is more variety. To return to our Manetti, we have learnt much since its introduction; but we owe it one debt—that it has let Roses be grown in gravelly, poor soils, where before they were unable to be cultivated. On such soils almost all the Hybrid Perpetuals do on it; on the richer good Rose soil, it will assert itself, and kill off the weaker kinds. Again, with the Tea Rose, it has no affinity, and makes but a bad stock. When in Victor Verdier, La-chaerme gave us a Tea-hybridized Hybrid Perpetual, a new race with Tea-blood began, and the series showed at once their origin by a gradually growing dislike to the thorny, thick-barked Manetti. Victor Verdier, the first, succeeds fairly; Captain Christy, the last and most Tea-like, refuses altogether to have to do with the stock. What conclusion should we draw from these observed facts? That the Rose growers should use this stock for the strong-growing, Jacqueminot-originated Rose, the hybrid Chinas, the free climbers, Moss, and hybrid Bourbon Roses. It must also always be valuable as a *porte-plante* for the newer Roses of all kinds, and for pot culture. We all know that, kept well beneath the surface, the variety it carries (so to speak) roots itself, and so the Manetti acts as giving a double tier of roots to the plants. For pot-culture, where too many roots cannot be had, the peculiar, much-fibred root of the Manetti is particularly valuable near the side of the pot. It will not cease to be used for pot-culture for even the smooth-wooded kinds, and (with its suitability for gravelly soils) so the lighter soils usually used in pot Rose-culture also meet with encouragement. This is a most important point; Roses on Manetti give us flowers at least a fortnight before those on seedling Brier, adding a month at the best time, too, to our Rose season. I have not much knowledge of the Celino, but know some growers, like Mr. Rivers and Mr. Curtis, use it for strong Teas, the Dijon race, and Bourbons. It is a hybrid China; but I hold the old Rose of the same class, De la Griferie, to be a better stock for the same kind. On this, which has been used at Cheshunt for ten years or so, the Maréchal Niel, Gloire de Dijon, kinds of Teas, and La France, seem to form a perfect union, and grow as if in full accord with their root-supply. It has one fault, a tendency to grow early, which it perhaps slightly imparts to the kind it carries. I am not quite sure, but fancy the Napoleon stock of the ‘*North Country*’ is this, or a nearly resembling variety. In the light, sandy, peaty soil of Surrey, the climbing Roses, the Garland more especially, and Félicité Perpetuelle, are used for Tea-scented and Noisette Roses. Here they grow so much in one season as to be too big, and have too thick rind to bud. The transplanted seedling Dog Rose or cultivated Brier is for Teas the stock. It should be also used for Captain Christy and the Victor Verdier race. Henri Ledescheaux, refusing to grow on the Manetti, is on the Dog a grand Rose. In an article, space could not be given for a detailed list, which is, moreover, a valuable acquired knowledge of the individual cultivator; but the broad rule is given as regards the Hybrid Perpetuals. Maréchal Niel

and the Dijons do thoroughly on this, and all the Teas, without exception, seem to thrive. Perhaps Niphetos and Madame Willermoz, and one or two of the feebler Teas, are hardly sucker-proof without extraordinary care. As Niphetos is, with shelter, so good a standard Rose, this does not much matter. For gravelly soils, as said in speaking of the Manetti, we doubt the adaptability of this stock; for rocky, brashy soils it seems suitable.”

The remainder of the book consists of a report of the weather during the past year, a chapter on Rose showing, and a well-deserved tribute to the memory of Thomas Rivers, by Canon Hole.

**How to make an Amateur's Rose Garden.**—Look out an open bit of land of whatever size is thought desirable. Beginning at one side, take out a trench 2 ft. deep if possible, and thoroughly trench the piece, mixing with the soil the best manure you can find available. When finished trenching, wait until the soil gets partially dry at the top, then give it a good treading all over, making it quite firm. Go to the best Rose-grower in your locality and beg the prunings of Roses, which any true amateur will give you ungrudgingly. Select of the shoots the strongest and best ripened wood, cut them into lengths 8 in. long, planting the pieces all over the ground at 8 in. apart and 6 in. deep, merely leaving above the surface two buds. This is as good a time as any to begin the work. Should the weather become very severe, protect the cuttings either with a few half-rotten leaves, fir branches, or, best of all, Bracken. When April arrives, take away the covering, but be careful not to hurt the young buds, which will now be showing. Keep the land open by hoeing—but not raking. If these remarks are attended to, you will have the first year a few late-blown Rose flowers, and the second year, by cutting all down in March, and mulching the bed with a little manure, you will possess a bed of Roses that would not disgrace the best garden in the land.—R. GILBERT, in “*Horticultural Record*.”

**Chrysanthemums.**—What is the difference between Mrs. Dickson and Golden George Glenn? Would they be disqualified if shown together in one class? Three years ago last autumn I had a yellow sport on George Glenn; but, seeing that Mr. Dickson had also one from the same, I gave mine away to my neighbours under the name of Golden George Glenn. This season I have a yellow sport on Barbara.—C. OGDY, Broughton, Manchester.

**Artificial Manures.**—What is the best kind of artificial manure for a fruit and vegetable garden where animal manure cannot be obtained?—X. Y. Z. (Guano, soot, salt, and bones are perhaps the best manures under such circumstances. Night soil (deodorized) might be used on poor land. Many other kinds of artificial manure are also advertised, but it is difficult to say which amongst them is the best.)

**Camellia Leaves Dropping.**—Can any one tell me the cause of my Camellias dropping their foliage, the buds on the ends of the shoots only being left? It is two years since they were potted, and the roots are all round the pot, and appear to be in good condition—quite white and clean.—H. S. (See if the roots are not too dry. If so, soak them and the ball of earth in which they are growing in a tub of water for an hour or two. You will be able to judge if the inner portion of the ball be dry by the air bubbles which will be produced on immersion.)

**Basket Plants.**—What are the most suitable plants for hanging baskets in a small Aquarium, where there is, of course, an abundance of moisture and also a little heat given off from a small steam boiler used in the building? (The best plants for such a purpose are Ferns and Lycopods, and amongst flowering plants Achimenes, Ivy-leaved Pelargoniums, and some of the half-hardy annuals. Much, however, depends on the heat which you have at command; if a temperature of 60° can be maintained, there are many Orchids which might be grown in such a place with advantage; also *Torenia asiatica*, *T. Fournieri*, and *Zeschmianthus grandiflorus*.)

**Cornelia glauca out-of-doors.**—Allow me to inform Mr. Osborn (see p. 562, Vol. XII.) that I have found this to be quite hardy in Queen's Co., Ireland. We have two plants of it about 6 ft. high and as many feet through, which always bloom freely; they are sheltered from the north by other shrubs. I have seen much larger plants of it in other places in this county outdoors, sheltered by walls.—W. H. H., Dublin.

**Begonia Frébelli from Seed.**—In raising this Begonia from seed, the temperature should have been 65° instead of 45°, as stated (see p. 604, Vol. XII.). I am now propagating it by means of cuttings, and I find it to strike freely.—J. Claws, *Headfort, Kells*.

**DURING THE YEAR 1877** Messrs. James Veitch & Sons, of the Royal Exotic Nursery, Chelsea, were awarded at the various meetings of the Royal Horticultural Society, 38 certificates, 34 being first-class, for new plants, 2 first-class for new vegetables, and 2 second-class for new plants. They also received from the same Society, in the same period, 2 botanical certificates, 1 cultural certificate, and 2 botanical commendations. This is the largest number of certificates, we believe, that has ever been awarded by the Society, in a single year, to one firm. Messrs. Veitch also received from the Royal Botanic Society, in the season of 1877, 33 certificates of merit for new plants, 27 of which were botanical, and 6 floricultural.

\* “The Rosarian's Year Book for 1877.” Backwood & Sons: London and Edinburgh.

"This is an art  
Which does mend Nature: change it rather: but  
THE ART ITSELF IS NATURE."—*Shakespeare.*

### ENGLISH GROWN ORANGES AS DESSERT FRUIT.

The culture of Oranges for some reason is not so popular as it deserves to be. The Orange-house here (established many years ago by my father) was a "picture of beauty" in October, when the fruit was fully coloured, if not ripe, and to all appearance it will remain equally attractive for the next three months; thus for six months during the dead time of the year it is a never-failing ornament. This mild winter the temperature in the house has averaged 55°, and consequently the cost for fuel has not been excessive. The trees are hardy, and require little attention or skill in pruning. My fruiting trees, which are from seven to ten years old, and from 4 ft. to 5 ft. high, are half-standards, a form which the Orange takes naturally. The soil in which they are grown is a strong loam (the ferruginous loams of Sussex are best). For supplementary food, oil yags or the wool-waste of Leeds or Bradford should be used in preference to stable manure; but if wool waste cannot be had, cow manure should be used. Such liberal fruit-yielding trees must be well nourished; and to give an additional help, plunge the pots in a border, and allow the roots to pass through into the soil. In November, when the fruit is perfected, prune all the roots outside the pots (for Orange culture perforated pots should be used); thus treated, the trees will be kept in a fruitful state, and excessive growth restricted. The St. Michaels, Blood, and Tangierine are three sorts which will satisfy all the requirements of an Orange cultivator. There are, however, many sub-varieties of the St. Michaels; of these the Prata, or Silver Orange, is noteworthy. It possesses a finely-grained thin rind, and when fully ripe is specially good. The Maltese Blood Orange should be in every Orange-house. Curiously enough, on the same tree some of the fruits are entirely free from blood stains. The Tangierine completes the group of dessert Oranges. It is a charming little fruit-bearing shrub, almost hardy, and an abundant bearer, forming a miniature tree of straggling, but graceful growth; it should be in every Orange-house, and, indeed, in every conservatory.

After Oranges the Lemons follow naturally. Of these the Imperial Lemon is the best. It is large, handsome, and of fine flavour. This and the Bijou are worth a place in every collection. The latter is a beautiful little plant, very dwarf, bearing Lemons, when full-sized, not larger than a Walnut, but of excellent scent and flavour. Unlike the Tangierine Orange, it makes a fruitful dwarf pyramid, and, when laden with fruit, it is surpassed by few plants for winter decoration. Limes, Shaddocks, and Citrons have all fruited here, and have been discarded as fruit-growing plants. Room and time given up to the growth of a worthless fruit is a mistake. The Myrtle-leaved Mandarin is a pretty bizarre shrub, but the fruit is worthless for the table.

Scale is a bitter enemy of the Orange tribe; but the use of paraffin will, in time, entirely destroy it. It must, however, be watched continually and vigilantly if the cultivator desires to keep his plants in health.

I have looked upon the Orange as a fruiting plant for so many years, that I have not alluded, (as an additional inducement to the cultivator) to the fact that it produces flowers in great profusion, and that these alone will repay any expenses which may attend its cultivation; but—they must not be in the market during Lent!

T. FRANCIS RIVERS.

*Sawbridgeworth.*

**Mammoth Bunch of Grapes.**—There was recently on exhibition in San Francisco, a mammoth bunch of Grapes from the great Grapes-vine of Santa Barbara. This cluster weighed 125 lb., and was 6 ft. in circumference and 3 ft. long. The Vine from which it was cut is sixteen years old, and produces annually from 10,000 lb. to 12,000 lb. of Grapes. This is probably the largest bunch of Grapes ever grown.—*American Paper.*

### FRUIT TREES ON NORTH WALLS.

WALLS with a north aspect may be made quite as useful as walls with a south aspect. The north walls here are just as well furnished with fruit trees as any others about the place, but of course with a different class of fruits. Cherry trees do better on a north wall than on any other aspect, and Gooseberries, and red and white Currants also do famously on a north wall, on which they have the advantage of being a month or six weeks later than in any other part of the garden, a circumstance worth attention, where a long succession of fruit is wanted. When Gooseberries are grown for preserving, the earlier they are ripened the better; consequently there is no need for them to be grown on a wall which should be devoted to the best dessert sorts. Ours consist of Garibaldi, Binger, Admiration, Brown Bob, Champagne Charley, Green Overall, Whitesmith, and Champion, and they answer so well that I have no hesitation in recommending them to others. Sometimes when there are no fruits or standard bushes the wall once covered, and they are easily protected from both cold in spring and birds in autumn. They are planted 2 ft. apart, and two shoots are allowed to grow from each root. These are trained straight up to the top of the wall at equal distances from each other. When pruned all the young shoots, which are growing straight out from the wall are cut in close. After pruning, a quantity of manure is annually forked about the roots. We had a fine crop of red and white Currants on a north wall this season. They are treated exactly like the Gooseberries, only they are planted further apart, and from six to eight branches are taken up from each root. Some old Cherry trees on east, west, and south walls, do not bear every season, but those on the north wall never miss a heavy crop, and were it not for the trees in this position we would frequently be in want of Cherries. These are planted from 12 ft. to 20 ft. apart and trained fan-fashion. The Morellos make most wood, and this is laid in closely as soon as the leaves fall. Archduke, Black Eagle, Black Tartarian, Late Duke, May Duke, and Transparent are a few good sorts which succeed well on a north wall. As this is the proper time for planting all these trees, wherever there is a vacant space on a north wall it should be at once filled up. Cherries grow best in a rich sandy loam, and Gooseberries and Currants will succeed in nearly any kind of soil. We have several Apple trees on a north wall, but they do not fruit with much certainty. As to the crops that do best on north borders I find Lettuce to do exceedingly well in summer, and salads generally seem to do better in such cool positions during hot weather than elsewhere.

CAMBRIAN.

**Victoria Nectarine.**—Notwithstanding "W's" remarks (see p. 12) in favour of this Nectarine, I repeat that such an unqualified recommendation as that given by the writer of the article to which I replied, is likely to mislead, as the Victoria Nectarine will only succeed out-of-doors in favoured localities. Trees of this fruit take some time to get established; they are expensive to purchase, and therefore anyone having only a limited amount of wall room must naturally be discouraged to find what they plant turn out a failure after being so lauded. On referring to several of the principal fruit catalogues, I find I am borne out in what I say respecting this Nectarine, as the remarks in each case are, "requires a warm situation." Surely your correspondents will not, after this, recommend it as the best of all Nectarines, and advise its being planted almost exclusively. The writer of the first eulogistic notice of it appears only to have it under glass, where it has done well, but its success under such conditions does not guarantee that it will do equally well on open walls. If your correspondents had stated the districts in which they reside, and the kind of soil in which they find this Nectarine to do so well, others could better judge of its merits and suitability for their own gardens. I should be the last to discourage the trial of any new or improved variety of fruit, and I only do so in this instance to save amateurs being disappointed after years of waiting and attention, knowing, as I do, that there are other harder varieties that will give more satisfaction.—S. D.

**Mildewed Grapes.**—I have found the following method efficacious in arresting mildew in the case of late Grapes:—On a still day, heat the hot water pipes as hot as the water will make them, and damp every part of the floor well with water, keeping all ventilation closed. Take a stone of fresh lime and slack it in a bucket, allowing it to boil well. Then reduce it with water to the consistency of thick paint, and into half a bucketful put three handfuls of flowers of sulphur. Mix all well together, and with an old whitewash brush put the mixture on the hot pipes. After the Grapes are all cut, it should be all washed off the pipes quite clean, or the result will be a crop of rusted Grapes the following season.—JAMES SMITH, *Waterdale.*

## NOTES OF THE WEEK.

**Kew.**—At the present time in the greenhouse (No. 4) there are several Australian plants in bloom which well deserve mention. *Correa speciosa* is there in three distinct and handsome varieties—*ventricosa*, with scarlet, green-tipped flowers; bicolor, with a pink tube and whitish limb; and *Bachnosiana*, with fine, bold, whitish flowers. All the *Correas* are very desirable greenhouse shrubs, and do not demand much skill on the part of the cultivator. A pretty twiner is *Hibbertia dentata*, with its purplish leaves, placed alternately, and its showy yellow flowers; other recommendations, besides its beauty, are, that it can always be easily kept within bounds, and does not suffer from insect attacks. *Stenantha pinifolia* is the only species of a genus of *Epacrids* which, we may remark, take the place of the Heath in Australia. (An interesting fact in plant geography is, that the Natural Order *Ericaceae* is not represented at all on the continent of Australia.) *S. pinifolia* is a very pretty bush; the branches are much crowded with needle-shaped leaves, and the flowers have a scarlet tube and white limb. *Styphelia tubiflora*, another *Epacrid*, has sharp-pointed leaves and scarlet tubular flowers, somewhat like those of some *Epacrises*.

In the Cactus-house may be seen two *Dianellas*—*D. tasmanica* and *D. corulea*. The pale blue, yellow-stamened flowers of both species are borne on large, lax-branched, many-flowered panicles; the ensiform leaves are from 3 ft. to 4 ft. long. *D. tasmanica* sets an abundance of bright blue berries, which hang for a long time on their hair-like pedicels; it is the finer of the two, and is certainly not one of the least beautiful members of the Lily family. The red, wax flowers of *Cotyledon* (*Echeveria*) *fulgens* and *C. retusa* are extremely showy. These *Meibomia* succulents should be specially grown for winter flowering.

*Stephanophysum Baikie*, now in flower in the stove, was discovered during Dr. Baikie's Niger Expedition. This *Acaethad*, when well grown, makes a pretty pot plant; and although the individual flowers do not last long, a succession is produced in tolerable abundance for some time. The inflorescence is terminal, and is composed of many-flowered opposite spikes of tubular, curved, scarlet flowers about 2 in. long. *Astrapea Walli* is a very striking *Bytneriacae* plant from Madagascar; it has large, cordate leaves and bright red flowers. Dr. Lindley and Sir Joseph Paxton say, "This may be considered one of the finest plants ever introduced; when loaded with its magnificent flowers, we think nothing can exceed its grandeur." The Rev. Mr. Ellis, to whose efforts our gardens are indebted for the glorious *Angreem* *sesquipedale* and that extremely strange vegetable production, the *Laticia*-leaf of Madagascar (*Ouvriandra fenestralis*), thus speaks of it: "But the most magnificent objects were the fine trees of *Astrapea Walli*. The name of this Malagasy plant is derived from the word for lightning, on account of the brilliancy of its flowers. I had seen a good-sized plant growing freely at Mauritius, but here it was in its native home, luxuriating on the banks of the stream, its trunk a foot in diameter, its broad-leaved branches stretching over the water, and its large, pink, globular flower-heads 3 in. or 4 in. in diameter, suspended at the end of a fine, down-covered stalk 9 in. to 1 ft. in length. These, hanging by hundreds along the course of the stream, surpassed anything of the kind I had seen or could possibly have imagined." Heat, moisture, and a fair amount of pot-room are essentials in the successful management of this plant. If these be given, it flowers pretty freely in a small state, say at from 4 ft. to 6 ft.

*Maettia cordifolia*, a handsome Brazilian *Cinchonaceae* shrub of climbing habit, is in flower in the old Lily-house. It has opposite leaves and a bright scarlet, tubular corolla about 2 in. in length. The root possesses emetic properties, and is used by the Brazilians in dropsy and dysentery.

In the Winter Garden, many of the Himalayan *Rhododendrons* will soon be making a fine show. At present, *R. arboreum* is covered with its refulgent crimson-scarlet flowers. Although, in its native haunt, this has to withstand a much colder climate than that of Britain, a glass structure is required for its successful cultivation in this country, except in the most favoured spots. Its flowers are boiled down in the Himalayas, and made into a sort of jelly.

In the Orchid collection, the following are the most noteworthy: *Dendrobium Devoniannum*, from the Khasia Hills in India, is one of the most delicate and lovely of all Orchids; it has jointed, nearly cylindrical, elongated, whitish-brown stems, and is of weak and slender habit. Its large, handsome flowers are borne at the ends of the leafless shoots; the entire ground colour is white, the sepals being faintly tinged with purple, and the beautifully ciliated petals bearing a purple spot at the apex; the very large cordate lip is elegantly fringed, is also tipped with purple, and bears two large orange spots on the pure white ground. *Oncidium ornithorhynchum*—in a genus

in which yellow so greatly predominates—is remarkable for having flowers of a pretty rose colour, with scarcely a tinge of yellow. It is a neat, pleasing little species, which, however, varies considerably in merit, both as regards size and tint of flowers. In its wild state it grows in damp, shady places in Mexico, Guatemala, and Peru, where the temperature varies between 68° and 75°. *O. aureum* is a Peruvian species, with an erect, loose panicle; the flowers have olive-coloured sepals and a golden-yellow lip. *O. sphegiforme*, from Brazil, has yellow-crimson spots on lip, and dull purple stains on the sepals and petals. *O. pubes*, also from Brazil, has a pyramidal panicle of small, brown, yellow-edged flowers. *O. serratum* is somewhat similar in appearance to *O. crispum*; the tall, oval pseudo-bulbs bear one or two long, erect, acute leaves; the panicle is lax, many-flowered (wild specimens have been gathered with panicles 9 ft. or 10 ft. in length); the sepals have crisp, serrated margins, and, as well as the petals, are of a brown chocolate colour, tipped and margined with yellow; the small, spear-shaped lip is yellow-crested. This species is a native of Peru. *Odontoglossum cordatum* is a Mexican species, with two-leaved pseudo-bulbs and broadly-oblong, smooth, acute leaves; the linear-lanceolate sepals are greenish, barred with brown; the petals are similar to the sepals in shape, and are light yellow, spotted with brown; the lip is cordate, acuminate, and of the same colour as the petals; the top of the column is white. *Mesospitium aurantiacum*—perhaps better known by the name under which Lindley first described it, viz. *Ada aurantiaca*—is a remarkable plant, with brilliant orange-yellow flowers collected in a close raceme. The pseudo-bulbs are about 4 in. long, and bear from one to three broad, linear leaves at the extremity; the drooping scapes are about 1 ft. in length. It inhabits the Pamplona, in New Granada, growing at a height of 8500 ft. above the level of the sea. *Maxillaria setigera*, also from New Granada, is one of the most attractive species of the genus. Its very pretty conspicuous flowers are freely produced, and are of a fine golden-yellow colour, with the exception of the base of the three sepals, the two linear petals, the column, and the edges of the small lip.

**A Clematis Christmas.**—My gardener has just presented me with a New Year's gift such as I do not remember to have seen at this date during my long experience as a Rosarian—namely, a well-formed bloom of *Paul Neron*, grown, without protection, in the open ground.—S. REYNOLDS HOPE, *Causton Manor*.

**Clematis Pitcher**.—This scarlet-flowering *Clematis*, recently figured in the "Revue Horticole," is a more striking plant than it is represented, as we can say from having seen it in flower. It will no doubt prove a hardy species, and be a charming plant for the rock-garden and for large walls. We first saw it in the Garden of Plants.

**Pleione humilis**.—This, one of the most singular as well as handsome of what are called Indian *Crocuses*, is now in full flower in Messrs. Veitch's nursery. It is grown in 4-in. pots, and on some plants it may be counted as many as twenty beautifully-fringed, violet-tinted blossoms and buds.

**Orchids at Holloway.**—An attractive display of Orchids may now be seen in the Victoria Nurseries. *Colax juncos* is flowering freely on suspended blocks, associated with the beautifully-marked *Odontoglossum Rossi majus*, fine spikes of *O. cirrhosum*, and the scarlet wax flowers of *Neottia maculata*. The graceful *Oncidium ornithorhynchum*, and a group of *Calanthes* and *Lady's-slippers*, intermixed with Palms and Ferns, are also at present striking features in this nursery.

**Primulas at St. John's Wood.**—A house filled with double and single-flowered Chinese *Primulas*, in the Wellington Road Nursery, is now well worth going a considerable distance to see. They consist chiefly of old plants, grown on purpose to supply early cut bloom. Amongst them the brightest red is *Magnifica*, a robust double-flowered kind; and we also noticed the Fern-leaved, lilac-rose flowered sort called *Emperor*; *Blushing Bride*, one of the largest-blossomed white kinds, delicately suffused with lilac; and the beautiful semi-double, flesh-coloured variety named *Maiden's Blush*, a kind which comes true from seed, and which furnishes blossoms unusually well adapted for use in a cut state.

**Angreem sesquipedale.**—A large plant of this *Angreem* in the Royal Exotic Nursery, Chelsea, is now bearing nearly a dozen blossoms, each of which measures about 6 in. across; they are of snowy whiteness, and last, in good condition, from fifteen to twenty days. A miniature form of this *Angreem* not yet named, also in bloom at Messrs. Veitch's, promises, for many purposes, to be equally valuable. Its flowers, as regards shape, are exactly like those of *A. sesquipedale*, but they are no larger than those of a *Stephanotis*.

**Dendrobium superbiens.**—This will probably prove to be one of the most valuable additions to this beautiful genus which has been introduced of late years. It is now flowering freely in Mr. Williams' Nursery at Holloway. Its blossoms, which are similar in shape, and nearly as large as those of the well-known *D. nobile*, are

of a most beautiful mauve colour, and are produced on long, gracefully drooping slender stems for a long time in succession. For cutting for small bouquets these blossoms will be very valuable. The plant itself is of freer growth than *D. bigibbum*, of which it is a variety, and its flowers are totally different from those of that species both in shape and colour.

**Azalea Rollissonii.**—This new double scarlet Balsam-flowered Japanese variety is now in flower in Messrs. Rollisson's nursery. It is very dwarf in habit, and it is expected that it will prove to be hardy; if so, it will be a valuable addition to plants suitable for the Alpine garden, as well as for planting in masses in the flower garden. As a market plant, too, when plentiful, it will doubtless be grown extensively.

**Dwarf Poinsettias.**—A fine display of remarkably dwarf Poinsettias has been made during the last month in one of the houses at Harrow Weald Park. They were struck from cuttings taken from old plants in August last, and were grown in 5-in. pots in good sandy loam, peat, and leaf-mould. The plants are now from 12 in. to 15 in. high, clothed with large, healthy foliage down to the pot; and the heads of bracts which they are bearing are the largest we have seen this season, some of them measuring 13 in. across, each bract being very broad and bright in colour. They have been fed with Standen's manure, have had abundance of water, and been kept near the glass in a light, airy house.

**The Douglas Fir at the Paris Exhibition.**—The Canadian steership Newfoundland is on its way to France, having on board two pieces of Douglas Fir (*Abies Douglasii*) for the Paris Exhibition. The pieces are a transverse and a longitudinal section, taken from a tree over 400 ft. in height and 8 ft. in diameter, found growing on the slopes in British Columbia.

**Cypripedium Boxalli.**—This recently-imported Lady's-slipper may now be seen flowering freely in the principal London nurseries. It is of robust habit, and, being already plentiful, it will no doubt be grown extensively in most gardens.

**Lomaria gibba var.**—In Mr. J. H. Ley's nursery at Croydon there is a new *Lomaria*, a variety of *L. gibba*, the peculiarity of which is a singular extension of the main rib at the end of each of the pinnae. It is a handsome Fern, apparently more robust in habit than *L. gibba*.—J. F.

**Early Outdoor Flowers.**—If the weather continue open, we will soon have a pretty display of spring flowers. *Botryanthus pallens*, *Abrotia superba*, *Gentiana acualis*, *Pansies*, and *Primroses* are already flowering freely, and the buds of *Saxifraga pyrenaica var. maxima* and *S. Borsariensis* are on the point of opening. Those, too, of *Galanthus Imperati* are through the soil, and will form striking and lovely objects when in full bloom, as there are thousands of bulbs of this, the finest of all Snowdrops, massed together in the nursery-beds in the Messrs. Backhouse's grounds. To all appearance it will be earlier in expanding its flowers than either *Galanthus nivalis* or *G. plicatus*.—R. P.

**Botanical Geography at Kew.**—"A selection of the larger tropical Ferns—Aroids, Marattaceae, &c.—has been planted in the beds under the Palmæ, which have hitherto been quite bare. They are now covered with an undergrowth of singular picturesque and luxuriance." So says the Kew report for the year 1876; and we can ourselves vouch for the beauty and luxuriance of some of the objects, which display a rude health and vigour somewhat surprising to those who have always been accustomed to see them confined in pots. The arrangement of some, however, strikes us as not being particularly happy. For instance, the trunk of a South African Palm, *Phoenix roscinata*, supports a fine fruiting specimen of the Mexican *Monstera deliciosa* and several Bromeliads, which, of course, are exclusively New World plants. Again, *Dendrobes* are associated with a Mexican Palm, *Trithrinax aculeata*, and we need hardly say that there are no *Dendrobes* at all in the Western Hemisphere. The *Dendrobes* would, to us, have seemed more appropriate on some Indian Palm, and the *Monstera*s and other American climbing Aroids on New World Palms. Kew, as a great educational establishment, does not fail to acknowledge the importance of geographical distribution, as is shown by the selections on the shelves round the Palm-house and Winter Garden, in both of which places a vast number of species, properly arranged, convey to the uninitiated in botanical geography a far more correct idea of the flora of any particular region than can possibly be obtained from whole chapters of the most graphic descriptions, unless these be very profusely illustrated. In connection with Mr. Hemsley's contributions to THE GARDEN on this subject, an intelligent glance at the collections just named cannot but be most interesting and instructive. In a place like Kew, when the same result, as far as regards appearance, may be obtained by associating subjects belonging to the same region, it is surely advisable to follow out, as far as practicable, the arrangement which obtains on the shelves.—S.

## FALLACIES OF LILY GROWERS.

THE readers of THE GARDEN who are interested in this subject, can hardly have overlooked the fact that Mr. Frank Miles' letter (see p. 546, Vol. XII.) is singularly consistent with my views. As regards his one doubtful point, namely, "whether the Lily is annual, biennial, or triennial," he will see from my last letter (see p. 557, Vol. XII.) that, before I could have seen his, I had stated my views on this point when illustrating the phenomenon, called "Three generations in one." I know of no other plants, though there may be some, which we can compare in their underground action with the Lily. With it there is undoubtedly an annual bloom, but not from the same bulb, though many who have not studied the matter sufficiently believe it is. From what I said in my last paper, it may be seen that, while one bulb is flourishing in its first and only bloom, another bulb within it—mark these words, "within it"—not outside, as offsets of any description whatever, another bulb, a new bulb within it, is progressing in its growth, so as to be enabled to bloom next year, in place of the one now blooming, which will then be dead; thus keeping up a yearly bloom from successional bulbs, *ad infinitum*, if properly cultivated. There is, therefore, no foundation whatever for saying that "the bulb goes on living and blooming for an indefinite period, and then dies of exhaustion or old age." A greater fallacy than this could not be uttered; for the term of a Lily's existence, from the period of germination till the final decay of the plant, is so designed by Nature as not to exceed two years. It is thus, that every year witnesses a birth and a death; that is, the birth of the seed-bud, and the death of the flowering bulb, being the youngest and the oldest of the "three generations in one," the new bulb being always an intermediate between these two. I think, when illustrating some of these points, I mentioned in a former paper that I have in my garden a bulb of *L. croceum*, the progenitor of which I planted 35 years ago. During all these years, I have watched this plant with more than an ordinary interest; and, as I lifted and replanted it every year, I found that the fading flower-stem was always attached to the fading parent bulb, and not to the new bulb, which appeared every succeeding year, fresh, clean, plump, and crisp, with the scales firmly and closely set upon one another, while the scales of the parent bulb were discoloured, loose, and flabby. How far back the pedigree of this bulb could be traced it is difficult to say, though I believe I could get evidence of ten years more to add to the thirty-five. But be this as it may, I think that, while considering the wonderful organization of the Lily, we might be pardoned for indulging in the reflection that some of the Lilies which we now see around us may have had progenitors among those Lilies which historians have mentioned as blooming in all their glory more than 3000 years ago. A distinguished writer, who spent twenty-five years in Syria and Palestine, in his description of the Hühle Lily, says:—"This Lily is very large, and the three inner petals meet above, and form a gorgeous canopy, such as art never approached, and which never sat under, even in its utmost glory. When I met with this incomparable flower, in all its loveliness, among the Oak woods around the northern base of Tabor and on the hills of Nazareth, where our Lord spent his youth, I felt assured that it was to this flower he referred, nearly 2000 years ago, when he said, 'Consider the Lilies how they grow.' This Lily is to be found on the mountains; but it delights most in the valleys, and appears to be the identical flower to which Solomon refers, when he wrote, 'I am the Rose of Sharon, and the Lily of the valleys; as the Lily among thorns.' The Hühle Lily grows luxuriantly among thorns, and I have had my hands sadly lacerated in extracting it from them. Nothing, indeed, can be in higher contrast than the luxuriant, velvety softness of this Lily, and the crabbed, tangled mass of thorns growing about it."

Returning from this digression, I may now mention that a writer in the "Journal of Horticulture," when describing *Lilium auratum*, as it is grown in the garden of Mr. McIntosh, at Duneevan, says:—"Last year a plant in that garden attained a height of 11 ft.; and this year, although the summer has been so dry, the same bulb has thrown up a spike 10 ft. 6 in. in height." The Lilies at Duneevan, from all that I have heard, are indeed splendid; but my object in quoting this

paragraph is simply to show that the writer says that the spike was thrown up by the same bulb that bloomed the previous year. This is a fallacy, which, from the position the writer holds, is calculated not only to confirm those who believe in such a theory, but to retard desirable investigation. Another writer, in June last, wrote, saying:—"Five years ago I purchased a bulb of *L. Szovitzianum*, carefully taken up with its roots. The first year it had three blooms; the second, five; the third, eight; the fourth, fifteen; and this year it has fifteen again, all on one stem, as it has never sent up a second one, a peculiarity said to belong to it." I trust this writer will soon be able to satisfy himself that it could not have been every year from the same bulb. There is another fallacy which, by long usage, has been so thoroughly ingrained in the minds of many Lily growers, that, I fear, it will meet with much opposition before it can be completely eradicated. I mean the objection against annual lifting and transplanting. In order to solve the difficulty, it should be asked in the first place—"Why annual transplanting is, at present, the exception rather than the rule?" Simply because there is a very general belief that the first year's growth and bloom, after transplanting, are inferior to the second; and that, consequently, annual transplanting would simply be encouraging a constant repetition of this inferiority. And so it would, if late transplanting is persisted in. I admit that it would be an act of great folly to transplant the general run of Lilies annually, with any prospect of success, if we left them in the ground until "the end of October or the early part of November," as a cultivator, in a book lately published, directs. But it would be the very reverse, if the transplanting took place soon after the flowers have faded. In dealing with Lilies in this country, we should never overlook the fact that they are here under artificial cultivation; whereas, in their native places, Nature has provided for them everything that is requisite for their luxuriant and annual successional bloom. To those who may think that annual transplanting is an unnecessary trouble, or who may not care for superior bloom, the present system may be all in all. But to those who would like to know that their favourites are doing well, and not left a prey to vermin, and, consequently, to retarded growth, the annual system is the best; for too well we know, that a clump of Lily bulbs, left two or three years in the ground—the dead and rotten mixed with the living and the growing—is, in this country, quite a paradise for grubs, slugs, and every other pest that is destruction to the growth and flowering of the plant. In order, then, to sweep all such enemies out of our way, let us, about eight or ten days after the flowers have faded, lift the plants, and, in doing so, take care of the new bulbs that are connected with the stems that have flowered, and are within the old bulbs, as that is the proof that these new bulbs are those which will flower the next year. Let all other bulbs, large or small, be picked off, and put aside for planting in a separate place until they also have flowered. Carefully examine the new bulbs, so as to make sure that they are cleared of vermin; and, when this is done, replant either, singly or in clumps, in congenial soil, and leave the rest to Nature. It is said by some writers that "Lilies are not ripe for lifting and replanting until the growth ceases, and the stems and leaves die down." But this is a fallacy which—whatever may be its value as regards Tulips, Hyacinths, and some other bulbous plants—is altogether inconsistent with the constitution of the Lily. I have cut down the stems when the plants were in full and fresh bloom, without in the slightest degree affecting the growth of the new bulbs, which, at this time, are themselves sending down roots, by which they can gain subsistence sufficient to make them independent of the parent bulbs. Those who have carefully studied the connection that exists between the old and the new bulbs will understand this. When lifting, I prefer leaving a portion of the stems in the old bulbs, as they make a convenient handle for moving the new bulbs about, without rubbing and breaking the scales with the hands. If this plan of lifting and replanting annually were adopted, I will venture to say that the result will be far better than by leaving the bulbs in the ground for some years undisturbed. It seems to me to require no science to tell us this. If we leave the bulbs in the ground for a few years, what can we expect? The offsets, instead of being removed, are growing

and drawing the essential principle of life out of the expectant-flowering bulbs; and these offsets, transformed into bulbules, will also generate offsets, so that all combined to the second and third generations, will be drawing vitality from the fully-developed or flowering-bulbs—the very reverse of what we have in view in giving periodical supplies of nourishment in the shape of mulchings, top-dressings, &c.

There are other fallacies to which I am desirous of drawing attention, but these must stand over for another occasion. With regard, however, to the remarks I made (see p. 557, Vol. XII.), on the subject of imported bulbs, Mr. Stewart Hardy informs us, in a note at the foot of p. 534, Vol. XII., "that last year he bought 100 bulbs of the importer at 1s. each, and that he planted them here and there in Rhododendron and other beds, and, so far as he knows, not one failed to flower, and some produced as many as seven blossoms." As Mr. Hardy has prefaced his communication by saying, "that my article on Lilies rather leads people to believe that they cannot reckon on imported Lilies flowering the first season," permit me to say that such was really my intention when I wrote, and having now frankly admitted this, may I ask Mr. Hardy, in all sincerity, if, by the information he has conveyed to us, he means that people should believe that the 100 bulbs he purchased was a fair sample of the whole of the importer's "shipments of that year?" As it is my desire to bring forward, not only my own experience, but the experience of others, in support of the correctness of what I have written on this subject, I shall take it kind if Mr. Hardy will, in the meantime, answer one or two questions. He writes his note in December last, and says it was last year he purchased the bulbs. Now I am somewhat at a loss to understand whether he means 1876, or last season 1877; he will therefore oblige me by saying when he really did purchase the bulbs; when he planted them; when they commenced to bloom; what height, at an average, they grew; if many produced only one blossom; if he tried any of the 6d. ones; and, supposing they bloomed in 1876, what was the result of the past season's bloom? I trust Mr. Hardy will believe me when I say that these are not merely idle questions, but are, as I know, of considerable importance to some of the readers of THE GARDEN. DUNEDIN.

**Trees and Buildings.**—The view on the opposite page shows the result that may be obtained by a little judicious planting near fine buildings. In this case, a small spot of ground is planted with trees and shrubs; there being a small circular lawn in the centre which allows of a view of the buildings and trees being well seen from various points. We have never seen a more instructive lesson in city planting. It is in the small gardens in the Place du Carrousel, with the stately buildings of the Louvre around.

**Arbutus Andraehna.**—In the grounds here we have a fine example of this Arbutus, which, I regret to say, got injured on Christmas Day by the sharp fall of snow which lasted over the 25th and 26th. The plant, which is an old one, occupies a prominent site on a sloping bank, which forms the western boundary of an undulating plot of pleasure-ground debouching from the house in a southerly direction towards the Mersey. It had been injured in a young state probably by "vibration," the consequence of neglect in not tying it firmly to a stake when it was planted. The wound had healed up, so as to be unobservable; but old age and premature infirmity, brought on from want of a proper supply of water at the root, had laid the germs of decay, the result being that the weight of snow resting on the branches brought matters to an unhappy culmination, by the tree being cleft in two at its base, where the old rent had apparently healed up. I should be glad to hear from anyone having experience in the propagation of hard-wooded evergreen shrubs, whether I stand any chance of securing a young stock from the branches by the ordinary means of propagation, and also whether it is correct (as many have told me) that this species is almost extinct (as far as large trees are concerned), with a few exceptions, in England.—W. HINDS, Otterspool.

**Christmas Decorations.**—While at the "Magpie" Hotel, Sunbury, a few days ago, my attention was directed to what I consider to be a charming novelty in Christmas decorations. At the end of the large dining-hall the greater part of the wall was covered with a fine bough of Cedar of Lebanon with about thirty cones scattered over it. The effect produced was far superior to the ordinary display of evergreens one usually sees.—R. O.

## TREES AND SHRUBS.

### TRANSPLANTING TREES.

TRANSPLANTING is an art which has long been in general practice, although not always carried out in a thoroughly scientific manner.

Much disappointment from failures often arises from the non-fulfilment of certain principles which are absolutely necessary, in order to obtain satisfactory results. Transplanting shrubs may be done, and is done, with adherent balls of earth varying from 8 lb. to 10 lb. in weight to as many tons, according to the lifting appliances at the command of the operator. The most simple of all methods is lifting a shrub or tree with an ordinary garden spade, and even by this simple process the greatest difference is observable in the execution of the work by different operators. This is easily seen by the way in which some parties go about such work. Some, from long practice, particularly in nurseries, will lift a small-sized shrub with a good adherent ball, while another, from want of the requisite skill in guiding his spade, will allow the ball to fall to pieces. Retentive soils and frequent transplanting have often much to do in the successful lifting of certain plants. With many deciduous trees and some shrubs it is not always necessary that they should be lifted with a ball of earth, even when of medium size, unless in the case of very rare or delicate specimens, when successful transplanting is absolutely desired. Deciduous trees, both forest and fruit, varying from 4 ft. to 6 ft., or even 10 ft. in height, where the roots have been prepared by previous cutting or frequent transplanting, can be moved with safety even without a ball, and at any time during the transplanting

season. If transplanted without any previous preparation, particularly if 10 ft. or 12 ft. in height, such trees are apt to lose many of their branches, frequently get into a sickly condition, and have ultimately to be uprooted. This state of matters frequently occurs in the case of forest trees which have been thinned out of young plantations where they have

been growing for many years in a crowded condition. The roots of such thinnings, if lifted by an inexperienced hand, and even sometimes by experienced ones, are sure to encounter a certain amount of damage. In the case of such root-mutilated trees, it is best at once to foreshorten all the points of the branches, in order to counterbalance the want of roots unavoidably injured, say in the proportion of eight to one as regards the roots, and even more as respects the branches. While lifting large deciduous and fruit trees without balls, or even with balls, it is absolutely necessary that all injured roots be cut off, particularly those partially broken through. These should afterwards be smoothed over with a sharp knife, as well as all surface-skin damages, instead of having them planted with their roots hacked with the spade, a system which is not unfrequently pursued. It will be found that all clean knife-cut roots will put out young fibres much freer than those that are cut with a spade and planted without any smoothing. Root-lifting is now much practised, both in the case of wall and standard fruit trees, and it is well known that this



Trees and Architecture.

system has a very beneficial effect upon them as regards after-fruiting. The branch-cutting system, on an extensive scale, is frequently practised on forest trees from 20 ft. to 30 ft. in height. The roots, although not damaged, ought all to be cut, that is, in cases in which no adherent earth can be removed with them. Large trees so treated often succeed well, and

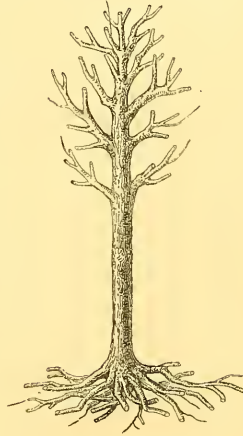
ultimately make as good a shaped top as unpruned specimens removed either with or without a ball of earth. The forest-shortening causes them to break more rapidly from the old wood than they otherwise would do; besides, forestshortened specimens do not require the assistance of ropes and props, which are generally necessary in the case of large deciduous trees where no branches are removed. The percentage of unsuccessful transplants is often very few in point of number compared with trees in which no branch or root-pruning had been carried out.

In order to transplant comparatively rare specimens, both large and small, it is in most cases desirable to resort to machinery or other appliances, however simple, such as surrounding the ball with canvas, staves, and ropes, particularly in cases in which balls of earth must accompany the plants. For this end I wish to offer a few remarks on the various systems adopted here for lifting and removing trees and shrubs of all sizes; and, in order to render this paper as complete as possible on the subject of transplanting, I shall also allude to systems carried on, although not practised here, from the want of the requisite machinery to do so.

The remarks which I intend to give will be chiefly confined to operations which have been carried on in Scotland, where much heavy work of this description has from time to time been done. In old gardening journals we find the names of many able transplanters, such as Mr. James Stewart, Pinkie House, Musselburgh, who was a very successful planter of large fruit and forest trees as far back as 1807. We have also other names more or less celebrated for heavy transplanting, such as Reid, Norval, Murray, McIntosh, Gorrie, Wilson, Lock, Hepburn, and Sorlie. The most celebrated, however, is the name of the late Sir Henry Stewart, of Allanton, Lanarkshire, who carried on for many years the transplanting of large forest and ornamental trees, all on the Janker system. As described in his "Planter's Guide," published in 1823, Sir Henry was very successful with all his transplants, as Allanton abundantly testifies. My late father, who was entrusted with the removal of the trees from the old Botanic Garden at Leith Walk to its present site, transplanted perhaps a greater number of weighty trees than most of the others put together, the largest proportion of them being done with large adherent balls of earth, mostly varying from 12 ft. to 18 ft. in circumference, and averaging about 2½ ft. in depth, one large specimen of *Arbutus Andrachne* having a circumference of branches of 56 ft. The root portion was surrounded with a box 10 ft. long, 5 ft. broad, and 3 ft. deep, requiring twelve horses for its removal. By far the greatest number of trees were raised on the tress and roller system, as afterwards described, and placed on a heavy carriage for removal, all being conveyed in an upright position, requiring six, and frequently eight horses to take them along. The Janker system was also extensively employed, but in all cases with trees whose roots had been previously prepared. All the trees transplanted from Leith Walk were moved during the years 1821, 1822, and 1823, and all are now in a very satisfactory condition.

As previously stated, small shrubs can be safely lifted with the spade, and after lifting, they can be tied or rolled up in a piece of mat or canvas, to keep their balls together for the purpose of transmission; but it sometimes happens that a plant requires to be taken from amongst others, and its removal is apt to injure a neighbouring specimen. A simple machine, invented by the late Mr. Stewart McGlashan, Canonmills, near Edinburgh, is admirably adapted for this particular purpose. It consists of two curved spades rounded at the bottom; these are forced into the ground in an upright position, one on each side of the plant. On the top of the spade first put in are two projecting eyes of iron, and on the other the hooks projecting downwards, which fit into the eyes of the spade first inserted. A tension-rod, deeply toothed backwards along the under surface, is fixed on the side of one of the spades by means of a permanent hasp, which causes the tension-rod to hang down when not in use. The other spade has a fixed projecting pin, square on the upper surface, and fixed on one side immediately below the handle. After the spades have been properly adjusted, the handles are drawn tightly apart, thus causing them to press in the bottom of the ball, which yields, in consequence of the curved nature of the

lower portion of the spades. When tightened, the teeth at the end of the tension-rod becomes fixed on the top of the iron pin on the opposite handle, and while in this position the plant can be easily lifted out of the ground. If the distance for removal be near, the plant can be easily carried in the spades direct to its new abode; but if distant, a slight tie of the tension-rod to the pin will secure it against movement. After being placed in position slacken the tension-rod and remove the spade last put in; scratch the surface of the ball exposed with a sharp instrument, as it sometimes becomes glazed, and also to set free any roots which may have been pressed down, soil being first put against the side exposed to keep it steady. The other spade is then taken out, the side scratched as before, soil being placed against it, and the surface afterwards is prepared for water. These rounded



Tree pruned top and bottom.



Rounded spade planter

spade planters are exceedingly useful, as plants can be lifted by them when in full flower, and placed in boxes or flower-pots without the roots sustaining any injury. The sizes generally in use for the pot planter are chiefly made for lifting balls 7 in. and 10 in. in diameter. The figure here given will illustrate this very simple and effective machine.

JAMES McNAB.

(To be continued.)

### STREET TREES.

It is probably well known that many of our streets are formed of refuse (I do not refer to the metalling) not at all adapted to the growth of trees. The materials used, indeed, are often positively injurious to all kinds of trees and shrubs. The refuse from gasworks, chemical and metal factories, stiff clay, &c., in fact, any rubbish that may come to hand, is used for filling up where necessary, often to a depth of several feet. Gas-pipes, sewers, and drains of various descriptions run in all directions, often emitting vapours destructive to vegetation. Therefore, when it is proposed to plant the margin of a street, it is necessary to consider what should be done, in order to ensure success. First, then, it is most important, at whatever cost, that the trees should be supplied with suitable soil, and in such quantity as to give them a reasonable chance of becoming thoroughly established. To do this, it is necessary to make holes or pits in proportion to the nature of the subsoil, whether very bad, bad, or indifferent, making the largest in the first case, and the smallest in the last. It is advisable to remove from 8 to 10 cubic yards at least where the subsoil is of a very bad description, coming down to 4 yards or 5 yards where it is indifferent. The depth of the holes should be from 3 ft. to

5 ft., according to the quantity to be removed. Where good soil is easily obtainable, and the cost no object, the amount of excavation can be increased even further. In cases of leakage from gas-pipes and sewers carrying away chemical liquors, planting is extremely difficult, and can only be carried on by forming receptacles of brick, concrete, or other suitable material sufficiently deep to be below the escape of noxious gases, thoroughly plastering both inside and out with cement, placing sufficient drainage in the bottom, and filling up with good soil. This is expensive work, but it should nevertheless be done where it is necessary to maintain a good line of trees. Trees planted in soil impregnated with coal have been known to die in two years, even after the leakage has been stopped. We may therefore infer that soil once tainted is a very long time in again becoming fit for the maintenance of vegetation. The distance at which trees should be planted from the edge of the kerb depends, in a great measure, upon the width of the roadway; they should, however, never be planted within the roadway, as a post and rail or post and chain fence (which would in that case be necessary, to protect them from damage, setting aside cost and unsightliness) prevents crossing the roadway freely. By far the better plan is to widen the footways sufficiently to allow the carrying out of the planting within their boundaries. Where the width of the roadway does not exceed 10 ft., the best position for the trees is from 2 ft. to 2½ ft. from the edge of the kerb. Upon wider footways the distance may be increased to 6 ft., giving sufficient room for large iron gratings and tree guards. The gratings should be movable, and, if possible, not less than 4 ft. square or 4½ ft. in diameter; if circular, paving carried close to trees is most injurious; moreover, the gratings admit of mulching, applying artificial manure, watering, &c., when necessary.

#### Distances at which to Plant.

With respect to the distances apart at which trees should be placed, much will depend upon the kind of tree planted. Two of the best smoke-resisting trees at present known are the Plane and the Poplar. The best distances for these trees are from 35 ft. to 40 ft. apart. No greater error can be committed than planting too thickly, and, unless we are prepared to cut down or transplant every alternate tree, it should never be done. It often, however, happens in carrying out the thinning that the best trees are removed; while if trees be planted at the distances just mentioned, should one or more fail, it is an easy matter to replace them at once with others that would match those already planted. In those districts where the atmosphere is purer than that in the more densely populated portions of London, Chestnuts, Limes, Sycamores, Acacias, and a few other varieties may be planted with advantage. These should be planted from 25 ft. to 30 ft. apart, and where variety is a consideration, the first three mentioned may be mixed with very good effect. I would, under no consideration, associate Planes and Black Italian Poplars with them, nor would I plant Planes and Poplars together, unless it was positively understood that the Poplars would be removed before the Planes were injured. Where rapid growth and dense foliage are required, nothing is more suitable than the Black Italian Poplar. The Plane, however, although slower in growth, is far more lasting as a tree, evidence of which may be seen in many parts of London. The foliage of both remains in excellent condition until very late in autumn; and this cannot be said of many trees, as, for instance, the Lime, Chestnut, and Sycamore. In street planting, it is important that really good, stout, and straight trees be procured. It is painful to see the miserable material under the name of trees that is sometimes planted; and when the cost of guards, stakes &c., is considered, it will be seen that a few shillings more than is usually paid per tree would really be a great gain. It is surely false economy to put a guard costing £1 to a tree costing but 2s. It cannot be too widely known that, to ensure success, the planting should be done by a thoroughly practical man, as it often happens that after every preparation has been made in the best possible manner, the work is a failure, through a want of knowledge of the simplest rules of planting. The hole should in all cases be sufficiently large to allow the roots to lie in it in a natural position. The bottom of the hole should be well loosened, and all broken or otherwise damaged roots

should be cut away. Some of the finest soil should then be introduced and the tree placed upon it in the centre, slightly below where it is intended to remain, in order that it may be raised to its place when some of the best soil has been placed upon its roots. This operation allows the soil to pass freely among the roots, and disposes of them in a natural manner. A tree should never be planted deeper than it has been when growing in the nursery, or wherever it may come from. Deep planting is the cause of many trees dying, whereas the loss does not exceed 1 per cent. when the planting is carried out as has just been stated. When the tree is in its proper place the soil should be made tolerably firm by treading, but great care must be taken not to tread too near the stem, as it often occurs that the stem and some of the best roots are injured thereby. It is much better to make the soil firm round the outer part of the hole than close to the tree.

#### Staking and Tree Guards.

Planting being finished, the next thing is to stake the tree securely. For this purpose strong Ash, Oak, or deal poles are suitable; they should be straight, and long enough to go well up amongst the branches of the tree, as it is the head which requires supporting. A very common method of tying, and one which may be recommended for its simplicity, is using old sacking about 6 in. in width. This is bound round the tree for protection, and tied tightly to the stake with tarred cord; the stake is then made fast to the guard by tying in such a manner that the wind does not cause the tree to chafe against the iron or woodwork of the guard, as is too often the case. During the growing season, especially with such rapid-growing trees as the Poplar, the ties should be frequently examined, to prevent damage being done by the strings. Where labour is not plentiful, and the trees are likely to be neglected in this respect, a good plan is to use jute, matting, or any durable material in the form of a band, which is put round the tree, crossing the two ends between the tree and the stake, and tying them at the back of the stake. Thus treated, the cord cannot injure the tree, the crossing between it and the stake forming a kind of cushion, which prevents chafing. Where guards are not used, the best plan is to place three stakes, in the form of a triangle, about 2 ft. from the stem of the tree; their tops are then brought together and tied, using old sacking to protect the tree, as before. Although this method has the advantage of firmness, I very much prefer the guards for roadways, affording, as they do, greater protection to the stems. Tree guards, whether made of wood or iron, should be close enough to prevent damage being done to the trees by mischievous persons. Circular guards are handsomer than angular ones; they should be ample, and not less than 7 ft. out of the ground. I may add that the expense of planting is, of course, materially diminished where the soil is sufficiently good not to necessitate further excavation than that which is needed for the trees. In such cases the soil should be removed to a fair depth, say at least 3 ft., and in every instance good drainage must be assured. The after-management appears to be a disputed matter, authorities disagreeing as to how far pruning and thinning should go, and in what manner it should be done. Trees, however, do not, as a rule, grow with any extraordinary vigour in London, and therefore it is, perhaps, best to leave them very much to themselves, unless someone thoroughly conversant with the matter is consulted.

*Southwark Park.*

CHARLES DENNIS.

**Rhododendron Early Gem.**—This comes into bloom quite a month earlier than any other kind of Rhododendron; it is, therefore, well adapted to forcing. Small bushy plants of it, loaded with delicate white-pink blossoms, may now be seen in several of the principal nurseries near London.—S.

**Large Cork Tree in Ireland.**—In the kitchen garden at Somerstown House, Cork, the residence of Mr. Alexander, there is what is, perhaps, the largest Cork tree that exists in Great Britain or Ireland. It is probably as large as the largest to be found in the Cork woods of Rhonda. The following are the measurements which I made of it last week:—Girth at 1 ft. above the ground, 13 ft. 5 in.; girth of trunk at 7 ft. above ground, 15 ft. It branches out at the last-named height. The arms are very large, the girth of one being 7 ft. 5 in.; the spread of the branches is over 60 ft., and both trunk and branches are covered to a great depth with Cork bark.—“Gardener’s Record.”

## THE GEOGRAPHICAL DISTRIBUTION OF GARDEN PLANTS.

### The American Regions.

GENERAL REMARKS ON THE FLORA, &c.—It is still impossible to give approximate figures concerning the vegetation and climate of most parts of America, that is to say, anything so nearly approaching the truth as those quoted for South Africa and Australia. With unimportant exceptions, and excluding the temperate and frigid regions or the north, there are no works extant relating to America of the same comprehensive character as Bentham's "Flora Australiensis," &c. This refers more especially to Mexico, Central America, and the Mountains of the northern and western parts of South America, whence we derive a large and splendid array of greenhouse plants. But, although the American sub-tropical regions furnish us with many beautiful plants of different classes, these plants do not constitute so prominent a feature in the



Cantua.

greenhouse or cool conservatory as the Australian and Cape elements. There are interesting exceptions, one of the most important being the genus *Fuchsia*.

DIFFERENT CLASSES OF PLANTS.—There are three or more quite distinct classes of American greenhouse plants to be distinguished inhabiting wholly different regions, the climatal conditions of which are very diverse. To give an example or two: the Cactus tribe, denizens of a dry climate and barren soil; the epiphytcal Orchid and Bromelia tribes, found in the humid forest regions; and the annual and perennial herbaceous plants of the plains of Texas, New Mexico, California, Chili, &c. It is evident, therefore, that one reason why American plants requiring only a greenhouse temperature are not generally more conspicuous in ordinary greenhouse collections is, that they require somewhat exceptional atmospheric conditions.

EXTENT.—The sub-tropical regions of America embrace the Southern States and territories of the United States of North America; the whole of Mexico, with the exception of the less elevated coast region, which is tropical; the mountains of Central America and South America, particularly of the western side; and the plains of Chili, Uruguay, and South Brazil. A few words respecting the more important centres of American greenhouse or half-hardy plants will be more useful than a general sketch, and therefore we take them separately.

VENUS'S FLY-TRAP.—The Southern States of the North American Union do not contribute many noteworthy plants.

Immense tracts are swampy and covered with forests of ever-green trees, Oaks, Pines, &c.; where also the singular Venus's Fly-trap, *Dionæa muscipula*, is at home. Cotton, Tobacco, Rice, and Maize are extensively cultivated.

ANNUALS.—The sub-tropical plains of North America are remarkable only in plants of annual duration. They vary in their degree of hardness, though most of them require raising under glass to have them in perfection before the autumn sets. Others, under favourable conditions, are able to ripen seed and reproduce themselves without attention. In a word, they are on the borders of the superior limit of hardy, and the inferior limit of greenhouse plants. The country to the immediate north of Mexico is exceedingly rich in this class of plants. Familiar genera are:

Platystemon	Bartonia	Cosmos	Leptosiphon
Linnanthus	Ageratum	Sanvitalia	Nemophila
Zinnia	Zinnia	Tugetes	Gilia
Eriogonum	Coreopsis	Phlox	Collinsia
Gaura			

THE CACTACEÆ AND OTHER CHARACTERISTIC PLANTS.—In Mexico proper, from the upper limit of tropical vegetation almost to the upper limit of vegetation, the flora consists of plants requiring shelter in this country during the winter. It is true that some Mexican plants, as *Bouvardia triphylla*, are



Gonolox pulcher.

able to withstand our ordinary winters on the south coast; but none of the numerous Oaks and Pines, forming the highest belt of forest, are perfectly hardy in the climate of London, though some of them may be in the milder parts of the west. The Cactaceæ find their maximum development in Mexico, presenting an almost numberless variety of forms. They are particularly abundant in the almost rainless parts of northern Mexico and the contiguous countries, but they also abound in nearly all barren, rocky, or sandy places, from the sea level up to an altitude of 10,000 ft. Upwards of 700 Mexican forms have been described, but it is right to state that the difference

between some are extremely slight and trivial, and appear in some cases to be individual rather than specific. Proceeding northwards, they become gradually rarer, and find their boreal limit in about 50° N. latitude. In South America they are rare in the northern parts, but in the dry regions of Peru, and in the almost rainless tract across Chili and South Brazil, &c., they are characteristic of the flora. These Cacti vary in size from the smallest *Mammillaria*, 1 in. or 2 in. high, to the lofty columnar species of *Cereus*, one of which, *C. giganteus*, is said to attain an height of 50 ft. to 60 ft., with a proportionate thickness. Other characteristic genera of the dry regions of Mexico are *Yucca*, *Agave*, *Dasyliirion*, *Echeveria*, *Cycadææ*, &c. The forests of Mexico, the mountains of Central America, and the northern parts team with climbing plants and epiphytes of various families, many of the genera ranging from Mexico to Peru, and in some cases to Chili; *Fuchsia*, for example. The small Order *Columelliaceæ*, consisting of two species of *Columella*, is limited to the Andes of South America. Miniature Palms, *Araliaceæ* with highly-ornamental foliage, brilliantly-coloured *Vacciniææ*, numerous *Salvias*, and many other groups, comparatively unknown in our gardens, form a luxuriant vegetation unparalleled in the sub-tropical countries of the Old World.

**Climbing Plants.**

- Tropæolum majus*
- " *Lobbianum*
- " *aduncum* (canariense)
- Pæsiiflora Medusæ*
- " *ligularis*
- " *holocerica* and many other species
- Tacsonia mollissima*
- " *Van Volkemi*
- " *insignis*
- Cobæa scandens*
- Lophospermum scandens*
- Rhodochiton volubile*
- Maurandya Barclayana*
- Aristolochia foetida*
- &c.

**Orchids.**

- Acineta*      *Lycaste*
- Atrophyllum* *Macleayella*
- Barkeria*    *Odontoglossum*
- Brassia*    *Oncidium*
- Catasetum* *Sohraha*
- Cattleya*    *Sinhopea*
- Epidendrum* *Trichoptilia*
- Lælia*      &c.

Some of the foregoing genera have tropical species also; but some, like the large genus *Odontoglossum*, are confined to the cool regions.

**Miscellaneous Plants.**

- Fuchsia*
- Melocactus*
- Mammillaria*
- Cereus*
- Opuntia*
- Echeveria*
- Begonia*
- Didymopanax*
- Dahlia*
- Lobelia*
- Abelia*
- Bouvardia*
- Rondeletia*
- Habrochamnus*
- Nierembergia*
- Petunia*
- Brugmansia*
- Haltotropium*
- Calceolaria*
- Salvia*
- lantana*
- Chamæstoria*
- Tillandsia*
- Pitcairnia*
- Dasyliirion*
- Agave*
- Pourcroya*
- Yucca*
- Ceratozamia*
- Dion*

**CHILIAN PLANTS.**—The foregoing lists do not include Chilian plants, which usually belong to different genera. Some of

those which are hardy in the south-west of the kingdom are repeated here, because they require the protection of a greenhouse in the rest of the country.

Schizopetalon	Collomia	Eccremocarpus	Philesia
Portulaca	Salpiglossis	Lapageria	Jubæa
Eugenia	Schizanthus		

*The Indo-Chinese Region.*

So many of the genera, and even the species of the Himalayan Mountains and South China and Japan are identical, that, for our purpose, we may combine these countries, especially as the number of commonly cultivated plants from this part of the world is small. The most important are the Orange tribe (the precise home of which it is now impossible to determine), *Azalea indica*, &c., *Camellias*, the *China Aster*, and *Dendrobium Orchids*.

<i>Citrus</i>	<i>Rhynchospermum</i>
<i>Camellia</i>	<i>Amaranthus</i>
<i>Impatiens</i>	<i>Diaphne</i>
<i>Pæsis</i>	<i>Rhodoleia</i>
<i>Ficus</i>	<i>Rbapis</i>
<i>Callistephus</i>	<i>Dendrobium</i>
<i>Primula</i>	<i>Bambusa</i>
<i>Gardenia</i>	

**OTHER SOURCES OF GREENHOUSE PLANTS.**—

Besides the foregoing great sources of greenhouse plants, there are some few other less important ones deserving of mention. Thus, the Canary Islands furnish the curious fleshy, Cactus-like *Euphorbias*, as *E. canariensis*, and various species of *Cinearias*, from which the splendid florists' varieties have descended, and the beautiful Composite plant, *Argyranthemum frutescens*, so largely grown for the markets; and from some of the Pacific Islands many beautiful species and varieties of *Croton*, *Cordyline*, *Acalypha*, *Eranthemum*, &c. Two familiar winter-flowering plants from the Mediterranean region are *Coronilla glauca* and *Cytisus racemosus*.

*Distribution of Stove or Tropical Plants.*

**EXTENT AND CLIMATE.**

—A map of the world on a plane projection, in which the degrees of longitude are represented

of equal extent in all latitudes, gives a very imperfect and distorted idea of the actual proportions of land in the different zones, and it is difficult to realise the fact that upwards of two-fifths of the dry land is within the Tropics. Nearly half of the immense area, or about 10,000,000 square miles, is in Africa, and the other half nearly equally divided between the other tropical countries of the Old World and America. The climate of tropical countries is much more uniform than in other regions; the extreme fluctuations of diurnal and nocturnal temperature being limited to a few degrees. The mean annual temperature varies in different parts from 70° to 82.5°; so that



Cool American Region—*Odontoglossum*.

there is sufficient heat in any part to meet the wants of the most heat-loving plants. The greatest heat is in the centres of the large continents; but it is the distribution of moisture, as already pointed out, that determines the distribution of plants in hot regions. In the vast plains of Central Africa and Australia little or no rain falls, years sometimes passing without any. On a smaller scale this happens in America. In other parts the alternation of rainy and dry seasons, corresponding to the active and dormant states of plant life, occur with great regularity; though sometimes, as during the last and present years in India, this regularity is disturbed, and the rainfall for several successive seasons is insufficient to feed the growing crops; the consequence is a complete famine, during which thousands and thousands of beings perish from starvation. Something has already been said respecting the enormous rainfall of some parts of the Himalayan range, and it may be added that in most of the coast and mountainous parts within the Tropics the rainfall is large; but, contrary to what obtains in rainy districts of temperate climes, the number of rainy days is not in proportion to the quantity of water that falls. It is no uncommon occurrence in some parts of the Tropics for as much rain to fall in one day as we get in the neighbourhood of London, on an average, during a whole month. It is well to remember, also, that tropical vegetation is subject to alternate equal periods of light and darkness every day all the year round.

**NUMBER OF SPECIES.**—The total number of flowering plants and Ferns in the tropical regions is very large—perhaps as high as 40,000, or even 50,000, but possibly not more than 30,000. There is an immense amount of work to be done, both in exploring and comparing the vegetation of different districts, before we can arrive at a satisfactory conclusion. Beyond the coast regions almost nothing is known of the flora of tropical Africa, save the fact that large expanses in different parts of the interior are covered with a luxuriant vegetation. Recent explorations in Borneo have resulted in a rich booty of new species; and the number of forms in South America seems literally inexhaustible. Every successive traveller adds to the number previously collected, and years must elapse before the country can be thoroughly botanised.

**RANGE OF SPECIES, &c.**—With some notable exceptions, the plants of tropical regions do not seem to be so restricted in their area as those of the sub-tropical regions of South Africa and Australia, for example; but comparatively few, perhaps not more than one in a thousand, range all round the Tropics. It is not easy to choose examples from among our cultivated plants having this wide range; but several species of *Abutilon* and other Malvaceous plants are apparently indigenous in the most distant parts. A much larger proportion of genera are generally dispersed, and very few of the Natural Orders are restricted to one or the other of the great continents; but we shall return to this point when examining the vegetation of each of the principal continents. Many of the food and other economic plants are the same in the tropics of America and the Old World, and it is quite as impossible to say where they are indigenous as it is to indicate the native countries of many of the cultivated plants of temperate regions. The Banana and Plantain belong to this category. Rice is the staple grain used for food, but there are many kinds of Millet cultivated, as well as Maize. With respect to vegetable food, it may be asserted that where vegetation attains its greatest luxuriance there man, civilised man, at least, draws most largely upon it for his sustenance. Indeed, some races in the Tropics are almost absolute vegetarians in their diet; and in gradually colder countries the proportion of animal food, generally speaking, increases until we pass the boreal limits of cultivation, where the inhabitants are entirely carnivorous.

**NATURAL ORDERS CHARACTERISTIC OF TROPICAL CLIMATES.**—A few of the more prominent Natural Orders characteristic of tropical countries are: Anonaceæ (furnishing several delicious fruits, as the Cherimoyer (*Anona cherimolia*), Menispermaceæ (climbing plants, many of them having a very wide range of distribution; *Menispermum canadense* is a hardy out-lier; Cappariaceæ (Caper family); Guttiferæ (an arboreous family, of which the Mangosteen and Gamboe trees are

examples); Dipterocarpeæ (a small group of large and valuable timber trees); Malpighiaceæ (trees, or erect or twining shrubs, usually having showy flowers); Banisteria and Galphimia; *Sinarubææ* (trees and shrubs remarkable for the bitter principle which most of them secrete); *Quassia amara*, Meliaceæ, Sapindaceæ, several tribes and sub-orders of Leguminosæ; Melastomaceæ (*Medinilla*); Myrtaceæ (*Engenia*); Rhizophorææ (the "Mangroves" of the muddy sea-coasts); Cinchonææ (a sub-order of Rubiaceæ, including the quinine trees); Gesneraceæ, Acanthaceæ (*Apelaudra*), Lauraceæ (*Cinnamomum* trees), Myristicaceæ (*Nutmegs*), Moreæ (the large genus *Ficus*); Artocarpeæ (*Bread-fruit*); Palms, Screw Pines, epiphytic Orchids, Aroidæ (*Anthurium*), Marantaceæ (*Canna*, &c.), Zingiberaceæ (Ginger family), Bambusæ (*Tree Ferns*), &c. There are three distinct tropical regions, namely, the American, the African, and the Asiatic, including the Malaccas and tropical Australia. W. B. HEMSLEY.

## THE FLOWER GARDEN.

### ARUNDO CONSPICUA AND PAMPAS GRASS.

It is a very common, but erroneous, idea with most people that all those large luxuriant tufts of feathery plumes on lawns and borders are clumps of Pampas Grass, and but few, even garden-loving folks, are aware that many are plants of quite another genus—viz., *Arundo conspicua* (or *A. Veitchii*). This most remarkable plant possesses a great advantage over Pampas, as it throws up its bloom-spikes at least two months earlier than the latter—often in September. The glumes are very long and graceful, and the leaves are broader and less sharply serrated. During the late moist and shady autumn, when there was but little heat or sunshine, the Pampas has been so checked in its power of expansion, that in most cases the glumes of inflorescence have not been visible; being quite locked up by their closing bractæal leaves. I opened most of my specimens, beginning at the apex, and found that in all cases the lower part had quite rotted away; but when placed on a hot plate, the inflorescence expanded into beautiful silvery plumes, fit for the porch or hall as a winter ornament. The foliage of both plants has been more dense and luxuriant than usual, from the great amount of rainfall. I venture to suggest that both plants should be planted together, and then there would be a continuous show of bloom from September to January, by which time the flower-stems become decayed and beaten down by the gales and heavy rains. Another magnificent ornament to the lawn is *Bambusa Metake*, especially in a low or moist situation; the flower is inconspicuous, but the stems rise to a considerable height (8ft. to 10 ft.), and the numerous leaves are broadly lanceolate, and of a vivid green. On the margin of a river or lake, or on low swampy ground, it is invaluable, and forms a striking contrast to Pampas or Arundo. E. W. C.

*Glen Andred.*

### WINTER TREATMENT OF LILY-BULBS.

The writer, in a recent number of THE GARDEN, who seeks advice as to the proper treatment of Lily-bulbs, may not, perhaps, be aware that, if left in the ground during winter, they become much stronger and more luxuriant than when taken up; but how contrary to all the principles of Nature it is to remove them from their native home. In the Japanese woods they are never dug up, except as a final move to Europe for sale. Stevens, in the early months of the year, has consignments of 10,000 at a time for his sales in King Street. After flowering, the old stems of *L. auratum* remain a considerable time; and before they are removed, my plan is to mark with sticks, having a piece of red serge or cloth fixed to the top, all the places where the bulbs are; then I remove the old stalks, and cover with a small heap of Cocoa-nut refuse, ashes, or sawdust and leaves, by which means the severest frost is effectually kept from the bulbs. White sand will answer equally well; and if the spring shoots appear too early to escape late frosts, the heap of light material can be enlarged, and through which the tenderest growth can develop itself. Every year my plants of *L. auratum* show an increased number of blossoms. I had some last summer with from twenty to twenty-four fine flowers. I find that the Martagons and several other species do not

need the same protection, but I place most of my tender species in a sheltered spot, backed by tall Hollies, and there are always enough of drifted leaves formed about them to afford the necessary protection. The same plan holds good for Chinese Paeonias, *Dioslyra spectabilis*, &c., &c., which, by the way, always appear too soon, before protection has been previously applied.

E. W. C.

**East Lothian Stocks.**—Many sow these in August, and no doubt it is a good plan; but if they are sown early in the spring in

heat, pricked off when large enough to handle, and treated liberally until they are fit to plant out, say early in May, they will be in flower in July. In warm, porous soils early planting is desirable, as it enables them to get well established before hot weather sets in. When the seeds have been sown with care, these Stocks are well adapted for planting in masses in the flower garden, as a considerable proportion of the plants will produce double flowers; and what few single ones there are do not, as is the case with many other kinds of Stocks, run up with a loose, straggling habit, but retain the compact orderly style of growth peculiar to this variety; therefore the fact of these flowers being single is not noticed so much, as it does not bring them objectionably into prominence. They will flower beautifully all through the autumn; in fact, unless the winter be severe or very wet, there is no cessation in their flowering. Continual wet weather and a water-logged soil are more fatal to them than even frost. Last year the cold rains killed them completely.

This season the rainfall here has been less, and they are now beautiful; and the few days of rather cold, dry, frosty weather in the Christmas week seems to have added to their freshness rather than otherwise. At present this variety of Stock does not appear to have run into so many colours as other kinds, and there seems to be little difficulty in keeping the individual colours distinct. The white variety is especially pure and good.—E. HOBDAY.

**Begonia Fröbeli in New Jersey.**—This is one of the best winter-blooming Begonias ever introduced, and I think M. Fröbel must be mistaken in considering it a rival to scarlet *Pelargonium* in June. It might probably flower once at that season, from being at

rest during its season of growth; but I have found that the resting season is during summer—a fact confirmed by one of the correspondents of THE GARDEN. We obtained a quantity of larger bulbs of the first importation even before, I believe, it was sent to Europe, and it has maintained its winter blooming character each season. It commences to grow in August, and the first flower opens about the middle of September. We have a few dozen plants of it in full bloom now (Christmas Day), and another lot, not started until the end of October, are just commencing to show flower. I noticed the great variety, both as regards size and colour, of flowers mentioned in a

previous number of THE GARDEN, and there is also a great difference in the size and colour of the foliage, many of the young leaves being covered with bright crimson hairs. B. Fröbeli is one of the easiest of all the tuberous-rooted Begonias to cultivate, for I find many of them either die while at rest, or while apparently some refuse to start into growth, and the hybrid varieties are worse in this respect than the species. I have observed that a few extra strong flowers seem to be inclined to take the floral bract form mentioned by one of your correspondents in reference to some other variety. I may add that the B. Sandersi section grow beautifully all the summer planted in the open ground, and make fine plants for winter decoration if lifted before frost sets in; but of course they would not be likely to do so in the climate of England.—J. TAPLIN, *South Amboy, New Jersey, U.S.A.*

**Late Gladioli.**—It may not be generally known that Gladioli can be had in good condition much later in the season than is generally supposed. This

year I was desirous of extending their flowering period as far as possible into the autumn. Consequently, instead of finishing the planting at the usual time, viz., about the middle of April, I retained some three or four dozen bulbs, which were stored in a cool, dry place, until about the last week of May, when I had them planted in clumps in the herbaceous borders, three or four bulbs being set in each clump. I had holes made for them 1 ft. wide and about 8 in. deep, and these I filled with rich light compost from an old Cucumber bed. In this the bulbs were planted, and made luxuriant growth. They commenced to flower in the middle of October, and all through the month of November they made a brilliant display, which lasted



Geographical Distribution of Garden Plants; Mexican Cactaceae and Agave (see p. 32).

nearly up to Christmas. Such late planting might not succeed in every place, but there can be no doubt that Gladioli can be had in good condition a month or six weeks longer than they usually are, and that at a time when there is little else to brighten our flower borders.—THOS. SPELMAN, *Derry Castle*.

**Plants in Flower at Torquay.**—The following is a list of plants in flower in my garden this day (Jan. 6) in the open air, viz., Chrysanthemum (both small and large-flowered), Pinks, Virginian Stocks, Lobelia compacta, yellow Everlasting Flower, Pyrethrum, Violets, coloured and other Primroses, Gloire de Dijon Rose (buds), St. John's-wort, white Alyssum, Genista, Coronilla, Silene compacta, Cotoneaster, Berberis, Veronica, Polyanthus, Oxalis floribunda, Lantana, Hellebore, scarlet Pelargonium, Wallflowers, double Gorse, Escallonia, double Daicies, sweet-scented Narcissus, Anemone, Jasminum revolutum and nudiflorum, Clematis Jackmanni, Daphne indica, double Stocks (white and coloured). I may mention, also, that evergreen Honeysuckles have made young shoots quite 1 ft. in length, and that a climbing Devoniansis Rose on an arbour has made young wood fully 3 in. long.—LOUIS R. COOKE, *Lauriston Hall*.

## PLATE CIX.

## POLYGALA CHAMÆBUXUS PURPUREA.

Drawn by MRS. DUFFIELD.

This charming little Polygala, for the specimens from which our plate was prepared we are indebted to Messrs. Backhouse, was recently found in Alpine valleys in the South Tyrol, and, considering the numbers of English tourists who yearly visit that locality, it is surprising that it has not long ere this become common in our gardens. It is closely allied in all respects, except in colour, to Polygala chamæbuxus, a well-known and deservedly popular plant. The colour of the wings of the flowers in the variety under notice, as will be seen by the annexed figure, is a lovely bright magenta-purple, while the centre is clear yellow. It appears to have a greater tendency than P. chamæbuxus to expand a portion of its blossoms during the autumnal months; but whether or not



Geographical Distribution of Garden Plants: Tropical Region—a Mangrove Swamp (see p. 31).

## NOTES AND QUESTIONS ON THE FLOWER GARDEN.

**Dividing Anemone fulgens.**—Now when this beautiful plant has thrown up foliage is a good time to lift the roots and divide the crowns, in order to increase the stock. Some of the strongest crowns might be placed in pots to flower early, and the rest might be left to bloom in the open border. A sharp knife will sever the crowns without injuring the crowns or affecting the roots. I have recently treated a large quantity in this way, and they are now showing blooms, and those under glass will be in flower by the end of the month, or perhaps earlier. In this way a succession of rich scarlet flowers may be had for three months. This new flower will make one of the grandest of spring flowering plants when it becomes plentiful.—A. D.

**Mignonette and Bees.**—This is an universal favourite with all lovers of flowers, including our honey-bees. Linnaeus compared its perfume to Ambrosia. A native of Egypt and Northern Africa, it has long been cultivated in France and England. In France it is called by its Latin name *Reseda*, which seems singular, while with us its French name is the popular one. A bee-keeper estimates that one acre of common Mignonette will supply with nectar the bees of a hundred hives.

this will prove constant remains to be seen. It is a plant of easy culture, succeeding in any sandy, well-drained soil, and in almost any situation. It may be as well, however, to remark that it seems to do best in sandy peat, and slightly shaded from the mid-day sun. It is a most desirable addition to hardy spring flowering plants, and one which will prove alike useful in the rock-garden and ordinary flower border; and even when out of flower it is interesting, owing to its dwarf, compact habit, bright shining evergreen leaves, and olive-purplish stems. R. P.

**The Wellingtonia as an Avenue Tree.**—Many specimens of this tree, here and there, have already attained considerable size. It is perfectly hardy, but very liable to suffer from storms, and should always be planted in sheltered situations; yet it is impatient of being overhung or darkened by taller trees. A moist climate and a dry deep soil appear to







THE PURPLE ALPINE MILKWORT. (FOQUIERIA SPLENDENS.)



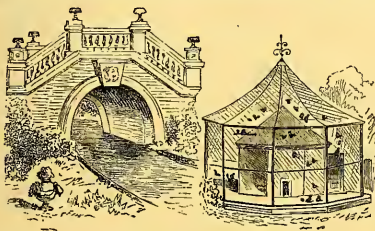
suit it best. Few trees are likely to attain great size or age, or develop their true character when grown from cuttings; nevertheless, it must be confessed that Wellingtonias grown from cuttings do not appear to differ greatly from seedling plants either in rapidity or symmetry of growth, at least up to the age at which we alone have opportunity of judging them. The timber being of little repute, it is only as a stately ornamental tree that it should be planted. It is well adapted for avenues.—S.

UGLY STRUCTURES IN GARDENS.

THE annexed are specimens of the hideous and trivial buildings with which depraved architects do their best to spoil otherwise



pretty gardens when they are allowed to work out their own wicked designs. Such abortions are, we are happy to say, much less frequent in private than in public gardens, though so few private



gardens can claim to be laid out in perfect taste. These sad examples are from the Parc Monceau.

*Terminalia elegans*.—This pretty Croton-like plant has long narrow gracefully drooping leaves of a dark bronzy-green colour, and a bright red mid rib. This plant is admirably adapted for table decoration on account of its graceful habit, and its effective appearance under gaslight.—S.

**White Hardy Flowers.**—It cannot be too widely known that white flowers can be had in every garden all the year through from hardy plants alone, but specially it is possible to have a supply of these during all the winter months, when, as a rule, tender flowers of all kinds are available only to those whose circumstances enable them to have glasshouses. During the summer months flowers of all hues are so abundant, that the special need for white ones is scarcely felt; nevertheless, both tender and hardy ones can be had in plenty. In the winter it is different. Plants that flower during its prevalence are few; but, fortunately, there are some that will flower in every garden. In the white *Anemone japonica* we have a hardy border plant that should find a place in every border. This blooms from the beginning of September until the end of November, the flowers being produced in great abundance, and most valuable are they for house decoration or for bouquets. Before these have ceased to bloom the white *Chrysanthemums* are gay with flowers; and although, as a rule, short-lived in the open air, they tide over one of the duller months of early winter. Then the Christmas *Rose* flowers, and established plants of these will carry large quantities of fine pure white blooms until the end of February. A hand-lily placed over each plant will keep the flowers clean and fresh. Then comes the *Snowdrop*, the white *Primroses*, the white *Arabis*, the double *Saxifraga*, the *Stock*, *Pink*, *Lily*, &c., until the season for tender flowers is again at hand. Those named are only a few of many, but these few will give a regular supply of white blooms with a very minimum of trouble. Of the thousands who have gardens, how few can boast that they have ever such useful hardy plants as these.—"Gardener's Chronicle."

GARDENING FOR THE WEEK.

Orchids.

*Cattleyas* and *Laelias* are often met with more indifferently grown than other Orchids, the prevailing error in their cultivation being that of giving too much water at the roots; this, even through the growing season, they cannot bear unless when, grown on blocks with little material that will absorb moisture in contact with their roots. When in good health, many of the species root freely during the winter when the top portion of the plant is at rest; but even when growth is thus observed actively at work, they should have no more moisture than will keep the bulbs and leaves from more than slightly shrivelling. For most of the species, with the exception of such kinds as *C. nuperiensis*, that requires more warmth than the generality of *Cattleyas*, a night temperature of 50° is sufficient. All the *Dendrobies* indigenous to the hill regions absolutely require through the winter a lower temperature than such as are found in lower districts; from 48° to 50° will be enough for them. Such as grow naturally near the sea level should have 5° or 6° more. The whole genus, with few exceptions, require to be kept during the winter much drier than most Orchids. In keeping with what I have already stated in reference to the influence that fire-heat exerts on the energies of plants, I look upon it that there should be no hard and fast line kept to, as regards exact temperature, either day or night during the winter season with either the East Indian or plants requiring an intermediate temperature. In place of this, when the weather is severe and it becomes necessary to keep the water in the pipes hot, a temperature lower by a few degrees will be found best. With what are usually termed cool, Orchids, the opposite excess is, however, often fallen into by keeping them too cold. Owing to what has been said about their ability to bear a low temperature, many have been induced to keep them, not only in the winter, but also during the growing season, so cool that they have gradually fallen into ill health or died right out, especially when under the low temperature they were kept too wet at the root; during the season of rest a night temperature of 45° will be low enough. T. B.

Roses.

Amongst the ever-increasing demand for cut flowers that appears to have scarcely any limit, *Roses*, as they have always, and doubtless ever will, hold the first position; neither is this to be wondered at, comprising, as they do, sufficient diversity in form, shades of colour, innumerable texture, &c., unequalled in delicacy of fragrance, combined with their handsome foliage, which collectively are not approached by any other flower. In any sort of floral arrangement it would be difficult to find a place in which some or other of the family in the varied stages of development were not suitable; *Roses* are amongst the few flowers that even in large quantities can with good effect be used alone. A vase or an ornamental basket filled exclusively with *Pelargoniums*, *Fuchsias*, *Camellias*, *Azaleas*, or even *Lilies*, always appears to want something to give diversity. Not so with *Roses*. When judiciously arranged with correct appreciation of form and colour, combined with their own foliage so far complete in themselves, that the addition of anything else becomes questionable as to being an improvement. To meet the continuous demand, it is necessary to take means somewhat different in different parts of the country; for instance, in the more favoured southern division and on the western coast, where the air is tempered by the sea, a fair selection of sorts, including a sufficient number of the Chinese varieties and their hybrids planted in open quarters, sheltered borders, and against walls, will generally afford a succession from the time they first come in in spring up to late in the year; in less favourable localities and in the northern portion of the kingdom they are nearly always cut off sooner than this. To keep up a supply through the winter and spring, at which time their flowers are the most acceptable, there is no resource but plants under glass. As is well known to every one at all acquainted with gardening matters, *Roses* have long been grown in pots; yet, excepting by those that have given more than usual attention to this method of growing them, their cultivation has often not resulted in the success attending the majority of other plants; for this reason, many are deterred from going largely into them, dependence being placed for winter flowers upon things generally looked upon as more easy to manage. Thus it often happens that a group of flowers, taking in appearance, or a bouquet artistically arranged, are met with without a single flower in them possessing any perfume, an absence that makes a nosegay a misnomer, and deprives any combination of cut flowers of its first and not least important essential. No doubt difficulties are experienced in growing *Roses* under glass, as they ought to be when associated with other plants, for the simple

reason that, to do them well, they require different treatment from anything else. Consequently, when grown with other things, either one or the other must suffer, or it entails a compromise in which neither the Roses nor the plants grown along with them can be treated in a way to give satisfactory results. At a time like the present, when probably more glass houses spring up in any given year than previous to the advent of the last quarter of a century were built in ten, we find houses almost exclusively devoted to individual families of plants. Nothing is more common now than to see a house entirely filled with Zonal Pelargoniums, wherein the glare of the various shades of red and pink—the former much predominating—is almost unbearable to look upon. Yet how much more interesting would such houses be filled with Roses through the autumn, winter, and spring, during which time, by the necessary application of fire-heat, a continuous supply of flowers could be kept up. There are two methods of growing them—one, by planting out all or the greater portion; the other, by confining all or nearly all to pots. Some difference of opinion is frequently expressed as to which method is to be preferred. Those who advocate planting out point to the stronger growth and more profuse flowering capabilities of plants treated in this way, which is no doubt correct; but, like the adoption of this system of cultivation exclusively with any plants under glass, it possesses its disadvantages, that far outweigh all that is gained by the greater profusion of flowers which the plants produce for a time, the worst of which is that, being immovable, there is no means of controlling individually their time of blooming; consequently, there is sometimes a glut, and at others a scarcity, with the ever-present difficulty with plants of any description when planted out, that those of a vigorous habit overgrow the weaker ones. Another disadvantage is, that when the roots have full play in soil of a rich border, the heads of the plants increase in size correspondingly to an extent that cannot be corrected without a too free use of the knife, the effect of which is that few can be grown in the given space, resulting in much less variety than is obtainable by pot-culture. One advantage gained by pot culture is that, with the addition of a cold pit from which to introduce fresh plants, and to remove others to, that have done blooming, a considerably greater number can be grown. Another and highly-important advantage is that, during the summer season, when the supply of Roses is not dependent upon those grown under glass, the house may be used for any other purpose; consequently, I should advise all who contemplate Rose-growing to any extent under glass to keep to pot-culture exclusively, or nearly so. Of course, there can be no objection, but rather the reverse, in a house wherein the growth of Roses is the principal object, to training a few on the roof, as, if these are judiciously managed, they can be made to drape the rafters, and take off much of the objectionable appearance arising from bare timber; but when introduced in this way, care must be taken to keep them sufficiently thin, or they will completely defeat the object in view, by excluding too much light from the plants below. As a matter of course, these roof-climbers will be best planted out. The Rose is essentially a light-loving plant; all that can be given it is not too much; therefore, the house in which Roses are grown should be so constructed as to admit every ray possible. The best Rose-houses I have seen consist of glass down to within 1 ft. of the floor-level, not too high, and without stages, the surface covered with finely-sifted ashes or some similar material, raised about 1 ft. above the paths; on this the plants are placed, or on inverted pots, according to their size.

T. BAINES.

### Stove and Greenhouse Plants.

In stoves maintain a temperature of 55° at night, and permit it to rise to 65° or 70° during the day with sun-heat. Plants of *Poinsettia pulcherrima*, the floral beauty of which is past, should be removed to a corner and kept dry. Plants of *Hexacentris* which have done flowering may be cut well back, and allowed to go to rest. Give weak manure-water to *Erantemum pulchellum*, and other soft-wooded plants coming into flower. Lay plants of *Lacstromia indica* on their sides in a cool house. Plants of *Stephanotis*, *Allamanda*, *Passiflora*, *Clerodendrons*, *Cissas*, *Echites*, and other climbers, if required to bloom early, should be pruned, and syringed daily to encourage growth. Start a few roots of *Achimenes*, *Gloxinias*, *Caladiums*, and herbaceous Gesneras for early flowering; cut down all long naked-stemmed *Dracenas*; use the tops as cuttings, and place the pots containing the stamps in moist heat, in order to promote the production of fresh shoots, which can be taken off as they attain the length of an inch or two and used as cuttings. Place in heat *Hycinths*, *Narcissus*, and *Crocuses*, so as to bring them into flower, but see that they are well supplied with roots before being excited. Keep them close to the glass, and water freely bedding plants or general greenhouse stock in pits or frames; but should anything happen to get frozen, get up the heat a few degrees above the freezing point, closely shade the plants, and then syringe them freely

with cold water overhead, keeping them as dark as possible for a few days. *Rhododendrons*, dwarf *Prunus*, *Ghent Azaleas*, &c., should, at regular intervals, be placed in heat to bring them into bloom. *Pelargoniums* must be kept rather dry, with the exception of a few plants, which should be placed in a warm house and moderately watered, in order to induce them to make young wood for propagating purposes. Keep all the finest-leaved kinds, such as tricolors and bicolors, near the glass, in light airy pits or greenhouses, and give them sufficient water to prevent them from flagging. *Verbenas*, *Ageratums*, *Salvias*, *Tropaeolums*, and similar plants should be cleared of all decaying leaves, and dry wood-ashes or sand should be scattered over the surface of the soil in the pots or boxes that contain them. If the stock is short, introduce a few plants to a warm house, and they will soon produce young wood, which may be made into cuttings. *Ageratums*, &c., may be forced and propagated in large quantities, for the cuttings root readily, and soon furnish tops and side-shoots, which may be used for a similar purpose. Sow *Lobelia* seeds in heat, and prick off the young seedlings as soon as they are fit to handle into pots, pans, or boxes containing light sandy soil. Cuttings of *Lobelias* may also be inserted as soon as convenient. Leave *Gazennias* undisturbed till March, for early-struck plants become long and weakly before they are planted out. *Calceolarias* in frames and boxes should be well ventilated in fine weather, and all decaying matter removed from amongst them. Remove the points of any shoots that are growing too rankly, and prepare cold frames for purposes of propagation next month. *Calceolarias* strike as well in cold frames if inserted in early February as they do if inserted in October; but, if the operation is delayed till March, they require a little heat to induce them to root readily. Any kinds of *Dahlias* that are scarce may be started in heat at once, and cuttings of them may be taken off and rooted as soon as they can be obtained. If a good stock of *Caladium esculentum* be required, start some of the rested plants in a brisk bottom-heat, and, when they have begun to grow, remove the top and insert it as a cutting, still retaining the old root-stocks in the plunging material. Before long the latter will push forth a number of young shoots, which may be separated and used as separate plants. Seeds of sub-tropical plants, such as *Solanums*, *Wiganacias*, *Perdianas*, *Udeas*, &c., should be sown in heat as soon as possible, in order to have good strong plants before bedding-out time; and all old plants of them wintered in pots should be plunged in bottom-heat, in order to produce young shoots to be used as cuttings. Prune back *Hibiscuses*, *Cassias*, *Fuchsias*, *Abutilons*, and similar plants, so that they may begin to grow slowly and hardly. *Acacia lophantha*, raised from seeds sown now, makes good plants before May for mixing with other plants in small beds. In conservatories use only fire-heat enough to expel damp and frost, and no more; and, when for the former, ventilate the house at the same time. Maintain a temperature of 40° at night, with the usual daily rise.

### Flower Garden.

If not already done, let all plants occupying prominent positions, or specimens which can ill be spared, or such plants as the *Arbutus* or *Strawberry tree*, *Ancubas* of various sorts, and *Daphnes*, *Desfontainia spinosa*, *Escalonia*, the *Laurus nobilis* or the *Sweet Bay*, and various kinds of *Yuccas*, and Asiatic species and varieties of the *Rhododendron*, new *Coniferous trees*, &c., be protected, should severe frost set in. The time is now nearly at hand when the propagation of bedding plants should be commenced; the preparation of materials for the formation of hotbeds, &c., should therefore be at once attended to, incorporating tree leaves with stable-yard manure by frequently turning the same. If bulbous plants are so forward as to be likely to be injured by frost, top-dress the beds with leaves, ashes, or similar materials, among which *Cocca-nut fibre* is the neatest and best. Transplant trees and shrubs, repair and make walks, construct, reduce, or otherwise renovate rockeries, relay turf, and energetically proceed with all similar alterations. Sow *Sweet Peas*. Remove dead wood from climbers on walls and on pillars, and tie up healthy shoots. In wet weather prepare stakes for *Sweet Peas*, *Dahlias*, standard *Roses*, and similar plants. Examine *Dahlia*, *Canna*, and other roots, removing from them all decaying portions, and keeping the sound roots dry and cool.

### Indoor Fruit Department.

Young Vines, kept in small pots, last summer for cutting back and growing into strong fruiting canes this season, should now receive attention. Cut them over at two eyes from the base, and apply some styptic to the wound, to prevent bleeding when growth begins. When cut and dressed, turn them out of their pots and shake most of the old soil from their roots. Have a corresponding number of 6-in. pots cleaned and drained, and into these pot the roots singly, using a free, open, pure loam, mixed

with a little horse-droppings. Give sufficient watering to damp the whole of the soil, and plunge the pots to the rim in a hotbed where a bottom-heat of 85° exists. They may be plunged as closely together as the pots will stand, and, where a suitable place cannot be obtained for their accommodation in a house, a hotbed, covered with a frame, will form a suitable place in which to keep them during the first stages of their growth. Another equally successful mode is to cut and dress the Vines, and plunge them, without disturbing the roots, in the soil in which they grew last year, retaining them in this way until they have made a young growth of 2½ ft. or 3 ft. in length, when they may be shifted into larger pots without breaking the ball. In this way they grow more freely when young, but they do not root so readily into fresh soil as those which had their roots disintegrated. Such Vines are generally grown for starting into growth, with the view of fruiting in October or November, and the earlier they are started the earlier will the fruit be ripened, and thereby have the advantage of a longer rest before the operation is again repeated. Where it is desirable to start pot Vines about the time stated, it is impossible to get them of a satisfactory kind, unless they have been cut back. Such Vines start into growth more quickly, grow faster, and ripen their wood sooner than one-year-old canes do. Where, however, it is not necessary to start them into growth before January and afterwards, one-year-old canes are as suitable as such as have been cut back, as it does not take so much trouble to attend to the growth of the former as the latter. If plunged in a dry place, a damping overhead with the syringe every afternoon softens the buds and assists them in breaking. Do not water abundantly until they are growing freely, and avoid by all means letting any cold draught pass into the early Vineries by having the door open for any length of time. During severe weather, access to such structures should be obtained through an inner door, or, where such convenience exists, from a corridor behind them. Begin forcing Figs with a night temperature of 50°, and thoroughly moisten the soil, for, if too dry, the young fruit is sure to drop. Peaches and Nectarines set their fruit much better if fire-heat and ventilation are given night and day during the time in which they are in flower, than they otherwise would do. Syringe the trees after the fruit has fairly set, and before the bloom has expanded, but not whilst they are in flower. Begin the forcing of Cherries with a night temperature of 45°, and give fresh air freely.

#### Kitchen Garden.

Look over Mushroom beds twice a week if bearing well; if not, once will suffice. Examine Seakale beds producing Kale, and, by means of the litter in the alleys and that covering the beds, maintain an equable temperature. If necessary, start two other beds by filling the alleys with fermenting manure, placing a covering of the same on the surface; or that pit hoops and mats, to be covered with litter if wanted. Succession beds leave exposed. Treat Rhubarb in a similar way, but give the roots more room. Take the litter of sashes put over Mint frames, but replace it at night. Make another hotbed, lift another lot of roots, and start them to succeed those already in bearing. For the first sowing of Peas, the driest portion of ground at command should be selected; the soil may be drawn in ridges about 8 in. high, flat at the top, and 12 in. broad; they should be made by drawing as much of the soil from the whole surface of the bed as will form these ridges at a distance of 3½ ft. apart for such varieties as William the First or Sangster's Number One. Sow on the top of the ridges, covering with about 3 in. of any sandy, open material, such as old potting soil covered with 1 in. of ashes; or if this be not at hand, the ordinary garden soil, mixed with one-third of its bulk of sifted coal-ashes, is a good substitute. As a precaution against mice, coat the Peas with red lead, or to lay under the covering of soil 1 in. of Gorse chopped fine on the top of them. It is advisable to sow thickly at this early season; a quart of early kinds will be found sufficient for a row about 18 yards in length. If the situation be at all exposed, as soon as the Peas appear above ground, take as much more soil from between the rows as will form a ridge on each side of the Peas high enough to break the force of the wind. Do not tread on the land more than can be avoided. Should the ground have been dug early in the autumn, such crops as the above may be put in without trampling upon the soil at all by simply using a few boards about 10 in. or 12 in. wide that will reach across the bed; the little extra labour involved in their use will be amply repaid in the produce. Broad Beans, where required early, should also now be sown. If the land be at all inclined to be wet, sow on the surface and cover as recommended for Peas, in which way it is evident the seed will be much better able to resist the effects of the excessive moist condition of the soil. In heavy, retentive ground, and in localities where the spring is backward, it is far preferable to defer sowing for at least a month. The earliest sorts of Potatoes should now be placed in single layers in shallow boxes, in a place where they will receive sufficient light to

cause the sprouts to grow stout and strong. The best varieties for general cultivation are the Ashleaf Kidneys. Of Round Early Frame kinds, Handsworth and Early Oxford are among the best. The boxes in which the tubers are placed should be protected from frost. A box of Mustard and Cress may be sown every week or so in the stove or forcing pit. Plant Cabbage out according to demand from the store beds of the autumn sowings, and sow a sprinkling of some small early sort in a frame or in a warm border. Rather than encumber the ground any longer with Cardoons, lift and store them in clean sand in a shed, where they will become blanched, and be always ready for use. Examine the stored roots of Carrots, and remove all decaying ones, from which cut away the decaying portion, and use the wholesome part at once. Sow a few Early Horn Carrot seeds on a slight bottom-heat. Sow Cauliflower seeds in frames in a very gentle heat. Freely expose on every favourable opportunity those wintered in frames, and tilt up the sashes at back and front during rainy weather. Sow Celery seeds in pans of light rich soil in gentle heat. In case of hard frost, protect the Celery in ridges with litter or Fern. Lift the old plantations of Horse Radish, and store the roots in sand in a pit or cellar, but every particle of the roots, small and large, should be removed from the soil. Make fresh plantations in deeply trenched ground. Sow some seeds of the white and green Paris Cos Lettuces in frames, and the Bath Cos in rows where they are to remain. Draw the lights off the frames containing late autumn sowings in favourable weather. If a frame can be spared for the purpose, sow some Tripoli or white silver-skinned Onions for salading, as they will come in six weeks sooner than the main outdoor sowings; and what are not required for this purpose can be used for transplanting purposes.

#### Diary.

**January 14.**—Putting in cuttings of Heliotropes, Lobelias, and Alternanthera. Removing Hyacinths and Tulips coming into bloom to cooler quarters. Looking over Pelargoniums, removing all dead leaves, and stopping them where required. Levelling ground, and relaying turf in pleasure grounds. Putting a little more long litter round Artichokes.

**Jan. 15.**—Sowing White Spanish, Giant Roca, and Giant White Tripoli Onions in 8-in. pots for transplanting. Emptying a four-light pit and refilling it with manure and leaves for Cucumbers. Pushing forward digging and trenching as fast as the weather will permit. Looking over the Grapes in bottles, removing any bad berries, and filling up the bottles where required. Turning over manure and leaves in Muscat-house, and adding a little fresh manure to it daily. Getting on with the pruning of pyramid Apples and Pears.

**Jan. 16.**—Planting four long rows of Early Long-pod Beans. Potting a few small Primulas. Making a hotbed for two one-light frames for cuttings. Getting in a quantity of Ash-leaf Potatoes in boxes, and covering them over with a little leaf-mould, in order to bring them forward for frames. Making a new plantation of Gooseberries and Currants, the ground being previously well manured and trenched.

**Jan. 17.**—Sowing a boxful of All the Year Round Lettuces. Putting Dahlia into gentle heat for cuttings. Covering up more Endive to blanch. Taking up all Snow's White Winter Broccoli that are fit for use, and putting them into large spare frames. Euster Benréd and Ne Plus Meuri's Pears now in fine condition. Knight's Monarch just coming in.

**Jan. 18.**—Sowing Marrow Peas in boxes for making Green Pea soup. Getting a little more Mint and Tarragon into gentle heat. Turning over gravel walks that had got very green. Carting home Pea-sticks from the grounds. Cleaning up the pleasure grounds and walks, and getting them all rolled down firmly.

**Jan. 19.**—Putting in 100 pots of Osborn's Early Forcing French Beans. Skaking and tying up Mignonette. Getting on with the pruning and nailing of Plums and Pears. Clearing off all garden refuse, and cleaning up the kitchen garden walks. Looking over Calceolarias, picking out rotten leaves, and stopping them when required. Turning over Mushroom-manure to sweeten. Looking over the fruit room, and removing all fruits that are bad. Looking over the Pines, and watering any that require it. Fruit in use for dessert—Pines, Grapes, Pears, Apples, and Nuts.

**Anoplophyton Rollisoni.**—This is a pretty little plant with bright silvery foliage, resembling that of *Tillandsia argentea*, but broader and more robust looking. The flowers are pink, and when the plant is growing on suspended blocks of wood, it has a pretty appearance, and well deserves a place in every good collection of stove plants.—S.

**Allamanda Schottii with double flowers.**—We have now in flower a fine plant of this growing in the border of a stove. The first bloom which it produced was very fine and perfectly double. Another has since made its appearance, but it does not differ from the original form. Have any of the subscribers to THE GARDEN ever seen a double Allamanda? If the shoot on which the double bloom appeared be eliminated and successfully struck, it is there any chance of the flowers produced by it retaining their double form?—E. H.

## THE CAVE MUSHROOM.\*

THE most complete account of the cave culture of Mushrooms which has been published by any cultivator on the spot well acquainted with the subject is that recently published by M. Lachambe, which we have translated for THE GARDEN, and herewith place before our readers.

The specific characteristics of the Common edible Mushroom, as cultivated in the subterranean quarries, underneath Paris, consist in its cylindrical stem or support, formed of a spongy tissue, covered with a thin skin and provided with a ring of fine filaments, which is nothing more than an expansion of the skin. The cup, supported by the stem, is in the form of a spherical cap symmetrically placed upon its support; its colour is dead white when it has been grown in the dark, but greyish-brown when it has been exposed to the light. The skin of the cap is very thin and tears off easily in strips. This is an essential character of the edible Mushroom, for in most poisonous varieties it is always strongly adherent. The inside of the cap is hollow, and furnished with a number of plates or "gills" which radiate from the centre to the circumference; these "gills" are of a light pinkish hue, which changes to light brown some time after the Mushroom has been gathered. The peculiar odour of the Mushroom is very characteristic, but does not, however, belong only to the edible Mushroom; while the pinkish colour of the gills forms one of its distinctive marks to such an extent that when this colour has once disappeared the Mushroom, although it does not become poisonous, is digested with such difficulty as to produce symptoms closely resembling those of poisoning.

The skin of the cap may vary in colour, according to the particular variety; it changes from white to yellowish grey, light brown or cream colour. These, however, are only accessory characters. It is more important, after having well determined the typical characteristics described above, to consider the relations which the size of the Mushroom bears to its culinary qualities. A good Mushroom ought to have a stem of not more than 1½ in. in length, the diameter of the stem should be half that of the cap, the circular edge of which should curve inwards in such a way as to conceal the "gills."

There are frequent anomalies in the growth of the Mushroom; for instance, we often find them with two heads growing on one stem, the second head being placed somewhat sideways. The Mushroom which is reared in the Paris quarries is always much smaller than that which grows naturally in old Melon beds, in meadows, or similar places. The earth for "soiling" is very poor, and contains but little humus; but this comparatively slow growth is advantageous from a commercial point of view, medium-sized Mushrooms selling better than very large ones in the Paris market. At Vitry, however, a specimen was grown which weighed no less than 6 lb. 2 oz.; the cap was 13 in. in diameter in its widest part, and 6 in. where it joined the stem. It was presented, in 1846, by M.M. David and Auguste Amiable to Louis Philippe, who presented them with a reward of 100 francs. It is somewhat singular that the bed which produced this wonder was otherwise most unproductive, the subsequent growings yielded nothing, its whole power having been apparently concentrated upon this single Mushroom. M. Carrière also mentions an enormous Mushroom which appeared suddenly, in October, 1872, in one of the nursery beds at the Jardiu des Plantes after a violent rain storm; the cap measured 8 in. in diameter at the widest part and 6 in. at the stem, which at 1½ in. from the soil measured 2½ in. in diameter. The weight was nearly 3½ lbs. It was of a dark grey colour, and when cooked was of excellent flavour.

To sum up, the Mushroom, as grown in the Paris quarries, is, so to speak, an artificial production. It is whiter and smaller than those grown in the open air, which is the result of the poorness of the soil and of the deficiency of light. Be this as it may, it has won its position in the market; it is liked and, so to speak, trusted, and the Mushroom grower would gain nothing if he tried to increase its size.

*Varieties.*

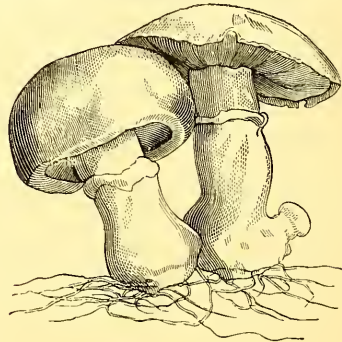
We shall only describe here those varieties which are grown for market, and which have found a place in ordinary cookery.

1st. The Small White Mushroom, whose cap is from 2 in. to 1½ in. in diameter, the cylindrical stem is 2 inches in length, and its flesh is more spongy than that of the cap. This Mushroom is greatly esteemed, as it is always eaten whole.

2nd. The Large White Mushroom.—The cap sometimes measures as much as 3½ in. in diameter without the edges of the cap ceasing to turn inwards, the stem is relatively short, measuring about an inch in diameter, and is milk-white; the skin of the cap, which is firm and fleshy, is slightly torn, and the "gills" are light pink.

3rd. The Cream-coloured Mushroom.—The stem is 2 in. in length, and ½ in. in diameter, and milky white. The cap is from 2½ in. to 2¾ in. in diameter. The skin is torn and clouded with cream-coloured spots on a white ground, and the "gills" are of a beautiful light pink.

4th. The Grey Mushroom.—This variety attains the largest proportions of any. Its cup sometimes measures 13 in. in diameter, the open portion near the stem being as much as 4½ in. across. The skin of the cup is greyish buff, and is generally torn into silky filaments. The stem is about 2 in. high, and 1½ in. in diameter; the ring is highly developed, and conceals the "gills" when the edges of the cap are open. The flesh is very firm, remarkably white, and emits a rich odour. In spite of these good qualities, this variety is less sought after than the others.



These varieties are pretty constant when grown under the same conditions, but I have seen spawn of the cream-coloured variety, when sown in a quarry, yield Mushrooms of the pure white variety, which would seem to indicate that the conditions under which they grow have a great influence on their colour. To be certain of the variety we are cultivating, we must grow successively two crops from virgin spawn, so as to leave the soil and the nature of the manure sufficient time to exercise their influence. For instance, virgin spawn grown on pigeon's guano, may, when a bed is first sown with this spawn, give a white or cream-coloured Mushroom, but the virgin spawn, grown on the same bed, having been influenced by the horse-manure, may produce a variety at the second crop.

*Mushroom Growing in the Quarries and Caves under Paris.*

THE MUSHROOM CAVES.—In the Department of the Seine there are 3,000 quarries; those which have been abandoned and which are situated close to Paris at Montrouge, Bagneux, Vaugirard, Méry, Châtillon, Vitry, Honilles, and St. Denis are used by the 250 Mushroom growers of the Department. There are several of these quarries with horizontal galleries driven into the calcareous rock from the level of the road which are mostly large enough to accommodate a good sized cart, but the majority can only be entered, like a coal-mine, by vertical shafts 100 to 125 ft. deep, down which everything has to pass. The labourers climb up and down a ladder, and the fresh manure is shovelled down the shaft from above, the waste stuff and the Mushrooms being hauled up in baskets from be-

\* Published at the Librairie Agricole, Paris.

low by means of a windlass. The inside of these quarries consists of a number of irregular corridors, varying in height from 2 ft. 6 in. to 7 ft. The manure for making the beds has often to be wheeled to a distance of nearly 350 yards from the mouth of the shaft. When there is plenty of headway, the work is comparatively easy, and the labourer rolls his load merrily along, lighted by the lamp which hangs at the head of his wheelbarrow; but, when the roof is less than a yard from the floor of the gallery, he must walk in a stooping or even in a sitting posture, pushing his heavy wheelbarrow painfully along. This part of the work is somewhat lightened by establishing relays at more or less frequent intervals. These galleries are all thoroughly ventilated, not only for the sake of the labourers, but for that of the Mushrooms, which would not thrive in confined air. If the air were not frequently changed, the breath of the labourers, the products of combustion of the lamps, and the gases given off by the slow fermentation of the manure would soon render these quarries uninhabitable. The ventilation is accomplished by means of small shafts sunk in different parts, and surmounted by a tall wooden chimney, the upper end of which is cut at an angle. The top of the chimneys should be above the level of the mouth of the principal shaft, and the bevelled edge should be turned towards the north. The number of ventilating shafts and their distance apart must be regulated by the special wants of each mine. Frequently the Mushroom-growers content themselves with using the ventilating shafts constructed by the former owners of the quarry, seeing that the construction of each shaft costs from £8 to £40, according to its depth. It sometimes happens that two quarries communicate with each other, in which case the ventilation is an easy matter; it is, however, necessary to guard against strong draughts and sudden changes of temperature, which would interfere with the well-being both of the men and the Mushrooms. For this purpose, the usual means employed for the ventilation of coal mines, such as fires and trap doors, is adopted. When the entrance to the quarry is

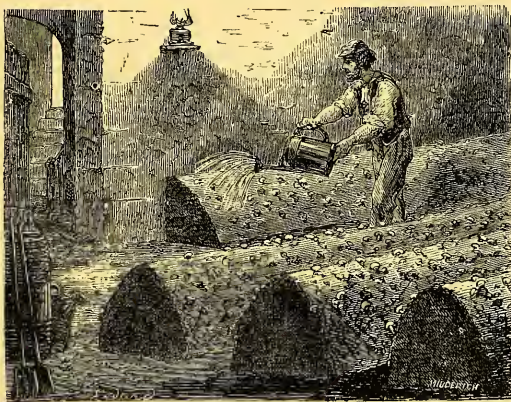
by a horizontal gallery, level with the road, the ventilation is comparatively simple and the work of cultivation much easier. The quarries are let at from £6 to £16 per month, according to the extent and height of their galleries, and the facilities for ventilating them. Not only should the ventilating currents be regular in their strength and motion, but it is advisable that they should always circulate in one direction. In fact, whenever the direction of a current changes, it is a sure sign that there has been a sudden change of temperature, either in some parts of the quarry, or on the surface outside, which is always dangerous to the Mushroom crop growing at the time. Atmospheric variations, both inside and out, must, therefore be narrowly watched, so that the temperature of the quarry may not rise or fall too far above or below the average, and that the ventilating currents should always be kept in the same direction and of the same strength. If the beds are in a cavern, the draughts should be in the direction of from north to south, and the ventilating shafts, and their dampers, should be so constructed that the quantity of air necessary for the proper growth of the Mushrooms may be obtained at will. Proper watering plays a great part in Mushroom culture; means must, therefore, be taken for obtaining a sufficient supply of water in the quarry itself. It often happens, however, that the opening of the quarry and the locality of the beds are far away from any dwelling, or well, in which the case water is conveyed

to the mouth of the shaft in large barrels, holding about 130 gallons, and mounted on wheels. By means of a sail-cloth hose, which is attached to the tap of the barrel, the water is led to the bottom of the shaft, where it is stored in large tubs or tanks. In some quarries sufficient water filters through the rock for the supply of the beds. This, of course, is a piece of good luck for the Mushroom-grower. In either case, the water is distributed by hand-watering-cans—a long and laborious process; but M. Renaudot hit on the happy notion of using a machine, consisting of a large tin or zinc barrel capable of holding 5 or 6 gallons of water, and carried on a man's shoulders like a knapsack. To the lower part is attached a tube, ending with a Rose, and provided with a tap for turning the supply on and off at will, so that the labourer can water the beds as he walks along, copiously or slightly, according to the amount of watering they require in different spots. It is true that this method is not applicable in caves where the height of the roof of the galleries is less than that of a man; but in other caves, such as those of M. Renaudot, at Méry, it is of great service, both to master and man. It may be mentioned incidentally that the galleries of M. Renaudot's magnificent quarries are no less than  $1\frac{1}{2}$  miles long, and 13 ft. high from floor to roof. The principal entrance of the quarries is in Méry itself, close to the station of the railway which conveys the manure from Paris.

When visiting M. Renaudot's quarries, in May, 1873, we had the opportunity of witnessing the influence of keeping the air at a proper temperature. The outside temperature was  $53\frac{1}{2}$ ° F. the inside nearly 5° lower. The beds, which were protected from the draught by the windings of the galleries, were covered with Mushrooms ready for gathering; whilst on those which were in the full current, the Mushrooms had hardly begun to make their appearance, even on those beds which had been made a day earlier.

THE QUALITY OF THE MANURE.—Success in Mushroom-growing depends very much on the quality of the manure employed; the choice, therefore, of the sources from

which the supply is obtained is an important point for the Mushroom-grower. Observation and experience have shown that the best manure for this purpose is that from entire horses abundantly fed, on dry, good, heating food, such as those of the Paris Omnibus Company, and the principal carters and carriers who always use horses of this description. The droppings from such horses are always dry and rich in nitrogenous matter, ammonia, and the phosphates, and ferment easily. After this kind of manure we may rank those of the mule, the ass, the sheep, and the rabbit; but the same rule applies in these instances as in the other—the harder the animals work and the more heating is their diet, the more valuable is their manure. The manure of milch cows and animals fed on green food is worthless, from being too watery. That from riding or carriage horses, which are only worked now and then, is but poor in quality, in spite of their good feeding, in consequence of its being mixed with too much straw, besides which it is not sufficiently impregnated with urine, owing to the necessity for keeping luxurious stables in a constant state of cleanliness. The price of manure, inside Paris, is as follows: Omnibus horses, 18 centimes, about  $1\frac{1}{4}$ d. per head per day; cab and fly horses, 14 centimes, about  $1\frac{1}{4}$ d. per day; tradesmen's cart-horses, 12 to 14 centimes, from  $1\frac{1}{4}$ d. to  $1\frac{3}{4}$ d. It is not only necessary that the Mushroom-grower should have the best quality of manure, but he must lay his plans so well that he



Mushroom Beds in Caves.

can always have sufficient material at his command to make a new bed within two or three days. In order to do this, he must apply to M. Chedeville, the contractor for nearly all the manure in Paris, who will speedily enable him to procure the proper quality and quantity within the time specified. Too much care cannot be expended in procuring the right kind of manure, as negligence and false economy are simply productive of loss by leading to poor crops, and a deficient supply of spawn. Good manure is, undoubtedly, the dearest material which the Mushroom-grower has to purchase, but the whole of it is not lost. As soon as a bed will yield no more Mushrooms, it is, so to speak, dismantled, and the exhausted manure is sent up the shaft to the top, where it is easily sold at from 4s. 2d. to 5s. 10d. per cubic meter, about 33 cubic feet. It must, however, be remembered, that not more than a cubic meter, or foot, of spent manure is produced from 2 to 2½ cubic meters or feet of the fresh material. In any case, it is much sought after by farmers and gardeners. The latter use it in large quantities for flower beds and pricked out vegetables. In the quarries, where carts can enter, the spent manure can easily be sold at from 5d. to 6d. per meter run, as it lies on the beds. It has been supposed that this spent material could be used for Mushroom-growing, but it is an error. Here and there, possibly, a few white filaments may be seen, which are easily mistaken for Mushroom-spawn, but they are nothing but inert, sterile particles of spent mycelium which are generally mouldy. It would simply be to court a failure to attempt to grow Mushrooms with exhausted material.

**THE FORMATION OF THE MANURE HEAP.**—Making up the manure heap which is to supply the beds with material at the proper stage of fermentation, is an important operation, which requires great care and experience. In fact, it is only by long habit and acute observation that the Mushroom-grower can recognise the exact point of fermentation which the manure must reach before it is in the right condition for making up into beds. To make a manure heap, a spot near the mouth of the shaft must be chosen. It should be dry, flat, and clean, and as near the water supply as possible. The necessary quantity of manure is first heaped up roughly on the particular spot chosen, and allowed to remain untouched for several days, after which the heap must be properly formed. The heap is a mass of manure to which a more or less elongated cubical form has been given, according to the quantity of manure at the Mushroom-grower's disposal, or the length of the beds to be formed. A cubic metre of heaped manure, properly prepared, gives a length of ten metres run, when placed on the beds, and a wheelbarrow load will give one metre. The heap is begun nearest the spot where the last load of manure has been shot, and is confined within the proper bounds by a border of boards, the length of which depend on the size of the beds for which the manure is intended. The smallest heaps in the Paris quarries are ½ yards long by ¼ yards across and ¾ yard high. The position of the border being marked, the manure is heaped up, shaking each fork full of stuff so as to mix the droppings and the straw as thoroughly as possible, taking care that the damp and dry portions should be well amalgamated. All foreign bodies, too, such as wood, iron, &c., should be scrupulously picked out and rejected. When the heap is begun, it ought to be made a meter high, at first, with an incline of about 30 to 35 in 100. It must then be frequently forked, mixing the parts together, and watering the heap whenever it becomes too dry. The heap, once formed, the incline is kept on the side which has last been finished, the sides being properly dressed with the fork, all the scraps being gathered up and added to the heap. The last operation is to tread down the heap until it is reduced to the height of ¾ yard. The heap should now remain undisturbed for six or seven days.

**FIRST TURNING OVER.**—At the end of six or seven days, the heap must be turned over, beginning at the side where the gauge has been left open. The border is re-marked, and the manure is well turned over and shaken with care, for the space of a meter, the whole being equally watered, so that every portion should be evenly damp. The outer and drier parts of the heap should be carefully turned into the middle. The operation is continued till the whole of the bed has been turned over. It is then trimmed up and made into the proper shape,

beaten down, and allowed to remain undisturbed for another six or seven days. The amount of water necessary is indicated by the comparative dryness or dampness which the bed exhibits during the first turning over.

**SECOND TURNING OVER.**—Six or seven days after the first turning over, that is to say the twelfth or fourteenth day after beginning the work, the bed will be found to be lower by some 4 inches than it was at first. The outer surface is brown, and a strong fermentation is still going on. The manure has, however lost its primitive odour. The interior of the heap, too, has changed; it is of a dark brown colour, and a number of whitish particles distributed through it, showing where the fermentation has been strongest. The second turning over is performed in the same way as the first, taking care to water each layer when it reaches a thickness of a foot. It is then beaten down to about a yard in height, trimmed and watered. In about three days it will have fallen to a height of about ¾ of a yard. The fifteenth day after the heap has been commenced, it is broken up and the contents carried away to the spot where the Mushroom beds are made. Such are the general rules for the formation and turning over of the manure heap, but it is often necessary to introduce modifications into them. For instance, it often happens that, during a rainy winter, or a thaw, fermentation goes on with great irregularity, so that it is necessary to remove the manure to the bottom of the shaft and finish the work at the foot of the ladder. By adopting this precaution, the losses sustained during the very rainy winter of 1872-73 might have been avoided. In that year most of the manure heaps were obliged to be sold for spent manure, the fermentation having proceeded with great irregularity. We must also take into consideration the quality of the manure we are using; for instance, that which contains a large proportion of urine mixed with much rotted matter, ferments most rapidly, consequently the operation of turning over must be regulated accordingly. The turning over, to be effective, must be performed at the proper time and not too often. For instance, the manure supplied to the Mushroom-growers of Méry is loaded into a cart at the stables, carted to the railway station, where it is transferred to a truck. When it reaches Méry, it is once more unloaded into a cart, which conveys it to the spot where the first heap is made. It is, therefore, turned over twice more in transit than the manure which is carted direct to the quarries near Paris. These extra turnings over do not increase the value of the manure, inasmuch as it becomes more broken up and preserves its heat during a much shorter space of time. The prepared manure, when made into a bed, ought to be unctuous to the touch, without leaving any trace of dampness on the fingers, it ought, in fact to show a certain amount of elasticity, without being too moist. Its odour should differ from that of fresh manure, its colour should be brownish yellow, with a certain mixture of whitish particles. The temperature should be about ⅓ of that of the first fermentation. French Mushroom growers use a term signifying "knocking down the manure heap," "*abatire le plancher*" for building it up. The expression is, of course, incorrect, and would tend to mislead any one not acquainted with its real meaning. When the contents of the manure heap is to be carried to the spot where the bed is to be made, in wheelbarrows, if the heap is near the shaft, but by carts if it is far away. The manure deposited either at the bottom of the shaft or at the entrance of the galleries, may remain there for three or four days and beaten down if it becomes too dry. It is then carried for a distance, which sometimes reaches nearly 700 yards, and is thrown out in small heaps, at regular intervals, forming what are called "chains." These "chains" once formed, the formation of the bed is proceeded with.

#### *Formation of the Mushroom-beds in the Quarries.*

We left the prepared manure deposited in the galleries in the form of chains. These chains are parallel with the walls of the galleries, and form as many longitudinal rows as there are beds to be formed. The number of beds in each gallery is variable, depending, first of all, on the width of the cavern, and, secondly, on the judgment of the labourers. Generally the beds measure from 17 in. to 20 in. wide at their base, and are separated from each other by a path of about 1 ft. wide, or even less. These data are sufficient to enable one to calculate the

number of beds that can be made in a gallery of a given width. The beds are built up by the hand, and not with the fork; first, because working with the fork would be impossible in low galleries, and secondly, because the labourer has better control over his work when using his hands and fingers. He begins with one of the beds which are against the sides of the gallery, the surface of which slopes gently downwards from the wall. The labourer takes the manure up by double handfuls, shakes it up well, and sprinkles it over the base of the bed for a width of from 18 in. to 20 in. He makes the portion next the wall 4 in. higher than the outer edge, and, still adding fresh manure, he presses it with his hands and knees, so as to make it into an even mass. He continues thus until the bed is sufficiently high, always taking care that it shall incline downwards from the wall, and finishing off by rounding the surface gently. The inclination of the bed should be such, that the earth to be afterwards added for "soiling" shall not slide off. He next forms the beds in the centre, but with a rounded double incline like the top of a trunk, taking care to leave sufficient space between each, and finishing up with a bed with a single incline against the opposite wall. The centre beds are made in the same way as the other, with the exception that they are rounded off, as described above, in such a way that they are nearly flat on the top for a width of about 6 in. or 7 in. The height of the beds from the ground is from 18 in. to 20 in., and is generally equal to their base. As the bed approaches completion it is divested of all loose straws and pieces with the hand, using the fingers like the teeth of a rake. The sides being made trim and ship-shape, the dressings are gathered up from the floor and sprinkled on the bed, so that there is no litter or waste. As each layer is placed on the bed it is beaten down firmly with the palm of the hand, so as to obtain an even, gently sloping surface throughout. Some labourers trim the beds as they make them, layer by layer, but it matters little which plan is adopted as regards the final result, as it is never necessary to retrace one's steps—no small advantage where the paths are very narrow. The beds are made by piece-work, the men being paid at the rate of 15 centimes (1½d.) per fathom of 6 ft. A good workman can make forty fathoms a day, making his wages 6 francs (4s. 1½d.) per day. The cost of the beds per fathom in the Paris quarries for labour and material is 2 francs (1s. 8d.). At Méry, owing to the greater cost of the material and to its having to be brought a long distance, the cost per fathom is increased to 5 francs (4s.).

M. Renaudot, of Méry, invented a method of moulding the beds in the form of gigantic bricks. The manure for this purpose was shovelled into moulds of sheet iron of the proper shape, open at the top like square cake tins, and well pressed down. The mould with the "brick" of compressed manure was then carried to the spot by two men and turned over, the operation being repeated until the necessary length of bricks, laid end to end, was obtained. The great difficulty which M. Renaudot encountered was that, no matter how carefully the operation was executed, there were always gaps between each "brick," so that the bed was divided into a number of sections instead of being continuous. It may be asked why the "bricks" could not have been made longer, but this would have caused too great an increase of labour; besides which it was discovered in practice that when the bricks exceeded a certain size, fermentation set in with such vigour, that the manure heated, giving off gaseous vapours, which, condensing on the roof of the gallery, fell on the growing Mushrooms, and spoiled them. The bed, too, could not be sown while it was hot; the labourer, therefore, had to wait until it became cool again before completing his work. This method had, therefore, to be abandoned also.

#### *Mushroom Bed-making in ordinary Cellars.*

When Mushrooms are grown in cellars, the same course of proceeding is adopted as when they are grown in quarries. Certain modifications, however, are necessary, according to the locality and the scale on which they are grown. As the scale on which they can be grown in cellars is necessarily a small one, it will be as well to calculate the length of beds we must have in order to provide for a continuous supply, basing our figures on those arrived at by wholesale growers. Taking

one-twelfth of this length for each month's work, we are almost certain to be able to keep up a continuous supply. The arrangement of the beds in the cellar will naturally depend on the space at our command. Whether large or small, however, we must adopt exactly the same method of culture as if the beds were a quarter of a mile long. We must also economise space as much as possible. Given the cellar, one may make Mushroom beds in it almost anywhere—on shelves against the wall, under the staircase, or even on the staircase, if the width of the steps will admit of it. The beds may also be higher and wider than those in the quarries; but in this case they require a larger amount of watching, as the fermentation is apt to become uncontrollable. All abnormal heating must be avoided now, especially when the manure has not been sufficiently worked. This elevation of temperature, owing to the fermentation becoming too strong, renders it necessary to delay sowing the spawn. The best remedy for such conduct is to allow the bed time to regain its proper temperature; but where this is not practicable, we may bring down the heat by making a number of holes in the bed. Every yard or so a stick as thick as a broom-handle is plunged into the heated mass, and worked round so as to produce a funnel-shaped hole. The vapours and gases generated in the interior escape by these outlets, which may be filled up when the manure has become cool. The manure may also be turned over with a fork in such a way as to form gaps between the layers, which should be filled up before spawn sowing is begun. For cellar work we must highly recommend the beds to be made in the form of conical mounds. The great advantages of this mode of forming the beds is, that they take up a comparatively small amount of space; they can be dismantled and renewed with greater facility than the beds already described; and as only small quantities of manure are used, the danger of heating is almost entirely avoided. Conical mounds of properly prepared manure may be formed almost in any cellar. Each conical ridge measures about 2 ft. high and 2 ft. in thickness. We commence by carefully laying down a compact mass of manure which is to form the base of the bed. It is next heightened gradually with more manure, taking care to press it down firmly, so that the sides may keep solid when they are transformed into a rounded angle of 90°. The conical ridge being well trimmed and dressed, it is beaten down with a narrow wooden shovel and left for about eight days, so that it may have time to get rid of its heat. After having tested in the way already indicated the fitness of the bed to receive the spawn, the sowing is commenced in three rows. The first row should be about 6 in. above the ground, each row being the same distance from the other. The bits of spawn should be placed at a distance of about 8 in. from each other in quincunx. If the temperature of the conical ridge is at the proper point, the operation of beating down may be proceeded with at once. A fortnight after the beds may be "soiled." Their fitness for this operation may be seen by their outside surface being covered with white filaments radiating in all directions, which give the beds a bluish appearance. The "soiling" may be done either with the hand or the shovel, and nothing more remains to be done but to water the soil with a fine-roset can wherever it shows signs of becoming too dry. The slope of the ridges being rather steep, care must be taken not to wash away the soil when watering the beds. At the end of about forty days the Mushrooms will begin to appear, and the beds ought to afford a daily supply for three months, if care be taken to fill up each hole with soil immediately after the Mushrooms are gathered. Here I must make a practical observation. Various writers on Mushroom culture have said that success can only be obtained by operating on large quantities of material, extending over a length of 12 or 14 yards; but I must protest against this assertion, for my experience has proved to me that with about a cubic metre of manure, or less, we may arrive at an excellent result, success depending much more on the quality of the manure we use rather than on the quantity, to say nothing of the care which we have bestowed on its preparation. The best cellars for Mushroom culture are those which have a great depth, a high roof, and are ventilated in such a manner that a draught of air can easily be set up. If the cellar is shallow and very dry, the floor must be watered for several days before the beds are begun. The air-holes should be shut during the day

and opened at night. There is a separate system to be pursued with each variety of cellar, which can be learned by experience by the aid of the principles laid down above. Beyond these little details, all the operations are the same as in carrying out Mushroom culture on a large scale.

#### *Preparation of Mushroom Spawn.*

The spawn is the seed of the Mushroom, and is called by botanists the mycelium. It shows itself in the form of a number of white threads, crossing and recrossing each other in all directions, and adhering to the scraps of straw contained in the manure, with which they form a kind of felted mass, which, when dry, forms the friable masses known to French Mushroom-growers as gallettes, or cakes. These cakes of spawn have the property of remaining fertile for many years, if they are kept in a dry, airy, well-ventilated place. Mushroom spawn is found naturally on the under sides of old water beds and manure heaps which have remained undisturbed for a lengthened period. This kind of natural spawn is not, however, always the best for sowing Mushroom beds. Sowings are often made with spawn taken from old beds, or from a bed which has ceased to yield Mushrooms, but by so doing we enlist ill-luck on our side. The best spawn to use is what is called "virgin spawn," that is to say, which has not yet produced Mushroom s. In this country this kind of spawn may be procured of any respectable nurseryman under the name of "French spawn." It differs from English spawn by being in the form of small tufty cakes, instead of in compact blocks. Large Mushroom growers, however, always provide themselves with their own spawn by taking it from a bed which is just about to produce its crop, or which has already produced a few small Mushrooms. By adopting this plan they avoid all expense of transport, besides the still heavier expense of paying for what they can produce themselves. By sacrificing an insignificant portion of the last crop, they obtain sufficient material for beginning again at almost no expense. It is true that by thus "breeding in and in," as it were, the Mushrooms show a tendency to deteriorate in quality after a time; new spawn must therefore be obtained as soon as any signs of deterioration begin to manifest themselves. It is by attentively watching natural facts that we gain our knowledge of natural processes, and apply them to our own use and profit. If we examine this peculiar method of Mushroom growth, whether on the surface of the soil or under the ground, we shall see that it is entirely due to the decomposition of organic matters placed under certain conditions of temperature, humidity, and light. By complying as much as possible with the same conditions, we shall succeed in producing as we like, when we like, and as long as we like, a regular supply of this mycelium, which, in its natural state, seems to be produced by accident and caprice.

(To be continued.)

Mr. RICHARD DEAN'S Catalogue of Potatoes will be found of service to those who take an interest in this esculent. It contains minute descriptions of sixty-six of the best varieties.

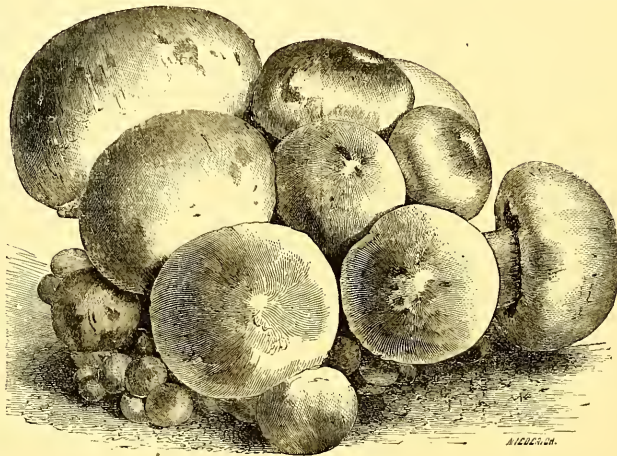
## PLATE CX.

### NEW SWEET PEA—BUTTERFLY.

Drawn by H. NOEL HUMPHREYS.

THIS beautiful variety was raised in Messrs. Sutton & Son's seed grounds at Reading. Its flowers, as will be seen, have a pure white ground, delicately laced with lavender-blue, tints which contrast admirably with the scarlet, black, rose, white, and other colours to be found in Sweet Peas already in cultivation. It therefore supplies a want hitherto existing in this favourite class of hardy, sweet-scented, climbing annuals. It possesses the same robust habit as the older varieties, and has proved itself to be perfectly true to colour and character. The annexed plate scarcely does justice to this Pea, owing to the difficulty experienced in giving to the flowers that softness and delicacy which they naturally possess. Vigorous plants of it sent us by Messrs. Sutton were covered with flowers, of which the plate gives only a faint idea, the flower being one consisting of neutral tints very difficult to render in colour printing. From having seen the plant, however, on several occasions, we may say that it is an annual of exceptional merit, and worthy of a place in every garden. It would deserve also what Sweet Peas

so often do not get—a good culture and a good position.



A Rock of Mushrooms.

**Pelargoniums.**—At whatever season of the year we visit Covent Garden we never fail to find the flowers of Zonal Pelargoniums playing an important part in bouquets and other floral devices, but especially during the dull months of winter are they to be found, and at this time of year their bright, lively colours are much more appreciated than when they are so plentiful in every garden and park in summer. Now that we have such a rich store of beautiful varieties of Pelargoniums in our gardens, much more might be done by private growers in the way of obtaining a good display in winter, as well as in providing a good supply of cut flowers. Growers for market manage their plants in this way:—In June cuttings are struck in the open air, and, when well rooted, they are potted in 5-in. or 6-in. pots, and fully exposed to the sun and air. A sandy loam, without any addition of manure of any kind, is used in potting, in order to induce the plants to make short-jointed wood, which will ripen thoroughly. For the promotion of the same object, no more water is given them at the roots than is absolutely necessary to keep them in health. The shoots are stopped twice before the middle of August. In September, or when the weather becomes unfavourable, the plants are placed on inverted flower-pots in light, dry, airy houses. As the blooms begin to push, a little guano-water is given once a week, and a little heat is applied, in order to keep the air of the house dry. The flowers are gathered as they expand until spring, when the plants are cut down, pushed again into growth, and when in flower are sold for window decoration. Where in private establishments large beds of Pelargoniums are required during the summer, plants to furnish them might be grown in this way; and instead of the houses being filled with store-pots containing small plants, a good display of bloom and an abundance of cut flowers might be secured; and in summer, when bedded out, each plant thus grown would be quite equal to three or four of the ordinary bedding plants, and if planted rather thickly an immediate effect would be the result; and, moreover, these plants would flower much more profusely than young ones.—C. S.

## AURICULAS—OLD AND NEW.

It must not be supposed that the estimate of a good Auricula held by modern florists is one belonging to the times in which we live. As far back as 1733, there was published the second edition of a floricultural work bearing on the cultivation of the Auricula, from which circumstance we may fairly conclude that the beauties of Auriculas were appreciated, and their culture carried on, to a considerable extent, at a much earlier period even than that just named. Be this as it may, it is evident that the taste for a symmetrical flower existed at that time, and that the florists of that day equally and as spiritedly took advantage of every improvement as we do now. This the following character of a good Auricula required at that time clearly shows:—"1. The stem of the flower should clear the foliage, and be sufficiently strong to support the bloom." It may be remarked that at the National Auricula Show, held in Manchester in the spring, supports are not allowed to the stems of flowers. It is held that it is a sign of good cultivation when the flower-stem can support the truss of bloom in an erect state, while weakly and ill-grown plants with high stems have a fictitious value given to them when supported by a stick. In the south, i.e., about London, Auriculas are shown so supported, and it is held that the plants have a neater and more attractive appearance in consequence.

The second article of the code of properties of the old florists was as follows:—"2. The foot-stalk of the flowers should be short, that the truss may be regular and dense. 3. The pipe or neck of each flower should be short and the flower large and flat, being no wise inclinable to cup. 4. That the flowers are very bright and well proportioned. 5. That the eye of the flower be round, and the paste of a good white, and that the tube or neck be not too wide." And as a kind of foot note to this table of properties, there is appended this remark:—"All flowers of this kind that want any of the above-mentioned properties are now rejected by all good florists, for as the varieties every year increase from seeds, so the bad ones are turned out to make room for their betters." It thus appears that the florists of 1733 were familiar with the properties of a good Auricula, and that they have handed down to us rules to which we cannot object at the present day, so far as they go. There are, however, little omissions; the necessary properties of the tube are not mentioned; it is important to the finish of a first-rate flower that the tube be circular and of a clear yellow colour; that the thrum or male parts be prominent and sufficiently bold; that the tube does not appear naked. And for an Auricula pip to be correct, the size of the tube should regulate the three other portions of the flower, viz., the paste, ground colour, and edging, for whatever the diameter of the tube, half that should be the diameter of the paste surrounding it; also of that of the ground or body colour; and also of the green, grey, or white that may form the outer edging. Let anyone apply this rule to a finely-finished pip of a first-class Auricula, and, apart from all geometrical rules or other considerations, he will find that where these parts are most evenly balanced there will be the greatest attractiveness from a floral point of view.

A caution is necessary to raisers of seedling Auriculas. Do not be in too great a hurry to decide on the merits of a seedling flower. At least three years' probation should be allowed before a flower is condemned as worthless. The age and strength of a plant has much to do with its floral qualities. In 1875 I flowered a number of seedling Auriculas obtained from an excellent parentage. They were generally of an indifferent character; but a certain number were retained for a second year's trial, while all the pin-eyed and irregularly-marked flowers were thrown aside. In 1876 the improvement in some of the flowers was remarkable, and especially in the case of the selfs; two in particular were highly promising, one a dark, the other a violet self coming near to Charles Perry. I have about 100 strong plants to bloom for the third year, and I am hopeful that others will prove to be of a high order of merit. D.

## OBITUARY.

We have to record the death of Mr. Thomas Moffatt, an event which took place on the 4th inst., in his 91st year. He was gardener to the late Viscount Sydney, at Fognall, for a period of twenty years, up to the time of his lordship's death. He then went to Clumber, where he served three Dukes of Newcastle in succession—the father, the son, and the grandson—and he was much esteemed by all the members of that family, being a man of large and varied information, and eminent as a thoroughly practical gardener. He was the oldest Fellow of the Royal Horticultural Society, and was appointed by that Society to form one of a committee of three to select a site for the new garden then about to be formed, when Chiswick was selected as the most eligible out of several sites inspected, and the recommendation of the committee was adopted. He was a man of high principles, strict integrity, and faithful in his friendships.

## THE KITCHEN GARDEN.

## FORCING ASPARAGUS.

In the case of Asparagus, as in that of other vegetables that are forced, the season at which supplies are most urgently needed regulates the time at which forcing should be commenced; and in all cases the best plan is to defer supplying any kind of forced produce until the resources of the place will warrant the supply being kept up continuously, for blanks, as regards supply, are worse than late commencements. For crops to be fit for cutting in November, we usually cut the decaying tops off the plants earlier in the season than from those roots intended to furnish later Asparagus, as I find that if cut down before the growth is quite completed, the crowns at the base start at once, and, when lifted for forcing, have made some progress, and only need a slightly elevated temperature to produce satisfactory growth. But, unless in exceptional cases, Christmas is a good date for commencing the regular Asparagus season; and here let me remark that I find young plants three or four years old, that have been grown specially for the purpose and never cut from, much superior, as regards both quality and quantity of produce, to old plants that have been cut from for years. Our supply is kept up in the ordinary way, by sowing a good-sized bed every year. The following spring, as soon as growth commences, the plants are carefully lifted and replanted on rich, deeply-cultivated land, covering the crowns with sharp sand or gritty soil. Under careful culture, they make fine crowns the third season; and by planting annually a piece of land equal to the quantity forced, a regular supply is maintained, and the permanent beds are left undisturbed; and, if not immediately cut from during the ordinary growing season, well-prepared beds should continue prolific at least fifteen or twenty years. For early crops under glass we lift sufficient roots to fill an ordinary two-light Cucumber-frame, which is set on a hollow bottom of stout planks resting on temporary piers of bricks. Under this some fermenting stable manure is placed and enclosed with litter, whereby a very gentle heat is raised. The frame is kept close, and the glass covered during severe weather; a temperature of from 60° to 65° is amply sufficient at any time both for roots and top growth. On fine days a little air is admitted as the produce appears above ground. One good soaking of tepid water, as soon as the roots are put in to settle the soil firmly amongst them, will generally be found to keep the soil moist enough until the crop is gathered. As soon as the produce of one frame appears above ground, a successional one should be prepared. For later supplies, that is, from the end of February until the open-air produce is fit for cutting, we get fine heads from beds in brick pigeon-hole compartments, to which movable span roofs are fitted with 4-ft. lights. The side trenches, which are 2 ft. wide and 3 ft. deep, are filled with leaves and stable manure a month before the produce is required. In other respects the treatment is the same as that for lifted roots, and the result is, produce finer and better in quality than the earliest growth in the open air, that usually has to contend with sudden fluctuations of temperature, frosty nights following bright days, rendering Asparagus hard and stringy; whereas growth made under glass is equal to that produced under the most favourable climate. The latest crop under glass needs scarcely any assistance in the way of bottom-heat, as the accumulated sun-heat under the glass roof warms the soil sufficiently to advance the growth at least a fortnight or three weeks before that in ordinary open-air beds. Of course, the cutting from such beds should be discontinued as soon as possible, in order to give a lengthened season of growth, so as to restore the energies of the plants. As soon as the cutting is discontinued, we remove the temporary roof, and use it as a shelter for late tender bedding plants, or for similar purposes, and give the beds a good soaking of liquid manure and salt, renewing the application during any periods of drought that may ensue during the growing season. It is also desirable in exposed situations to apply some supports to the tops, in order to prevent strong winds from breaking them off at the base. During the last few years we have used Conover's Colossal Asparagus, which certainly appears to possess finer heads in its earlier stages than the old variety; but whether it will ulti-

mately revert to the original form or not, it is, perhaps, premature to decide.

Henham.

JAMES GROOM.

#### WHERE TO PLANT THE POTATO CROP.

It becomes plainer year after year that if we are to contend, with any degree of success, against the Potato disease, it must be by altering our system of culture. When the Royal Agricultural Society tabulated the results of their experiments, about a couple of years back, they had little or nothing new to record. All varieties of the Potato were found to be liable to the disease, as had been proved before, though some sorts escaped more than others; as, for example, Paterson's Victoria and a few others. But the one thing which the various experiments tended to confirm, as was anticipated, was, that the disease was worst where the soil was wet or retentive, or where the rainfall was heaviest. Possibly, also, it was found to be bad in the richest soils. One of the most affected districts in England during the past season was that around Goole, in south Yorkshire, a district celebrated for its rich and deep "waup" land, and for its vegetable productions generally, and Potatoes in particular. It is a great Potato-growing district, and in good seasons the crops produced are enormous, and pay well, £30, or more, an acre being a common price for crops as they stand in the field; but last year £5 an acre was about the highest price that could be realised after the disease had set in in September. Later we were informed that even that amount would not have been risked upon crops in some places, so utter was the destruction by the disease. It was stated in the "Agricultural Gazette" at the time that probably something like "a million of money had disappeared" in about ten days in the district around Goole alone. Now this is a very important fact as affecting the culture of the Potato. A district, noted for its rich, deep, level land, produces the very finest and heaviest crops in dry seasons, but has them completely destroyed in those years that the disease is bad. And quite as remarkable as the extent and severity of the disease was the speed with which it did its work. In this district, some thirty miles from Goole, the crops were bad enough, but in plenty of instances half a crop or thereabouts was saved; yet the climatal conditions and the rainfall were much the same, the only difference being that the soil is thinner and poorer and better drained, the district being hilly or undulating, and not so well cultivated. The crops were neither so bad, nor so speedily affected; but of course they varied, being worst in the valleys and the heavy soils. But none of the soil hereabout is the best for Potatoes, being, on the whole, clayey, and nowhere light and sandy. About Goole, however, the chief characteristic of the soil is its depth and richness; the pastures are exceedingly luxuriant, and all crops are heavy and good; and, of course, the cultivation is usually of a high order. The same results, however, as regards the Potato crop are observable within much narrower limits, for on one part of a field, where the soil is thinner and poorer and better drained, the crop, as a rule, turns out sounder than it does perhaps a stone's-throw away, where the soil is deeper or heavier, and more retentive. These are all facts with which the gardener and farmer are perfectly familiar; and they know well enough that when they plant their Potatoes in their strongest and deepest land, they are trusting almost wholly to the chances of a favourable season for a good crop. The prospect of a heavy crop is no doubt a strong temptation; but would it not be worth while, at the same time, to try a portion of the crop at least on the poorer ground, and especially on sunny slopes, where the soil is shallow and not highly manured? The crop would not be so heavy, perhaps, but we are not sure if there would be so much difference in that respect when it is considered that one may plant somewhat thicker on poor soils, and that the crop is sure to be freer from diseases, and the tubers of better quality. One certain effect of free exposure and a poor soil is shorter and much woodier stems; greater maturity, in short, which is itself some protection against disease.

I noticed here that our garden crops, produced on a deeply tilled and well-enriched soil, within the shelter of the garden walls, invariably make a much more luxuriant growth than the

field crops; but they are always much more diseased when there is disease. This was very noticeable a year or two back, when the garden and farm crops were only separated by the walls. Those Potatoes in the field were growing on a sloping bank, where the soil was not more than an ordinary plough's depth—perhaps 8 in. The late sorts were the same in garden and field, but the percentage of sound tubers was greatly in favour of the field crop. The difference in the character of the haulm was equally noticeable, for on a high-lying and exposed field the wind had blown the stems about till they had worn quite a socket in the soil at their base, and in many places rubbed the soil away till the tubers were quite exposed. The consequence was, that the tops were much harder and woodier than those in the more sheltered garden quarters. So far as I have seen, the soundest crops have always been produced on stony or gravelly soils, in which the water passes away quickly, and such soils are less affected by heavy manures than those that are of a close and adhesive texture; but all manure of farmyard character, particularly if there is much cow-dung amongst it, is retentive of moisture. The kind of manure applied frequently depends upon the character of the soil; but wood, ashes, and especially charcoal, bone-dust, nitrate of soda, common salt, guano, &c., are preferable to those of a heavier description. In gardens, however, it would probably be found better not to apply fresh manure to the Potato at all, but follow some other crop for which the ground had been manured. But, at all events, I strongly recommend farmers and gardeners both to experiment in the direction suggested, viz., to plant in poor and dry soils, and compare the results. My advice to cottagers, is to drain and dung their plots well when needful; to plant in rows running north and south, in order that the sun may shine on both sides of the ridges, and thereby dry them sooner after rain has fallen. Cottagers cannot change their ground like the farmer; but I have often thought they might plant shallow and earth up well, so as to have the seat of the roots or tubers slightly above the bottoms of the furrows, in order to secure more complete drainage; and just before the crop began to ripen, if the ridges were patted smoothly with the back of a spade, it would help much to throw off the water at the critical period. The great point is either to prevent the rains from reaching the roots, or to provide means to let the water run away speedily when it does reach them. I once (in 1872) saved a batch of Potatoes, in the very centre of a badly-diseased quarter, by simply keeping them dry by means of glass lights placed over them, leaving the sides open and unprotected. It was simply an experiment, intended to demonstrate that I could keep off the disease by keeping off the wet. The lights were put on in July, before growth had ceased, and when the Potatoes were taken up the soil was quite dry, and the Potatoes perfectly free from disease, while all around, in the same quarter, up to the edges of the glass shutter, the crop was an almost total failure; and I have seen the very same results produced by planting the Potatoes alongside a row of Peas, which, as any gardener knows, draw the moisture out of the ground faster than any other crop; if there is a dry spot in a garden, it is where a row of Peas are growing. When I saw the row of sound Potatoes turned out, I thought of a preventive for the Potato disease which I read of some twenty years ago, and which appeared a very absurd one at the time—it was to plant a Pea either inside or beside (I forget which) each Potato set at planting time.—"Field."

#### KITCHEN GARDENING MADE EASY.

LET me say a few words this week respecting out-door Cucumbers. These require good land, enriched with leaf-soil instead of manure. The seeds should be sown in the middle of May in shallow drills, and covered slightly without any protection. The gathering season is in July and August, and the quantity of Cucumbers harvested from 12 in. to 15 in. long, of the right sort, viz., Walker's Champion Ridge is quite astounding, besides additional quantities for pickling. We plant amongst the Cucumbers *Rose Coleworts* in the first week in September; and when that month is fine, scores of Cucumbers are gathered while the Coleworts are small. In October all the Cucumber stems are cleared away, and here again comes into use the cultivator for breaking up the surface of the soil and destroying weeds. In November we plant Broad Beans between the Coleworts with a dibber

the Greens giving the Beans protection when young, but they must not be allowed to get drawn. As soon as they are well up, the whole crop of Coleworts is cut in the space of ten days. The Beans are slightly sarked up, and the crop stops long on the ground. I may add here, that when I dig, I do it effectually, taking out a trench at one end one spit deep only, and the crum, putting in each trench a good layer of farmyard manure fresh from the stable. I never have any old manure-heaps, from which the rain washes all the richness; on the contrary, I bury the manure in a fresh state, thus warming the land, and charging every particle of the soil with ammonia.

Durgley.

R. GILBERT.

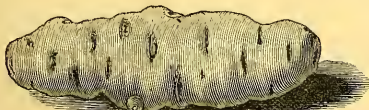
I am truly grateful to Mr. Hereford (see p. 22) for the kind manner in which he speaks of my practice, and I have much pleasure in informing him that the Strawberries are all cleared off the ground before the Celery trenches are taken out. As Mr. Hereford's kitchen garden consists of a claysy soil, I would recommend him to burn a portion of it yearly, mixing the burnt earth with the clay. In this way he would soon alter the character of his soil to that of a mealy loam. The cultivator could then be worked with both pleasure and profit. I cannot expect my mode of culture to be applicable to all soils, but I believe it could be carried out in every sixty gardens out of the hundred.

R. GILBERT.

Durgley.

### THE VITELLOTTE POTATO.

This is the curious-looking, sausage-shaped, little reddish Potato which comes to Covent Garden from France. It is, we believe, used



in preference to all others for Potato salads. It may often be seen exposed in Mr. Gulliford's shop in the Central Row.

**Scottish Horticultural Association.**—The ordinary monthly meeting of this Association was held in S. St. Andrew Square, Edinburgh, on Tuesday evening last, Mr. Hugh Fraser, Vice-President, in the chair. Seventeen new members were elected, and thirteen names were proposed and seconded for admission at next meeting. Mr. Jas. Griev, of Pilrig Park Nursery, read a paper on the "Phlox and Pentstemon." At the outset he touched upon the neglect into which these good old plants have fallen, described the history of their introduction, and traced the progress of their cultivation to the present time. He gave his own experience as to the different modes of culture, and mentioned the various points requisite to make a good flower. As decorative plants, their various uses were also named. At the conclusion of the paper, several members expressed their opinions regarding the usefulness of these plants, referring to their suitability to the wants and demands of particular gardens. The thanks of the meeting were awarded to Mr. Griev for his highly practical and useful paper. It was then intimated that the subject for discussion at the next meeting would be the "Construction of Vine Borders," to be opened by Mr. William Priest, Newbattle.

**Examination for Prizes in Botany for Young Women.**—The Society of Apothecaries of London offer to young women students of Botany, for proficiency in that science, prizes to be competed for under the following conditions:—The competition will be open to all young women who shall produce from their teachers certificates that their age at the time of examination does not exceed twenty years. The examination will be in General, and not Medical Botany. The examination will consist of questions both written and oral, in—1st, Structural Botany; 2nd, Vegetable Physiology; 3rd, Description of Living Plants; 4th, Systematic Botany, so far as those subjects are contained in Sir Joseph Hooker's "Sciences Primer"—"Botany," and in Professor Oliver's "Lessons in Elementary Botany." The first examination will take place in London on the third Wednesday and the third Friday in June, 1878. A portion of the second day's examination will be devoted to microscopical demonstration. Certificates of merit will be awarded, in the first instance, to a certain number of candidates, to be determined by the examiner; and such selected candidates will be allowed to compete for the prizes, consisting of the Society's gold medal, to be awarded to the first in order of merit, or of a silver medal or of books to the second. Candidates will be required to send their names and residences, at least fourteen days before the examination, to the Beadle, Apothecaries' Hall, Blackfriars, E.C., when they will receive tickets of admission to the examination. Copies of regulations may also be obtained on application.

## THE INDOOR GARDEN.

### CINERARIAS AT BEDFORD.

The Cineraria is emphatically a plant which thrives best in a cool temperature. It simply needs to be just kept from frost. Its cultural requirements are of the simplest kind; as to soil, there could be no greater absurdity than to insist upon the stereotyped admixture of rich mellow loam, leaf-soil, rotten manure, and silver sand—a very fine compost, of course, but by no means necessary for the Cineraria, as I have often proved, and especially this year, as I have just now a fine lot of plants in 6-in. pots, having foliage of the most robust and healthy kind, growing in soil that is composed of portions of a decomposed couch-heap and leaf-soil. I have brought these plants to their present fine condition in this simple way:—The seed was sown in a pan in a greenhouse at the end of June, the young plants were pricked out singly into 3-in. pots about the middle of August, and finally shifted into the 6-in. pots, in which they will flower at the end of September. Nearly all have, even now, thrown up blossoms, and many will be in flower in the course of the next two months. I keep them in a span-roofed house where there is plenty of light and air, and where only the smallest possible amount of heat is given when frost prevails. So far, however, fire has not been needed for their protection more than half-a-dozen times this winter. Six-in. pots are too large for amateurs, unless they have plenty of room at their disposal, but the advantage is found in the after-culture, as the roots are less subject to drought, and therefore the plants less affected by the greatest enemy of the Cineraria—green-fly; and, also, the bloom is finer and longer continued. I should submit, as a simple course of culture for amateurs, that seed should be sown thinly in shallow pans or boxes, in fine sandy soil, about the middle of July, keeping the pans slightly shaded and the soil moist until the young plants are well in leaf. The advantage of thin sowing will be found in the fact that the seedlings can grow into strong plants before pricking off into 3-in. pots is necessary. When the plants have filled these latter with roots, they should be shifted either into 5-in. or 6-in. pots, as may be thought desirable, and in these the plants should flower. Soil should be the best to be got, but many amateurs are terribly troubled to get this good; they have to beg or buy where they can. Some good, well-rotted loam, and a plentiful mixture of leaf-soil, to keep it open and porous, will make a very fair compost, and the plants will thrive well in it. My own plants are growing in a similar mixture, and none could look better; the leaves are large and healthy, and the stems stout and vigorous. If green-fly should appear at any time, give the plants a moderate fumigating at once. It is really a case in which a stick in time saves nine. A little frost may not hurt once or twice if the foliage is dry, but it should be excluded if possible, and only just excluded, being careful not to rush into the other extreme of giving too much heat, and thus inducing a dry atmosphere, and the inevitable green-fly. When potting for the last time, use one large crock at the bottom of the pot and just a handful of rough pieces of turf or road manure for drainages, and thus the balls will not get over dry. Water most freely in mild weather, and especially after a thaw has occurred.

A. D.

### HARDY PALMS.

I HAVE *Chamaerops Fortunei* and also the so-called *C. excelsa* both in a large and small state, in neither of which can I detect the slightest difference between them. As to this Palm being hardy in the north of England, except in a very sheltered situation, I should be very doubtful, and should recommend your correspondent not to trust it in severe winters without some protection. It is surprising what even a very slight covering does for plants in carrying them safely through hard frost, as when this is kept out of the ground they appear able to endure almost any amount of cold. The way in which we manage it here is to scatter a few fresh fallen leaves around the stems, and on these put a handful or two of Brakes, to prevent their blowing away; this keeps all snug for the season. In ornamental grounds, where heaps of littery matter of this kind would be objectionable, all that is required to take off any unsightly appearance is a few Laursl or other evergreen branches stuck in, and if these get shabby, they can be quickly replaced. Protection of this kind is far better and neater than mats and similar coverings, and, what is of even more importance, it costs nothing, except the time and slight amount of labour involved in collecting and placing the branches in position. In protecting plants of this class the covering should in no case be heaped up very high, as keeping the air from their crowns engenders damp, and this is often as fatal as frost by causing decay, which soon takes place when growth is dormant, and when there is no drying influence in the atmosphere. Owing to its fan-like leaves, *Chamaerops Fortunei* gets much blown about and in-

jured by wind if planted in exposed positions, and this should be borne in mind when selecting sites for it. To be successful in establishing this Palm<sup>out</sup> of doors, it is necessary to plant in the spring, in order to afford time for it to become established and inured to the weather before winter sets in. Young leaves made under full exposure to the air and sun are altogether of stouter texture than any formed under glass, and consequently better able to bear the vicissitudes of winter. S. D.

—“T. B.” (see p. 7) may rest content, as *Chamærops excelsa* and *C. Fortunei* are synonyms. We have a fine pair here, which stand all weathers. I have, however, great doubts as to whether this Palm will prove sufficiently hardy to stand out in the north of England. W. WILDSMITH.

*Heckfeld, Hanus.*

**Forced Lilacs.**—Where cut flowers are in request, the Lilac is not only a great favourite, but also one of the most satisfactory plants that can be put into a forcing-pit. From this season, until blossom is obtainable out of doors, we lift a few strong plants of it at intervals of two or three weeks, and introduce them to the gently-progressive heat of a Peach-house or Vinery that has just been started. If too large for pots or tubs, they are set on the borders; we then cover their roots with soil, give plenty of root-moisture, and an occasional damping overhead on bright days, when they quickly unfold their bloom, which saves that of choicer plants from being out. The same treatment applies to *Deutzias*, *Wiegelas*, *Rhododendrons*, and *Guelder Roses*. When the blossom is nearly expanded, we usually remove the plants that are in pots to a cool conservatory or plant house, as, whether required for cut flowers or for plant decoration, they are much more lasting when hardened off a little. When deprived of their bloom, they are placed temporarily in cold houses until the season for planting them out in the reserve garden again arrives.—JAMES GROOM, *Henham*.

**Propagating Crotons in Bottles of Water.**—Not only may Crotons be propagated in the manner described by “C. S.” (see p. 23), but they will likewise strike freely in bottles of water; indeed, this is the easiest and most certain way of increasing them, and particularly when it is desirable to get large pieces of the tops rooted with the view of having well-furnished little plants with rich-coloured leaves for table decoration. It is well known by those who grow the Oleander how readily cuttings made from it root when treated as just described, and Crotons greatly resemble that old favourite plant in this respect, as it is very rare any of them fails. The plan of propagating Crotons and *Dracenas* by means of pots split in halves and attached to their stems is a good one, but in many cases it involves too much time and trouble; whereas suspending a few bottles in a warm position in the stove, and placing a branch in each, is only the work of a few minutes, and, what is of equal importance, they require no further attention till ready for potting. The only objection to striking cuttings in bottles of water is, that the roots formed are very tender, and become injured when placing the soil about them, unless great care is taken at the time to handle them gently. In potting, therefore, the soil should not be pressed down, but simply shaken in among the fibres, allowing it to subside of its own accord after a good sprinkling with warm water. Managed in this manner, there will be little danger of rupturing the rootlets, and at the next shift they can be potted more firmly, if at that time it is thought desirable to do so.—S. D.

**Miniature Cutting Frames.**—It frequently happens that a brisk bottom heat is required for striking a few cuttings of any special plant that may be received, or that cannot advantageously be propagated at the season when the bulk of such work is on hand; and even where a regular propagating pit exists it sometimes happens that, in conjunction with a brisk bottom-heat, a lower top temperature than that of such a structure is desirable for special subjects. We have for several years propagated thousands of soft-wooded plants during spring and autumn in ordinary Cucumber frames, set on a hollow floor of planks raised 2 ft. high with temporary piers of bricks laid on each other to the required height, without mortar, and heated with stable manure. But when the bulk of such work is over, and the frames are put to their ordinary use, we have adopted a modification of the same principle, on a very small scale, by substituting hand-light for the frames; and by using the short Grass from mowing machines in the place of manure, any amount of heat may be ensured. To retain the heat we build the little structure against a wall; and after the hollow portion is filled with Grass, the front is blocked up with any available litter, which, in the event of the heat becoming too violent, can be partially drawn away to allow any excess to escape; and by adding some fresh Grass at intervals of three or four days, quantities of cuttings may be rapidly struck. The floor or platform

should be furnished with a good depth of Cocoa-nut fibre or sawdust, in which to plunge the pots, and keep down the steam from the fermenting material. Hand-lights with moveable tops are best, as they can be wholly or partially removed when required.—JAMES GROOM, *Henham*.

#### RIVERS' ROSE AMATEUR'S GUIDE.\*

This work comes, as a *souvenir* from some beloved friend, bequeathed as he lay dying, and sent to us by his executors. We regard it with a tender, solemn sadness, as though it were the touch of a vanished hand, or the sound of a voice that is still. And yet, beyond the deep regret that horticulture has lost one of her most joyful sons, and we florists and fruitists one of our best-loved brothers, there is no cause for sadness. This roseate little volume reminds us that for forty years it has quickened men's appreciation of the beautiful, and guided young travellers who were searching for it; and, more than this, that, though the great Rosarian is gone from us, the love of Roses and of Rose growing which he evoked is spreading far and wide. The additions made to the present book are brief, but they are of special interest and importance. For example, it must have been a grand gratification to one who had worked so perseveringly to improve the culture of the Rose, to be informed by a Continental Rosarian who had seen our latest exhibitions that “no Roses were equal in brilliancy to those grown in England;” and, again (as he tells us in the same preface), to know that “our English seedlings are now fully as good as any raised in France.” These happy reflections must have come like sunshine to the old man's heart as he wrote these very touching and final words:—“I conclude in the hope that some day every man in England may have a garden, and that Rose-growing will be considered one of the Fine Arts, calculated to refine both mind and manners.” Once more, the last of his “general directions” well deserves the practical attention of those who love the Rose. 1, “Seedling Briars raised from the hips of the wild Rose form an excellent stock for all classes of Roses, and especially for the Tea-scented;” and, 2, “Roses on their own roots require patience, but undoubtedly they make the best plants, lasting for years when once well established, and entirely free from the nuisance of suckers.” May he rest in peace! S. REYNOLDS HOLE.

#### QUESTIONS AND ANSWERS.

**Plants from Mentone.**—As I have a friend at Mentone who is willing to send me some bulbs and plants for culture here, will you be good enough to inform me what are the best kinds of bulbs and perennials that will flourish, here if sent from Mentone?—J. P., *Adershot*. [All the bulbs from Mentone and the greater number of the perennials that grow there will be found to be perfectly hardy in England.—R.]

**Chrysanthemums.**—A question is asked (see p. 24) as to the difference between Mrs. Dixon and Golden Geo. Glenn, and whether, if shown together, the tray containing the two varieties would be disqualified. In the first place they are identical, both being sent out the same year, although by different firms, in addition to which another firm sent the same variety out under the name of Mrs. C. H. Glover. That such a fact is to be regretted, as it causes endless confusion. Sufficient care is seldom exercised by nurserymen and others as regards lists of Chrysanthemums whose synonyms are undoubted. In my own catalogue I have endeavoured to point out the synonyms as far as is possible and the usefulness of the practice is self-evident.—F. T. Davis, *Plumstead Common*.

**Chrysanthemums and their Culture.**—I am anxious to commence Chrysanthemum growing. 1. Will someone give me the names of twenty-four of the larger or show varieties combining shape with free-blooming properties and compact growth; also kindly name six of the best Anemone-flowered varieties and twelve Japanese. As I am quite a beginner, I do not care to commence with uncertain bloomers. I would like a few of each colour. 2. Cuttings of Chrysanthemums, after a few months' growth, often throw suckers. Ought they to be removed? If allowed to remain, do they bloom? 3. To what height should a Chrysanthemum cutting be allowed to grow before being topped? 4. How long should topping continue? 5. Do the Japanese kinds bear any topping? 6. What system of cultivation will keep the lower leaves on Chrysanthemums? 7. Would cuttings struck now make better plants, and bloom freer than those grown later?—Q. D.

**Flowering “Club Moss.”**—On page 61 of the last volume of *The Garden*, in a notice of the “Flora of Greenland,” by Clements Markham, mention is made of a very pretty Club Moss, with little bell-shaped flowers like miniature Lilies of the Valley. Will some reader of *The Garden* kindly inform me what this plant really is?—THOS. WILLIAMS.

\* “Rivers' Rose Amateur's Guide.” By Thomas Rivers. Eleventh Edition, Longman, Green, & Co.

"This is an art  
Which does mend Nature: change it rather: but  
THE ART ITSELF IS NATURE."—*Shakespeare.*

### POLYGALA CHAMÆBUXUS PURPUREA.

I WAS much pleased to see in last week's number of THE GARDEN a coloured plate of the *Polygala chamæbuxus purpurea*, of which I had seen no previous mention. I had found the plant in 1870 at the Monte Generosi, in Tiëno; it was growing near the spot known as La Bella Vista, looking down upon the lake of Lugano. Near it was the familiar *Polygala Chamæbuxus*, of which I concluded it might be a variety, though I did not find it named in any of the books to which I had access. There was not much of the plant, but it may probably be found on other parts of the mountain. In ascending from Mendrisio, a small wood seemed to be filled with *Spiræa Arnica*; a little higher, in a vale by the way-side, *Ceterach officinarum* and *Aepidium Trichomanes* grew abundantly. I did not notice other Ferns, and it is, probably, too dry for them higher up; but under trees, chiefly ancient Chestnuts, the *Cyclamen* was conspicuous; also many large Campanulas, and other flowers, and the small *Saponaria ocyroides* a mass of bloom. Higher, and above the zigzags of the road, was a reach of Golden Broom, and above that, one of a dwarfed *Laburnum*, exceedingly beautiful; and on higher ground still, the spring seemed to return to us (in June); the Hawthorn was in full flower, and small singing birds and the cuckoo were heard. The flora is a very rich one. In some meadow land were found the *Ilac Thalictrum*, our own *Trollius europæus*, and the conspicuous *Agrostemma Flos Jovis*, with colour more brilliant than I have seen it in English gardens. On the mountain were many species of *Gentian*, *Pedicularis*, and *Achillea*; also the little *Astrantia minor*. I have omitted to say that the *Paeony* is also found there and two varieties of *Anthericum*, with many more familiar plants. M. BEEVOE.

*Coniston, Ambleside.*

I am glad to see a figure of the *Polygala Chamæbuxus purpurea* in THE GARDEN. All the plants I ever received turned out to be yellow. Perhaps we have not an enough to bring out the red or purple colour.—JAMES MCNAB, *Royal Botanic Garden, Edinburgh.*

**Hardy Palms.**—These impart quite a new feature to outside gardening, and, if capable of enduring severe weather, will be a great acquisition in this country. Your correspondents, "S. D." and Mr. Wildsmith, seem to have great doubts as to the hardiness of *Chamærops Fortunei* in the north of England, and it may be that they are right as regards many districts; but, at Messrs. Backhouse & Sons' Nurseries at York, two fine specimens, 5 ft. or 6 ft. high, have stood the exposure of several winters without protection, excepting, I believe, once; and they have not only thriven, but have produced healthy panicles of golden flowers. It would doubtless interest many of your readers if any of your correspondents, north of York, who have had experience in the culture of hardy Palms in the open ground, would state the result of their trials, and whether and what protection was given during frost. I do not fear wet, as I believe in their native habitats they luxuriate in damp places; nor do I expect that they will suffer from high winds after a few seasons, as the foliage will adapt itself to the altered circumstances and become more sturdy. The *Chamærops humilis*, a Palm very much like *Fortunei* in its growth, but not hardy in this country, abounds in the south of Europe and in Algeria on waste grounds, and there it may be seen, in the most exposed situations, without the damaged foliage suggested by "S. D." Of course plants grown under glass, or under shade, as they are in Algerian nurseries, by which the foliage is considerably drawn, should be acclimatized by gradual exposure for a couple of seasons, as otherwise the leaves will certainly become damaged by the winds.—T. B.

**Eucharis amazonica.**—I have a plant of this of which I had a photograph taken on the 12th December last, when it bore twenty-nine strong flower-spikes. It received similar treatment to that described by Mr. Groom in THE GARDEN of December 29, 1877. It was grown in an ordinary stove, as a stage plant, until July, 1877, when it was removed to a cool Vinery, and subjected to the process of drying off, *i. e.*, rested, as it is termed, for a period of about six or eight weeks; afterwards it was placed at the end of a Cucumber-house (not plunged, but set on an iron grating), and the result has been most satisfactory, even surpassing anticipation. I may just add, in corroboration of Mr. Groom's statement, that this plant was

in flower in November, and in full beauty on Christmas Day; even at the present date (January 15) it bears several very perfect flowers.—JOHN BROADHURST, *Trevallyn, Wrexham.*

**Winter Flowers at Bingham.**—A few days ago I brought in a handful of blossoms from the open borders. First and loveliest there was *Primula vulgaris grandiflora*, the great mauve *Primrose* wrongly known as *P. altaica*. This is blooming well now, but is still lovelier in a cold house under glass. *Primula vulgaris auriculata* is also in bloom, and many of Mr. Dean's fine seedlings, which ought to be everybody's plants. The double saffron, the double mauve, and the double white *Primroses* are also in full bloom. Another gem is *Veronica Blue Gem*, a dwarf, shrubby *Veronica* which seems to stand any amount of cold, and which is now smothered with buds and blooms. The spring *Cyclamens* are also showing their crimson buds. *Helleborus niger* is in first-rate condition; the giant variety has still a few blooms. At Worcester I saw beds of *Helleborus atrorubens* one solid mass of bloom, quite untouched by frost. The white *Helleborus aschasicus* was also in great beauty there. *Lonicera fragrantissima* is throwing out its exquisite sweet flowers; *Jasminum nudiflorum* becomes a bush of gold; *Chimonanthus fragrans*, on a wall, is sweeter than Orange blossoms; *Berberis Darwini* is still garlanded with Orange wreaths on a south wall. The last blooms of *Clematis Jackmanni* are not all gone.—FRANK MILES, *Bingham, Notts.*

**Propagating *Exochorda grandiflora*.**—The increase of this by means of root-grafting must, I think, be considered a slow and worn-out practice. The plant may be increased as easily as a *Fuchsia*. Introduce a good-sized bush of it into a little warmth in spring, and as soon as the shoots are 2 in. long, take them off, cutting through between the old and new wood. Insert the cuttings in the usual manner, placing them under a glass in a moderate amount of warmth; or let the shoots grow to their full length, and when they are just beginning to get firm, take them off and cut them up into lengths of one or two joints each, inserting them as just directed. The principal point is to keep them quite close and shaded; their foliage will be very tender, and, therefore, susceptible of injury. *Mm. Trumpy* & *Goujon* appear to have conjointly "caught a minnow."—T. SMITH, *Neury.*

**Lily Bulbs.**—I shall be most happy to answer "Dunedin's" questions (see p. 28) as accurately as I can. I bought the Lily bulbs in question in February or March, 1877—half for my father, Mr. Gathorne Hardy, and half for my father-in-law. I have no reason to doubt that they were a fair sample of the man's goods, as I am entirely unacquainted with him, and do not suppose he would treat me better than any other customer. As it was so late in the season when I got them, I had them all potted and started in heat, and they were planted out about the same time as the bedding plants. As I am in Parliament, I am, of course, away a great part of the summer. I cannot be very certain as to the minute details required, but some had begun to flower before I got home in August, and some had their flowers destroyed by the early frosts; very few seemed to have less than three flowers, and I should say, on an average, they were from 2 ft. 6 in. to 3 ft. high. I tried no sixpenny bulbs. Of course, I cannot tell how they will do this year, but if anyone takes an interest in their fate, I will endeavour to give a report of them in the autumn. My only reason for writing to you was that I thought "Dunedin's" article was likely to injure the business of a man who certainly had treated me very obligingly, and to prevent many, to whom the price of Lilies was an object, from trying to grow the *Lilium auratum*, which ought, in my opinion, to be planted out in every garden.—J. STEWART HARDY, *Camden Hill, Staplehurst.*

**Flowering of *Begonia octopetala rosea*.**—This distinct and ornamental species of *Begonia*, concerning which and its temporary name I made a brief communication a short time ago, on behalf of its introducer, Herr Otto Friesel, of Zurich, to THE GARDEN (see Vol. XII, p. 545), is now in bloom in my greenhouse, having opened its male bloom (borne on a hairy stem 9 in. high, from which the slender footstalk of the individual bloom rises another 2 in.) two or three days ago. The flower is about 2 in. square, and is composed of ten petals, the top and bottom ones being about double the size of the four smaller ones at each side; the colour of the under side of the petals is deep and rather dull red, that of the interior a very pleasing shade of bluish, and the bunch of pollen anthers in the centre of the flower is very conspicuous. The brace of female blooms, one on each side of the male, are not yet open, but promise to be poor and inconspicuous in size, as is sometimes the case in this family. The foliage has all disappeared more than a fortnight ago, going naturally to rest, and the bloom-stem comes up quite independently direct from the tube, and close to the side of the pot. As this species is a native of the north of Peru, would not *B. peruviana* be an appropriate name for it? or if a more descriptive name were preferred, it might be named *B. decempetala*.—W. E. GUMBLETON.

**Tussilago fragrans.**—This midwinter flower has been in full bloom since early in December. It is well named the Winter Heliotrope, for the scent is exactly like that of the better known "Cherry Pie, and recalls far-off summer days. It is of the easiest cultivation, and it spreads almost as freely as the irrepresible Coltsfoot, and is quite hardy. A waste corner cannot be better occupied than by this delicious flower.—SALMONFEES.

**Eulalia japonica.**—Mr. James Taplin sends us a plume of this lovely and most distinct ornamental Grass from South Amboy, New Jersey. We have not seen such a beautiful inflorescence on any Grass since the advent of the Pampas Grass and the New Zealand Arundo.

**Laelia anceps Lawsoni.**—This beautiful variety of one of our most useful winter-flowering Orchids is now in bloom in Messrs. Veitch's nursery at Chelsea. Its flowers are very large and of a pink-like substance, the petals being broad and of pearly whiteness, set off effectively by a rich, violet-purple-coloured throat.

**Early Outdoor Flowers.**—Until the sharp frosts of last week occurred a good display of Primroses was to be seen in Mr. Parker's nursery at Tooting. The beautiful *Anemone fulgens* and *A. blanda* were also opening their blossoms. In Mr. Cannell's nursery at Swanley, the flowers of *Violet Victoria Reginae* have been unusually abundant, but these, in common with others, were severely checked by the frost in question. A week's bright weather would, however, bring many of our beautiful hardy flowers into bloom, so forward are they this year.

**Calanthes in Masses.**—These attractive winter-flowering Orchids, though very effective when distributed amongst Palms and Ferns, are much more so when arranged in masses and surrounded by such plants. A group of some twenty or thirty plants of the rose-coloured *Calanthe*, now finely in bloom, makes an effective feature in Mr. Parker's nursery at Tooting.

**Persian Lilacs in Covent Garden.**—In addition to these Lilacs being grown in large quantities at this time of the year to furnish flowers in a cut state for the London florists, we now find neat little plants of them full of flower being offered for sale. They are furnished with a clean stem of some 6 in. or 8 in. high, surmounted by a compact head of green shoots, bearing from eight to twelve trusses of delicate blossoms. For indoor decoration such plants are highly useful, and few look better by gaslight.

**A Garden Cemetery.**—The fine engraving (see p. 60) showing a garden cemetery is from a photograph sent to us by Mr. Olmsted, of New York. It represents the cemetery at Spring Grove, Cincinnati, which is in many respects the most remarkable in the only country where cemeteries are designed in a masterly and tasteful way. Landscape effects—Grass, trees, and shrubs, native and introduced, and water—are seen in such cemeteries in all their beauty. The vast space prevents that overcrowding which is so horrible in many of our own cemeteries; and for the same reason the trees and shrubs escape destruction.

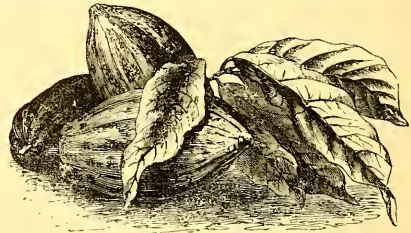
**An Apple Tree Killed by Mistletoe.**—The case mentioned by "J. N. R." (see p. 12) is an interesting one, but open, I think, to a few comments from one like myself, a devoted admirer and defender of this old Druidical symbol of the everlasting youth of Nature. The Apple tree in question was young, whilst its parasite was vigorous and "growing steadily." Mistletoe not being a rapid grower, this may mean a good deal. I presume, from "J. N. R.'s" account, that many years did not elapse before the Apple tree died with its thirty-five bunches of Mistletoe. If so, it never became an old, perhaps never a large, tree. Now the growth of Mistletoe, as of other branch parasites, is precisely analogous to that of an artificial graft on a stock. I doubt whether any horticulturist would assert the juice of a stock ever to become so thoroughly impregnated by that of the graft, that young shoots of the latter appeared on different parts of the tree. The thirty-four new shoots were, I believe, seedlings. The injury Mistletoe does to deciduous trees is that, being itself evergreen, it continues to draw upon the juices of the host during what should be the period of rest—that of defoliation. In other respects a bunch of Mistletoe is simply a vigorous, woody, un-Appleiferous, extra branch. It, therefore, is probably insupportably harmful on large trees in a small quantity; but thirty-five evergreen branches on a small tree, by Nature deciduous, is a very different matter. This is life at a very high pressure.—G. S. BOULGER, *Scientific Club, Saville Row.*

**International Potato Show.**—At a preliminary meeting of the International Potato Show Society's Committee, held at South Kensington on Tuesday last, a most liberal offer, made by the Crystal Palace Company, to hold their next Potato show, in connection with their great autumn fair and flower exhibition, on Sept. 24 and 25, was accepted, and the committee are now engaged in arranging a schedule of prizes.

## THE GEOGRAPHICAL DISTRIBUTION OF GARDEN PLANTS.

### *The American Tropical Region.*

**EXTENT AND CHARACTER OF FLORA.**—This region includes the West Indian Islands, and, as a whole, the vegetation is the richest of the three tropical regions, and contributes largely to our collections of stove plants. Many of the most brilliant and gorgeous inmates of our hothouses have their home in this region. Taking a rapid survey of the more striking features in the composition of the flora, and noting particularly those plants or groups of plants, which are characteristic, as distinguished from those which are common to the tropical of the Old World, we have first of all, following the natural arrangement of plants, the grand Water Lily (*Victoria regia*), of the Amazon and its tributaries and other rivers of the northern part of South America. Although this magnificent Water Lily was discovered by Hænke as long ago as 1801, and subsequently seen by various travellers, it was not till 1836 that it was introduced into this country through Sir Richard Schomburgk, who discovered it in one of the rivers of British Guiana. The *Vochysiaceae* is a small Order peculiar to South America. It consists mainly of trees of large size, some of them with very showy flowers, and climbing shrubs. In floral structure these trees are allied to the *Polygalaceae*, one of the sepals being usually produced below in the form of a hollow spur. Seven genera and about 100 species have been described. *Trigonia laevis* and *villosa*, members of this family, were formerly in cultivation, and may be now in some collections. Of the *Guttiferae*, a family of large trees (*Cordia*, &c.),



Cocoa.

one sub-Order is entirely American; and the singular *Marcgraviaceae*, sometimes regarded as a sub-Order of the *Ternstroemiaceae*, are also confined to America. The latter are remarkable for their bracts, which are hollowed or hood-shaped, and for their manner of growth. Some of them are epiphytes, and the barren and flowering branches bear very differently-shaped leaves. A species of *Marcgravia* itself was exhibited at one of the meetings of the Horticultural Society in the spring of 1877. The genus *Theobroma*, different species of which yield the Cocoa of commerce, belongs to the *Sterculiaceae*, and consists of about half-a-dozen species of small trees, all endemic in America. The *Coca* family (*Erythroxylaceae*), which also finds its head-quarters in America, must be distinguished from the *Coccoloba*. A large tropical family, the *Malpighiaceae*, is numerously represented, including many of the *Lianes* or woody climbing and twining plants, so characteristic of the Brazilian virgin forests. These *Lianes*—which belong to various families, as the *Leguminosae*, *Combrataceae*, *Bignoniaceae*, *Aroidae*, &c.—embrace the largest trees, eventually causing their destruction, and form such a network of branches and aerial roots from tree to tree as to render progress impossible without cutting a road through. Most of the *Malpighiaceae* have showy yellow or red flowers, with crumpled, slenderly-stalked petals. The next characteristic group, is the *Simarubae*, of which there are many species, including *Quassia amara*. Passing by a number of tropical families which are not specially characteristic of any particular region, and which do not furnish many cultivated species, we come to the *Leguminosae*. Although this Order cannot be said to be characteristic of any particular flora, as it forms a large per-



GEOGRAPHICAL DISTRIBUTION OF GARDEN PLANTS: TROPICAL AMERICAN REGION—CINCHONAS.

centage of the vegetation of most regions, except the frigid and New Zealand, still certain of its sub-Orders and tribes are characteristic in this or that country.

**LARGE FOREST TREES.**—In Brazil, for instance, the tribe Dalbergiæ, and the sub-order Cæsalpiniæ find their greatest concentration, constituting an important part of the large timber trees. Some of these trees are of a prodigious size. Martius mentions some, the trunks of which were so large that fifteen men with outstretched arms could only just embrace them. The magnificent genus *Brownia* is American, and belongs to the Cæsalpiniæ. The *Chrysobalanæ*, a small Order, or a sub-Order of Rosaceæ, consisting of trees and shrubs, is principally American, numbering nearly 200 species in Brazil, Guiana, &c. Another group of some 80 or more species, the *Lecythideæ*, regarded by some botanists as an independent Order, and by others united with the *Myrtaceæ*, is peculiar. They are all trees, and many of them of gigantic dimensions, as the *Brazil Nut*, *Bertholletia excelsa*. Like the tree just named they have mostly large, woody fruits, opening in the form of a lid to allow the seeds to escape. The fruit of *Bertholletia* usually contains as many as twenty nuts (seeds), and is 5 in. or 6 in. in diameter, and so solid and heavy that if it fell a distance of a few feet only on a man's head, it would



Frangipani.

seriously hurt, if not injure, him. Some of the fruits, as that of the *Sapucaia Nut*, *Lecythis Zabucayo*, and that of the *Cannon-ball tree* (*Couroupita guianensis*) are even larger. They present a great variety of shapes, from spherical to cylindrical, and urn or pitcher-shaped. *Myrtaceæ* proper, both shrubby and arborescent, are exceedingly abundant in tropical and sub-tropical South and Central America, a few reaching the almost temperate regions. The genera *Eugenia* (300), *Calyptranthes* (70), *Marleria* (50), *Myrcia* (300), *Myrtus* (100), *Campomanasia* (100), and *Psidium* (100), making up a total of more than a thousand species. Indeed, one botanist describes 500 species of *Myrcia* alone.

**THE MELASTOMACEÆ.**—The next family, the *Melastomaceæ*, consists of above 130 genera, and hard upon 2000 species. It is by no means confined to America, having representatives in Africa, Asia, and Australia; but, excluding the Old World genus *Memeceylon*, of which there are nearly 100 species, differing structurally from the *Melastomads*, it is in America alone that the family forms a prominent feature of the flora. Almost all the members are easily recognised by their opposite, three-nerved leaves, devoid of stipules, and the curiously-formed stamens. Upwards of 90 of the genera, and an even larger proportion of the species, are endemic in America, and none of the genera of the family are represented in both America and the Old World. Though this family is so much more numerous in America than elsewhere, and is there repre-

sented by a great variety of beautiful herbaceous, shrubby, and arborescent species, yet it will be seen that the Asiatic genera are better represented in gardens. Among the more familiar genera we may name *Miconia*, of which there are about 300 species, and to which the splendid *Cyanophyllum magnificum* belongs; *Pleroma*, 125 species; *Clidemia*, 40 species; and the smaller genera *Bertolonia*, *Centradenia*, and



Cannon-ball tree.



Guava.

*Heeria*. *Turnera*, the type of a Natural Order, of which there are only half-a-dozen other species belonging to two genera, is represented by about 70 species.

**PASSION-FLOWERS.**—Passion-flowers abound as well as in the sub-tropical regions. It is a curious fact that of the large genera *Passiflora* and *Tacsonia* nearly 130 of the about 150 species are American, whilst the remaining 12 genera,



Sweet Potato.



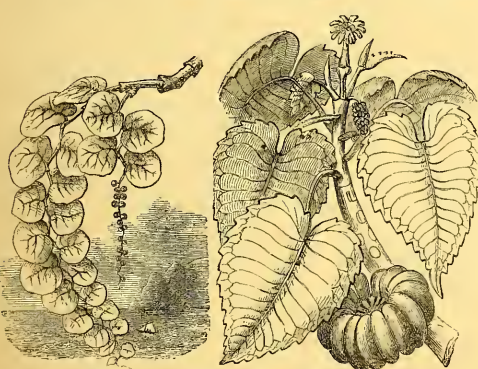
Avocado Pear.

comprising few species, are confined to the Old World; this is excluding the small groups *Malesherbiæ* and *Papayaceæ*, regarded by some botanists as tribes of the *Passifloræ*. Both of these groups are exclusively South American; to the latter belongs the genus *Carica*, the *Papaw*. *Passiflora quadrangularis*, *maliformis*, *macrocarpa*, *incarnata*, and other species yield the fruit called *Granadilla*. *Begonias* and *Cacti* also get into the tropical parts.

**SHRUBBY COMPOSITE.**—This family is numerous, Brazil being the centre of the shrubby element, altogether about 1000 species. There are 130 species of Vernonia, 100 of Eupatorium, and 100 of Baccharis. The Chilian, Andine, and Mexican regions have collectively nearly 3000 species of this family, but they are chiefly sub-tropical, temperate, and Alpine types. The ornamental genera Theophrasta, Clavija, and Jacquinia, forming a tribe of the Myrsineæ, are quite endemic.

**ALLAMANDA.**—Brazilian Apocynæ contribute the splendid Allamandas forming a part of almost every collection of stove plants; and the Asclepiadæ, the equally valuable Dipladenias and Echites; Gentianaceæ, Lisianthus; Convolvulacæ, Argyrea, Ipomæa, &c.; and Solanacæ, Browallia, Brunfelsia, and Solanum. Tropical America is the principal centre of the last genus, which numbers altogether upwards of 700 species, more than half of which are South American.

**GLOXINIA TRIBE.**—Gesneracæ, including the Cyrtandree, are generally dispersed, but most numerous in America, whence we obtain the genera Gloxinia, Achimenes, Nægelia, Gesnera, Alloplectus, Columnea, Hypocyrtæ, and Episcia. Brilliant-flowered climbing and erect Bignoniacæ abound, but they are mostly too big for ordinary glass houses. Spatheoda and Jacaranda are typical genera. Of Acanthaceæ, we may name Sanchezia, Apelandra, Geissomeria, Fittonia, and Thyrsacanthus; several of the other genera represented in our gardens



Seaside Grapes.

Sand-box tree.

by American species have a wide range in the Old World as well. All these families just enumerated, where not otherwise mentioned, are not specially American, but only the genera given as examples.

**FAMILIAR TYPES.**—Petrea volubilis (Verbenacæ), Bougainvillea (Nyctagineæ), Iresine (Amarantacæ), Poinsettia (Euphorbiacæ), Peperomia (Piperacæ), Rhopala (Proteacæ), Canna and Maranta (Marantacæ), Anthurium, Philodendron, Caladium, Dieffenbachia, and Phyllotæmium (Aroideæ), Eneharis (Amaryllidæ), Bromelia, Billbergia, Aechmea, Nidularium, &c. (Bromeliacæ), and numerous Palms, form the principal remaining types of tropical American vegetation commonly met with in cultivation. The families Piperacæ, Aroideæ, Marantacæ, and Bromeliacæ are numerously represented and characteristic in America. The Bromeliacæ, indeed, are confined to America, and chiefly tropical, and include the Pine Apple, Ananassa sativa.

**ORCHIDS.**—The typical genera of Orchids, as may be seen from the list given below, include some of the most gorgeous and some of the most curious of the family. The genus Catasetum is remarkable for occasionally producing flowers of three entirely different kinds of structure on the same spike. These three kinds of flowers were first observed separately on different plants, and were considered as the types of distinct genera Catasetum, Myanthus, and Monacanthus.

**ECONOMIC PRODUCTIONS.**—Among the important vegetable productions of this region, not yet mentioned, are the Custard Apple (Anona reticulata), Sweet Sop (A. squamosa), and Sour Sop (A. muricata), extensively cultivated and delicious fruits. Guarana Bread, made from the seed of Paullinia sorbilis; Mahogany, the wood of Swietenia Mahogany, in Central America; Rosewood, various species of Dalbergia, in Brazil; Balsam of Peru, from Myroxylum Pereiræ and Guava, the fruit of Psidium pomiferum and pyriferrum. Cinchona, obtained from the bark of various species of Cinchona, large trees, of which there were formerly extensive forests in Peru, but they are fast disappearing. Tomato, Lycopersicum esculentum; Greenheart the timber of Nectandra Rodriæ, a native of British Guiana. Cassava or Mandioca, obtained from the root of two species of Manihot—Aipi and utilisima (Euphorbiacæ), a staple article of food in some districts. Brazilian Caoutchouc, the inspissated juice of Hevea brasiliensis, also belonging to the Euphorbiacæ. Sarsaparilla, the roots of various species of Smilax; Vanilla, the fragrant fruit (seed vessel) of Vanilla planifolia, &c. Vegetable Ivory, the seed of a Palm, Phytelphas macrocarpa; and Palm Wax, an exudation from the trunk of Copernicia cerifera, Ceroylon andicola, and other Palms.

**General list of some of the tropical American Genera represented in European Gardens.**

Victoria	Vinca	Bougainvillea	Maranta
Theobroma	Dipladenia	Iresine	Batemania
Brownea	Lisianthus	Poinsettia	Betia
Mimosa	Argyrea	Peperomia	Burlingtonia
Pteroma	Ipomæa	Dieffenbachia	Castleya
Miconia	Gloxinia	Philodendron	Coryphanes
Clidemia	Achimenes	Caladium	Galeandra
Centradenia	Gesnera	Bucharia	Huntleya
Monochætum	Columnea	Bromeliacæ	Loelia
Heeria	Episcia	Phytelphas	Moradæes
Bertolonia	Sanchezia	Ceroylon	Ocoidium
Turnera	Apelandra	Attalea	Perieteria
Pasiflora	Fittonia	Geconoma	Pescatoria
Begonia	Thyrsacanthus	Sabal	Trichocentrum
Theophrasta	Jacaranda	Thrinax	Vanilla
Olavija	Spatheoda	Martinezia	Zygopetalon
Allamanda	Petrea	Canna	

W. B. HEMSLEY.

**Hardiness of Coronilla glauca.**—I observe that the hardiness of this little shrub is questioned; but here, on the east coast of Suffolk, it is not only hardy, but one of the most profuse midwinter flowering plants which we have. At the present time we have dwarf bushes of it in much healthier condition than I ever saw them indoors, and they are a perfect mass of yellow flowers. Under glass they usually become infested with white scale, but exposed, they do not appear to be affected by any insect plagues whatever. As regards soil, they will grow in anything; in fact, a poor soil suits them best, as moderate, sturdy growth is one of the first essentials towards ensuring hardiness. I have lately planted some against walls, and they promise excellent results mixed with Pyracantha and the early-flowering Pyrus (Cydonia) japonica. I have no doubt that the Coronilla will withstand any ordinary winter in any part of England, provided it is planted out early in the season, so that its growth may be completed and its roots well established before winter sets in, as no plant, however hardy, could be expected to withstand even slight frost if grown under glass and removed in its tender condition to a bleak situation.—JAMES GROOM, *Henham*.

**A New Thermometer.**—To be obliged to leave a warm, comfortable room in order to consult a thermometer outside, and that, too, when we see the snow falling through the window-panes, or when we hear the wind blowing before it the half-frozen rain, can hardly be called agreeable. It is, however, what every gardener is now and then obliged to do, not only by day, but also by night. This inconvenience has, we believe, been long surmounted in Germany by the invention of a thermometer with a transparent scale, which is fixed to the bars of a window and showing its face to the observer, who, by this means, can take his observations at his ease under shelter. The transparent scale in which the thermometer is fixed justifies the title of glass thermometer (*thermometre à glace*) which has been given to it. M. Eon, the well-known philosophical instrument maker, of 11, Rue des Boulangers, Paris, has improved the original instrument by making the divisions plainer, and by using the three scales, Centigrade, Réaumur, and Fahrenheit, which are the only ones now used in the sciences. By this valuable addition these thermometers can be used in any country.

## THE FLOWER GARDEN.

### THE PHLOX, PENTSTEMON, AND CHELONE.\*

#### Phlox.

AMONGST Phloxes, species may be found that grow from 2 in. to 4 ft. and 5 ft. in height, and they are nearly of every colour, except yellow and blue. Numbers of them are also striped, spotted, and oculated, as it is called. Some, too, have variegated foliage. The dwarf species, such as *P. frondosa*, *Nelsoni*, *verna*, *subulata*, *ovata*, and *divaricata* make excellent pot plants; they only require good loam, plenty of water, and to be plunged in the open air, where they are fully exposed to the sun, to succeed. They are also indispensable ornaments for the rock garden and herbaceous border.

THE EARLY PHLOX (*P. suffruticosa*), introduced from Carolina in 1818, is one of the best border and exhibition plants that can be had during July and August. It will grow satisfactorily in any good border or bed, but if the ground be not naturally suited for it, it can, with very little labour or expense, be made so. If the subsoil be too wet, it must be drained, and about 9 in. of good Hazel loam should be laid on the surface and enriched with good old manure and a small quantity of broken bones. In the herbaceous border a pit can be taken out—say 12 in. square and 9 in. deep—and filled with this compost. Phloxes of this class also make excellent pot plants; and if they be grown in 9-in. or 12-in. pots, and three or four shoots be left to each, according to the strength of the plant, they will be found very useful for greenhouse decoration in June and July. It is a good plan to grow a set of cuttings every year of the sorts best suited for this mode of cultivation, and to discard old plants, which will be found useful for propagating from, or for planting out in the borders or shrubberies. There is also a class of Phloxes especially adapted for pot culture that grow from 15 in. to 20 in. in height.

THE LATE PHLOX (*P. decussata*).—This was introduced from North America in 1812. It is stronger in habit than the Early Phlox, and has a far greater variety of colours. It also makes an excellent pot plant; and, being vigorous in habit, it requires a larger sized pot. Plants of this class are very attractive in conservatories in August and September, and they are also very fragrant. If grown like *Chrysanthemums*, they would create quite a new feature in greenhouses. When cultivated in beds or borders, the early and late sorts should be planted alternately, arranging them according to their heights and colours. They would thus produce a mass of bloom for at least three months, and the only labour required after they were planted would be to give each plant a good stake and tie them up when necessary, in spring reducing the number of shoots according to the strength of the plant and nature of the variety. They are also much improved by a liberal top-dressing every spring, of good, rich soil; and in very hot and dry seasons a good deluge of water will very much prolong the season of bloom.

Phloxes may be propagated by means of seeds, cuttings of the stems and roots, and also by division. The seed should be gathered from the best sorts only. It should be sown at once in boxes or pans in good free loam, and kept in a greenhouse or warm pit close to the glass. The young seedlings will make their appearance above ground in February and March; and as soon as they are fit to handle, let them be pricked into boxes of good soil, and kept close and warm for a short time, when they can be grown along with the other plants intended for the decoration of the flower garden. The strongest will be fit to plant out in April and May, and they will flower the first season; but not strongly and well before the second year. Then all the best sorts ought to be marked and grown a third year, in order to test them with the best-named kinds. Cuttings can be taken at all seasons of the year; and in the case of new or rare sorts, a few might be treated like *Dahlias* in a hot pit, the cuttings being taken off as soon as they are 3 in. in length, or they might be cut into single eyes, when they will

root in a short time in the bed of a propagating-house. They can also be propagated by means of the roots, the oldest of which should be cut into pieces about  $\frac{1}{2}$  in. in length, sown, so to speak, in boxes, and treated like seedlings. I have also struck the leaves, but they are long in making shoots, and altogether I consider this mode of propagating to be too slow to be recommended. The mode of propagating by division is simply taking the old plant and cutting it into small pieces.

As regards the properties of an exhibition Phlox, the form should be a perfect circle, quite smooth on the edge, and of good substance; the colours should be clear and well defined, the flowers arranged close on the spike and overlapping each other; their size should be about 1 in. in diameter. The spike of the Early Phlox ought to be quite conical, and that of the Late one a corymb. The habit of the plant should be strong and erect, with plenty of broad and healthy foliage, and it should not exceed 3 ft. or 4 ft. in height.

#### Pentstemon.

Of this useful genus I will just name a few species that are well worth growing, although the different hybrids now in cultivation are much finer. Nevertheless, for the herbaceous border and rock garden, *P. glaber*, *humilis*, *ovatus*, and *speciosus* are very unique, and no one can overlook the beauty of *P. Murrayanus*, *Cobaea*, *Kellermanianus*, *heterophyllus*, and *Palmeri*. As regards cultivation, Pentstemons will grow in any good garden soil; but when wanted for exhibition purposes, it is best to grow them in beds by themselves, well exposed to the sun and air, unshaded by trees or shrubs. Being cross-feeding plants, they require rich ground, and will stand a good watering with liquid manure or guano water during the growing season. When, in early summer, they commence to grow, put a stake to each plant, and if extra-fine spikes be wanted, all the side shoots ought to be pinched close to the stem. This will induce the growth of a number of short cuttings from the root, which will be useful for purposes of propagation. When they have to be cut for the flower show, it is of the greatest advantage to roll wet Moss round the cut part of the stem, and to immerse the spike in clean water; this will, in a great measure, exclude air, and prevent the flowers from flagging or falling. *Pentstemon Scouleri* is about the only species that has a shrubby habit, and it makes a fine plant to train on a low wall, where its blue flowers are very ornamental in August and September.

Pentstemons may be propagated by means of seeds, cuttings, and division. Seeds of the best sorts only should be saved, and they must be well ripened before they are gathered. They may be sown in heat in February and March, in boxes or pans, in good, free soil, and they should not be covered too deeply. As soon as the young plants are fit to handle they should be pricked out into boxes or in a frame, and planted out in April or May, when they will produce a dense mass of bloom in August, September, and October. Seeds may also be sown in the open air in June in a bed of finely-prepared ground, and the produce can be planted out in beds from 9 in. to 12 in. apart each way. These will flower in the following July, August, and September, and will ripen a great quantity of fine seed; the best sorts should be marked and propagated for further trial. When propagated by cuttings they should be selected, when about 2 in. or 3 in. length, from the sides of the strong shoots, and put into a cold frame close to the glass in good, rich, sandy soil, well watered and shaded from the sun. Division is chiefly employed in the propagation of the dwarf species.

As regards the properties of a show Pentstemon, the spike should be strong, stiff, and erect; the flowers should be in bunches of from five to seven, set on short foot-stalks, and arranged close to the spike; the blooms should be as near a circle as possible, and should stand nearly erect on the spike, and they should be of good substance; the colours should be rich and well defined, and if with a white throat, the lobes and the outside of the flower should be of one colour, and the circle of white well defined; if blotched, pencilled, or striped, they should be bold and effective—not running one into the other, nor flushing like ink on wet paper; the plant itself should not exceed 30 in. in height, and should be branching from the ground upwards.

\* Read at the Scottish Horticultural Association by Mr. James Grieve, Pirbright Park Nursery, Edinburgh, on Tuesday, January 8, 1878.

**Chelone.**

*Chelone barbata*, *mexicana*, *purpurea*, and *Torreyi* are generally grouped by themselves, being quite distinct from the *Pentstemon* proper. They constitute a class of dwarf, herbaceous plants which send up spikes of flowers from 2 ft. to 4 ft. high. They are quite hardy, and very ornamental in the herbaceous border. They differ from the *Pentstemon* in which the two upper petals are small, and the three under ones large, while in the *Chelone* the two upper petals are large, and the three under ones small, and the throat of the flower is full of strong hairs. The *Chelone* proper is a true herbaceous plant, dying down under the surface of the ground, and the shape of the flower, as I have just stated, is quite distinct from that of all the *Pentstemon* family. *Chelone Foxi*, *glabra*, *obliqua*,

quite a distinct variety, and well worth adding to any shrubbery or pleasure-ground where such plants are grown.—W. E. G., *Belgrove, Queenstown, Co. Cork.*

**Winter Crocuses.**—*Crocus Imperatorius* furnishes a kind of link that almost keeps up the continuity of flower between the autumn section and the favourite spring-flowering kinds. *Crocus speciosus*, and its autumn kindred allied to the giant section, as the *Colchicums* are termed, carry us through nearly two months of early winter. *Crocus Imperatorius*, a mid-winter kind, is also in habit allied to the first and last winter sections, as it has more leaves developed when in bloom than the autumn kinds, and less than the earliest of all the spring kinds, the old *Cloth of Gold*. Good clumps of the winter *Crocus* in sheltered places would be just now esteemed very charming, but perhaps it is best fitted for pot culture in a cool house.—A. D.



Lianes, or woody twining plants.



Palm (in flower and fruit).

Geographical Distribution of Garden Plants : Tropical American Region (see p. 52).

*Lyoni*, and *altissima* ought to be included in every select collection of border plants.

**Second Flowering of *Gynerium jubatum*.**—This new variety of the Pampas Grass, which I described in your columns in the autumn of last year as being by far the earliest to expand its graceful, feathery inflorescence of any variety with which I was acquainted, being, in fact, intermediate as regards the time of its flowering between the summer-blooming *Arundo conspicua* and the almost winter-blooming *Gynerium argenteum*, or ordinary Pampas Grass, is now blooming a second time in front of my house, planted out in the Grass in by no means a specially-sheltered or favoured situation, but fully exposed to the south-easterly gales, which are what we suffer most from here. It has sent up five good spikes, of which two are open, and if the present mild weather continue, I expect the others will also fully expand. I consider this *Gynerium* to be

**NOTES AND QUESTIONS ON THE FLOWER GARDEN:**

**Early Primroses.**—We have some plants of the common wild Primrose in full bloom on shrubbery banks in sheltered positions, and cultivated coloured varieties have been in bloom all the winter; I do not, however, attribute this altogether to the mildness of the season, as the real woodland Primrose beds have the ordinary wintry aspect. My impression is that high cultivation induces early growth, and consequently early flowering, which eventually becomes a fixed character in the Primrose.—J. Groom, *Heathon.*

**A Flower Garden on a Rubbish Heap.**—A few weeks ago we passed a railway station where a large bank of dug earth had been deposited in a conspicuous place, giving the spot an appearance exactly the reverse of ornamental. The occupant of the station, however, knew how to take advantage of things adverse. From pegs at the bottom of the bank to pegs at the top he had stretched a large number of cords at regular distances apart, and on these *Convolvulus* and other twiners had freely extended themselves, nearly clothing the whole surface with green foliage and purple bloom. In another place a compost heap was covered with *Petunias* and *Phloxes*.—"Cultivator."

## THE FRUIT GARDEN.

### SOWING AND TREATMENT OF EARLY MELONS.

From the beginning of January on to the middle of February is a good time to make two or three small sowings of Melon seeds for an early crop. The seed should be selected with care, and procured from trustworthy sources, always keeping in mind that certain varieties require more than a mere recommendation on paper for early work. By all means let us have new varieties, and if they turn out to be satisfactory, good and well; but I have found it best to keep to one variety for early or late work. I always observe that the longer I keep any single kind the more it improves in constitution, and the better it becomes adapted to our climate. The sort which we grow here for early fruiting is Malvern Hall, an old Melon possessing rare qualities as an early forcer. It ripens from ten days to a fortnight before any other kind which we have tried, but it does not present that imposing appearance on the dessert or exhibition table that many other varieties do, either in form or size. Neither is its habit of growth or vigour very striking; on the contrary, the stem is hard and wiry in appearance, and the leaves small and comparatively hard. To this fact we ascribe much of its merit for early or late growing in unfavourable localities, like that of the part of Lancashire from which I write. It is not so apt to damp off at the neck as more vigorous growers, nor are the leaves so suddenly affected by atmospheric changes. In their earlier stages of growth the young plants do not seem to thrive so luxuriantly as others do, but they make up for the deficiency afterwards. The early Melon crop is our most difficult one to manage. Early Grapes, Peaches, or Strawberries are comparatively easy to grow, simply because they have furnished themselves with all the essentials in the current year's growth, but with the Melon it is very different. The only advantage one can have is good seed and proper facilities for growing it, which is more the exception than the rule. Talk about growing early fruit, why a compact house, well treated and situated, is half the battle. Just compare our Lancashire climate with that of the Isle of Wight, and you have the difference at once. How rarely do we see a compact lean-to house, with abundance of top and bottom-heat, located in a sheltered corner which catches the first rays of light and the first and last gleams of solar heat? and yet these facilities would only be giving the gardener a fair chance of acquitting himself creditably in the matter of an early Melon crop. But it may be asked, How about the other side of the question? Well, I would just apply myself as best I could to improve on existing arrangements (if improvement were possible), and adapt myself to circumstances.

In sowing the seed for early crops, have the requisite number of small pots washed clean, and put a rough piece of soil in the bottom of each, filling the pot about half-full with any ordinary soil run through a  $\frac{1}{2}$ -in. riddle. Then drop two good seeds into each pot, and cover slightly through a fine sieve. The pots should then be plunged in a temperature of from 80° to 85°. If the bottom-heat be from fermenting material, there will be no need of watering before the plants have grown into "rough leaf." Meanwhile, they will be earthed up with soil that is warmed, either with hot bricks or some other appliance, to the same temperature as that of the soil in which the plants are growing. This is done by consulting the bottom-heat thermometer, and nothing is of more importance than avoiding checks in early growth.

While the young plants are progressing, the soil for the final planting out will be in process of preparation. Melons will grow in any soil, but they prefer a good fibry loam well incorporated with burnt clay and wood ashes; and preference should be given to limited room for early crops. Taking the "make-shift" principle for our guide, bottom-heat can always be supplied where there is a command of warm manure and leaves. A rude base of brickwork can be laid of sufficient height, on which to place either pots or square tubs with drainage holes in the bottom, to admit of a free passage for water, and the tubs might be made to come to pieces like a frame. By having a base of this sort, the bottom-heat could always be renewed and a steadier heat kept up than by planting out on a bed where the heat could not be renewed at intervals. When

about 1 ft. high, two or three of the strongest shoots should be stopped, in order to secure a few fruiting laterals; and in ten days or so two or three more might be pinched in the same way, and the remainder might be allowed to reach the top of the wires before they were stopped, and might be permitted to carry a full crop. Of course, pinching so early entails a little sacrifice, but the advantage of a few early fruits is no mean consideration with many people. Heat and moisture should be increased according to necessity as the days lengthen, and later conditions of cultural treatment ought to be governed by the exigencies of individual requirements. W. HINDS.

*Otterspool Park, near Liverpool.*

### FRUIT TREES ON ARCHES OVER WALKS.

THERE is certainly much to be said in favour of this plan of growing fruit trees, and most heartily do I second Mr. Hobday's remarks (see p. 11) by describing a plan which we adopted here some five or six years ago, and which has far exceeded our expectations. The kitchen garden is divided into four parts by two central walks running crosswise and lengthwise. Originally, as in many other kitchen gardens, ribbon borders lined each side of the walks; but, thinking that such a plan was a waste of space, I obtained permission to do away with the central cross borders and devote that space to fruit trees—Pears. The soil being light and very poor, I had the ground deeply trenched, and worked in a couple of layers of fresh stable manure. The borders, which are 6 ft. wide, were then marked out to receive two lines of trees, each of which was planted thus—

at 4 ft. apart in the rows. Two-years'-grafted trees were used, and trained the first year as upright cordons; the second year stakes were used for the two front rows, slanting towards the walk; and the following year an arch was formed over the walk with strong Hazel rods, to which each cordon in the front row was trained, till now the two lines of trees have met each other, and this season, by way of experiment, I grafted them together. The trees are so sturdy, that now they form an arch without any support whatever, and the grafting will add to its strength, though what effect the union may have on the fruit remains to be proved. The last two years they have fruited excellently, and doubtless they will continue to do so. It will thus be seen that this plan involves no expense of erecting supports or arches; and though I by no means wish to disparage these, I am of opinion that they are unnecessary. The two back lines of trees have been trained and trimmed into a pyramidal form, and, through having been allowed greater freedom of growth, they have had to be root-pruned twice to induce fruitfulness, which, I am happy to say, has proved to be the result. To make amends for the loss of bedding plants, now that the trees are established, I have planted the space underneath them with flowering herbaceous plants, so that in lieu of three months' gaiety we have something both of interest and profit all the year round.

*Hecksfield.*

W. WILDSMITH.

**Manuring Bush Fruits.**—I always like to give Gooseberries, Raspberries, and Currants a good dressing of manure at the season when the pruning is finished. There is not much fear of inducing too much grossness of habit in bushes or trees that bear a heavy load of fruit annually. The manure should only be lightly forked in, as this keeps a good many of the roots near the surface, and, consequently, the wood made is firm and short-jointed. If the land be well prepared before the bushes are planted by trenching and manuring, the fork and hoe will do all the cultivating that will be required amongst them afterwards, so long as they can profitably occupy the same plot, and when that period expires it is better to plant a fresh break and destroy them. On dry, porous soils, mulching early in summer is very beneficial, as it enables the trees to carry a much heavier crop with less signs of exhaustion than when mulching cannot be resorted to. The mulching need not necessarily consist of manure; the bushes will, of course, derive more support from manure, but in most cases it is simply moisture that is required, and anything that will check evaporation may be usefully employed.—E. HOBDAY.

## BIRDS AND BERRIES.\*

DURING the last few months certain trees have been observed covered with fruit, often in very large quantities. Many were early robbed of their produce, while others remain untouched even at the present time. The greedy way in which birds cleared off many varieties of the smaller native or hardy fruits and berries, to the total exclusion of others, although belonging to the same genus or species, is worthy of remark. This peculiarity was first observed during autumn in the case of the berries of most of the varieties of the Service or White Beam trees. During September and October trees of all sizes were covered with fruit, which was rapidly taken off by blackbirds and thrushes, often before it was thoroughly ripe. Of one variety, however, viz., the *Sorbus torminalis*, which has brilliant crimson fruit, not one berry was meddled with till the end of December, and then

upright branches. While the Yew berries last scarcely a Holly or Thorn seems to be meddled with.

Birds would appear to avoid certain fruits, the colours of which are different from those to which they have been accustomed. As I have stated, the rich crimson fruit of the *Sorbus torminalis* is avoided, although ripe at the same time as the other Service tree berries, which are of a yellowish tinge, spotted with red, and which are eaten. The two varieties may even be seen side by side, the yellow bared, and the crimson untouched; but whether this is on account of the colour alone or because of a difference in flavour I am unable to say. The berries of both, however, are pleasant enough to the taste. This selection of certain fruits is also applicable to the fruit of the yellow-berried Holly, which is found thick on the bushes during a severe winter when all the red berries are gone. Birds also seem to



Epiphytal Orchids, Bromelias, and Ferns.



Philodendrons.

Geographical Distribution of Garden Plants: Tropical American Region (see p. 53).

only a few, as clusters of them are still plentiful on many of the trees. The common red Rowan tree berries were likewise cleared off in a few days during the month of September. At the present season, as well as all through December, the Yew trees formed a great resort for birds, the red berries being greedily eaten by them, so much so, that besides passing a considerable quantity of pulp and seeds, which lay plentifully on the ground around, the branches were in many cases covered with ejected masses of crimson pulp. It seemed as if the berries were no sooner down the throats of the birds than they were immediately thrown up, always mixed with the small green nuts which are embedded at the end of the fruit. The Irish Yews (*Taxus hybernica*) were this autumn loaded with fruit, and it was remarkable to see the manner in which the birds cling to their

avoid the yellow-berried Yew, yellow-berried Mountain Ash, and the black-fruited Thorn, few of the fruits of these being touched till the common coloured kinds are gone. In this district of Scotland we have few ripe white berries on the Mistletoe this year, most being green, except in some very favourable situations. I find amongst the large bunches sent at this season from England, that although many berries are ripe and plump, numerous others are seen in the transition state from green to white. One can scarcely fancy that the Mistletoe berries are sought after by birds for the sake of food alone. It is evident that birds have an object to accomplish with regard to them. While eating the fruit, the extremely adhesive substance surrounding the seeds causes them to adhere firmly to the bills of the birds. In order to get rid of this foreign substance, recourse is had to rubbing their bills on the branches of neighbouring trees; and in this way the seeds are left sticking to the branches, where they afterwards take root and

\* Read the other evening by Mr. James McNab before the Botanical Society of Edinburgh.

grow. This method of distributing Mistletoe seeds seems to be assigned to them by Nature, as it is impossible for such seeds to grow in soil. We have just now several young Mistletoe plants growing on some out-of-the-way branches, evidently two or three years old, in positions in which birds have taken refuge to get their bills cleared of the glutinous substance, and seeds adhering to them. A similar practice is adopted by cultivators when propagating the Mistletoe, viz., by bruising the adhesive pulp surrounding the green central germ with the fingers, and fixing it on the bark of a tree to which it readily adheres. In order to prevent birds removing the green germ, which they frequently do, it is necessary at times to cover the germ with a piece of fine wire gauze netting or muslin, keeping the muslin tight over a piece of wire previously adjusted. The Sea Buckthorn (*Hippophae rhamnoides*) is another indigenous fruit-bearing plant which this year is fruiting in its native stations in the greatest abundance, the fruit clustering like that of the Holly, but of an orange colour, the leaves being narrow, and of a glaucous Ash colour. This Buckthorn is now very generally cultivated in many of the sandy districts of East Lothian. Perhaps the largest native tract of this plant is to be seen on the "Sandy Hint" at Tynningham Point, where

## PLATE CXI.

## A FEW GOOD ONCIDIUMS.

(WITH A COLOURED FIGURE OF *O. CONCOLOR*.)

Drawn by Mrs. DUFFIELD.

The genus *Oncidium* contains a very large number of species; the flowers of many of them are, however, small and insignificant, looked at from a gardening point of view, and, therefore, not worth the attention of those who have but limited accommodation; the few, however, here described, merit a place in every collection of Orchidaceous plants.

*Oncidium concolor*, the subject of the annexed illustration, is a native of Brazil, and has, until recently, been exceedingly rare; it is now, however, more plentiful, and well deserves the attention which it is receiving. Being close and compact in habit, it may be grown upon a block, or in a pot, whichever way may suit the taste or convenience of the cultivator. It should be placed at the warm end of the Cattleya-house, and be treated liberally as regards water,



A Garden Cemetery (see p. 50).

a great extent of the ground is covered by a dense thicket of this shrub, varying from 4 ft. to 10 ft. in height, and all in fruit-bearing condition, contrasting well with the Hollies and Thorns, which are also abundant in the district. I wrote to Mr. Lees, who was long gardener at Tynningham, to ascertain if the berries of the Buckthorn were eaten by birds like those of the other native fruit-bearing plants. In answer to my question, he stated that he never saw them much frequented by birds till all the fruits of Hollies and of Thorns were exhausted. During the severe winter of 1860-61, when birds were sorely pressed for food, blackbirds, thrushes, and bullfinches might have been seen in flocks upon them; but although they eat the berries, he did not think they were very fond of them. Mr. Lees adds that it is rare to see the Buckthorn fully covered with fruit two years in succession. Although the Buckthorn succeeds in cultivation, it is rare to see more than one or two dozen berries on cultivated bushes in any one place away from the sea. While on this subject I may state that the distribution of many fruit-bearing plants, particularly in some districts of Scotland, is chiefly through the agency of birds, many such plants as Yew, Holly, Thorn, Elder, and Mountain Ash being found in many inaccessible places on the hill-sides.

taking care, in the first instance, that the pots are well drained. Its rich, yellow flowers, which measure from 1 in. to 2 in. in diameter, are produced upon pendulous racemes during the months of April and May.

*O. macranthum*.—A noble species, producing large flask-shaped, much ribbed pseudo-bulbs, and long, narrow, bright green leaves; the flower-spike is much branched, and bears numerous blossoms, each measuring nearly 4 in. in diameter. The sepals and petals are thick and fleshy, and of a rich, deep yellow colour, tinged with purplish-brown; lip small and similar in colour. This species does best in a pot, and it should be placed in a cool house. It flowers during spring, and is a native of Peru and New Granada at considerable elevations.

*O. varicosum* Rogersi.—Until about a year ago this variety was extremely rare. Lately, however, large importations of the species have been received, and many plants of the variety (Rogersi) have appeared amongst them. It is a compact-growing plant, and has large, ovate, dark green pseudo-bulbs, more or less freckled with black; the flower-spike is large and much branched, and bears, in some instances, as many as 150 or more blossoms, each measuring



ONCIDIUM CONCOLOR.



nearly 3 in. in diameter. The sepals and petals are very small, the lip deeply bilobed, and of a rich golden yellow colour. It may be grown either in a pot or in a basket, and it thrives best in the temperature of the Cattleya-house. The blooms appear during autumn. It is a native of Brazil.

**O. Marshallianum.**—The pseudo-bulbs and leaves of this species somewhat resemble those of *O. crispum*, but it is, nevertheless, distinct. The flower-spike is much branched, and bears great quantities of large, handsome flowers during April and May; the sepals and petals are golden-yellow, spotted and barred with chocolate; the lip large and spreading, rich golden or orange-yellow. This fine species, which is a native of Brazil, thrives best in the Cattleya-house.

**O. Lanceanum.**—An old but extremely beautiful species, and an exception to the genus in being destitute of the colour which is so prevalent amongst its members. Its leaves are large, thick, and fleshy, carinate, and without pseudo-bulbs, bright green and profusely dotted with reddish-brown. The flower-spike, which is erect, is many-flowered; the sepals and petals are greenish-white, heavily blotched and barred with chocolate or deep red; lip rich violet and rose. It blooms during summer. The leaves of this species are very liable to spot. It is found to thrive best in the warmest end of the Cattleya-house, or even in the East India-house. It should be well drained, potted in peat and Sphagnum Moss, and carefully watered. If nothing is allowed to become stagnant about it, and sudden changes of temperature avoided, it will continue in good health and bloom profusely. It is a native of Demerara.

**O. sessile.**—A charming plant, of compact habit, producing oblong, slightly-compressed, pseudo-bulbs, and pale green, ligulate leaves. The flower-spike, which is erect, is much branched, and bears numerous large golden-yellow flowers, the sepals and petals of which are dotted with cinnamon. It should be grown in a pot and placed at the coolest end of the Cattleya-house. The flowers appear during spring and early summer. It is a native of Cerecass.

**O. saurodes.**—This distinct and handsome species is now tolerably plentiful. Its pseudo-bulbs, which are dark green, bear a pair of broad, obtuse leaves of the same colour. The flower-spike sometimes attains a great length, and is much branched, bearing numerous orange-yellow flowers, which are spotted and blotched with crimson. It blooms during spring and summer, and thrives best in the Cattleya-house. It is a native of Brazil.

**O. ampliatum majus.**—A fine, old, well-known plant, having sufficient merit to maintain its position even amongst the numerous novelties which have cropped up during the past few years. Its pseudo-bulbs, which are large and compressed, are pale green, freckled with reddish-brown, and bear a single, large, shining green leaf, which is paler on the under side than on the upper. The flower-spike, which rises from 2 ft. to 3 ft. in height, is much branched, and bears numerous large flowers, which are clear soft yellow on the upper side, and white beneath. It blooms during the summer months, and thrives best in the Cattleya-house. It is a native of Venezuela and Nicaragua.

**O. splendidum.**—This still continues to be one of the rarest of Oncids. It has small, somewhat compressed, dark green pseudo-bulbs, that support a single stout, leathery leaf of the same colour. The flower-spike, which is erect and branching and about 2 ft. in height, bears numerous very large flowers, the sepals and petals of which are greenish-yellow, transversely barred with cinnamon; lip large and flat, and of a rich deep yellow colour. It blooms during the spring and early summer months, and should be grown in the warm end of the Cattleya-house.

In the cultivation of the different species of *Oncidium* here enumerated, care as regards watering is one of the chief requirements, especially during the winter months. The drying-up system is now seldom practised, except in a few old-fashioned places. Experience goes to prove that during their resting season the plants must be carefully watched, and never allowed to show signs of suffering from drought before water is given them; the atmosphere should, however, as a matter of course, be kept dry, and any sudden change of temperature avoided at any season, but especially in winter. W. H. G.

[For the specimen from which the annexed plate was prepared we are indebted to Messrs. Veitch.]

**Abutilon vexillarium** as a Basket Plant.—This is at once one of the finest and most effective plants for hanging baskets, or as a pot plant for brackets that can be grown, and as there are not too many really good basket plants, those having each to furnish should obtain it forthwith.—W. W. H.

## TREES AND SHRUBS.

### TRANSPLANTING TREES.

(Continued from page 30.)

THE next form of transplanters which I find useful are flat transplanting spades, also invented by Mr. McGlashen. They are of various sizes, from the common garden form to spades 30 in. across. The sizes which I generally employ, and which I find by far the most useful, are those used for lifting a ball 13½ in. in diameter at top, requiring two men to lift; also a ball 17 in. across, requiring four men to lift; and one 24 in., requiring six men to move. As each set of spades requires its own apparatus, I shall simply detail the working of a 17-in. set, a size which I consider exceedingly useful, and therefore



Iron frame.



Hook for iron frame.

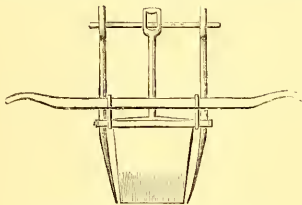
more employed here than any of the other kinds. It consists of four spades or lifters, having ordinary, but strong, garden-spade-handles, a strong iron frame 20 in. in diameter, having a curve in the centre of each side, and made in two pieces, with a curved hinge at one of the angles, which can be taken off by putting the two portions well back; this, however, is not necessary. A hooked nut is fixed to the opposite angle, which keeps the frame together when the pressure is put against it from within. The frame is first laid on the surface of the ground round the shrub or tree, keeping it equi-distant from the stem. A cut, 4 in. or 5 in. deep, according to the nature of the surface soil, is made round the outside of the frame. This enables any superfluous surface soil to be removed, and the top of the ball to be made to slope from the stem to the iron frame, which is placed at the bottom of the cut. By this



Method of using iron frame.

simple arrangement, I find that I can lift a much larger shrub with a smaller-sized machine than I could do by placing the frame wholly on the surface, which was Mr. McGlashen's original plan. By this partial sinking of the frame, it causes the widest portion of the ball, where most roots are generally to be found, to be at the widest part of the transplanting spades; besides, it is rendered much easier to lift, although the weight may be a trifle greater. After the frame has been placed in the cut intended for it, the four spades are inserted by merely pressing them down with the feet, beginning with the two opposite ones, and keeping them exactly in the middle of the side of the frame, the curve being intended for the back of the spade-handle. The opposite spades are next inserted. It is necessary that each spade should be put in at the same angle, which is easier done when the frame is inserted than when placed on the surface. Two tension-rods, of flattened upright iron, about 3 ft. 6 in. long, 1 in. deep, and ¼ in. broad, having a cross iron pin about 6 in. long, ¼ in. deep, are fixed across one end, but about 4 in. from the point, so as

to keep the tension-rod in an upright position. The other end, first inserted into the opposite handle, is graduated with elongated holes; another iron pin, 6 in. long, and for convenience, is generally fixed to a chain attached to the tension-rod. One tension-rod and chain is first put through the branches and between the opposite handles of the spades, the cross-pin preventing it going through. One man will pull the fixed cross end of the tension-rod, and another the opposite side. When sufficiently extended, the chain-pin is inserted in the most extreme elongated hole that can be reached, but inside of the spade-handle. The tension-rods should always be 10 in., or 12 in. longer than what may appear to be required, as it occasionally happens that if the spades are inserted with more slope than is necessary, the extra length will be found useful. Besides, the same rods can be used for different sized spades. For this end it is advisable that plenty of holes should be made in them. After the one tension-rod has been fixed, the other is placed through the handles of the opposite spades, immediately above the first, and tightened, as before stated. Four hooks, all of a uniform length, are then inserted under the iron frame, one at each corner, but on two sides only; or, as sometimes happens, particularly in the case of smaller-sized frames, oblong rings are permanently fixed on the corners, two on the opposite sides, large enough to allow of the insertion of a pair of lifting hand-spokes. If the tension-rods are sufficiently tight, four men will lift the plant out of the ground in a few seconds, and carry it to where it is to be planted; but with larger spades and heavy balls, it is advisable to use a long-handed truck or mason's "bogie." If the plant is to be conveyed in this manner, in order to keep



McGlashen's 17-in. Transplanting Spade.

the spades in position during the transit, it is necessary to take out the hand-spokes, and, with one long piece of soft rope, fix the iron handles to the tension-rods up and down all round. This simple precaution will prevent the frame from moving, which sometimes happens by the shaking of the spades or the bogie, or even when carrying, or while being rested on the ground, but which is seldom or never the case if the rope-fixing is attended to. When taken out of the pit, it is desirable to place a piece of canvas below the ball, tying it at the same time to the sides, to prevent any loose soil falling on the ground. As the hole for the reception of the plant is previously prepared, and is generally made about 1 ft., or 14 in. wider than the size of the spades employed, it is necessary to raise the soil in the centre of it, so as to fill up any vacancies arising from fallen earth; the plant is then lowered by means of the hand-spokes. At this stage it is necessary to see that the plant is standing perfectly upright; if so, the hand-spokes are withdrawn. The frame is then pushed down by pressing the feet on the corners; it is then unhooked and removed, the tension-rods are slackened and taken off, and the four spades fall back, leaving the plant standing in the centre of the hole. At this stage it is necessary to have the sides of the ball scratched round, as before recommended, in order to free the glazed surface acquired through the pressure; and if any roots have been cut by the insertion of the spades, their ends should be smoothed, and the hole filled in with prepared soil. When large spades are used, say 36-in., they are generally provided with solid iron handles, 1 ft. long, having a strong iron eye fixed near the top of each. These spades are generally driven into the ground (but within the frame) by means of a heavy mallet. The tension-rods in this case are provided with screws on each end, which are inserted

into the iron eyes placed on the side of the spade-handles, each being provided with moveable thumb-nuts at each end for tightening them to the spade-handles. Such transplanting spades require the assistance of six or eight men to lift them and the plants out of their holes, and a bogie to place them on. With larger balls than those now described, where one spade only on each side is insufficient, smaller spades are employed, two at each end and three on each side, suitable frames being used for them, 4 ft. 8 in. long, and 3 ft. 5 in. broad. In this case, like the 36-in. ball, all the spades are of solid iron, and each is provided with iron eyes and tension-rods. For such balls a moveable wheeled machine is employed. By the removal of the back frame and screw beam, the machine is placed on planks on each side of the spades, and the back frame and screw beam are replaced. By means of chains fixed at each end of the iron frame, the plant is raised by the screws out of the ground, and is thus left suspended in the machine for removal. As I have not witnessed any very satisfactory experiments conducted with the large solid-iron spades, I therefore leave this part of the McGlashen transplanting to parties who have the medium-sized horse machines in their possession. I have stated that the lifting of plants with the 13½-in. spades, and also with the 17-in. set, is an interesting process, being cheap, rapid, and safe. A few may come to grief at first from the want of experience, but after the principle is thoroughly understood by the operator, the number of plants that can be lifted in a given time is wonderful. I have seen two men preparing holes and planting as fast as any other two could lift and convey a 13½-in. ball.

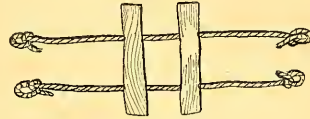
As I have now stated all that I intend to do about the ordinary McGlashen methods of transplanting, dwelling chiefly on the sizes of spades which I generally employ, I shall now give my experience as regards the removal of evergreen shrubs and trees of various sizes, lifted with adherent balls of earth, by what we call the rack system, and which has long been adopted here, and always with perfect success, occupying, however, much longer time than is taken up by McGlashen spades. Before doing so, however, I shall give a short notice of the machines or carriages which we employ for heavy transplanting purposes, in addition to those already noticed. One very strong carriage is 5 ft. 6 in. long, 3 ft. 3 in. broad, and 1 ft. 6 in. high. The upper surface of wood is 2 in. thick, supported above the axles, upon three longitudinal bars, each 5 ft. long, 8 in. deep, and 4½ in. broad, resting on and fixed to the heavy iron axles, supported by four solid wooden wheels, strongly iron bound. The wheels are each 15 in. in diameter and 7 in. broad. The back ones turn on a fixed axle, while the front one is moveable, and strongly pivoted in the middle, on the ends of which are fixed suitable appliances to be used for horses. This carriage is freely surrounded by hooks and rings. It is also provided with a double tram, to enable it to be drawn by horses, as it is only intended for trees to be moved in an upright position along a public road. When not employed for heavy work, two of the wheels are used for a strong bogie, 2 ft. 6 in. long, 2 ft. 5 in. broad, and 18 in. high, having a long handle attached to it. This carriage is also freely supplied with hooks and rings. The other two wheels belonging to the large carriage are likewise used for a medium transplanting machine. The top is 3 ft. 6 in. square, the two solid wheels being fixtures for a time, on a strong iron axle. It has also a smaller wheel in front, working on a moveable pivot attached to a long handle, and is drawn by ropes, the handle and small wheel guiding it. Besides those just mentioned, we have what we call frame-rollers, one 3 ft. 9 in. long, and 3 ft. 6 in. broad, resting on two strong iron-bound rollers, each 13½ in. in circumference, having a square iron axle passing right through them, the height above the ground being 6½ in. This machine is much used when the trees are moved in an upright position on planks. Another frame-roller carriage is 3 ft. 4 in. long, 2 ft. 6 in. wide, and stands 5 in. high, the rollers being 12 in. in circumference. These low frame-rollers are strongly bound with iron, and are made to carry very heavy weights.

We find them also exceedingly useful for removing large plants in tubs, both upright and on their sides. For the latter purpose these low-frame carriages have either three or four crossbars of wood, according to their size. When a tall Palm, or other exotic plant in a tub, is to be taken from one house to

another, it is first conveyed, so as to face the door, on common iron rollers. The sides of the tub are then supported on bricks, or blocks of wood made of planks 3 in. thick, plenty of them being always at hand. When the tub has been raised 6 in.—the height of two blocks—the smallest frame-roller is run below the tub till the back part of it is immediately over the two front cross-bars, fixing the front of the tub with blocks till such time as it is laid over. If the door be high enough, resting between the two front bars of the machine may be sufficient; but if not, it can be laid down by degrees, and supported on the back portion of the frame-roller with wooden blocks and wedges, and fastened with ropes to the hooks and rings; then it can be conveyed along on planks to the house intended for it. This is done with ropes drawn by men, strong iron crow-bars being employed to move it either to the one side or the other, so as to keep the machine on the middle of the planks; and when required to be turned, a sufficient number of the planks are laid side by side for the purpose. In a large plant establishment it is almost impossible to carry on heavy moving without some such appliances as those just described.

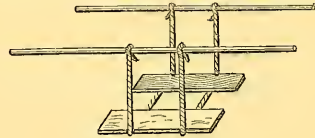
Let us now advert to the rack system of transplanting, which is suitable for balls of all sizes. Those which I shall describe are trees with balls varying from 1 ft. to 3½ ft. in diameter, the larger being the size we generally use here with the McGlashen spades. As an illustration of the rack system, I shall take a plant with a ball 6 ft. in circumference. After the ground has been opened up in the ordinary way all round, taking care to keep the sides quite upright and smooth by the use of a hand-fork, saving all the fibres that can possibly be got, cutting off or shortening any strong roots projecting beyond the ball, and saving all pliable ones to bend round the

the hole. The next operation is the undermining; this is done by means of a long narrow trowel, first on one side, and afterwards on the other. On the side to be first commenced, particularly when the balls are large, it is necessary to put a prop between the ball and the upright side of the hole, so as to prevent the ball leaning during the process of undermining. Two permanent lifting-boards, generally of Oak, slightly grooved on the under surface, to keep the lifting-ropes in their places



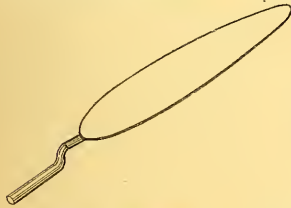
Lifting boards, flat.

are now provided. These are generally made in pairs, to suit the different sizes of trees to be transplanted. If the ball be small, two lifting-boards are sufficient; but if large, it is sometimes advisable to put in first a piece of thin deal, but of the same length as the lifting-boards, and the grooved Oak ones outside. It sometimes happens that the inner deal board cannot be taken out after planting without injury to the ball, being soft and thin, but that is of little importance, as it soon rots away. When



Lifting boards in use.

one side of the ball is completed, a prop is put to the opposite one; the undermining is again commenced, and the bottom boards inserted. The lifting-ropes, one for each side, are put below, beginning on the one side and then on the other. They are generally of a uniform length, and vary in thickness according to the weight of the ball. An eye is formed on each end of the rope, through which the hand-spokes to be used in the lifting-ropes are placed. The number of men to be employed for lifting the plant out of the hole depends upon the weight of the ball. In ordinary cases it can be done at once, but with larger balls we generally make a ledge in the upright bank, about half-way

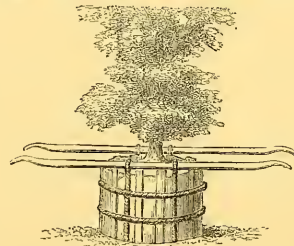


Trowel for undermining.



Form of rope for fixing canvas.

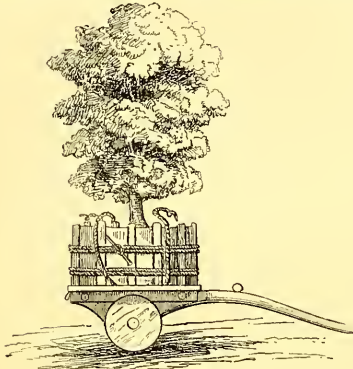
sides of it, a piece of canvas, doubled longways, is then put round, keeping the doubled portion at the under side, and exactly level with what is to be the bottom of the solid part of the ball. The canvas is first fixed with a piece of soft rope, which is put round the lower portion of the ball double, and, after being drawn through the single loop and partially tightened, it is taken up the side immediately above the loop, and then taken round the upper portion, twisting the one end round the other in opposite directions, no knots being used. Numbers of thin barrel-staves, all naturally curved, and all of uniform lengths, are then adjusted round the ball, but within the soft rope, keeping them about 3 in. or 4 in. apart, according to the apparent firmness or softness of the mass. The soft rope being made at first sufficiently tight to keep the staves in their respective places, a strong doubled rack-rope, ½ in. or ¾ in. in diameter, according to the size of the ball, is then put round the staves, immediately above the soft rope, and treated in the same way, sufficiently slack, however, to allow of two rack-pins to be put in, one at top, and one at bottom, but on opposite sides of the ball. The rack-pins are then tightly twisted till the rope is hard and firm. The ends of the rack-pins should be fixed with a piece of tarred yarn, or small rope, put below the rack-rope before being tightened, so as to fix them securely. The ends of the rack-pins should be placed so that the top of the upper one should be tied to the under rope, and the under pin to the upper rope, the pins in no case to be longer than the depth of the ball. These minor details may not appear of much importance, but they will be found to be essential when much transplanting of this kind is carried on. We have now got the ball as firm as it is possible to make it, and standing securely on the bottom of



Hand transplanter.

between the bottom of the hole and the surface; on this ledge or shelf the plant is first lifted. It sometimes happens, in the case of large balls, that the hand-spokes require to be lowered, and if that is to be done it should be at this stage. It will always be found that the lowering of the hand-spokes generally facilitates the lifting of the ball to the surface. If the distance to which the plant is to be conveyed is not great, it can be carried at once to its destination, but if far, it may be placed on a strong transplanting bogie and conveyed there. Several kinds and sizes of these machines are used here. After the plant has been placed in the pit intended for its reception, the bottom boards are taken from below it. If the under part of

the ball be not quite firm, the inner deal one, if used, may be left; the lifting ropes are also taken out. If the plant be thoroughly upright, soil is packed securely under the ball and all round it. The rack ropes, staves, and canvas are then taken off, the bent roots adjusted, prepared soil is filled in, and water is freely applied. From the description given of preparing the balls, it will be seen that it takes a much longer time than is done by the McGlashen spades. With large balls, however, it is very much safer, and when performed by experienced hands it is really astonishing the rapidity with which such work can be carried on. The rack system, when properly done, enables the transplanters to withstand a good deal of



Transplating truck.

fatigue, and no injury is sustained in the event of a breakdown, provided a sufficient number of men be at hand for assisting in lifting.

JAMES MCNAB.

(To be continued.)

### GLYCINES GROWN AS BUSHY SHRUBS.

WE are so much accustomed never to see creepers in any other form than that of climbing plants, which enlase and hook on to the supports, by the aid of which they rise into the air and produce their flowers, that we should not be surprised if the title at the head of this article were read with some approach to doubt on the part of some of our readers, not so much perhaps with respect to the Glycine being able to grow in this form, but as to their flowering properly. Nevertheless, this is the case, and these two things are perfectly possible. Nothing is easier than to have even very small plants which every year will be covered with a considerable show of bloom. On the other hand, when the Glycines first begin to blossom, it is only necessary to examine them closely to perceive that these plants show a greater disposition than a large number of others to flower abundantly on the old wood. In fact, it is rare to see the Glycine flowering anywhere else but on the old wood, resembling most of the fruit trees in this respect. We must therefore allow certain parts of these plants to grow old, which is easily done by breaking off the buds a little above their insertion, so as to transform their base, as we do when we similarly break off the buds of Apple and Pear trees. If the shoots have not been broken off sufficiently short, we may, during the pruning season in spring, cut back almost to the old wood, so as to give them the proper dimensions. Even if, in the course of two or three years, these shoots become too long, we can, so to speak, regenerate the plants by cutting the old wood, so as to give them the form and size we desire.

These remarks are purely practical, for we know of Glycines which, by being submitted to the operations just described, have not yet exceeded the dimensions of 5 ft. in diameter by  $4\frac{1}{2}$  ft. in height, although they are now over twenty years old. Every year at flowering time, notwithstanding this change of form, they disappear for a fortnight under a mass of bloom, and form one of the most beautiful effects it is possible to imagine. By planting alternately the two China Glycines with blue and white flowers we increase their beauty by the pleasing contrast of colour. Those who are in a position to make a trial of this method of training Glycines will never have to repent it.

E. A. CARRIERE, in the "Revue Horticole."

## THE INDOOR GARDEN.

### LEVETZOW'S SELF-WATERING FLOWER-POT.

THE danger of under or overwatering plants cultivated in pots is by no means an imaginary one, as almost every cultivator knows to his cost, and any contrivance which will prevent the possibility of supplying them with either an excess or an insufficient quantity of moisture cannot fail to be duly appre-



Fig. 1.

ciated. This Mr. Levetzow's patent self-watering flower-pot, represented by the annexed illustrations (figs. 1 and 2) does, and, as we shall see, it is very simple in construction. It consists, in reality, of two pots, situated one within the other, but united so as to have only one bottom. Whilst the outer pot is intended to hold water, the inner one is filled with soil, and there is no communication between them except what is due to the porosity of the inner vessel and of the air-tubes attached to it. The upper ends of these tubes, as will be seen by the illustrations, reach to just above the level of the water, and their lower ones, passing through the side of the inner pot, open out near its base. The tubes being porous, not only damp air, but a little water escapes by the lower extremities on to the layer of charcoal in the bottom of the pot. Thanks to

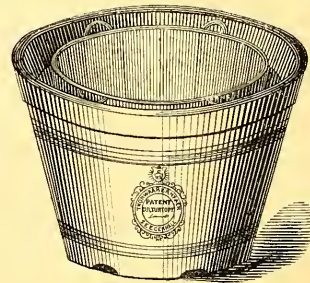


Fig. 2.

the property which charcoal possesses of absorbing and retaining humidity, the layer of it just alluded to, whilst it serves as a protection against an undue quantity of moisture, is yet able to supply the plant with the needful amount, so long, of course, as there is water in the outer vessel. As one would naturally suppose, it is more particularly when the roots of the plant begin to approach the bottom of the pot that they have the full benefit of its peculiar construction. At the Seegerhall earthenware works, situated at Neuwedell, in the Neumark (Prussia), Levetzow's self-watering, or so-called "Culturtopf," is manufactured of different sizes, as well as of various degrees of porosity, so as to suit the requirements of different plants.

T. S.

**Canistrum aurantiacum.**—Thanks to the writings and figures published by the learned Liège botanist, Professor Morren, the Bromeliaceæ generally are now attracting the attention of a considerable number of horticulturists, particularly on the Continent. Some members of this family are exceedingly handsome plants, and by no means difficult to manage. Given porous loam and peat, heat and moisture, and success is certain. The smaller genera and species do admirably in the warm Orchid-house, and many of them seem to like being kept in a close, moist stove for many years. *Canistrum aurantiacum* is distinguished by its close head of numerous orange-yellow flowers, borne on a peduncle overtopping the leaves; the broad red bracts on the flowering stem also form a conspicuous feature. It is of medium size, measuring about 2 ft. in diameter and little more than 1 ft. in height, including the inflorescence. One of the greatest recommendations in its favour is the length of time it



*Canistrum aurantiacum.*

will remain in bloom; a healthy plant, under favourable conditions will continue for three months in full beauty. The genus was founded by Morren.

**Sowing Lobelia Seed.**—Some recommend this to be sown on a gentle bottom-heat in March. Anyone who has a cool house and does not wish to wait so long for a stock of seedling plants, will find that seed sown at once in pans or pots, and placed on a shelf near the glass, will soon germinate, and thus furnish strong plants ready for pricking out by the time for sowing in a gentle heat arrives, as mentioned above. I have now two pans of seed just germinating in this way, without the least assistance from artificial heat. I make it a rule to sow *Petunias* early in November, and *Lobelias* and *Mimulus* just before Christmas. In this way I have an abundance of plants early in the spring without any trouble. The *Lobelia* is a half-hardy annual, and does not require such forcing treatment as is too often applied to it. Good strains of the best bedding kinds also come very true from seed, and, as a rule, produce better and more robust plants than those obtained by means of cuttings. The old *L. speciosa* seedlings used to come with rank, straggling habits, but this kind has been almost superseded by such fine sorts as *Blue Beauty*, *pumila magnifica*, *Ebor*, *Emperor William*, *Blue Stone*, &c.; and all of these produce in, the form of seedlings, that same dense, compact habit that they show when propagated by cuttings. *Blue Lobelias* are indispensable to all summer bedding displays, and, therefore, it will be to many a boon to know that they are thus easily raised. Sow at once in shallow pans in fine sandy soil; do not cover the seed, but just press it in and gently water.—A. D.

**Phalænopsis at Clapton.**—The large house in the Clapton Nurseries devoted to these will soon be very attractive. Many of the plants have already opened their blossoms, and if fine weather prevail for the next few weeks a grand display will be the result.—S.

## GARDENING FOR THE WEEK.

### Roses.

In the selection of *Roses* for pot culture, especially such as are required to produce flowers in winter, it is necessary to exercise considerable judgment. It will not do to be ruled by mere fancy as to this or that variety; nor should we be guided in the selection by the colours and fine forms of outdoor *Roses*. Still less by the most conspicuous to be met with in the collections exhibited at the various *Rose* shows, a course too often followed without the least consideration as to the suitability of the kinds chosen for the purpose required; and which is a continual source of disappointment, as not one in fifty of the finest kinds which those who grow for exhibition cultivate are adapted for pot culture. In support of this I may mention that amongst those who grow *Roses* largely for the London flower market, it frequently happens that not more than half-a-dozen kinds are to be met with. House after house may be seen filled with even two or three varieties, and I am acquainted with one considerable grower who cultivates little but one kind, and that is *Devoniensis*; but it must be observed he has succeeded in managing this favourite sort in a way that few growers have been able to approach. No doubt it is necessary to keep in sight the desirability of having sufficient variety, yet private cultivators would do well to imitate the trade growers, who seldom make mistakes in either keeping kinds that do not grow and bloom freely, or in producing flowers that the public do not appreciate. There is no section of *Roses* held in such general estimation, no matter how arranged, whether it be in vases, bouquets, or as button-hole flowers, especially the two latter, as the *Tea* varieties. The long half-expanded flowers of these are unrivalled for general floral arrangements. To this must also be added their perfume, and the fact of their yielding a succession of flowers so long as they continue to make growth, and, above all, their ability to produce flowers in the winter under the influence of a considerable amount of heat. As a white variety nothing can compare with *Niphotos*, but it is a somewhat delicate grower. It is the favourite white *Rose* growing in the London market, and everyone who attempts pot *Rose* growing ought to have several plants of it. *Isabelle Sprunt*, a bright yellow, is probably the finest of all, and will produce the greatest number of flowers; *Madame Falco*, a dark apricot-coloured kind, is a good, vigorous grower; *Catherine Mermel*, a flesh-coloured sort, is very fine in the bud state; and a good grower; *Cheshant Hybrid*, pale carnine, is beautiful in all its stages, and a free grower; *Gloire de Dijon* is yellowish-white, the open flowers being tinged with pink—this, though not so beautiful in shape as the kinds already named, is such a free grower and bloomer, with the natural property in the flowers of lasting long when open, that it would not do to pass it over; *Devoniensis*, sulphur white, is one of the most charming of all in the bud state; *Duchess of Edinburgh*, bright crimson, is a good grower, and we must not overlook the apricot-coloured *Safrano*; the *Hybrid Perpetual General Jacquemont* is one of the very best dark *Roses* for forcing in existence, and deserves to have a first place; *La France*, light blush, from its fragrance and beautiful shape, and vigorous good habit, is worthy of a place in the most select company; the *Hybrid Bourbon Charles Lefran*, bright rose, is also another excellent kind, but I should not recommend its being forced so early as the others. As a climber on the roof there is none equal to the beautiful *Noisette Maréchal Niel*; it is one of the finest of growers, and it produces equally freely its rich yellow flowers. *Lamarque*, white, is also worthy of attention. The above, though, as will be seen, only a small selection, are thoroughly well-proved kinds; and where a continuous supply of *Roses* is required through the winter and spring, I would much rather place dependence upon them, grow'ng duplicates so far as necessary, than I would extend the number of kinds. To come in later on through the spring, the following two dozen *Hybrid Perpetuals* or any portion of them, will be found suitable, viz., *Anna Alexiff*, *Alfred Colomb*, *Duchess of Sutherland*, *Comtesse de Chabrilant*, *Charles Lefebvre*, *Fischer Holmes*, *Caroline de Sansal*, *Senateur Vaise*, *Marquise de Castellane*, *Maurice Bernardin*, *Duke of Edinburgh*, *Madame Lacharme*, *Mademoiselle Marie Rady*, *Madame Louis Léveque*, *Prince Camille de Rohan*, *Star of Waltham*, *Madame Victor Verdier*, *Pierre Notting*, *Paul Verdier*, *Victor Verdier*, *Emilie Hansburg*, *Elie Morel*, *Etienne Levet*, and *Marguerite de St. Amand*. These will be found to flower freely under the influence of a moderate amount of fire-heat, but are better not kept so warm as those given to come in earlier. The *Teas* through the winter in a thoroughly light house, after they have commenced growing freely, will bear to be kept during the night at a temperature of 55° or 60°, but if they are not put into heat until the present time, 7° or 8° lower will be better until they have begun to push freely; in each case the temperature may be allowed to rise 5° or 6° in the day, or even

more during sunny weather. But in Rose forcing there is one most important matter to guard against, that is, in giving air never to admit it at the sides of the house, as a cold current coming in direct contact with the foliage is certain to produce mildew. In a Rose house sufficient means should always be provided for giving all the air required in the roof. Another essential is to see that the plants, before being introduced into the house are of completely free from aphides, which will often be found on, or about the base of the buds, yet in so small a state as not to be noticed by the inexperienced. Previous to placing Roses in heat, by way of precaution I have always found it advisable to syringe them well overhead with a solution of Gishurst at the rate of 3 oz. to the gallon; this is equally destructive to aphides, the eggs of red spider, or the spores of mildew. With Lilies required for forcing it is very desirable that the plants should have acquired sufficient strength, and be large enough for the purpose, as the produce from small plants will be proportionately small. Those who are commencing to grow them will always be able to obtain a supply of plants from the principal Rose nurseries that have been grown on in pots, and that have attained a size to give the desired results at once without the delay and partial disappointment that are sure to follow from forcing plants that are too small to produce anything but puny flowers, and few of them. It will be well, at the same time, to procure a sufficient amount of smaller stock of the Tea varieties in pots to grow on, and of the Hybrid Perpetual sorts recommended for immediate potting, keeping them plunged in ashes in a cold frame. With the Teas this precaution in most parts of the country is an absolute necessity, and the others will be much better under cover, as, when so treated, their roots will not get saturated with rain, nor be liable to injury from frost, from which even the most hardy plant is sure to suffer when its roots are confined within a pot, and the ball of earth which contains them becomes congealed; the expansion of the soil, when thus frozen, crushes the fibres. As to soil, Roses, more than most plants, require it of a strong rich character; such as is light, containing too much sand, is quite unsuitable. I have never found that the addition of either peat or leaf-mould, even in small quantities, was any benefit, but the reverse. Good loam moderately enriched with rotten manure, and just enough sand to admit of the water passing through it, is what they require. In potting, drain sufficiently and ram the soil quite firm, so as to make the ball solid. I have said nothing about pruning. The Tea varieties under pot culture should, as out-of-doors, have the knife much less freely used than the others. When the plants have attained sufficient strength, the weakest shoots may be cut away, and the stronger ones slightly shortened back. T. BAINES.

#### Stove and Greenhouse Plants.

Pot on *Draecenas*, *Dieffenbachias*, &c. Divide and pot singly choice *Marantas*, and keep them for a time in a frame inside the propagating pit. Increase the stock of any plants that are scarce. Pot off singly seedling Palms from seed boxes. Have stocks of *Camellias*, Orange trees, *Azaleas*, *Gardenias*, and *Rhododendrons* in readiness for grafting on in February and March. Young plants of *Cyanophyllum magnificum*, *Ficus*, *Medinillas*, &c., must not be permitted to become pot-bound, otherwise they sustain a check; on the contrary, they must be potted when they require it, supplied liberally with water, and, if practicable, have the advantage of a good bottom-heat. Under this treatment good plants are soon made, and the growth formed before the end of the summer has time to become well ripened before next winter. Water all evergreen plants moderately, and keep deciduous ones nearly dry. Plants in borders require watering very seldom at this season; but plants in pots, especially such as are near hot-water pipes, require unremitting attention as regards water, for, although apparently moist on the top, the soil in the bottom of the pots may be dry. Rather than keep the conservatory too warm, in order to forward the plants therein, supply any deficiency there may be in the way of flowers by means of *Camellias*, *Azaleas*, *Jasminums*, *Weigelas*, *Kalmias*, *Prunuses*, *Acacias*, *Dioleytras*, *Lily of the Valley*, *Dutch and Roman Hyacinths*, *Tulips*, *Narissis*, *Crocuses*, and other plants from the forcing pits. Decaying leaves must be regularly removed, and a rather dry and healthy atmosphere is a good remedy for such an evil, and to effect this supply artificial heat and plenty of air. Keep *Heaths*, *Epacris*, *Chorozemas*, *Boronia*, *Tremadoras*, &c., in the coolest and freest ventilated portion, and forced shrubs and other flowers, *Orchids*, &c., in the warmest parts. Cut over *Chrysanthemums* that have done flowering, and keep a pot of each kind in a frame, if sufficient cuttings have not already been obtained. Plant the others in the open border, or, if not wanted out-of-doors, throw them away. Shift herbaceous *Calceolarias* and *Cinerarias* as they require it, and keep them cool and well watered. Fumigate to destroy aphids. Keep *Mignonette* near the glass, and stake and tie it as may be necessary. Have a good succession of it, *Violets*, and

other plants in pits. Regularly train *Tropaeolums*, and give them a little manure-water if they are making good progress. Continue to pot off singly good-rooted, early autumn-struck cuttings of *Azaleas*, *Camellias*, &c., but if neither time nor space can be spared for shifting them at present, leave them for a time in their cutting-pots set on a side shelf of a close pit or intermediate house. Any *Statice* becoming too long-stalked should have an incision made on each branch just at the base of the foliage crowns, after which some Moss should be tied round it. The Moss should always be kept damp, and if a little silver sand be mixed with it, so much the better, as it helps to encourage root production. Keep old and young *Statice* moderately moist and in a minimum temperature of 45°.

#### Trees and Shrubs.

This is a good time to re-plant and re-arrange masses of the better kinds of *Rhododendrons*. Sandy peat is the best soil for them when procurable; but, where it cannot be had, they will grow in sandy loam. In preparing positions for *Rhododendrons* resting upon calcareous matter, the whole of the soil in the beds should be above the ground level. In planting, hardy *Azaleas* must not be overlooked, their brilliancy of flower and delightful fragrance rendering them most desirable. They may be grown in masses by themselves, or interspersed with *Rhododendrons*, or used promiscuously in mixed shrubberies. The *Kalmia* grows freely in low situations; and, moreover, it is one of the few plants that game will not molest. Common *Laurels* should be cut down, but specimen *Portugal Laurels* should not be pruned yet. *Thorn* and other hedges should now receive their winter cutting. Evergreen hedges, such as those of *Holly*, *Yew*, or *Laurel*, should not be cut until the end of March, just before they begin to grow; *Privet* may be cut at any time during the winter, after all danger from severe frost is over.

#### Flower Garden.

One of the most important points in connection with flower garden operations at this season is preparation of the beds and the securing of proper composts. Where beds are not planted with spring-flowering plants, have them deeply worked up and prepared for planting. Flower-beds, to be perfectly successful, must be treated according to the crop which they are intended to carry. Some plants, as, for example, *Abutilions*, *Aralias*, *Cannas*, *Ferdinandas*, *Ricinus*, *Solanums*, *Wigandias*, &c., require a large amount of manure to give them nobility of aspect and perfect leaf development. In preparing beds for these, especially in cold wet localities, place the soil on brick rubble, which will secure good drainage, and raise the temperature of the soil used. Use the compost in a rough state. Hardy *Clematises* grown as bedding plants should now have attention; prune them at different periods, viz., in autumn, mid-winter, and early in spring. Cut them back now to the ground, and surface-dress with rich rotten manure. This is necessary to ensure continuity of bloom. Fill up all vacancies which occur among spring-blooming plants. The plan for the bedding out of the flower garden should now receive attention, in order that some idea may be formed as to what quantities of different subjects may be required.

#### Indoor Fruit.

All superfluous bunches should be removed from pot Vines on which the fruit is set, the quantity left on being regulated by the strength of the Vine. Five bunches will be sufficient for most Vines, but in some cases double that number may be left. In thinning the bunches from all sorts, the best proportioned should be allowed to remain, cutting away to the required number all loose long-stemmed scantly-set bunches. Thin the berries before they swell to the extent of being crowded together, but do not thin so much as in the case of permanent Vines, nor until it can be distinctly seen which berries are likely to swell best. These are always the largest, and soon outgrow such as are not fully fertilised. Permanent Vines started in December will now be breaking, and they should have air given them on all favourable opportunities; but during severe frosts and windy weather in January and February great care is necessary. A temperature of 60° during the night, and a rise to 75° in the day, when the Vines are in bloom, will keep all safe. Peel the rough bark off Vines lately pruned, and dress them with some strong composition, to keep mildew and insects in check. Maintain a temperature of 65° at night in mild weather in houses where the fruit is set, ventilate moderately and principally in the earlier part of the day, and do not fire strongly in cold weather. Ventilate freely, but avoid cold currents in houses where the Grapes are in bloom. Muscats require a higher temperature for setting them than *Hamburgs* do. Water the inside borders freely with tepid water, and mulch them with a thin layer of short manure. Stop the young shoots at two or more joints beyond the fruit, and rub off all superfluous growths. In late houses, where the Grapes are uncut, use a little fire-heat and

ventilation at the same time, to preserve a dry atmosphere at about 45°. Examine the hanging bunches weekly, and remove from them every mouldy berry. Strip off the loose bark from late Vine rods, and apply a coating of some insect-destroying paint. Keep the unstarted houses as cool and airy as possible, and prune any Vines not already operated on. Syringe daily until the flowers begin to open, but not after that, for plenty of atmospheric moisture may be maintained by damping the floors and walls. Nothing but time, patience, and persevering attention will succeed in kindly starting, blooming, and swelling Pine-apples to perfection while we have short and dark days. We must allow from fourteen to twenty-eight days longer for winter fruit, according to the variety, to swell than those that will start into fruit in February or March. If hurriedly forced, they will push up weak, long stalks productive of small fruit, weak and irregular blossom, causing some pips to swell imperfectly, also causing uneven and abortive fruits, light in weight and black inside, bearing overgrown crowns. From 65° to 70° should be maintained in the pits, with a kindly humidity during night, according to the light and sun by day, and the day interior atmosphere and humidity must be in proportion to the sun and light. For all growing succession plants, maintain a kindly bottom and inside atmospheric heat, advancing it as the days lengthen and light increases. Pot on plants in every stage that require it, never allowing their progress to be checked for want of pot room at any season of the year. A batch of Queens may be plunged and given increased heat. It will be some time before the bottom-heat gets fully up after plunging them, so that although the Pines first plunged are in a bottom-heat of 90°, those plunged now will be somewhat inured to the increased warmth before the heat has risen to that height about them. The plunging material should be made sufficiently firm to stand up to the rims of the pots until the fruit is ripe. If not previously done, every plant should be thoroughly watered with liquid manure immediately the fruit is visible. Smooth Cayenne, Black Jamaica, and Charlotte Rothschild are the best winter kinds; and, where winter fruit is desired, those kinds should be grown in quantities. Where too many are ripe at once, if the fruits are cut and laid in an air-tight box, they will keep perfectly well for six weeks. Boxes, lined with zinc, are made for this purpose, and should be about every place, as they are useful for preserving other kinds of fruit. When Pines are cut, the old stamps, to which suckers are attached, should be allowed, if possible, to remain where they are for a couple of months, as the present is a very unfavourable time for the propagation of such stock. Early Cucumbers are much the best sown singly in small pots, as by this method there is no mutilation of the roots by dividing the plants when re-potting. Put a small bit of flaky leaf-soil or fibrous loam in the bottom of each pot; this will be drainage enough for the short time during which the plants remain in pots before being removed. Ordinary loam, with one-fourth of sifted leaf-mould and a little sand, will be suitable material in which to sow the seed, which should not be covered more than half an inch. Fill the pots two-thirds full of soil at the time of sowing; this will leave room to add more when the plants have attained a few inches in height, and will induce them to throw out roots up the stem, which tend much to strengthen the plants. For ordinary purposes, few sorts equal the Telegraph. It is an abundant and continuous bearer, but so free is it, that if the fruits be not well thinned, the plants will soon exhaust themselves with overbearing.

**Hardy Fruit.**

If the weather continue favourable, planting may be proceeded with, unless the ground be very wet, in which case it had better be deferred for a time. In preparing borders for the reception of Apricots and Peaches, drainage is of the first importance, and nothing is better for this purpose than a good thickness of brick rubble, over which has been laid large turves, Grass side downwards. The soil (which should not be less than from 2½ ft. to 3 ft. in depth) best suited for Apricots and Peaches is a good holding loam, to which should be added a cart-load of chalk to every dozen loads of loam; or, of course, if the loam be naturally chalky, this addition is unnecessary. No manure should be mixed with the soil, as it is better to give it in a liquid state, or to mulch thickly with rotten manure, and allow the rain to do the rest. If any old trees of Apricots or Peaches be looking exhausted or starved, now is the time to renovate them. Remove the soil down to the roots, and, with small hand-forks, work out as much of the old material as possible; cut away all suckers and cankered roots, after which fill in with good loam, and mulch with manure. Other fruits, and especially Pears, may be treated in the same way. When the weather is favourable, prune, nail, and tie Pears, Ploms, and Cherries. If any are affected with scale, fly, larva, Moss, or Lichen, paint every particle of the tree with a composition of soft-soap, sulphur, and Tobacco-water, made to the consistency of thick paint by adding clay and cow-manure.

**Vegetable Forcing.**

Cut all shoots of Asparagus as they attain a length of 6 in. or 8 in., and, if the soil gets dry, gently sprinkle it with tepid water. Make up another bed for succession. These beds may be formed of manure, or leaves above the ground, or trenches may be cast out 2½ ft deep, and as wide as the frames, and filled with the fermenting materials, the frame being set on a level with the ground, and a lining of hot manure built all round it. A few inches of deep of light soil should then be placed inside to plant the roots in. Cover the roots sparingly with light mould, and keep all close until the Asparagus begins to grow. If blanched Asparagus be required, darken the frames by a covering of mats or litter, but be particular that neither the bottom nor top-heat rise above 70°, whilst 5° or 10° less will not hurt. Sow Early Horn Carrots on a slight hot-bed; also Lettuces, and keep those previously sown dry and clean. Introduce roots of Chicory and Dandelion into the Mushroom house, arched under Cucumber beds, under boxes in Vineries, Pine-stoves, or, in fact, any place where they may be kept dark, and in a temperature of about 60°. Lift some plants of Endive with good balls, and plant them in frames, where, as soon as they have grown enough, cover them with pots or boxes to blanch. A few seeds may be sown in the event of very early Endive being required. Make successional sowings of French Beans in pots half filled with rich loamy soil, and grow them on front shelves in the forcing houses. Earth them up before they begin to flower, and syringe them regularly, to keep red spider in check. Newington Wonder, Syon House, Palmer's Forcing, and Osborn's are good sorts for forcing. Young plants of Lettuces in frames should have the sashes tilted at back and front in mild weather if wet; but if dry, they should be removed entirely throughout the day, and replaced at night. Tie up a few old plants of the Brown Cos, as required. Place roots of Mint, Pennyroyal, and Tarragon in boxes or pots, using light soil, and introduce them into some heated house or pit. A portion of a hot-bed may be devoted to them. Maintain an atmospheric temperature of 55° or 60° in the Mushroom house, and gently charge it with humidity; the beds may rise 5° above the heat of the house. Prevent draughts in the house, as they are productive of severe checks to the crop. Obtain some fresh horse-droppings for succession beds. Turn and prepare this material in winter on the floor of the Mushroom house, a practice that produces, by gentle fermentation, just the natural, gentle ammonia-charged atmosphere, in which the Mushroom luxuriates. Sow some of the Tripoli Onion in a slightly-heated frame for drawing whilst young, for salading, or for transplanting. Plant some of the Early Ashleaf Potatoes in gently-heated frames, and sow some Radishes on the surface of the soil. Ventilate on favourable occasions, and do not over-water. Lift some roots of Rhubarb and Seakale, and introduce them into the Mushroom house, or other heated structure. Some crowns may also be covered, where they are growing, with pots, over which place some litter or leaves. In order to blanch Seakale it should always be kept dark. Sow a few seeds of Tomatoes, if early plants are required.

**Diary.**

**January 21.**—Sowing Marrow Peas in boxes for making Green Pea soup; also the following sorts of Peas in turf, viz., Carter's First Crop Blue, Extra Early Premium Gem, Maclean's Blue Petal, and Little Gem. Making up hotbeds for Carrots, Potatoes, and Radishes.

**Jan. 22.**—Sowing fifty pots of Mignonette; also Cucumber, Melon, and Sweet Basil seed. Putting in cuttings of Alternantheras, Celosia, Fuchsias, and Ageratum. Re-potting large tri-color Pelargoniums for exhibition. Getting into the potting shed a good store of peat, loam, and leaf-mould. Turning over Mushroom manure to sweeten.

**Jan. 23.**—Sowing a three-light frame with Wood's Early Frame Radish, and another with Early Horn Carrot. Cutting turf for laying down. Thinning out shrubs where overgrowing each other. Cleaning up pleasure-grounds and getting all newly-laid turf well rolled.

**Jan. 24.**—Sowing an early border with Snowball Turnips. Putting in cuttings of Hathaway's Excelsior Tomato; also of Heliotropes, Chrysanthemums, Gnaphalium lanatum, and Lobelia. Digging up Horse Radish beds and preparing the ground for planting again. Pruning Roses and digging up borders. Getting on with digging, and trenching as fast as the weather will permit.

**Jan. 25.**—Planting Hardy's Pedigree Windsor and Carter's Long Pod Beans. Planting also a three-light frame with Ashleaf Kidney Potatoes. Turning over leaves and manure for hotbeds. Disbudding early Black Hamburg Vines; Peaches, and Nectarines well set; beginning, therefore, to use the syringe freely. Looking over Pines and giving water where required. Removing all straw from Celery, very mild weather having set in.

**Jan. 26.**—Potting off Cucumber and Melon plants. Getting into the Peach-house a quantity of turves, and planting them with William I. Peas. Looking over Grapes in bottles, removing any berries that are decaying, and filling up the bottles where required. Looking over the fruit room and removing any that are bad. Clearing out all vegetable refuse, and cleaning up kitchen garden walks.

W. G. P., Dorset.

## THE CAVE MUSHROOM.

*(Continued from p. 44.)**Preparation of Mushroom Spawn.*

FIRST PROCESS.—Any time between April and September open at the foot of a wall, which is exposed to the east, a trench 2 ft. wide and 1 ft. 8 in. deep, the length, of course, being governed by the amount of spawn to be produced. Before digging the trench we must provide five or six wheelbarrow-loads of horse-droppings which have lain in a heap for some time, and have lost their heat. The horse-droppings should be mixed with a quarter of short stable litter, the effect of which is to give the resulting bricks or cakes of spawn a greater amount of solidity when they afterwards come to be hauled. The bed is formed in the trench by strewing the bottom with a layer of chopped straw, 3 in. or 4 in. thick, and then with a layer of the prepared horse-droppings of equal thickness, the whole being made smooth and symmetrical, walking regularly over each layer, and pressing it down firmly with the feet. The two layers must now be gently watered,

and then another double layer of chopped straw and droppings must be laid, trodden down, and watered, and so on until the top of the trench is reached. In treading down the layers great care must be taken to press evenly, so that the whole may be an evenly compact mass, not harder in one place than another. The bed ought to rise somewhat above the level of the ground, and the upper surface rounded off like the top of a trunk. To prevent excessive damp from heavy rain, which would bring about premature decomposition of the materials in the trench, the mound must be covered over with a thick layer of stable

litter. A trench which has been filled up at the beginning of September should be opened in December at the side or at one end. If the pieces of manure are well covered with masses of bluish-white filaments, giving off the characteristic odour of Mushrooms, the operation has succeeded, and the spawn is fit for use; but if the threads are only sparingly scattered through the mass, the trench must be covered up again and left for another month. This delay is no real inconvenience, for beds rarely begin to produce abundant crops of Mushrooms at this season. The trench should be emptied in January, or February at the latest, if the weather will allow of it, and those flakes of manure picked out which contain the largest amount of spawn filaments, all pieces showing a brown appearance being carefully rejected; the brown filaments being the spawn in a state of decomposition, the spores of which are unproductive. In order to quicken the drying of the cakes, they are divided as soon as they are taken out of the trench, and broken up into pieces, weighing from 1 lb. to 2 lb.; they are then placed in a well-ventilated shed or outhouse, but they must not be piled upon each other. When prepared thus, and dried by the air and in the shade, virgin spawn will keep good for ten years. We

have taken the spawn bed made in September as our typical specimen, because at that time of the year Wheat chaff is most easily procurable. The preference must always be given to Wheat chaff or chopped straw coming from the winnowing machines, as they are less mixed with grains of corn than other kinds. If we have all the materials at our disposal, we can, as has been said before, make our Mushroom-beds in the open air from the commencement of April to the beginning of winter, and at other seasons of the year, indeed, at all times in a cellar or quarry.

SECOND METHOD.—We have seen in the first method of procuring spawn that it forms naturally in the manure; in the second process, which is that generally adopted by Mushroom growers, the formation of the spawn is accelerated by adding pieces of old spawn here and there. Experience has shown that the two most favourable seasons of the year for this work are spring and autumn. At the beginning of April we must choose a piece of ground situated at the foot of a wall which faces the north. On the other hand, in the month of September we must have a wall with an eastern aspect. The soil

ought to be very open and light rather than heavy, so as to avoid dampness. Taking advantage of a fine day, we open a trench at about 8 in. from the foot of the wall, measuring 16 in. in width, and of a length adapted to the quantity of spawn we desire to produce. The earth is thrown out on the side opposite the wall. Manure which has been prepared for a Mushroom bed, as directed at p. 42, and has just come into condition, is then filled into the trench, leaving, however, a space at one end of it, about 2 ft. 6 in. in length, for the formation of a Mushroom bed, which is made by tossing the manure about, and shaking it up with the hands,

after which it is pressed down with the hands and knees. As soon as the layer of manure reaches about 6 in. in thickness, we place along the edge a number of lumps of spawn at about 1 ft. apart. These lumps are placed level with the manure on the edge facing the wall. This portion of the surface of the manure ought to be raised vertically, and should lean against the earthen wall of the trench. The other half of the surface ought to slope gently towards the wall, leaving a space of 3 in. or 4 in. between it and the side of the trench, so that it may be trimmed. The lumps of spawn on this surface should be placed a little backward, so that they may not be broken when the bed is trimmed. The bed is then covered with more manure until the first lumps of spawn are buried 3 in. or 4 in. deep. A second row of lumps of spawn is then inserted as described in the directions for making the first row, and the bed is filled up level with the surface of the soil. It is finished by covering it up with a layer of fine dry soil 3 in. or 4 in. thick. The spawn ought to be very dry, otherwise we shall get a premature crop of Mushrooms instead of fresh spawn. At the end of six weeks or a couple of months the new spawn ought to make its appearance, a fact which we may learn by opening the bed. One sign, which will save us the trouble of opening up the beds,



A Garden Cascade.

is the appearance of young Mushrooms on the surface. The layer of earth is first removed, and then the cakes of spawn are treated as described in the directions given for the first method of making spawn. As a matter of detail it may be mentioned that if the wall is not long enough for our wants we may dig several trenches, one before the other like Melon beds, taking care to leave a space of 8 in. or 9 in. between each. The spawn made by either of the methods described above is equally good, and success is as certain in one case as in the other. The second method is more expeditious than the first, but it necessitates the purchase of fresh spawn, which of course adds to the expense. It is naturally for the grower himself to consider the circumstances under which he is working, and to choose the method which will yield him the greatest profit.

**THIRD METHOD.**—By filling in a trench like that described in the first method by a series of layers of one-third of pigeon or fowl guano, and two-thirds of short manure, containing a large proportion of spent horse, droppings, treading it down, firmly watering it if it is too dry, and finishing up with a layer of soil as described already, we may at the end of a couple of months, or even a little longer, procure a supply of well-formed cakes of spawn of excellent quality, which may be used in the ordinary manner.

#### *Spawning the Mushroom Beds.*

A Mushroom-bed is prepared by planting in it lumps of spawn  $2\frac{1}{2}$  in. long, 2 in. wide, and  $1\frac{1}{2}$  in. thick. These lumps are planted on each slope in two rows, the first being 8 in. above the ground, and the second 8 in. from the first. The lumps in each row ought to be from 8 in. to 10 in. distance from each other, and arranged in such a manner that the lumps in the second row will be opposite the spaces of the first row, and *vice versa*. In spawning, remove the manure from the spot where it is intended to insert the spawn for a width of four fingers and for a depth of  $\frac{1}{2}$  in.; the lump of spawn is introduced into the hole with the right hand, pushed well into the bed, and covered up with the manure taken out of the hole, pressing it down firmly with the left hand. The work is continued in the same way, the two rows being sown at the same time, which is more expeditious than spawning one after the other. In practice we must know how to determine at what precise period a Mushroom-bed ought to be spawned. The manure ought to be neither too hot, nor too cold, and the most favourable moment may present itself any time between the seventh and the fourteenth day after the bed has been commenced. Experience alone can teach the grower the proper moment; and the clever labourer, when preparing the manure for making up the bed, will know by its condition whether the bed will come to perfection late or early, that is to say, whether it has got rid of the greater part of its heat or not. It is by estimating the amount of unctuousness left on his hands that the labourer is able to judge of the future temperature of the bed, but he can in any case only have a general idea of it. He may, however, be able to predict whether there is any danger or not from after-heating. It is only by direct trials all along the bed that its temperature can be tested. The best way is to plunge the hand into the manure, when habit will soon enable us to estimate exactly the temperature of the whole mass. Another way is to plunge pieces of wood into the manure at various distances, allowing them to penetrate to half their length. After remaining in a sufficient length of time, they are withdrawn and tested by the hand. When the piece of wood feels pretty warm, the spawning may be proceeded with without fear of failure. In the Paris quarries the beds are always spawned in two rows, but when it is possible to make the beds more than  $1\frac{1}{2}$  ft. wide, whether in a cellar or in the open air, it is best to spawn in three rows, the ultimate yield being much greater. If in a bed which we judge to be of the proper temperature we find that certain spots are hotter than others, rendering it possible that the bed will heat, we prevent all delay in spawning by simply thrusting the lumps of spawn into the hot parts without pressing the manure firmly down upon them. This should be left simply covered over with manure for several days, and then firmly pressed down with the hand. All these minute details may seem unnecessary to those who are already practically acquainted with Mushroom growing,

but for the sake of those who are not we have thought proper to be as detailed as possible; as it is, success is entirely dependent on the careful carrying out of the minutest particulars. We have endeavoured to make those who read this article as dexterous as if they had descended into the Mushroom quarries and seen the growers at work.

#### *Stratification of Spawn before Spawning.*

A bed in the open air, which is exposed to all the accidents of the weather, may be spawned with dry spawn, such as may be taken from the stock kept under the shed or outhouse, as we have described elsewhere. Experience, however, has shown that, for Mushroom-beds in cellars or quarries, it is better to allow the spawn to become damp, and undergo a kind of stratification. For this purpose, the cakes are taken out of the shed or outhouse, and placed in rows on the floor of the cellar or quarry, and allowed to remain for about eight or ten days, until the dampness of the atmosphere has caused the filaments of spawn to swell up and return to their normal cylindrical form, whitish colour, and felted appearance. It is of importance only to expose a sufficient quantity of spawn to the damp for immediate use, for it will not bear being dried and damped again. It must also be remembered that the spawn must be exposed at such a time that it will be ready for use simultaneously with the Mushroom-bed. Neither operation should wait for the other. If the spawn remains too long in stratification, its sporules become swollen with the damp, and, not finding a suitable temperature for their development, they wither away. On the other hand, if the Mushroom-bed has to wait until the spawn is ready, it will become cold, and fail to develop the spawn when it is put in it. Here, again, practical experience and intelligence must be the only guides of the Mushroom-grower. It is evident that the best way of ascertaining the heat of a bed would be by using a thermometer, but we are describing the method pursued in the quarries. The stratification of the spawn advances the gathering of the first crop of Mushrooms by eight or ten days. It is for this reason, amongst others, that the Mushroom growers in the Paris quarries take their fresh spawn from beds already in work, except when they desire to obtain an entirely new stock. When the bed has reached the proper temperature, the Mushroom grower chooses from among the beds already in bearing the one which appears in the healthiest condition, that, in fact, in which the spawn filaments are most numerous, thickest, and cling most closely to the particles of the manure. The best time for choosing the spawn is just when the young Mushrooms are first appearing. The bed we have chosen is broken up, and the cakes of spawn removed, and broken into lumps of the size already described higher up. This kind of fresh virgin spawn is in the best condition for yielding an early and abundant crop of Mushrooms, which may be gathered at least twenty days sooner than if dry spawn had been used. At the risk of repetition, and for the sake of calling my readers' attention to details which, although they appear to be insignificant in themselves, are of great importance when the success of Mushroom growing is considered, we return once more to the subject of the choice of spawn. No matter what care has been exercised in selecting the dry cakes of spawn from our stock, they must be carefully examined before they are used for spawning the beds, those only being chosen which show an abundance of bluish-white filaments, well fitted together, and giving off a strongly-marked odour of Mushrooms. All those portions which show traces of white or yellow mould, or have a floury appearance, must be rejected and destroyed. The floury patches are a kind of mould, which attacks the filaments of spawn and destroys them. Like all fungoid growths, it spreads very fast, and an almost imperceptible patch will quickly infect and kill a large quantity of healthy spawn. Where a bed is broken up for the purpose of procuring a supply of spawn, the cakes must be most scrupulously examined, and every particle which does not bear the characteristic marks of good healthy spawn must be rejected. Another disease which attacks the spawn is what is known to the Paris Mushroom grower as "verdigris." It makes its appearance in the form of very small agglomerated granules, of the colour of verdigris, and having a peculiar smell resembling that of chloride of lime.

All the portions attacked by this fungoid growth must be scrupulously rejected; in fact, if it is at all abundant, it is better to destroy the whole batch of spawn. This disease seems to be the result of the decomposition of foreign substances which have been mixed with the manure by accident, and its presence would only promote the growth of false Mushrooms, having possibly poisonous properties, or a sickly crop of the true kind. We must also be careful never to use old pieces of spawn in which Mushrooms in the rudimentary state have begun to be formed; in a word, every particle of spawn which has a doubtful appearance must be rigorously rejected. While making this examination, the cakes of spawn must be reduced to the proper size, in order to obtain uniform crops. If the cakes are too thick, they will produce clumps or "rocks" of Mushrooms of such compactness, that they will interfere with each other's growth, besides entailing an unprofitable expenditure of spawn. Some Mushroom growers remove all pieces of spawn which show signs of producing closely-serried clumps or rocks. A few days after the spawn has been put in, the filaments grow out of the manure and spread over the surface of the bed, the whole of which turns of a bluish-white colour. The French Mushroom-grower calls this *fleurir sur la panne*, an expression which is quite untranslatable, and takes it as a sign that the bed is ready for soiling.

(To be continued.)

#### NOTES FROM KEW.

ONE of the prettiest amongst plants not previously noted is a species of Bearberry, from California and the Rocky Mountains (*Arctostaphylos tomentosa*). This handsome Heathwort—in comparison with the Black Bearberry (*A. alpina*), of the Scotch mountains, and the Common Bearberry (*A. Uva-Ursi*), which is not exclusively Scotch, being found in the rocky uplands of the north of England—is a real giant; it sometimes attains, in its native haunts, a height of more than 20 ft. The snow-white, *Arbutus*-like flowers are crowded into dense, terminal racemes. *A. glauca* has pleasant-tasted fruits, which are much used as food by the Indians of Oregon and California. *Acacia lineata* and *A. stricta* are two very desirable species; the former is a neat-habited bush, which will flower well and make a compact plant in a small pot; the latter is more suitable for a large pot, and should be allowed to attain its full dimensions of about 6 ft. Neither of them bears true leaves, the flattened leaf-stalks or phyllodia taking their places. In *A. lineata* these are very small, almost needle-shaped, about  $\frac{1}{2}$  in. long, and bear singly in their axils small globose heads of deep yellow, fragrant flowers. *A. stricta* has long, narrow phyllodia, from the bases of which spring, in pairs or clusters, shortly-stalked heads of pleasing lemon-coloured flowers. This is an elegant plant, and is one of the most charming of the Australian *Acacias*.

In the Palm-house there is a dearth in the way of novelties. An Abyssinian half-climbing Composite, *Senecio abscondens*, is striking as a curiosity, although worthless from a gardening point of view. Fancy long, weak stems, clothed for about a length of 20 ft. with leaves much resembling in size and form those of the Common Sow Thistle, terminated by leafless, branched panicles of small flower-heads, the exact counterpart of those of the Common Groundsel, and a tolerably correct idea of this peculiar plant may be obtained. *Senecio* is, perhaps, the largest in number of species of any genus in the vegetable kingdom, and many very interesting chapters on plant mimicry could be written on examples furnished by it alone. *Barleria flava* is a very useful winter-flowering Acanthad; it is an erect shrub, with dark green, opposite leaves, and terminal spikes of funnel-shaped, bright yellow flowers.

Among the Orchids, there are several beautiful kinds in bloom. *Lycaste gigantea*, from New Granada, is remarkable for its long leaves and large flowers, borne on long scapes; the sepals and petals are yellowish-green; the lip a deep orange. The flowers of *Maxillaria punctata* are produced in clusters from the base of the pseudobulbs; the ground-colour is white, with a faint tinge of primrose, and is spotted freely with purplish-crimson dots. *Maxillaria variabilis*, var. *lutea* and *media*, from Mexico, have Grassy leaves and yellow and purple flowers much inferior in size and beauty to those of the last named. This species and its varieties are of very easy cultivation. *Orchidium Sophronitis*, from Colombia, is a perfect little gem; its creeping stems bear numerous, nearly spherical pseudobulbs, and small leathery leaves; the beautiful scarlet flowers are borne singly on scapes about as long as the leaves. *Dendrobium gratioissimum* is a very handsome species from Montsein; it has

weak, knotted, leafless stems and extremely beautiful flowers, the entire ground colour of which is white; the sepals, petals, and lip are tipped with rose, and the greater portion of the lip is of a fine orange colour. *Odontoglossum Ehrenbergi* is a pretty Mexican species; all the parts of the flower are similar in form, being somewhat lance-shaped; the sepals and petals are yellowish-green, blotched with chocolate-brown; the column and crested lip white. *O. Bictioniense* is a very vigorous and striking species from Guatemala; the erect, many-flowered spikes are freely produced, and often attain a height of 3 ft. or more; the sepals and petals are dark chocolate-brown, and the large triangular lip is of a purplish-rose colour. The Brazilian *Oncidium flexuosum*, with its large, branching panicles of clear yellow, brown-spotted flowers, is a general favourite, and is as accommodating as it is pretty. Few Orchids will stand more ill usage than this, or flourish under more diverse conditions. *Stenoryllis speciosa* and *S. maculata*, two very pretty terrestrial Orchids from the West Indies, are closely allied to the *Spicanthes* (*Lady's Tresses*) of our English pastures. They are herbaceous plants, with broad root leaves and stout spikes of reddish flowers, the large coloured bracts contributing not a little to the general effect.—†

#### ROYAL HORTICULTURAL SOCIETY.

JAN. 15.

At this meeting the most striking features were groups of Orchids, Cyclamens, and Cycads, and a few good stands of Grapes.

First-class Certificates were awarded to the following new and rare plants, viz. :—

*Zamia corrugata* (Ball).—A noble-looking Cycad, with broad oblong leaves, of a glossy green colour.

*Zamia lucida* (Bull).—A somewhat close-growing kind, having smooth leaves, with serrated edges.

*Microlepia hirta cristata* (Williams).—A graceful Fern, of dwarf habit, and beautifully-crested pinnae. An excellent plant for placing in vases, or in similar positions.

*Dendrobium superbiens* (Williams).—A beautiful Dendrobium from Torres Straits, bearing rich mauve-coloured blossoms on gracefully drooping, slender stems.

*Long Orange* (Rivers).—A new variety, well adapted for home growth.

**Miscellaneous Subjects.**—Messrs. Veitch & Sons sent a collection of Orchids, amongst which were good examples of *Angreum sesquipedale*, *Cypripedium calceolom*, *C. Bealii*, and *Leelia alba*. With these were also sent a beautiful variety of the rare *Odontoglossum Andersonianum*, the brilliant *Sophranitis grandiflora*, and *Pleione humilis*, together with well-flowered plants of *Saccolabium giganteum* and *Odontoglossum cirrhosum*. The same firm also contributed a basketful of plants of the dwarf *Rhododendron Early Gem*, a kind which should be largely grown for winter flowering on account of its early-blooming qualities. From the same nursery likewise came a remarkably fine collection of *Cyclamen persicum*, the flowers of which were large and finely coloured. Mr. Bull furnished an effective group of Cycads, which attracted considerable attention. Among them were good specimens of *Encephalartos villosus ampliatas*, *Cycas Armstrongi*, *Ceratocarpus nobilis*, *Catakiadomania Hopei*, *Zamia Lindenii*, and others. Mr. B. S. Williams, of Holloway, showed an unique group of *Cyclamens*, *Sarracenias*, and *Orchids*, amongst which may be mentioned *Odontoglossum Rossi majus*, *Cypripedium venustum*, and a fine variety of *Cattleya Trianae*. The beautiful purple-violet *Dendrobium moniliforme* was also shown in good condition, as was likewise a large specimen of *Sarracenia Drummondii alba*, bearing upwards of a dozen trumpet-shaped pitchers. From Mr. John Wile came an effective group of plants, consisting of *Palms*, *Ferns*, and *Orchids*. Amongst the latter were well-flowered plants of some of the best varieties of *Odontoglossum Alexandræ*, also *Leelia anceps*, and several *Phalaenopsis*. Mr. Cannell, of Swanley, showed cut blooms of *Zonal Pelargoniums*, amongst which we noticed E. Davis, a kind with large flowers nearly purple in colour; *Louis*, a beautiful pink; and the best of whites, *Jean d'Are*; the flowers of *Lizzie Brooks* were of a brilliant scarlet, large, and well-formed. Mr. Ollerhead, gardener to Sir H. Peck, Wimbledon, was awarded a vote of thanks for a remarkably fine variety of *Odontoglossum cirrhosum*. Mr. Richard Dean showed a potful of *Crocus Imperatorius*. Mr. E. Spary, The Queen's Graperies, Brighton, furnished specimens of a beautiful fern-leaved Chinese *Primula* named P. *Brightoniensis*, a variety which bears whorls of bright rose-pink blossoms. A group of *Senecio Giesbreghtii* was sent from the Society's gardens at Chiswick, consisting of plants well furnished with massive green leaves surmounted by large heads of golden flowers. Mr. Wildsmith, gardener to Lord Eversley, at Heckfield, contributed a most remarkable *Fuchsia*, the floral bracts of which were very large and brilliantly coloured.

**Fruit.**—Very fine examples of *Muscad* of *Alexandria* and of *Black Alicante* Grapes came from Mr. Atkins, gardener to Colonel Loyd-Lindsay, Wantage; and six very large bunches of *Gros Guillaume* came from Mr. Miller, Combe Abbey. A fine collection of Apples was shown by Mr. Louis Kilkie, Langley, Maidstone; amongst them were bright, plump fruits of *Warwickshire Pippin*, *Blenheim Orange*, *King of the Pippins* and *Cox's Orange Pippin*.

## THE LATE ANDREW MURRAY, F.L.S.

Most of our readers probably will have learnt through the daily press of the death of Mr. Andrew Murray on Wednesday, the 10th. We cannot allow the occurrence to pass without paying our tributes of respect to the memory of so conscientious and hard-working a student. Whilst different aspects of his nature and of his labours would strike different minds in different ways, there were two qualities he possessed for which we entertained special regard—the one was his desire for accuracy, at whatever cost of personal inconvenience it was to be obtained, and the other was the interest he took in making available for others the knowledge he acquired.

No better illustration of his patient and conscientious work can, perhaps, be given than by referring to his monograph of the Nitidulario, communicated to the Linnean Society in April, 1863. When he undertook it, he knew, he says, that it would be no easy task. "It implied the microscopic dissection of the parts of many hundred specimens, and the making of careful drawings of these dissections, a work rendered doubly difficult and laborious by the minute size of the insects to be examined. I knew, too, that its results would bear no proportion to the labour bestowed upon it; and that was perhaps more discouraging, I felt, that after it was done there were few from whom I could expect an intelligent appreciation of my work." The data for his monograph had to be seen in many different collections, public and private, throughout Europe, including St. Petersburg, Copenhagen, and Stockholm; at Philadelphia; and special collections were sent for the work from Ceylon, Siam, Singapore, China, California, Chili, Quito, Hudson's Bay, &c. The study was carried on during several years, and only those who have done similar work can appreciate the labour involved.

The interest which he took in making knowledge readily accessible to others was well illustrated by the way in which he planned and carried out the collection of economic entomology for the Science and Art Department at Bethnal Green. Its formation has been the work of years, and he was engaged on the last few cases of it just before the commencement of the few days of his illness. It was his hope that the collection will be used by teachers in preparing instruction in entomology connected with damage to gardens and crops; and with this in view he strove to make his points clear. Direct instruction in harmful and useful insects is given in elementary schools in France, and Mr. Murray repeatedly urged that similar instruction should be given in England. He not only urged it, but, with the authority of the Privy Council, made this collection as a type for teaching purposes. This is, without doubt, the most important practical work he did, appealing, as it does, to the material interests of so many classes. Some day the national value of his work may be duly recognised.

Mr. Murray's scientific knowledge was of a wide range, and he wrote on several subjects besides entomology and botany. Of these other works we have but space to mention his "Geographical Distribution of Mammals," for which he prepared more than 100 maps coloured to show the distribution of the different groups. The first of his entomological papers having a bearing on horticulture was published in the Ed. Bot. Soc. Trans., 1858—"Account of the Insect which infests the seeds of *Picea nobilis*," and as time passed on, practical subjects like this received more of his attention than descriptions and grouping. He wrote considerably on Conifers, and was one of the first to describe the Californian Conifers, and a series of papers on the synonymy of various Conifers, communicated to the Royal Horticultural Society, was reprinted in 1863 under the title "Pines and Firs of Japan." Mr. Andrew Murray, who was the son of Mr. William Murray, of Conland, was born at Edinburgh in 1812. He was trained as a writer to the Signet, and for some time practised. But the natural history classes had for him a greater charm than law had, and he soon became well known in scientific circles. The first paper he ever published was in 1851 in the Transactions of the Société Entomologique de France on some new Buprestides. When Prof. Fleming died he for one year gave the course of natural history lectures at the new college, Edinburgh. He also filled the office of President of the Royal Physical Society, and President of the Royal Botanical Society, and was a centre around which many students of science gathered, and the friend of many distinguished men. In 1860 he came to London, to hold an office under the Royal Horticultural Society, and since then his residence here has been broken only by occasional tours in America and different parts of Europe. He contributed notes and articles on insects to THE GARDEN from its commencement up to our recent issues.

**Paraffin and Scale.**—My Camellias are infested with scale, though they have been several times washed—both sides of the leaves—with soft soap and water. Is not paraffin a cure? How should it be applied? Is there a risk in using it of damaging the plants?—A. Z.

## CHRYSANTHEMUM QUESTIONS.

I AM anxious to commence Chrysanthemum growing. (1) Will some one give me the names of twenty-four of the larger or show varieties, combining shape with free-blooming properties and compact growth; also kindly name six of the best Anemone-flowered varieties and twelve Japanese. As I am quite a beginner, I do not care to commence with uncertain bloomers. I would like a few of each colour. (2) Cuttings of Chrysanthemums, after a few months' growth, often throw up suckers. Ought they to be removed? If allowed to remain, do they bloom? (3) To what height should a Chrysanthemum cutting be allowed to grow before being topped? (4) How long should topping continue? (5) Do the Japanese kinds bear any topping? (6) What system of cultivation will keep the lower leaves on Chrysanthemums? (7) Would cuttings struck now make better plants, and bloom freer than those struck later?—Q. D.

By way of answer to "Q. D." the following remarks may be of service.—Twenty-four really first-class Chrysanthemums for cut bloom may consist of Novelty, White Globe, Eve, Prince Alfred, Lady Slade, Prince of Wales, Mrs. Halliburton, Nil Desperandum, Princess of Wales, Golden George Glenny, Mrs. G. Rundle, Mr. George Glenny, Lady Hardinge, Empress of India, and its sport Golden Empress of India, Queen of England, Venus, General Slade, Empress Eugenie, Princess Teak, Cherub, Beverley, Jardin des Plantes, Mr. Brunlees, and Barbara. These flowers possess all the best qualities for exhibition purposes. The following are six of the best large-flowered Anemone varieties, viz., Gluck, Mrs. Pethers, Lady Margaret, Sundlow, Bifou, and Prince of Anemones, all very distinct. Twelve remarkably fine Japanese varieties may be represented by James Salter, Elaine, Fair Maid of Guernsey, Meteor, Bronze Dragon, Fulton, Baronne de Prally, Countess de Beauregarde, Dr. Masters, Gloire d'Or, Garnet, Glitter, and Hero of Magdala. The reflexed varieties appear to have been overlooked by "Q. D.," and as this is one of the finest sections (in fact, some of the finest colours are in this class), I have selected a few which are as follows, viz., Dr. Sharpe, Chevalier Damage, Julie Lagravere, Progne, Poach Christine, Golden Christine, Felicity, Beauté du Nord, and M. Lucien Barthere, the last being one of the most chaste and beautiful Chrysanthemums in existence, colour dark chocolate, edged with a gold stripe. The suckers arising from the base of the plants should certainly be removed, for if allowed to remain, they do not, as a rule, bloom. Stopping Chrysanthemums depends, in a great measure, upon the purpose for which they are intended; if for large cut blooms for exhibition, then they should be allowed to grow on from the cutting state without stopping till they bloom; but if for bushy plants, then they should be stopped when about 6 in. high, and again when the new growth has attained about four joints. The last stopping for large-flowering varieties should be performed about the second week in July; if stopped after that date the operation seriously jeopardises their successful blooming. The question of stopping, however, requires considerable explanation, and so much depends upon it that I would recommend "Q. D." to consult a good treatise on the subject; and, further, I would strongly impress upon him the necessity of not topping the Japanese varieties; on the contrary, he should grow them as strongly as possible. In order to ensure the retention of the lower leaves fresh and green, the plants must never be allowed to get dry at the roots. In reply to the question as to whether outtings struck now will make better plants than those struck later in the season, I would answer that the sooner they are struck the greater number of topplings can be given them, and that for whatever purpose they may be intended, I would recommend "Q. D." to get them in without delay. F. T. Davis.

*Plumstead Common.*

—In answering "Q. D.'s" questions, I will begin with outtings, which I would recommend not to be put in till next month; which, however, depends on circumstances. If the plants be intended to cover a trellis of any shape, or to form a "bush," the sooner the outtings are taken in November the better, and they should be grown on rapidly without check, and kept under glass till June. If "Q. D." resides in the sunny south this practise will be advantageous; but I am writing from a different climate. On the other hand, if the plants be intended to produce large shoots, the old stools or stock plants had better be kept back till next month in some airy position near the glass, and the young shoots should be thinned out to three or four, as circumstances will admit. Then, again, time and facilities will have to be studied. No one will throw away a good cutting because it is a fortnight earlier than he would like to propagate. The best plan would be to determine what mode of propagation would be best suited to the means at command; it is simple enough to accelerate the formation of roots by means of a little warmth, only it requires considerable space afterwards, as the plants are potted in find suitable quarters in which they will receive no check till the weather becomes warm enough to turn them out-of-

doors. And, again, if cuttings are put in a prepared bed out-of-doors, and severe weather sets in, they are apt to "draw" or damp through the exclusion of light caused by protection. On the whole, I would recommend a temporary frame being introduced to a coolinery or greenhouse, and filled with leaves about half-way up. Always leave a chink of air on, to allow excessive moisture to escape, and then there is no need of covering in severe weather; besides, you can take either one cutting or twenty, whenever they are ready, irrespective of weather, and put them in at your own convenience. By a system of coal propagation, you avoid much risk of checks, and the cuttings inserted singly into small pots prevent unnecessary shifting, and conduce to a stubby, short-jointed growth. By this system a beginner is most likely to succeed, and it is the best remedy to adopt in order to keep the stems clothed with leaves. The *Chrysanthemum* roots freely at all times, and the roots soon find their way to the sides of the pot; they are therefore often shifted too early, i.e., before the centre of each ball of earth is occupied by roots, as it should be. Before shifting make certain that every particle of soil in the pot is completely filled with roots, and follow the principle up to the last shift, which should be a liberal one, consisting of prepared compost. The summer situation, too, has something to do with leaves dropping. The site selected for summer culture should be open, and every shoot should be fully exposed to sun and light. If such a situation as this be at command, and protected from winds, and if the strength of the sun's rays be broken when they are most powerful (by intervening objects at a distance) from off the pots, little difficulty will be found in having fine, green leaves down to the rim of the pot. There is no insuperable barrier against anyone growing fine flowers, and fine leaves also (for the former is the natural product of the latter), if the last potting be deferred as long as practicable, and a proper summer situation be found, as recommended. They must never be allowed to get even once dry at the root, and they should also be syringed twice a day, once at least in the afternoon, when the work of evaporation is at a minimum. The surface-roots should be protected by a mulching of horse-droppings, amongst which *Chrysanthemum* roots increase and flourish amazingly. Liquid manure may be given in increased quantities as the plants develop in strength and quantity of foliage. Guano, if good, and cow or sheep manure mixed with soot make a first-rate stimulant, and so does farmyard sewage, diluted to safe proportions, with water.

As to stopping the plants, if I understand "Q. D." aright, he has a notion of becoming an exhibitor, in which case, if, as he states, he is quite a beginner, he had better not stop his plants at all that are intended for large flowers, but let them grow on till August, when each shoot will branch into three. These shoots may be allowed to carry one flower each, or the shoots may be reduced to one when it is seen which has the best-formed bud. This is one way, and the surest for beginners. Another plan is to stop the young plants early—say in April—merely nipping off the point of the shoot, and taking away three stems instead of one. This plan has the advantage of concentrating the whole energies of the plant at an early stage into a good base to work on afterwards, and it very materially decreases the unsightly length of the stems. At the usual time these stems will each branch into three shoots, two of which should be gently removed, leaving the best one, which will in the end produce exactly the same number of flowers as those treated according to the first-mentioned plan; but the system is more confusing to beginners. Of course, anyone wanting a mere display would simply encourage three flowers to each stem, which would give nine flowers instead of three. As to the height a plant should be when it is stopped, all depends for what purpose the plant is intended; if it be grown as an umbrella standard, it must first reach the top of the trellis; if it be meant to form a low bush, it can be pinched at every third joint or so up to June. The Japanese varieties will bear the same treatment, and, with few exceptions, are best grown as bushes. Formality ought to be entirely out of the question with flowers bearing such remarkable characteristics. Your correspondent seems to ignore disbudbing in his somewhat lengthy inquiry, which is the most important matter in the modern culture of the *Chrysanthemum*. No golden rule can be laid down to guide the beginner in the execution of this operation; practice alone will make perfect, and nearly every variety has some characteristic peculiar to itself.

In enumerating what I consider to be the best twenty-four incurved, large-flowering varieties, I have chosen only those with which a beginner would be most likely to succeed. I may also mention that the customs of different localities differ very much in this respect, as, for instance, Mrs. George Rundle and George Glennie take a leading place at some of the London shows, while in Liverpool it would simply prove amusement if an exhibitor was to set up a stand of flowers that included only medium-sized varieties. My selection of twenty-four large, incurved-flowered kinds is as follows:—Prince

Alfred, Mrs. Neale, Princess Beatrice, Golden Empress, Empress of India, Bronze Jardin des Plantes, Jardin des Plantes, Isabella Bott, Beethoven, Nil Desperandum, Prince of Wales, Princess of Wales, White Venus, Dingsal, John Salter, White Globe, Sir Stafford Cairre, Queen of England, Cherub, Pink Pearl, Baron Beuet, Beauty of Stoke, Lady Hardinge, and Mr. Gladstone, though not so large, yet invaluable for sake of colour. Novelsy and Eve are selling kinds if well grown, and go a long way in favour of an exhibitor with people who understand the merit of surmounting difficulties in the culture of peculiar varieties. Twelve Japanese sorts may consist of Elaine, Aurora, Colonel Hemery, Meg Merrilies, The Sultan, Grandiflorum, Madame Godillot, Wizard, Dea Masters, Fair Maid of Guernsey, Hero of Magdala, and Cromwell. The following are six Anemone-flowered kinds, viz., Fleur de Marie, Prince of Anemones, George Sands, Gluck, Acquisition, Louis Bonamy, and Princess Louise, a most invaluable sort for very late flowering. W. HINDS.

Otterspool.

## NOTES AND QUESTIONS—VARIOUS.

**Chrysanthemum at North Berwick**—One of the brightest borders which the writer observed during the past gloomy autumn was that surrounding the little Episcopalian Chapel at North Berwick. Throughout October it was glowing with richly-hued *Chrysanthemum*, planted close against the chapel wall, and surrounding the semicircular apse with a band of many colours. Interior decoration of churches is often carried to an absurd extent in these days, but we do not too often see successful attempts at the decoration of the external architecture of churches.—SALMONTERS.

**Victoria Nectarine**.—I quite agree with "S. D.'s" remarks (see p. 25), as to the questionable hardness of this Nectarine. It is, however, doubtless a valuable acquisition under glass, but, except in very favourable localities, I am persuaded that it requires a warmer and more certain climate than is experienced out-of-doors in most parts of the country. I would therefore by no means advocate planting it against open walls. I had here two fine trees grown upon walls and discarded both, as the fruit was so very uncertain in ripening as to be useless, although the locality is favourable for the growth of Peaches in general.—G. WESTLAND.

**The Big Cluster of Grapes** (see p. 25).—The "California Farmer" denies that California raised a bunch of Grapes weighing 125 lbs. It says it weighed only 12½ lbs., so it was really not much of a bunch after all; our English friends may therefore still claim the honour of having produced the largest bunch.

**Variegated Rock Rose**.—I have a golden-variegated sport from a robust form of *Heliathemum vulgare*. It originated in Bittersea Park during the late Mr. Gibbon's superintendence, and he gave it to me in the form of a single shoot from H. vulgare. It readily makes an edging about 1 ft. in diameter, and continues much longer in flower than any other *Heliathemum* of this class with which I am acquainted. The flowers are bright yellow, and this plant must not be confounded with the poor straggling white-flowered kind. During the spring months it is very bright and beautiful either on rockwork or elsewhere.—W. ELLIOTT.

**Striking Crotons in Bottles of Water**.—I, like "S. D." (see p. 45), think that Crotons are much easier struck in bottles of water than by the old plan. I have struck them in bottles for those last eight years; but, instead of suspending the bottles in the stove or propagating house, I put them on the pipes, a plan by which they strike much sooner. I have known *Dracenas* to make good roots in five days treated in this manner. I always put a little charcoal in the bottles, as it keeps the water fresh.—W. J. LANDERS, *Blankney Hall, near Slough*.

**Orchids now in Bloom in Mr. Philbrick's collection at Avenue Road, St. John's Wood**—

<i>Calanthe vestita oculata</i>	<i>Zygopetalum Mackayi</i>	<i>Oncidium sneebs</i> Barker
<i>lutea</i>	<i>Odoglossum</i> U.F.O.	<i>autumnalis</i>
<i>Turcici</i>	<i>Skinneri</i>	<i>orthochyrcum</i>
<i>Veitchi</i>	<i>nehlossum pardunum</i>	<i>Laelia alida</i>
<i>veratrifolia</i>	<i>roseum</i>	<i>Barkeria elegans</i>
<i>Angrecum sesquipedale</i>	<i>Roezli</i>	<i>Dendrobium heterocar-</i>
<i>phalaenopsis leucorhoda</i>	<i>circenseum</i>	<i>pum</i>
<i>Casta</i>	<i>Rosei majue</i>	<i>primitivum</i>
<i>Schilleriana</i>	<i>Alexandrae</i>	<i>Saccolabium giganteum</i>
<i>ambilis</i>	<i>Bictonense</i>	<i>violaceum</i>
<i>grandiflora</i>	<i>madroese</i>	<i>Cyrtopodium venustum</i>
<i>Rostropia antennifera</i>	<i>Cordatum</i>	<i>Roezli</i>
<i>Lycaste Skinneri</i>	<i>Sophrontis grandiflora</i>	<i>Boxalli</i>
<i>Masdevallia tovarensis</i>	<i>Vanda susvis</i>	<i>Harrisonium</i>
<i>polystachia</i>	<i>Oncidium nubiense</i>	<i>nivium</i>
<i>ignea</i>	<i>cuscutatum</i>	

On the *Sophrontis* there are no fewer than thirty-three fine blooms.—J. F.

**Flowering "Club Moss"** (see p. 48).—The plant referred to by Mr. Markham as a Club Moss (with flowers resembling miniature Lilies of the Valley), in his notice of the Greenland Flora, is probably the *Andromeda hypnoides*, which certainly occurs in Labrador, and is likely enough to be found somewhat farther north.—W. THOMSON, *Ipswich*.

—*Andromeda tetragona* covers the slopes of hills in Spitzbergen. It is slightly larger in the Himalayas.—THOMAS ACOTON.

No. 323.] SATURDAY, JANUARY 26, 1879. [Vol. XIII

"This is an art  
Which does mend Nature: change it rather: but  
THE ART ITSELF IS NATURE."—*Shakespeare.*

### A FEW GOOD GARDEN ROSES.

THERE are often so many disappointments arising from an improper selection of Roses for the garden, that while it is not yet too late to plant for the coming season, I venture to give the results of some dearly-bought experience in the matter, though, knowing that each must, in earnest, learn for himself, I can hardly expect it to go for much. The glamour of some glorious show Rose, grown and shown in perfection, chosen, it may be, out of many hundreds, will seduce each and all of us from our sternest determinations to try "at least this one" without inquiry as to its habit or wants; and, consequently, nine times out of ten we shall repent at leisure when, year after year, we find few flowers or, perhaps, fewer leaves on the plants we had fondly hoped would be the pride of the garden.

First, however, what is a good garden Rose? Its qualifications differ very considerably from those of an exhibition Rose, for in a garden brightness of colour and freedom of flower must dispute the palm with size and form, and a very double Rose is to be looked on doubtfully, as refusing to open in a wet, sunless summer like the one we passed through last year; above all, it should bloom freely in autumn, be sweet scented, and for small gardens be not too gross a grower. Capability as to standing hot sunshine as well as rain is also very desirable, but this last qualification is rarely found in any but light-coloured Roses.

Among old Roses none is more resplendent in a garden than Eugene Appert; its glowing colour, endurance, beautiful foliage, and freedom of flower still place it in the front rank. *Séateur Vaisse* is too well known to need further notice. Dr. Andry is a Rose that no garden should be without, a sure physician to heal all disappointment; his complexion is an index of his vigour, which defies all ordinary trials. Madame Victor Verdier is also a model Rose in every respect, brilliant in colour, deliciously sweet and free-flowering, handsome in growth and leaf. This Rose, I fancy, is not yet appreciated fully; perhaps from its resemblance to *Séateur Vaisse*, which, to my thinking, it surpasses. Duke of Edinburgh would be second to none if it were not scentless; and Paul Neron, were it not for the same grave defect, would be as necessary to a garden as La France is, for its huge size and coarse appearance vanish when treated with judicious neglect, and its autumn-flowering powers are indeed great when fully established and clothing some pillar. Baroness Rothschild and Countess of Oxford are, alas! also scentless, but who could leave such beauty in the lurch? Of less strongly growing Roses, Maurice Bernardin, Louis Van Houtte, and Xavier Olibo are remarkable for their excellence in every way, and the twin Roses Alfred Colomb and Marie Baumann make it an impossibility for anyone to choose between them. Charles Lefebvre and Jules Margottin must not be left out of our "garden party," though it is hardly necessary to mention them and other favourites whose fame is as great as their deserts. I go on, therefore, to the more neglected members of Rosedom, of whom none are more unjustly forgotten than the Bourbon Roses. Sir Joseph Paxton is peculiarly brilliant in colour, and will thrive almost anywhere, flowering abundantly; and another Bourbon Rose, Baron Genella, will in autumn yield blooms as beautiful as those of Eugénie Verdier, and with a sweet scent which that variety lacks. Count Bobrinski (red) is a wonderful late autumn bloomer on a south wall, but is rather tender, while Boule de Neige ranks with the hardest, and is very generous as regards its compact, white flowers at all times. Where abundance of cut Roses in autumn is required, the Tea Roses are indispensable, and nobody who can bestow a sunny bed on them with light, rich soil, and a little shelter from the north, need fear to grow them. In this selection great advances have been made lately in hardiness, so that when on their own roots, or, better

still, on the dwarf seedling Brier, or some equally congenial stock, obtainable at any good nursery garden, success is as sure as in any other kind. It is not necessary to grow many sorts where all cannot be equally good, but I mention a few which I have found to be of great use. Caroline Kuster is said to be a Noisette, but is not of a rambling disposition; Isabella Sprunt, Madame Falcot, Marie Van Houtte (best of all), Perfection de Montplaisir, and Perle des Jardins are all very good and trustworthy in their different ways, and embody various shades of yellow; Catherine Mermet, Goubault, Joséphine Malton, Regulus, Souvenirs d'un Ami and Paul Neron are also to be depended on as regards shades of pink and white, and, with those mentioned above, will afford cut blooms as long as any hardy flower can withstand autumn cold and rain. Among other and newer varieties Anna Ollivier, Jean Pernet, and Perle de Lyon (the last not so new), deserve trial, though not quite so certain to succeed, and for those whose gardens are in the "sunny south," Lamarque will prove a never-failing source of pleasure under a glass verandah with an east aspect, but a south wall forces him into growth too soon; his sweet, lemon-white flowers are by many preferred to those of any other Rose, and they are produced both early and late. Where there is plenty of space, and an evergreen is required, Fortune's White Banksian should share a place with Lamarque, for its flowers, too, are sweet, white, and of good size, and its period of bloom extends over several months in spring; appearing, also, in a mild winter, before March 21, as I have seen myself on the south coast of England, while on the shores of the Mediterranean its first blooms open in December, and a succession is kept up till the end of May, its earlier blooms combining peculiarly well with the Neapolitan Violet, so common in Paris flower-shops. In this incomplete list many well-known sorts are omitted because their fame needs no trumpeter. These will, of course, be added, or rather already be growing in every collection; but I trust that some of those just mentioned will be welcomed when once known, and as I write from the "North Country," where, as last year, summer forgets sometimes to pay us a visit, few exceptions need be made on the score of hardiness, except in some very low and damp situation. E. H. W.

### NOTES FROM KEW.

AMONG greenhouse plants in flower this week the following are most worthy of notice:—*Bonia tetrandra* is a neat-habited shrub, with pinnate leaves and pretty whitish-pink flowers. *B. megastigma*, of which there are several plants, produces an abundance of shortly-stalked, drooping, bell-shaped flowers, maroon-purple outside and greenish-yellow within; it is remarkable for its slender habit, sparse foliage, and the singular colour and delicious fragrance of its flowers. Sir Joseph Hooker thus speaks of it:—"Its somewhat aromatic fragrance resembles nothing known to me. It is most delicious, and, though not overpowering, scents fills a large room; and should it be capable of being obtained as a perfume, I may safely predict its being in great request. In these respects of delicacy of odour, accompanying a singular brown-purple colour, it resembles the *Tinnea* æthiopia of tropical Africa;" (noted in *THE GARDEN* of July 28, 1877) "and, like the *Tinnea*, the *Bonia* is very easy of cultivation, if treated like a Heath in an ordinary greenhouse." The two *Bonias* just mentioned are from West Australia. The Early-flowering Bitter Vetch (*Orobus vernus*), a native of Switzerland and Germany, lends itself readily to forcing purposes if taken from the open border in autumn, potted and placed in gentle heat; the pleasing, light green foliage, the bright purple of the flowers when first expanded, and the peculiar metallic-blue assumed as they get older, make a striking and pretty combination. A very graceful shrub, and one, moreover, readily forced, is the *Cytisus filipes*, of the Canary Islands; its long, string-like, drooping branches are sparingly furnished with leaves, from the axil of each of which are produced several sweet-smelling flowers. These, when held in the hand, appear to be pure white, without any tinge of colour; a closer examination, however, reveals the presence of several fine parallel lines of a rosy-red at the base of the standard, as the upper petal in the flowers of the Pea family is technically called. *Podalyria calyptrata*, from South Africa, is an elegant shrub, with alternate, entire, silky leaves, and purplish-pink, Pea-shaped flowers. In some parts of Ireland, and in sheltered positions in the south-west of England, there is a probability of this succeeding in the open air. More than a dozen fine species of this beautiful genus remain yet to be intro-

duced to our gardens. *Epaoris purpurascens*, with its upright, rigid branches, thickly beset with hard-pointed leaves, at the base of each of which, for a considerable length, are borne the short, tubular, pure white flowers, compares very favourably even with the beautiful cross-breds we owe to the art of the hybridist. It is not very frequent that the purely wild type can vie in beauty with the varieties formed after long cultivation.

In the Palm-house may be seen a very pretty little Bromeliad, *Bilbergia nutans*, from tropical America. From its tufts of narrow leaves spring the scapes, with their large, bright red, sheathing bracts; the flowers are about  $1\frac{1}{4}$  in. long, the three short outer segments being pink, slightly edged with blue, and the much longer inner ones yellow-green, margined deeply with dark blue. The contrasts afforded by the bright yellow anthers, the blue-edged yellow green petals, and the red bracts are very novel. In this house may also be seen *Rondeletia Bakhouseana*, which is classed by Mr. T. Moore, in the "Gardeners' Chronicle," among the new plants of 1877. Although we believe the species was first figured last year, it is anything but a new one, having been in cultivation for about twenty years. It is a rank, coarse, large-leaved plant, which, in spite of its large panicles of flesh-coloured or whitish flowers, will never be a favourite in general collections.

In the stove is a variety of Plumbago rosea, remarkable for its neat habit and the large size and brilliant colour of its flowers, which are some shades deeper than those of the type; *superba* is the varietal name, and one which is well merited by the plant in question. *Meziera erecta alba* is, in our opinion, not nearly so handsome as the splendid purple, yellow-throated *M. erecta* itself; like the last-named, it is a native of Sierra Leone. *Begonia prismatocarpa* is a charming little species, first discovered by Gustav Mann at an elevation of 3000 feet above sea-level, growing on rocks and trees near Fernando Po; it has creeping, herbaceous stems and small leaves, just above the level of which are borne umbels of from two to four two-petalled flowers, one of which is always a female. The petals are yellow, with a tinge of orange towards the base. To any collection of miniature plants this will prove a very welcome and elegant addition. A very noble and graceful Palm from Ceylon (*Ptychosperma rapicola*) is also in flower, perhaps for the first time in this country; the beautiful arching leaves are pinnate, and from the smooth trunk, well below the crown of the leaves, is given off the short, starchy, much-branched inflorescence, every part of which is of a deep red colour.

There are several fresh Orchids in bloom, the most interesting, from a gardening point of view, being the following:—*Odontoglossum pulchellum* var. *tenus*, from Guatemala, has long, narrow leaves and short, erect scapes bearing a few small flowers pure white, with the exception of the yellow crest on lip. The Indian *Eria obesa* has thick, leafless pseudo-bulbs about 2 in. or 3 in. long, and numerous racemes of white flowers scarcely tinged with pale pink; this is a very neat and pretty little Orchid, and does not possess the disagreeable scent emitted by some of the species in this genus. *Cattleya Warszewiczii* has white sepals and petals, the base of the lip exhibiting a faint but decided tinge of yellow, and the upper portions slight blotches of rose colour. *Dendrobium nobile* var. *elegans* is a very charming variety of an extremely useful and beautiful species; the flowers are larger and more deeply coloured than those of the type.—†

**Effect of the Weather on Vegetation.**—The damp mild autumn and winter which we have so far had are influencing everything out-of-doors. Previous to the 10th and 11th of this month, when the thermometer marked 12° of frost each night, we had not had more than 8° of frost, and many plants have flowered in a way not ordinarily seen. Of these the most unusual early in January were *Calceolaria aurea floribunda* and scarlet *Pelargonium*, which, although their bloom is now destroyed, are yet alive, and in many places have sustained little or no injury. This season the autumn and spring flowers may be said to have met each other. The following are finely in flower: Christmas Rose, Primroses (common, double white, and lilac), Violets, Polyanthus, Wallflowers (double and single), white Arabis, *Jasminum nudiflorum*, Veronica Anderssoni, Pyrus (*Cydonia*) japonica, and Hæpaticas; many Roses, both Hybrid Perpetual and Tea-scented, are still studded with numbers of opening buds, but amongst them the old Chinese blush and crimson have stood the cold the best; indeed, the unscathed buds of these in many places are still opening quite perfect. Laurustinus are more than usually full of flower. Fruit trees of all descriptions are thickly studded with bloom-buds. Peaches, Nectarines, Apricots, Pears (both standards and on walls), Cherries, Plums, and bush fruits of all kinds are alike promising, the buds being not so forward as they generally are at this time. Should the weather henceforward be sufficiently cold to keep them back until the spring frosts are over, there is every prospect of our having a good fruit crop during the coming season; but,

should it continue mild, its adverse influences will soon manifest themselves. Within the last few days many things show signs of moving. Honeysuckles, always amongst the first to push, are making considerable progress; the buds of Roses are also beginning to move.—T. BAINES.

**Halleborus orientalis.**—This is now finely in flower in the Fulham Nurseries. It is a handsome species, which should find a place in every garden.—P.

**The Sketch for our Plate,** issued this week, of Iris Victorine was drawn from a plant in Mr. Peter Barr's trial grounds at Tooting, where there is a very large collection of hardy Iriess.

**Dried Wild Flowers.**—Mr. Horsman has called our attention to some very graceful ornaments made from dried plants for Christmas and Easter cards by Mrs. Greston, of Colchester. They consist, to some extent, of annual everlasting, such as *Rhodanthe maculata*, ornamental Grasses, and some of our native plants, dried between ordinary newspapers, and they perfectly retain their colours. They are the prettiest things we have seen in dried flowers. Messrs. Hooper & Co., of Covent Garden Market, have a large collection of them.

**A Finely-flowered Cœlogyne.**—A specimen of *Cœlogyne* in Messrs. Veitch's Nursery, at Chelsea, is now furnished with forty-eight gracefully drooping flower-spikes, each of which bears from four to five flowers of snowy whiteness. A bank of this *Cœlogyne*, grown in 6-in. pots, also makes an effective feature, single plants in some instances bearing no fewer than six or eight flower-spikes. They are grown in peat and Moss, and in a temperature of from 50° to 60°, and are given abundance of water, especially when in active growth.

**A Winter-flowering Fuchsia.**—Mr. Cannell, of the Nurseries, Swanley, has sent us shoots of *Fuchsia splendens*, bearing numerous bright red flowers with green tips, a most brilliant and novel flower, resembling a very good and bright *Correa*. It requires an intermediate house, and if cuttings of it be struck about midsummer and grown on to healthy plants, they continue to produce an abundance of scarlet flowers throughout the winter. It is quite distinct from any other *Fuchsia* in cultivation.

**Dendrobium barbatulum Fitchianum.**—This *Dendrobium*, though comparatively little grown, is well worth attention on account of the tresses of soft, white, violet-centred blossoms which it produces freely during the dullest months of the year. It is now in flower in Messrs. Veitch's nursery at Chelsea, where the plants are growing on small strips of wood.

**Galanthus Imperati.**—This is, and has been for more than a fortnight, finely in flower with us at Colchester, while *G. plicatus* and the common Snowdrop are hardly above ground. *G. Imperati* seems to be not only the earliest, but also one of the finest of all Snowdrops. I may add that *Crocus alaticus* is likewise in flower with us.—F. HORSMAN.

**Begonia insignis in Winter.**—This is one of the best *Begonias* which can be grown for blooming in winter in the form of small plants. From cuttings of it struck in spring, and grown on liberally through the summer, good bushy plants, in 6-in. pots, loaded with delicate, rose-pink blossoms, may be obtained by Christmas. This plant grows freely in a cool house, and continues in bloom for several months, if occasionally watered with weak guano-water during its flowering period.—S. C.

**Cœlogynes in Small Pots.**—These beautiful winter-flowering Orchids, grown under any conditions, are both valuable and ornamental at this season of the year, but, when well cultivated in 6-in. pots, they are doubly useful, as such plants, when laden with four or five pendulous sprays of blossoms, as they may now be found in Messrs. Low's nursery at Clapton, may be used for vases and similar purposes in rooms, where they have an excellent effect, and last in good condition for a long time.

**Platycerium grande.**—Under no circumstances is this Stag-horn Fern more attractive than when grown on large blocks of virgin cork. A pair of plants of it grown in this way in Messrs. Jackson & Sons' nursery at Kingston are just now very ornamental. Strips of cork are set in an upright position in large pots, and bound together with wire to a height of 2 ft. or 3 ft. above the rim of the pots. On the sides of these are fastened the plants, which in a short time develop themselves into large specimens, some of the fronds of which measure from 3 ft. to 4 ft. across.—S.

**Gardeners' Royal Benevolent Institution.**—We are informed that Mr. Robert Marnock has consented to preside at the thirty-fifth anniversary festival of this charity, to be held during the ensuing summer.

KENTCHURCH COURT, HEREFORDSHIRE.

THIS ancient seat of the elder and unenobled branch of the Scudamore family lies to the right of the Pontrilas Station of the Hereford and Abergavenny Railway, at a distance of from 1½ miles to 2 miles. It is approached by a very old Elm avenue of considerable length, but somewhat detracted from in point of beauty by the coincidence of lines of hedgerow with some parts of it. Though the Scudamores of Hom Lacy—of which race was the first Viscount Scudamore, the friend of Buckingham and Archbishop Laud, the princely second founder of several Herefordshire churches, and (which is, perhaps, more germane to the columns of a horticultural journal) the first improver of Herefordshire orchards—are a more distinguished family in the annals of the county, the Kentchurch branch can boast an almost unique property of the same soil as their ancestors held five centuries ago, and of having in the course of that period not unfrequently represented the county

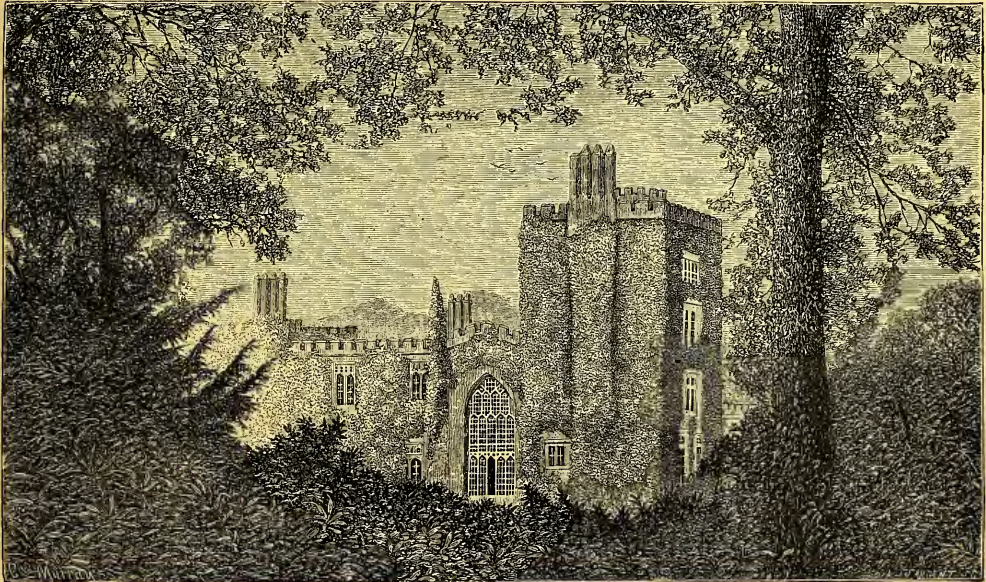
author of the English Georgic, "Cider," John Philips, assumed a poetic licence when he singled out the soil of Kentchurch, with some half-a-dozen other parishes, as noted for the growth of cider Apples.

Such is the Kentchurch, such Dantzeyan ground,  
Such thine, O learned Brome, and Capel, such, &c.

Book I., v. 66.

As his commentator, Dunster, explains, the parish of Kentchurch is not particularly noted for its cider. Possibly the poet assumed that it would be so, on account of the association of the owners of the soil with the lord of Hom Lacy above referred to; of whom Philips could with truth say, *apropos* of the Red-streak Apple, that

Scudamore's skilful hand  
Improved her, and by courtly discipline  
Taught her the savage nature to forget;  
Hence styled the Scudamorean plant; whose wine



Kentchurch Court. Drawn by C. O. Murray, after a photograph by Vernon Heath, and engraved by A. Sargent.

in Parliament. The last direct representative of the family, John Lucy Scudamore, Esq., of Kentchurch, was born in 1798, and died in 1875, being succeeded by his maternal grandson, Edward Scudamore Lucas, of Castle Shane, Monaghan, and Kentchurch Court, Hereford, a magistrate for that county, and a lieutenant in the Herefordshire Militia.

The present residence at Kentchurch is a castellated mansion, from designs by Nash, erected in 1824 to replace a quaintly irregular house, of which one old tower remains, as seen in our engraving. In this tower tradition holds that the mysterious John-a-Kent or Gwent, who is supposed to have been identical with Owain Glyndwr, and who is buried in the neighbouring church of Grosmont, was wont to hide himself, his daughters having married the representatives of the families of Scudamore and Monnington. The situation of Kentchurch, although the steep slopes of Garway Hill rise almost too abruptly in its front from the very edge of the drive, is eminently picturesque, and embraces some fine, park-like scenery, of a wild and secluded character. The oft-quoted

Whoever tastes, let him with grateful heart  
Respect that ancient loyal house.

Book I., 504, &c.

In Mr. Evelyn Shirley's work on "Deer and Deer Parks," we find that Kentchurch Park contains between 300 and 400 acres, and a herd of about 130 fallow deer. It was enclosed before the reign of Henry VIII.

*Colletias in Ireland.*—Perhaps there could not be found in the three kingdoms such examples of that curious shrub, *Colletias cruciata*, as are to be seen growing in the grounds of Mr. Smith-Barry, at Fota, near Queenstown. It should be remembered that the *Colletias* were at one time classed as stove plants, and, indeed, we believe they are still to be found so placed in some horticultural publications of rather recent date. The species referred to above we know—and, doubtless, all the other species are equally so—to be perfectly hardy in Ireland, and we strongly recommend it to the notice of all who are interested in rare and beautiful shrubs, as being well deserving of a place in their gardens; its pretty little creamy-white flowers, which are produced in great profusion during the autumn months, and its striking appearance always render it an object of interest.—"Gardeners' Record."

## ORCHIDS.

## ORCHID FLOWERS AT WHITECHURCH RECTORY.

The form, texture, colour, and fragrance of many Orchid flowers peculiarly adapted them for effective arrangement in a cut state. When judiciously mixed with other flowers, they add a charm to the combination which in their absence could be supplied by few other flowers. Where they are grown in sufficient quantities with the requisite variety, there can be little doubt that, independent of the estimation in which rare flowers are common with all rarities are held, they produce the best effect when grouped by themselves. This opinion, which I have always entertained, received additional confirmation the other day by a charming arrangement which I saw at the Rev. J. B. Norman's, Edgware, and which I will attempt to describe. The stand consisted of a massive glass plate 18 in. in diameter, covered with green velvet; on this stood some dozen and a half small specimen glasses, similar in shape to such as are used for button-holes flowers in the shops. The centre one was about 10 in. high, those surrounding it gradually decreasing to the outer ones, which were not more than 3 in. high. In the centre glass was a single flower of *Laelia purpurata*, associated with *Madevalla Lindeni*, *Harryana*, and *Veitchi*, also single flowers cut with good long stems, so as to avoid a dumpy appearance when set too closely together. The surrounding row of glasses contained varieties of *Cattleya Mossie*, *C. lobata*, and *C. Mendali*, a raceme of *Phalænopsis grandiflora*, and one of *P. Luddemanniana*, and several spikes of *Odontoglossum Alexandræ* and *O. Pescatorei*; the outer glasses were filled with *Dendrobium Ainsworthi*, *D. Dalhousianum*, *D. crystallinum*, *Odontoglossum Uro-Skinneri*, several flowers of *O. Rosali*, and *O. triumphans*, *Vanda Malesagris* (very fine), *V. suavis*, *Epidendrum vitellinum majus*, a single spike each of *Oncidium barbatum* and *O. pulvinatum*, the drooping feathery sprays of these lightening up the whole. To give colour there was a flower or two of *Anthurium Schoberzianum*, and also several of *Streptocarpus biflorus*, to afford the essential shade of blue. A few fronds of *Adiantum Farleyense*, *conneatum* and *gracillimum* completed an arrangement the beauty and elegance of which it would be difficult to over-estimate. There was a total absence of that crowding together which is so objectionable, yet so often met with in groups of cut flowers. The whole was covered with a high glass shade; the latter not with a view to improve the appearance of the flowers, but to prolong their duration, to which it very much contributes. It may with truth be said that few have such *recherché* material as this at command, but that does not in the slightest degree affect the principle on which such combinations should be made, for even flowers of a much commoner character would look much better than they do if not banded together in vases and baskets, as if the object were to pack the greatest possible number into a limited space, a condition which simply results in destroying the individuality of the flowers and all artistic effect. Mr. Norman is not only an enthusiastic cultivator of Orchids, possessing, as he does, one of the finest collections in existence, but he is equally successful as an amateur artist in the drawings which he makes of his choicest plants in flower. The productions of his pencil not only possess more than ordinary merit as pictures, but are true portraits of the flowers which he paints. Amongst large numbers of rare and beautiful kinds I noticed *Cattleya Bassetti*, *C. Dawsoni*, *C. Trianae magnifica*, *C. Mossie* (the Manley Hall variety), *Laelia purpurata*, *L. majalis*, *Aerides Fieldgieri*, *A. Veitchi*, *Dendrobium luteolum* and *D. crassinode*, *Vanda Bensoni*, and *Disa grandiflora*. In the colouring and in the delineation of the plants and flowers Mr. Norman is alike successful, rendering the delicate shades for which Orchids are so conspicuous in a manner that many artists of considerable repute would appear incapable of. Drawings, if striking in appearance, may pass muster with those who are not familiar with the flowers, but if not faithful representations of what they profess to be, they have little interest for those who are intimately acquainted with the originals.

T. BAINES.

## SEASONABLE NOTES ON ORCHIDS.

PLEIONES out of flower should now be re-potted, in order to have strong, well-developed pseudo-bulbs for blooming next autumn and winter. Pot them in a mixture of peat-loom, well decayed cow-manure, Sphagnum Moss, and a little sand; drain well, and treat them liberally as regards water when root action commences. There is one exception, however, respecting the flowering of these plants, for, although the instructions just given apply to *P. lagenaria*, *Walliichi*, and *maculata*, *P. humilis* is only now beginning to open its blooms, and must, therefore, be left until later in the month. *Laelia cinnabarina*, now sending up its flower-spikes, must also be carefully watered; plants of this species which are not showing flower should

be kept at rest as long as possible, because they will make stronger growth if started later.

*Cypripedium Boxalli*, be it species or variety, bids fair to become a favourite winter and spring-blooming plant. In habit of growth it resembles *C. villosum*; its flowers, however, differ from those of that kind considerably, and, indeed, in some respects they are more beautiful. The dorsal sepal is pale-green, beautifully blotched and spotted with dark purplish-black; the sepals have lost something of the pearly, varnished appearance of *C. villosum*, and are more or less blotched with brownish-black. With this plant the beautiful hybrid *C. Sedeni*, with its deep rose-coloured petals, forms a fine contrast. Amongst older kinds, *C. insigne* *Maslei* has few rivals, the large dorsal sepal being more than half pure white, blotched and spotted with brownish-purple and mauve, and, in addition to its beauty, it thrives by anyone having even an ordinary greenhouse. Plants of the variable *C. Trianae* are now unfolding their beautiful flowers, and amongst its many varieties few are more charming than the kind called *O. T. delicata*, a sort which should be sought after by all who do not possess it.

*Odontoglossum* now in flower, and, indeed, all other Orchids in the same condition, should be kept free from sprinklings from the syringe, or their beauty will soon be impaired, and their period of blooming greatly curtailed; care should also be taken that plants in flower removed to a low temperature should not be exposed to an atmosphere charged with much moisture, or loss will be the result. Plants in baskets or upon blocks should not be over-stimulated, or they may start into growth prematurely, and the display of flowers will be thereby much impaired. Plants with pseudo-bulbs may be kept in health and in a state of rest if they be taken down and dipped in water about once a week. At this season the syringe should be used with caution, especially after noon, as the sudden changes of temperature that take place may lead to much mischief in the case of plants hanging near the glass. Yellow fly now making its appearance should be diligently washed off; this little pest should be kept in check in this manner as much as possible, in order to avoid fumigation, which in many instances is injurious.

W. H. G.

Orchids in Flower at Chelsea.—*Cattleya bulbosa*, or *Walkeriana*, now in flower in Messrs. Veitch's nursery, though not new, is strikingly beautiful; it bears flowers as large as those of *Laelia marginata*, the petals are transparent in texture, and elegantly tipped with violet, the lip being rich purple. A rare variety of *Odontoglossum nabaloom* is also in bloom; its flowers, which measure quite 3 in. in diameter, are wax-like and beautifully spotted. An orange-scarlet *Chysis* is also very attractive, six large flowers being borne on one spike. It is a hybrid, raised by Mr. Sedeni, the result of a cross between *C. Limminghei* and *C. levis*. A very beautiful *Dendrobium* is also now in flower; it is named *D. Dominicanum*, and is the result of a cross between *D. noble* and *D. moniliforme*. Its flowers are nearly as large as those of *D. noble*, the petals being tipped with deep purple, and the throat rich dark crimson. Amongst hybrid *Dendrobies*, this is probably the best which has yet been raised.—S.

*Lycaste lanipes*.—This old yet valuable Orchid produces large, waxy, cream-coloured blossoms in abundance, and they are agreeably scented. The flowers issue from the bases of the bulbs, sometimes as many as from fifteen to twenty being produced round one bulb. We saw a good plant of it the other day in bloom in Messrs. Jackson & Son's nursery at Kingston.—S.

*Odontoglossum vexillarium* in Pans.—Young plants of this beautiful Orchid are found to succeed best in small shallow pans, filled half full of broken crocks, on which are heaped up lumpy peat and Sphagnum. The pans are suspended from the roof, so that the plants are placed close to the glass. Large plants are, of course, best grown in pots, but these should be filled at least half full of drainage, as if a large bulk of soil be used the roots do not increase nearly so fast, nor are they so healthy as when afforded plenty of drainage and loose material in which to ramble.—C.

Ferns and Ficus amongst Orchids.—Orchid houses might be greatly improved in appearance by introducing free-growing Ferns, Mosses, and *Ficus repens* amongst the pots in which the Orchids are growing. These are placed on stages covered with ashes or gravel, and the plants just named luxuriate under such conditions. The *Ficus* may be allowed to droop over the edges of the stage so as to form a curtain of green spray. Under the stages stones or cinders might also be placed, and in the cavities filled with soil might be planted *Selaginellas*, *Fittionias*, Ferns, and similar moisture-loving plants. In addition to the effect produced by such an arrangement a certain amount of humidity would always be maintained in the house, which would prove of benefit to the Orchids.—S.

THE GEOGRAPHICAL DISTRIBUTION OF GARDEN PLANTS.

*The African Tropical Region.*

Including Madagascar, the Mauritius, and other small islands, the flora of this region has contributed comparatively little to our gardens. Though isolated from the other tropical regions, it contains no peculiar families, but a large proportion of the genera and species are endemic. The vegetation of the western side approaches, in some of its characters, that of the



Pacific Islands—The Bread-fruit.

opposite coast of America, and on the eastern side there is a greater resemblance to the Asiatic flora; but a very large number of the species of both sides of the continent are identical, and the general character is more Asiatic than American. So little has been published of what is known respecting the flora of this region, and so much remains to be explored, that a general comparative sketch is impossible. There is, how-



Tropics of the Old World—Tamarind.

ever, an absence of the wonderful profusion and brilliancy characteristic of the American region. Handsome plants are, however, not wanting, and further explorations will doubtless add many fine things to those we already possess. The most beautiful and the most singular of the plants from this region in cultivation are from the islands; for instance, the Lattice-leaf Plant (*Ouvirandra fenestralis*), the Traveller's Tree (*Ravenala madagascariensis*), and the indispensable *Stephanotis floribunda*, are all natives of Madagascar; and many of the fine Palms of recent introduction belonging to the genera

*Hyophorbe*, *Latania*, *Dictyosperma* (*Areca alba* and *rubra*), *Roscheria*, *Verschaffeltia*, and *Stevensonia*, are natives of the smaller islands of the Mauritius and Seychelles group. The Mauritius and Seychelles are also rich in Screw Pines (*Pandanus* genus). Sixteen species have been described as growing in these islands.

*General List of some of the Cultivated Plants from the African Region.*

<i>Whitfieldia lateritia</i>	<i>Ravenala madagascariensis</i>	<i>Hyophorbe amaricanalis</i>
<i>Laukeseria longiflora</i>	" "	" <i>Verschaffeltii</i>
<i>Gardenia Stanleyana</i>	<i>Angrosma acsuppedale</i>	<i>Dictyosperma alba</i>
" <i>devoniata</i>	" <i>caudatum</i>	<i>Acanthopanax</i>
<i>Pentas carnea</i>	" <i>eburneum</i>	" <i>rubra</i>
<i>Olerodendron Thomsomii</i>	" <i>citratum</i>	" <i>crinita</i>
" <i>splendens</i>	<i>Anacellia africana</i>	<i>Roscheria melanochætes</i>
<i>Stephanotis floribunda</i>	<i>Latania borbonica</i>	<i>Verschaffeltia splendida</i>
<i>Ouvirandra fenestralis</i>	" <i>Verschaffeltii</i>	<i>Stevensonia grandifolia</i>
	<i>Hyophorbe indica</i>	

*The Asiatic Tropical Region.*

EXTENT OF CHARACTERISTIC VEGETATION.—The flora of this region, which is here understood to include the whole of tropical Asia and Anstralia, is probably not far short of 20,000 species. British India alone numbers at least 10,000, judging from the number of species of the first 44 natural orders, *Ranunculacæ* to *Sapindacæ*, which, in Hooker's "Flora of British India," amounts to exactly 2250. It is true that this total includes not only the species growing in the Tropics, but all those occurring in British India up to the highest limits of plant life on the Himalaya Mountains. But whilst some parts of this area have an exceedingly rich and luxuriant vegetation, other districts are comparatively poor. Thus it has been computed that the whole of the immense plain of Bengal supports only about 600 species of flowering plants. On the other hand, there is almost a complete absence of desert land. Comparatively little is yet known of the vegetation of some parts, as Burmah, New Guinea, and many of the islands of the Malay Archipelago. Of the 2250 species belonging to the orders named above, nearly 250 occur above an altitude of 10,000 feet. Already, under sub-tropical and temperate regions, something has been said of the contributions to our gardens from the Himalayan Mountains, particularly of the great variety of magnificent *Rhododendrons* from Sikkim. It remains now to point out some of the characteristics and peculiarities of the tropical flora. In doing this in a general way, it is not easy, in fact it is not possible, to draw any line of demarcation between the sub-tropical and tropical elements. Some species are common to both regions, and many genera characteristic of the country are represented by diverse species in the different regions. Disregarding some of the orders of general distribution in the Tropics, the following may be selected for remark:

CHARACTERISTIC FAMILIES. — *Anonacæ*, chiefly aromatic trees, 200 species in British India. To the *Nymphæacæ*, *Water Lily* family, belong *Euryale ferox*, a native of India and China, closely allied to the *Victoria* of American waters, having similar large leaves, but much smaller flowers, numerous varieties of *Nymphæa stellata*, in common with tropical Africa; *Nymphæa gigantea*, from Australia; and *Nelumbium speciosum*, *Sacred Lotus*, which is also widely dispersed in the Old World. Trees belonging to the *Guttiferæ* are numerous, and include those yielding gamboge. A characteristic Order of Indian timber trees is the *Dipterocarpeæ*, which, with the exception of three or four species occurring in tropical Africa, is confined to tropical Asia, and includes some of the most valuable of Indian timber trees, among them the *Sal*, *Shorea robusta*, and *Dipterocarpus laevis* yields a kind of varnish called wood-oil, used for painting ships, &c.; and *Dryobalanops camphora* furnishes a superior kind of camphor, called *Sumatra camphor*. A conspicuous character of the flowers of these trees is the growing out of one or more of the calyx-lobes into long wings as the seed-vessel advances towards maturity, giving the fruit somewhat the appearance of a shuttlecock. Belonging to the *Geraniacæ* is the genus *Impatiens*. A familiar species, *I. balsamina*, the *Balsam*, is a native of India, where also 120 out of about 150 known species of the genus are concentrated. They inhabit the tropical and sub-tropical regions, a few ascending into the temperate region. The remaining species are widely dispersed in temperate regions of Africa, North Asia, and North America. The Mal-

pihiaceæ, which we found so abundant in America, are rare in Asia, and represented in India by only about a dozen species. Anacardiaceæ (ex. *Mangifera indica*, the Mango) are abundant; and the next family of importance is the Leguminosæ, which is represented by no fewer than 132 genera—among them *Butea*, *Amherstia*, *Poinciana*, *Cassalpinia*, *Tamarindus*, and *Piptadenia*. In India the tribe *Dalbergiæ* is represented by a considerable number of species, but they are not so numerous as in South America. Some of them, as the *Sissoo* (*Dalbergia Sissoo*), are amongst the most valuable of timber trees. *Arborescent Myrtaceæ*, belonging to the genera *Eucalypta*, &c., are also very numerous, and include the Clove (*Caryophyllus aromaticus*) and Rose Apple (*Jambosa vulgaris*).

MELASTOMACEÆ.—The Asiatic Melastomaceæ, although they constitute no prominent feature of the flora, contribute a larger proportion of the commonly cultivated species than the American. The principal genera are: *Osebeckia*, 36 species; *Melastoma*, 40; *Allomorphia*, 3 or 4; *Sonerila*, 50; *Phyllagathis*, 2; and *Medinilla*, 50. The genus *Mecynoclon*, consisting of about 100 species of shrubs and trees, now generally referred to the Melastomaceæ, is almost exclusively Asiatic. The beautiful *Lagerstromia indica* belongs to the neighbouring family *Lythraceæ*. *Compositæ* are less numerous and less showy than the American. Mr. *Bentham* estimates the total number for tropical Asia at 326, and the tropical Australian species would not materially swell this number.

The *Rubiaceæ* (including the *Cinchonææ*), a family of upwards of 325 genera and 4000 species, chiefly tropical, are numerous in Asia, and include the finest species of *Ixora*, the fragrant *Luculia gratissima*, and the pretty *Mussaenda frondosa*. The species of *Coffea* (*Coffee*) are also Asiatic. *Hoya* and *Centrostemma* belong to the large tropical Order *Asclepiadææ*; *Torenia asiatica* to *Scrophularinææ*; *Coleus* to *Labiataæ*; *Chirita*, *Didymocarpus*, and the splendid *Æschynanthus* to *Gesneriææ*. *Verbenacææ* furnish many fine species of *Clerodendron*, including *C. coccineum* and the valuable *Tenk*, *Tectona grandis*; and the *Convolvulaceææ*, such ornamental plants as *Ipomœa Horsfallii* and *I. Leari*. *Laurinæææ*, *Myristicaceææ* (*Nutmegs*), and *Moracææ* (*Figs*) are characteristic families of large trees. The genus *Myristica* constitutes the Order *Myristicaceææ*, and has its head-quarters in the Malaccas or Spice Islands, and the species of *Ficus* are very numerous.

PITCHER PLANTS.—The *Nepenthæææ* (*Pitcher Plants*) are confined to the Asiatic region, and most abundant in Borneo and the neighbouring islands, only one species occurring in Australia, and that only in the extreme north. *Rafflesia Arnoldi*, a curious parasite on the roots of trees, has the largest flowers of any known plant, being 3 ft. or more across. It is a native of Sumatra, and there are some other smaller-flowered species in the same part of the world. *Screw Pines*, *Palms*, *Orchids*, *Zingiberacæææ* (*Ginger family*), and *Bamboos* are some of the principal remaining Orders, of which representatives are in cultivation in this country.

ECONOMIC PRODUCTIONS.—The economic plants of India and the Islands are numerous, but Australia has none of importance that do not occur elsewhere. *Papaver somniferum* (*Opium Poppy*) is extensively cultivated; *jute* is the fibre of *Corchorus capsularis*, now exported on a large scale; *gutta-percha* is the inspissated juice of *Isonandra gutta*, a native of the Malay Islands; *Cinnamon* is the bark of a *Lauraceous* tree of Ceylon (*Cinnamomum zeylanicum*); *castor-oil* is the product of *Ricinus communis*, believed to have been originally wild in India; *Piper nigrum* (*Pepper*), and *Ficus elastica* are also natives of India. The *Durian*, *Mangosteen*, and *Tamarind* are indigenous fruits.

General List of some of the Genera of Plants from the Asiatic Region.

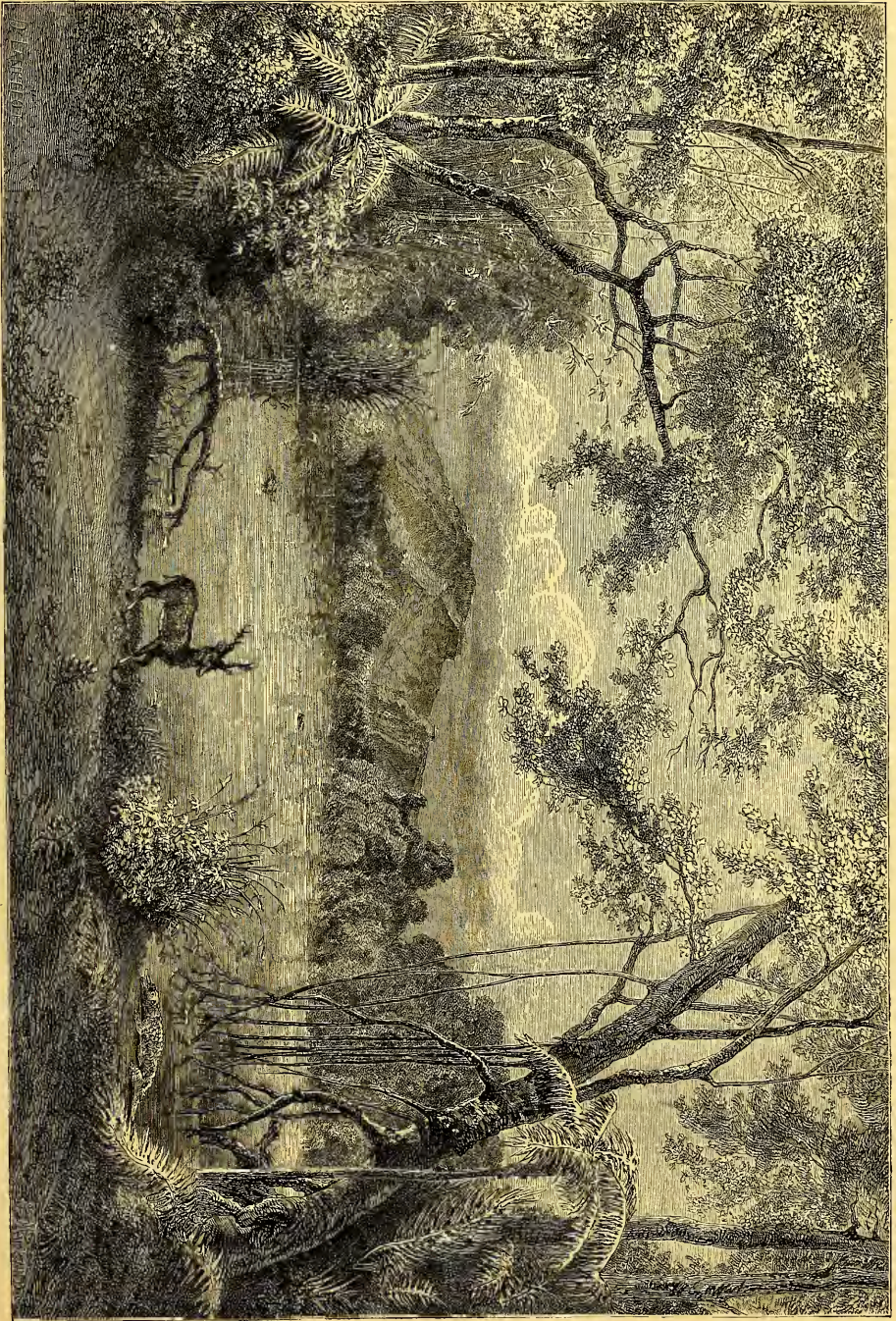
Euryala	Ixora	Nepenthes	Anæctochilus
Nymphaea	Luculia	Ficus	Calanthe
Impatiens	Mussaenda	Ricinus	Coleogyne
Ambrasia	Hoya	Croton	Cymbidium
Cassalpinia	Centrostemma	Hedychlorum	Cypripedium
Poinciana	Torenia	Orinum	Dendrobium
Osebeckia	Coleus	Pandanus	Eria
Allomorphia	Chirita	Caryota	Phalenopsis
Medinilla	Didymocarpus	Calamus	Pleione
Sonerila	Æschynanthus	Wallisia	Saccolabium
Phyllagathis	Clerodendron	Aerides	Vanda
Lagerstromia	Ipomœa		

PACIFIC ISLANDS.—A few words respecting the flora of *Polynesia* should be added, although we have very few plants in cultivation from this region. The vegetable food of the inhabitants forms the most interesting feature from our point of view. What may be termed the almost universally-cultivated bread-plants are the Bread-fruit tree, the *Cocca-nut Palm*, and *Taro* and *Cocca-meal*, the produce of the tobacco root-stocks of the gigantic *Aroids Colocasia antiquorum* and *C. esculenta*. It must not be supposed, however, that the vast number of islands widely scattered in the Pacific Ocean are uniform in their vegetation. Some of them are almost barren, whilst others have a luxuriant tropical flora, and the way in which the rising coral reefs gradually become covered with vegetation is one of the most interesting phenomena connected with the distribution of plants. Seeds of various littoral plants are conveyed by the sea from the neighbouring islands and spring up, forming the first vegetation of flowering plants. As the reef rises, and generation after generation of these plants live and die, and a soil is formed by their remains and the wearing away of the rock, other plants take possession. Among the first is the *Cocca-nut Palm*, which quickly establishes itself, and, in its turn, affords cover for other small-fruited plants, whose fruits or seeds are conveyed by birds, winds, and other agencies. Coral islands of different ages exhibit all the different stages imaginable, between a complete clothing of plants and a few seaside species springing up on the reef as it is just emerging from the sea.

#### Concluding Remarks.

By employing as much as possible familiar cultivated examples of different groups in illustration of the principal facts of the geographical distribution of plants, the foregoing mere outline of the subject should convey much interesting and instructive information to anyone tolerably well acquainted with the plants commonly met with in gardens of even moderate pretensions. But, of course, it can only be regarded as a foundation upon which to build up by degrees a complete superstructure, or a simple framework in which future knowledge shall enable the student to imagine perfect pictures. One of the most important lessons the practical cultivator learns from a study of the laws affecting the character of the vegetation of a given region, is the part played by climate (heat and moisture); thus, if a country in a temperate region has a large proportion of herbaceous perennial plants flowering during the warmer months, as in England, for example, we may take it for granted that the climate is always moderately humid. Where there is a large proportion of Ferns, as in New Zealand, an almost constantly humid atmosphere must prevail. In other temperate and sub-tropical regions, where rainfall is periodic, there is, according to the quantity and frequency of rainfall, and the duration of the rainy season, &c., a vegetation consisting mainly of bulbous-rooted plants and succulent plants, as in some districts in South Africa; or an almost exclusively woody vegetation, as in some parts of Australia; or a large number of annual plants, as in the Californian region. As soon as the rains begin, the seeds of annuals will germinate, and, with increasing heat, quickly grow, produce flowers, ripen seeds, and die. Succulent plants and bulbs as rapidly develop their flowers. In countries where the vegetation is of a mixed character the different classes of plants are subject to much the same conditions, as they vegetate at different seasons of the year. In unusually dry seasons many perennials become annuals, that is to say, they ripen seed and are scorched up; but the seed, being able to withstand the drought and heat, lies dormant until the rains come, to repeat the same process should the drought again kill the plants. In this way a perennial plant may gradually become of annual duration, or rather, to more exactly define its nature, flower only once. A change of climate, whether to a moister or dryer condition, heat remaining the same, would favour certain elements of the existing flora, and at the same time act unfavourably on the development of other elements, causing a corresponding change in the general character of the vegetation. This brings us to a clearer perception of the reason why many wild plants are often found in regions which are now not the most suitable to their perfect development, and why

GEOGRAPHICAL DISTRIBUTION OF GARDEN PLANTS: VEGETATION IN THE PHILIPPINES.



similar regions, differing only as to the amount of moisture, exhibit a totally different kind of vegetation. We see, too, that it is possible for a plant normally perennial to become monocarpic, or once-flowering, if the exigencies of climate require it. On the other hand, some plants that are monocarpic in their native countries become perennial, or polycarpic, under cultivation. In excessively dry climates the plants are either succulents, and do not readily part with their water by evaporation, or they are hard-leaved, like *Cycads*, *Dasylirops*, &c. Most Palms are hard-leaved plants, and, as a general rule, they may be said to be able to flourish in a dry atmosphere, but they must have plenty of water within reach of the roots. A forcible illustration of this constitutional peculiarity is offered by the Date Palm of the oases in North Africa, and the Dou Palm in Upper Egypt. How far plants may in time become modified by climate we can only conjecture, but the kind of change indicated is known to take place. On the other hand, if plants undergo any alteration in constitution in respect of their power to bear a greater degree of cold without injury, the process must be extremely slow, because, as has already been observed, the Potato, which has been in cultivation nearly three centuries, is not appreciably harder now than when first introduced, or than when it has been re-introduced. A modifying condition not to be lost sight of in countries subjected to intense cold during the winter is the presence of a more or less thick layer of snow, completely sheltering herbaceous and dwarf woody vegetation as well as the roots of trees, and the larger shrubs. This snow is a great protection to plants from the severe and prolonged frosts of continental places, even in a much lower latitude than London. Occasionally there is what is termed a black frost, that is frost without snow, which proves very disastrous to plant life. Dry litter is a very good substitute around the roots of choice shrubs, &c., and for covering dwarf plants during sharp frosts, but it should be removed when the frost breaks, where it is likely to cause damage in decomposition. Climate, being so potential in all that appertains to plant life, determines the nature of man's food to a great extent, in so far as it depends upon the plants that will succeed in any given country. It is true, one may live upon Rice in this country, and almost as cheaply as upon Wheat, though it is the product of a warmer climate. But, notwithstanding our being able to obtain the vegetable food of other climes, we subsist largely upon the produce of our native soil; and this, broadly speaking, obtains in all countries. With regard to beverages, however, we find a large foreign element, the English drinking Tea, the French Coffee, and so on; and these are brought from the most distant countries. Already under each region something has been said respecting the principal Bread plants; and it remains to point out the extraordinary extent to which the cultivation of these plants by man has modified the whole physiognomy of the vegetation of thickly-populated countries. Vast forests have disappeared, bogs have been drained, pasture land ploughed up, and many other things done to destroy the indigenous flora, and alter the climate. Some of these operations have proved of the highest benefit to mankind, whilst others have worked prejudicially, especially the indiscriminate destruction of the forests. If clearing the ground of trees over large expanses of country does not directly influence the rainfall, there is no doubt that, in the absence of trees, the rain quickly dries up, and immense tracts of fertile country have been transformed into barren deserts through the thoughtless acts of man. Now every wise government takes precautions for the preservation of forests; not alone to prevent land from becoming a waste, perhaps, because the supply of timber is another serious question. In countries enjoying a naturally humid climate all the year round, as the United Kingdom and New Zealand, no such danger exists; or if it exist, it is in a modified degree. It is in continental regions, where long periods of drought are not uninfrequent, and, where possibly trees exercise a direct influence on the rainfall, that deforesting has brought such direful consequences. In conclusion, a word to gardeners against attempting to imitate climate too closely; because, after all, it can only be imperfectly done under artificial conditions, and because the natural conditions under which plants are found growing are not always the most advantageous. Proof of this may be found in almost

any well cultivated garden, where we can see, both out-of-doors and under glass, such a luxuriant development and profusion of flowers as never or rarely occurs in Nature. Of course, we must not lose sight of the fact that plants under cultivation are altogether relieved from the struggle for existence to which they are subjected in their native habitats. Another reason why failure is almost certain to attend servile imitations of natural conditions is that light, one of the principal conditions, is wholly beyond our control—that is to say, we cannot provide the intense light many of our cultivated plants enjoy in their native countries, though heat and shade are within our reach. From what has preceded, it is clear that it does not necessarily follow that the gardener who knows most of the distribution of plants, and the conditions under which they grow in their native habitats, will be the best cultivator. Indeed this knowledge, employed without intelligence and reflection, may lead him astray. In spite of all the theoretical knowledge a man may possess, he cannot dispense with practical experience; and if he attempt it, he will probably undergo the mortification of seeing himself beaten as a cultivator by a rival who, mayhap, can neither read nor write, but who has observant eyes, and watches his plants so closely, that the slightest changes in their health for the better or the worse do not escape him; and thus he is able to modify his treatment according to circumstances.

W. B. HEMSLEY.

#### THE LINNEAN HERBARIAN AT BURLINGTON HOUSE.

THE one hundredth anniversary of the death of Linnæus was celebrated the other day at several places in Sweden. He died on the 10th of January, 1778. The occasion is an appropriate one to refer to the present condition of the relics of the great naturalist which Eogland guards. We have in London his herbarium, his collection of insects and shells, his library, and some few of his MSS. When Linnæus died his natural history collections and library passed to his son, who succeeded him as Professor of Botany of Upsala. The younger Linnæus died in 1783, and they then reverted to his widow. She wished to sell them, and referred the matter to Dr. Aroel, professor of medicine at Upsala, who wrote to Engelhart, who was then in London, and they were offered to Sir Joseph Banks for £1000. Sir Joseph was not disposed to purchase, but he named the offer to Dr. James E. Smith when at breakfast one morning, and recommended him to become the owner. Dr. Smith, who had recently completed his course at Edinburgh wrote to his father asking for the money to make the purchase. The letter is dated December 24, 1783, and the letter, interchanged, as printed by Lady Smith show that the request was not acceded to without some importunity. After some correspondence with Dr. Aroel, the sum agreed on for the whole collections and library, excepting a small collection for Baron Alstromer, was £300. Just as they were being despatched, the King, who had been away, heard of the arrangement, and endeavoured to have the collections retained in the kingdom, but he was too late. It is recorded that he gave instructions for stopping the ship that was conveying the collections to England, and there was even an engraving made showing the war ship chasing the other in mid-sea. This is supposed to be a myth, but, so far as we can find, no one seems to know what really took place. The important fact, however, was, that the collections did reach London, and up to the time of Dr. Smith's death, they remained his property. He died on March 17, 1823. During the time he had the collections he added to the insects and shells, but the plants, fortunately, were hardly touched. It was found by his will that the whole, with some of his own collections, were to be offered to the Linnæan Society of London for the sum of £3000. He had been for so many years President of the Society, that it was thought by many that he would have bequeathed them, but as he had not done so, and as the further conditions were that, if the Society did not purchase them, they were to be offered elsewhere, it was felt that an effort must be made to raise the money, or the collections might again pass out of the country. An appeal to the Government was made in vain. By May 24, however, £1593 8s. was raised by voluntary contribution among the Fellows of the Society, and the rest of the money was obtained on loan, and so the collections passed into the hands of the Society. The herbarium was some time ago catalogued by Mr. Kippist, according to the orders adopted by Linnæus. There are 1292 genera, illustrated by 13,737 sheets of mounted specimens. The paper is the same as that on which Linnæus mounted them, and the names are in his own handwriting. They are in the three tall wooden cases in which they were originally arranged, and

are all in good preservation. Together with the collection of shells and insects and the library, they are now in the meeting-room of the Society at Burlington House, and they are thus kept apart from the general collections of the Society. At the British Museum there are two collections which he used in working, but which, however, were not his own.

## THE INDOOR GARDEN.

### CONTINUOUS FLOWERING OF THE BOUGAINVILLEA.

THOUGH many now grow and flower this climber successfully, I am of opinion that the majority who attempt its culture fail. One reason for thinking so is, that, although one often sees the plant in gardens, it is an exceptional circumstance to see it in flower, and rarer still to see it flowering anything like so well as it ought, and can easily be made to do. Another reason is, that having had the plant flowering in unusual profusion from March till near the end of November during the last two years, I have had inquiries innumerable from proprietors of gardens who have not succeeded in flowering it as to the cause of my success. I take it, therefore, that an account of our mode of culture will probably meet the wants of some of your readers who have hitherto been unsuccessful. It is a plant that is worth all the pains that one can bestow upon it, for I do not think that for the warm conservatory or intermediate house a more useful subject can be grown. Although the Bougainvillea may be flowered by what may be termed the starvation process, which consists in withholding water from it some six months in the year, and giving it as little as possible during the other six, I have no hesitation in saying that such treatment is not only unnecessary but wrong; and so also is the practice of using the knife to the shoots, either with the object of shortening them or thinning them out. A little consideration as to the habits and wants of the plant might at once suggest the method of culture likely to succeed; but the three facts which it is of most importance to keep in view are, that it enjoys a tolerably high temperature during the season of growth, abundance of light, and, above all, that it flowers at the extremities of the shoots only—the shoots ceasing to produce leaves, and simply running out into long wreaths of flowers. A fourth point to be observed is that the plant should not have too much root room; but this is entirely a question having reference to the room allowed for the extension of the branches. If a large plant is wanted, a big pot or tub must be allowed for the roots, and *vice versa*. When we first set about flowering it methodically, these were the rules adhered to; but in other respects the plant was treated on anything but the starvation principle. We treated it, in fact, exactly as we do our Peaches—rushed it up into a tree as soon as possible, and into bloom by simply letting it expend its energies in growth. A beginning was made with a tolerably large plant in a 9-in. pot, and which had hardly ever produced a flower previously. This plant was shifted into a 20-in. pot in January, and potted in good strong loam, mixed with a little leaf-mould and peat, and a good sprinkling of Standen's manure. After potting, the plant was placed in an intermediate house, and the pot plunged in the bed where there was little or no bottom-heat; the branches, which had been pruned in as bare as a walking-stick, were simply laid on a few strands of wire under the apex of the roof and tied in one or two places to keep them from shifting; and this was all the tying and training the plant received during the next eight months. The roots were freely watered, like the rest of the plants in the house, and soon the bare stems burst into a very profuse growth, which was not allowed to be thinned or meddled with in any way. The result was that the large pot was filled with roots in a very short time, and by May every shoot was freely coming into flower, and very soon the whole plant was a sheet of mauve—the flowers appearing to be more numerous than the leaves. By September the shoots had nearly run themselves out of flower; but the copious supplies of water at the root were continued, with occasionally strong doses of liquid manure, and the shoots broke back behind the bracts, flowered again immediately, and continued to blossom till November, when the plant was again pruned close

in, and allowed to go nearly dry at the root. It, however, broke into growth again immediately; but, being kept dry and rather cool, the young shoots did not make above 6 in. or 7 in. of growth during the winter, and they were not disturbed. To have seen the plant so green at midwinter and unripe-like, many would have entertained little hopes of it flowering the next year, but we had no fear on that point. When February came round, about 4 in. of the top soil in the pot was removed, and a rich top-dressing given; and again copious waterings were begun, which were not discontinued till the middle of November last, when the branches were again shorn in close as before; in other respects it was treated in exactly the same way as last year, and it began to flower in March, and had still quantities of bloom upon it when cut back. During all that period it flowered most profusely, and produced three distinct sets of bloom; the third it was not allowed to finish. It may be stated that the variety is *B. glabra*, but *B. speciosa* yields to the same treatment, only, being a stronger grower, it needs more room. For most positions the former is to be recommended. In both the flowers are best coloured when they have plenty of air and light. Early in the spring they are rather pale, and they are the same in October and November. CHRS.

**Begonia manicata in Winter.**—How is it that this good old Begonia is not much more grown than it is? It cannot be said that it is useless for winter blooming; for what is there that looks better than a few dozens of this plant grouped together at this time of the year? Plants of it can be grown in 3-in. pots that will produce seven or eight spikes of flower, or they may be had in 6-in. pots with from twelve to eighteen spikes. I have some dozens of it, and I find it to be very useful. Its flowers are fit for bouquets, both button-hole and others. Gas does not seem to affect them; the foliage, too, is by no means unsightly; I would therefore recommend this Begonia to be grown more extensively than it is, particularly for winter decoration.—JOHN CLEWS, *Headfort Gardens, Co. Meath*.

**Forcing Lilacs in Darkness.**—During the autumn and winter months it not unfrequently happens that in plantations that are being remodelled and replanted, or even thinned out, there are scores of old Lilac trees consigned to the rubbish-heap as worthless and worn-out. This is to be regretted, because they may be used for forcing purposes. All that is wanted is four brick walls and a roof of thatched hurdles. Such a place, however, should be well heated, in order that there may be no difficulty in raising the temperature to 100°; if required. This is all the more necessary if vegetation be in an advanced state; the main object is to get the flowers before a single leaf appears. In renovating some shrubberies last autumn, we selected a few of the best old stools, and to-day (Jan. 16) one of these bushes is literally white with lovely sweet-smelling flowers. Springing ought to be discontinued as the flower-pips become prominent, but their expansion may be hastened by steaming the pipes occasionally. When the flower-buds are pushing forward next month, if good strong branches well set with them be cut and put into bottles of water and forced sharply, a moderate supply of flowers may be obtained, but of course not nearly so fine as they would be if they were not severed from the roots. I filled an ordinary-sized flower-basket last year from one bush, a great relief at times when there is an unusual demand for out flowers, and when it is remembered, also, that two or three sprays will scent a whole room for days. Old plants that occupy good situations, and that are fully exposed to sun and light, with all weakly shoots thinned out, thus concentrating the sap into fewer branches, will answer best, and produce the largest bunches of flowers.—W. HINDS, *Otterspool*.

### NOTES AND QUESTIONS ON THE INDOOR GARDEN.

**Tree Carnations.**—A large collection of these is now finely in flower in the Royal Exotic Nursery, Chelsea. Among the best of them may be mentioned—Diana, rosy-pink; Vulcan, scarlet flaked; Mons. Baldwin, rich dark scarlet; La Belle, white; Garibaldi, rosy crimson; and the old but still valuable, Miss Jolliffe.

**Forcing the Lily of the Valley.**—This is forced in the Old Nurseries, Chesham, as follows:—A long trough of wood is fixed over the hot-water pipes in one of the houses. It is about 4 in. or 5 in. in depth, and is filled with Cocoa-nut fibre, in which the roots are placed, and covered with a board until they start into growth. When the boards are removed, the plants then quickly shoot up into bloom, and are pricked out into pots. In this manner a good supply for sale has been obtained ever since the first week in December.—J. F.

**Two New Clematises.**—Seeing the pitch of perfection which the genus *Clematis* has reached, it savours of boldness, if not of temerity, to introduce two new forms to the world, except on the ground of their great merit. Such, however, is the case; and we shall therefore proceed to describe them. The "battens" of the flowers are very large, villous, and pointed; the petals of the flowers, which are abundant, are very regular, curving back and forming a dorsal disc, which often reaches  $8\frac{1}{2}$  in. in diameter. The petals are thick, and are of a beautiful lilac-violet, with metallic reflections at the top, passing into a brighter lilac, but never becoming whitish. The name of Madame Emile Sorbet has been given to this variety, which, along with the one to be described presently, was obtained from the seeds of *Clematis lanuginosa*, by M. L. Paillet, who has just introduced these two new flowers into the market. The second, which has been called the Duchesse de Cambrères, has flowers nearly as large as the one already described, of which it possesses the vigour

## PLATE CXII.

## IRIS VICTORINE.

Drawn by A. McFARLANE.

OUR plate this week shows a variety of the common hardy Iris, a lovely and easily grown plant, just as precious for the garden as the most costly Orchid. It is as easily grown as the common German Iris, attaining, however, the greatest perfection in sandy, rich, moist soils; in such it grows from  $2\frac{1}{2}$  ft. to over 3 ft. high, and produces abundance of flowers, which are strikingly beautiful. Such plants need not necessarily be grown for the embellishment of the mixed border alone, inasmuch as they are easily grouped with other plants in such a manner that when not in flower no blank will be noticeable, as



Geographical Distribution of Garden Plants: Vegetation in the South Sea Islands (see p. 75).

and the general appearance. Its petals, however, are not so thick, and more elongated, so that the point in the centre of the disc is longer and thinner. The graceful arrangement of the points of the petals gives the flowers a peculiar appearance of lightness. The petals themselves are of a beautiful azure-blue, with rosy reflections, which produce a charming effect. Like the preceding, it is a plant of great value. It is hardly necessary to say that these two varieties are not injured by cold, and that they keep in bloom for a long time, as these are well-known characteristics for most of the members of the lanuginosa group, while they are pretty free-growing. These two Clematises may be obtained of M. Paillet, horticulturist, of Châtenay-lès-Sceaux (Seine).—"Revue Horticole."

**Rogiera cordata.**—This is one of the best of winter-flowering stove plants. Even in 4-in. pots it never fails to produce flowers, which are not only effective on the plant, but most useful in a cut state.

is the case in the mixed border. Such Irises, for instance, might be advantageously grouped with Lilies, or amongst low and choice shrubs, above which the flowers would show themselves, or they might be isolated in the shape of little tufts near water or rockwork. The variety now figured has been so much in demand, that it has never become very common in nurseries, but still it is not difficult to obtain. It was raised, we believe, or sent out by the late Mr. Salter, of Hammersmith, but it may now be found in all nurseries in which collections of hardy herbaceous plants are grown.

**Scilla sibirica.**—A great quantity of this spring-flowering Squill is now in Covent Garden, where it is sent by Mr. Herbert, of Richmond. Ten plants of it are grown in a 3-in. pot, a plan found to be very convenient for purposes of decoration.



THE IRISES



## TREES AND SHRUBS.

## TRANSPLANTING TREES.

(Continued from page 62.)

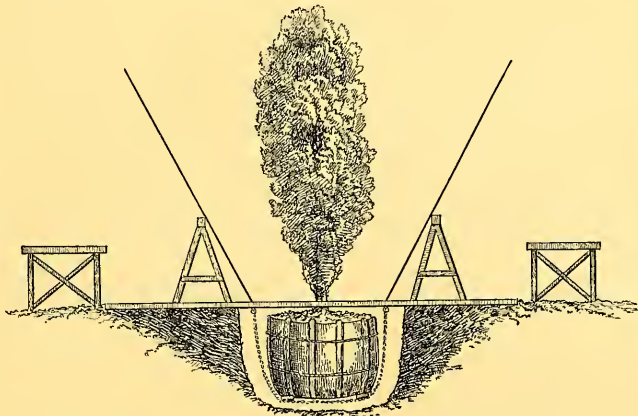
In order to facilitate lifting without the aid of hand-spokes, various systems and forms of machinery, as well as transplanting apparatus, are now employed. Amongst these, perhaps, the most simple form is the lever. After the ball has been prepared with canvas, staves, and rack-ropes, as formerly described, strong lifting-boards are placed below it; but instead of lifting-ropes, a doubled chain is put under them, keeping the entire portion at one side and fixing the two ends together on the opposite side. A rope is generally put round the ball, thus fixing the chains, and keeping them a little way apart. Two strong tressels, each a little higher than the depth of the pit, are placed on stout planks, one at each side of the ball, so that the feet of the tressels will rest upon them. Stools are also required, one at each side, for the operators to stand on. Two levers made of stout iron or wood, with iron placed along each side, are then brought into use, each being provided at one end with a strong hook, which is placed in the chain at each side. When the plant is raised to the proper level, which ought to be done at the first lift, provided the

fulcrum is of sufficient height, planks are put under the ball, with their ends resting on the cross planks first put down, and on these the ball may be rested. By lowering the chains and raising the planks a new lift can be taken, which will enable the ball to be raised sufficiently high to allow a low-wheeled machine to be run under it for transmission.

When the plant has been taken to the pit intended for it, the planks and tressels are arranged as before, the plant is lowered into the hole, and finally finished off. Where much transplanting

of this kind is carried on, it is necessary to have tressels of various heights always at hand. The transplanting machines which we employ for shrubs and trees, the balls of which are larger than those generally lifted with hand-spokes, are those known as the McNab transplanting machine. The first machine of this kind was originally invented by my late father, and although upwards of forty-five years old, it is still in active operation. These machines may be made of various sizes. No. 1, to lift balls 2 ft. 7 in. broad, 2 ft. 8 in. long, and 2 ft. 7 in. in depth; No. 2, to lift balls 3 ft. 5 in. broad, 3 ft. 7 in. long, and 2 ft. 9 in. in depth; No. 3, to lift balls 3½ ft. broad, 4 ft. long, and 3 ft. in depth. By these machines shrubs or trees weighing from 18 cwt. to 30 cwt., after being prepared, can be raised, conveyed, and planted without being subjected to any undue stress or even the possibility of injury. A small machine of this kind weighs about 8½ cwt., and is constructed of a strong frame of wood and iron, supported on wheels, with two windlass rollers in front and two at the back, the back rollers being so arranged that they may be taken off, to enable the machine completely to enclose the plant to be operated on. To show how this method of transplanting is performed, and to follow it through all the stages, we shall take, for example, a shrub 18 ft. in height, and the branches 16 ft. or 18 ft. in circumference. The first operation is to tie in all the lower branches together with a piece of soft rope or yarn, keeping them as close as

possible, and thus preventing them from interfering with the work while in progress. It is necessary, before tying up, to attach a mark on the best side of the shrub, or what is intended to be the front after planting; by so doing, it will save a good deal of trouble after the plant has been lowered into the pit prepared for its reception. The machine (No. 2) is capable of taking in a ball of earth with roots 3 ft. 7 in. long, 3 ft. 5 in. wide, and 2 ft. 9 in. deep. In every case it is necessary to be careful not to exceed this width, making allowance for the thickness of the canvas and staves to be employed round the roots. The preparation of the ball, viz., opening up, surrounding it with canvas, staves, and racking the whole together, is much the same, although on a larger scale as that described for the ordinary rack system for hand-spoke lifting; care, however, must be taken not to put any of the staves or rack-pins at the sides of the ball, as they are apt to prevent it from coming freely up between the wheels during the process of lifting, the frame being at this particular point ½ in. narrower than any other part of it. After the undermining has been carried through, the lifting-boards, four in number, the two outer ones being made of strong Oak, 1½ in. thick, curved in the middle, with a grooved recess on the under side at each end within 3 in. of the points for receiving and keeping the lifting-ropes in their proper places, are introduced. If the ball



Transplanting by means of Levers.

to be raised be compact and firm, the two Oak lifting-boards may be sufficient, but if the ball is inclined to be soft below, it is necessary first to introduce a piece of deal the same length as the lifting-boards in case it has to be left under the plant, as the removal of it in some instances is apt to injure the ball. The lifting-ropes, made expressly for each machine, are now put under the ends of the lifting-boards, one on each side, the centre or middle of each rope being placed in the centre of the ball, taking care that the rope is directly under the grooves of the lifting-boards. The ropes for the machine now under notice are 60 ft. long and 1½ in. in diameter. After being placed, fix in some soil to keep the bottom boards and the ropes securely in their places. The next operation is to lay two strong planks, one on each side of the plant. They must be laid perfectly level and parallel with each other, keeping them as low as the ground will admit of. The machine being at hand, remove the back binding-bar and the two rollers; then run the machine on the planks till the centre of the machine is exactly at the centre of the plant; replace the two back rollers and binding-bar, and secure the wheels with stones or wedges; likewise place a piece of board across the planks in front for the feet of the machine to rest on; next bring up the ends of the lifting-ropes over the rollers. This part of the work requires a little nicety, as the ends of each rope must be done exactly in the same way. The rope is first brought up and over the top of the inmost roller three times, winding it always towards the centre of the roller; then take it over the top of the outer roller, and work it also towards the centre, where hooks are placed for fixing the ends of the ropes on, each rope being previously supplied with suitable strings for the purpose. All the ropes being similarly adjusted, the plant is now ready for lifting and removal. The foregoing operation is easily accomplished with two men, but the lifting and removal require more; this,

however, depends on the size and weight of the plant to be raised; a moderate-sized ball, say 15 cwt., can be lifted by six men, but if larger, say 18 cwt., eight men will be required. If the tree or shrub is very tall, it will be desirable to have two guy ropes to steady the top and keep it perpendicular during the lifting and transmission. Each roller is provided with a cross-wheeled handle, and the outer rollers have a series of iron-bound holes pierced through them. By means of two round iron levers and the wheeled handles, the plant is easily wound up both back and front at the same time. The strong crank catches at each end of the inner rollers prevent the possibility of the plant running down, and secure it firmly at every turn when re-adjusting the levers. After the plant has been raised high enough to clear the bottom of the wheels, the levers can then be pushed through the holes so as to rest either on the inner roller or binding-bar; this will

before, and arrange the men as at the lifting, one always being employed to press down the machine handles. After taking off the strain sufficient to remove the four crank catches, lower gently into the pit by holding back the handles and levers. If the pit is found to be too deep, raise, and put in some soil, and then lower again. When properly placed, undo all the ropes, and take off the two back rollers and binding-bar, and remove the machine. Immediately the machine is withdrawn from the plant, but before it is finally taken off the planks, put on the two rollers and binding-bar, to prevent the possibility of twisting the machine by taking it upon uneven ground. The machine and planks being removed, withdraw the two lifting-ropes, which will be easily done, owing to the curve on the bottom of the lifting-boards. The bottom boards can also be taken out by a slight leaning either to the one side or the other, placing at the same time a little earth below to keep the plant in its upright position. If attention has been paid to mark the best side previous to the first tying up of the branches, the plant can be easily turned, so that the best part shall face any particular side; if this has not been done, it is necessary to loosen down the whole top, so as properly to adjust it—that, however, is very inconvenient till such time as the plant has been filled in and watered. After the plant has been properly secured in its upright position, take care to have the soil firmly fixed below the bottom of the ball all round, to prevent it sinking down on any one side after the water has been applied; next remove the rack pins and binding-ropes, staves, and canvas, loosen out all the roots, and fill in with prepared soil, taking care to adjust the roots in a horizontal manner while filling in; afterwards prepare a basin round it to retain water. In all cases apply water freely, but more particularly with summer transplants. After the branches have been loosened down, syringe freely if the weather be dry, and cover the surface of the ground under the branches with fresh-cut Grass to prevent the surface of the soil from drying up. In the case of summer-transplanted trees and evergreens, it is a good plan to roll some Hypnum or Sphagnum Moss round the stems and chief branches, as it assists in keeping the bark moist. I may state that these machines are in constant use here, and are employed with complete success, not only for tree-transplanting purposes, but for moving large and heavy plant tubs, such as Palms, Oranges, and Camellias, from one place to another, bottom boards and ropes being put first below, and afterwards worked as described for moving large trees. JAMES McNAB.

(To be continued.)



M'Nab's Transplanting Machine.

doubly secure the plant, and hold it tight in its position, till such time as it is conveyed to its destination. If the plant has to be taken over clean gravel walks, it is necessary to put a piece of canvas under the ball to prevent any loose earth from falling. If the distance for removal is not great, it can easily be taken along by the men employed in the lifting, but if the distance is considerable, the most convenient way will be to attach a horse and draw it backwards, taking with it, if necessary, the two planks, foot-board, and cog-wedges. If many removals are going on, it is desirable to keep a double set of planks and foot-boards. The hole for its reception being prepared, in all cases taking care that it is not less than 3 ft. beyond the diameter of the ball to be put in, place over it the two planks, adjusting them to the width of the wheels, then run the machine with the plant backwards upon it, till right over the centre of the hole, place the cog-wedges to the wheels, and adjust the foot-board as

#### NOTES AND QUESTIONS ON TREES AND SHRUBS

**A Large Ostrya.**—An unusually large specimen of *Ostrya virginica* is recorded in the "American Naturalist" for November. The girth of the stem at the ground was 9 ft. 11 in., at 4 ft. from the ground 7 ft. 2 in., height to first branches 6 ft. 4 in., spread of branches from east to west 47 ft., from north to south 45 ft., height of tree 43 ft. 7 in.

**Fructification of the Persian Lilac.**—Speaking some time ago, says the "Revue Horticole," on the subject of the *Yariv* Lilac, which has been stated to be sterile, we announced that, contrary to this opinion, we had gathered over 2000 fruits. We now have to inform our readers from another species which has hitherto been looked on as sterile, the Persian Lilac with lacinated leaves (*Syringa persica laciniata*), we have gathered 800 fruits, the seeds from which have been sown. It remains to be seen what they will produce.

**Influence of Trees on Moisture.**—M. Faurel has made observations in French forests, to determine the influence of trees on the distribution of rain and moisture. He finds that forests receive more rain than open plains, and Pines more than leafy trees. Pines retain more than half of the water that is precipitated upon them, while leafy trees allow 58 per cent. to reach the ground. Pines, therefore, furnish the best shield against sudden inundations, and the best means for giving freshness and humidity to a climate such as that of Algiers.

**Grafted Conifers.**—In the January number of the "Journal of Forestry" the practice of grafting Conifers is defended on the ground that there is no other way of getting up a stock of certain kinds except by grafting, and that the objections that formerly had force have been abolished by the adoption of better modes of procedure than prevailed in the early days of the practice. The avenues of the glaucous variety of *Picea nobilis* at Castle Kennedy are referred to as evidence in favour of grafting. "All these splendid trees, ranging up to 50 ft. in height, are grafted plants 'worked' by Mr. Fowler, who for many years has been gardener there to the Earls of Sutherland."

## THE FLOWER GARDEN.

### MY TOWN GARDEN.

IN addition to the hardy border plants mentioned in my last (see p. 6), I propose now to describe a few that would make a very ornamental round bed. The idea was borrowed by me a few years ago from a very useful work entitled "Hardy Flowers." At page 12 of that work the author says:—"First, then, for a noble circular bed in an isolated place, say on some little glade of Grass where there is a recess in a shrubbery, and where you perhaps never thought of putting anything. Have the bed thoroughly well prepared in the first instance, say 8 ft., 10 ft., or 12 ft. wide, according to the size of your place, or the nook in which you plant. What I mean by well prepared is, that the soil should be rich, free, well drained, and 3 ft. deep, if possible. Place a good plant of the very tall and late-flowering *Tritoma grandis* in the middle, and then around it a circle of the excellent and somewhat smaller *T. glaucescens*. Follow that with a ring of the beautiful white *Anemone Honorine Jobert* and the showy *Rudbeckia Newmanni*; mixed plant for plant; and outside of that again place a circle of the fine herbaceous *Sedum spectabile* (sold and known as *S. Fabaria*). This *Sedum* will form a grand edge to the bed, and flowers, like its companions, finely in the autumn. The above would form a grand autumnal bed, and a noble object from any point of view, its aspect all through the spring and early summer being fresh, healthy, and in every way unobjectionable."

The *Tritomas* mentioned above are valuable plants for various purposes. *T. grandis* is the finest variety, producing very strong flower-stems, which sometimes attain a height of 7 ft., and which are densely clothed for about two-thirds of their length with bright orange and red tubular-shaped flowers. The flowering season commences in September, and in mild winters continues until January. Its style of growth and gorgeous colouring are grand and unique. They require heavy drenchings of water during summer and autumn, and prefer light, rich, sandy loam, or peat and loam, well drained. *T. glaucescens*, sold as *T. Uvaria glaucescens*, is also a fine variety, in all respects similar to the preceding, except that it produces shorter flower-stems, and flowers in August, September, and October. The scape, when luxuriant, attains a height of 4 ft. or more. The colour of the leaves is glaucous, and the edges and keel are rough from short bristles.

*Anemone Honorine Jobert*, sold by some as *A. japonica alba*, and also as *A. vitifolia*, is a distinct and beautiful variety; its flowers, which measure  $2\frac{1}{2}$  in. in diameter, are pure white with golden centres, and they are borne in great profusion from August to December. The height of the plant is from 2 ft. to  $2\frac{1}{2}$  ft.; in habit it is neat and compact. I have had it in full flower at Christmas, and recommend it to be cultivated in quantity where large supplies of cut flowers are required late in autumn and early in winter. It is, indeed, one of the grandest ornaments which a garden can possess.

*Rudbeckia Newmanni* is a very desirable plant. Its flowers are rich orange-yellow, with conspicuous, velvety, maroon centres; the flowers, individually, are from 3 in. to 4 in. in diameter, and are borne in dense masses, in great profusion, from early in August to late in October. The height of the plant is from 2 ft. to  $2\frac{1}{2}$  ft., and its habit is neat and compact. It is easily cultivated, flourishing in any ordinary garden soil, but succeeding best in that which is moderately rich, light, and well drained.

*Sedum spectabile*, sold also as *S. Fabaria*, is an erect-growing plant, with stout stems, from 1 ft. to 18 in. high, furnished with broad oval leaves, glaucous and toothed, and standing horizontally on the stems. The flowers, which are rosy-purple, are produced in dense, broad corymbs in September and October. This is the handsomest of the tall-growing species, and is worthy of a place in the choicest collection of hardy plants, being very distinct and beautiful. In the flower garden it may be usefully employed in many ways, either for breaking the uniformity of large, flat surfaces, or for centres to small beds; and where the style is formal and severe, its rigid aspect will be found to harmonise well with the surroundings. For this purpose the plant is best divided annually into single crowns early in spring. Indeed, all the plants mentioned as

forming the round bed just alluded to increase so rapidly, that if all were taken up in two or three years, and divided into crowns, there would be enough to stock many such beds, or for general purposes. *Sedum spectabile* alone will increase in three years from a single crown to between 200 and 300 crowns. The plants, too, before they begin to bloom have all a refreshing green appearance, the leaves of the *Sedum* being large, fleshy, smooth, and very glaucous or greyish-green.

As an outside edging to the round bed in question, I have sometimes used, with good effect, the popular little *Pyrethrum* known as *Golden Feather*. A pennyworth of seeds sown in a shallow drill, formed round the outside of the *Sedums* with the point of a stick, would be sufficient for several beds. As the plants come up they could be thinned out to 2 in. or 3 in. apart, and the spare ones used for other purposes.

L. E. X.

### POTTING AND TRANSPLANTING LILIES.

I HAVE read "Dunedin's" remarks on Lilies with interest, and I quite agree with him as regards the importance of transplanting them annually. But although he positively asserts that Lily bulbs do not suffer from being cut down in full bloom, will he go so far as to recommend such a course as being likely to assist the perfect maturation of the succeeding year's flower-spikes? It would, in my opinion, be difficult to fix a date on which potting or transplanting Lilies could best be done, owing to the wide range that exists as regards the period at which they flower; for instance, *Lilium auratum* may frequently be had in bloom from early in summer till late in autumn. Is it not, therefore, safer to postpone the period for potting or transplanting until after blooming, as soon as the leaves are faded, when, in my opinion, the sooner these operations are done the better, as the bulbs soon commence to root afresh, and the fibres, being very brittle, are very easily injured. In the case of the finest collection of Lilies in pots with which I am acquainted, including all the lancifolium section, they were annually shaken out of their pots as soon as the tops decayed; the bulbs were then sorted into different sizes, to insure regularity as regards the size of the flower-spikes. The largest-sized bulbs were put, five together, in a 13-in. pot, well drained, and filled about half-full of fibry turf and dry cow, sheep, or deer manure, that had been baked in an oven to kill all insects. The second-sized bulbs were planted in 10-in. and 6-in. pots, and the small ones were planted out in well-prepared beds. The pots were then stacked in a cool shed until growth had commenced in spring, when they were transferred to cold pits, and, as the summer advanced, they were set on coal-ash beds in the open air. They received rich top-dressings to encourage surface-roots, and the watering was very carefully attended to; for, although moisture-loving plants, Lilies are easily injured by stagnant water at the root. As the flowers began to expand the plants were removed to light, span-roofed houses, in which they made a fine display. They were never cut down until the foliage had faded, and when shaken out of the pots the latter were positively full of bulbs. I am well aware that bulbs of all kinds, and Lilies in particular, are not generally managed so as to increase or even retain their bulbs at all, or why the great demand that exists for imported Lilies. "Dunedin" truly remarks that we must never forget that they are grown here under purely artificial conditions; let me therefore warn your readers that as their culture in pots is more artificial than that out-of-doors, a wide range must be allowed for the transplanting season; for, in the case above referred to, the potting could not have been done before November, as many of them were in bloom up to that period.

JAMES GROOM.

*Henham.*

**Iris (Xiphium) Kolpakowskiana.**—In the autumn, Dr. Regel kindly sent me two bulbs of this beautiful species. They were crushed nearly flat in the post, and I had little hope that they would live; some bulbs of *Crocus atlavicus*, which accompanied them, were utterly smashed. I planted the Iris bulbs in prepared charcoal, an excellent restorative for injured or mildewed bulbs, and one of them has recovered sufficiently to flower. It is, I believe, a native of Turkestan. It is a very distinct and lovely species, and a

meet companion for its beautiful and near relatives, *X. Histrionicum* and *reticulatum*. The leaves, as far as I can see, are two or three in number, short, obovate, lanceolates; stem, little or none; limb, pale lilac, shaded with white; falls obovate, tapering to a sharp point; at the base, fine white; tips, bright lilac; keel, bright yellow; feathered with lilac towards the base; standards and claws pale lilac, minutely flecked with white, giving the appearance of reticulation; bulb somewhat resembling that of *X. reticulatum*. It flowered in a pot in a cold frame.—H. HARPUR CREWE, *Drayton, Beauchamp Rectory, Tring.*

### BRITISH FINE-FOLIAGED PLANTS.

It is a point, perhaps, worthy of the attention of the sociologist that at about the same period at which our English ladies began to find sombre greens, browns, and blacks a dress in accordance with our dull northern skies, our landscape cultivators saw large masses of subdued colour to be preferable to a mosaic of gaudiness. These large masses of subdued colour are more easily attainable in foliage than in flowers, and hence has arisen the popularity of ornamental-leaved plants. The charms of graceful outline that many of them possess when not at a distance was, no doubt, a supplementary cause.

When we analyse the beauties of English scenery, we find them to consist, speaking broadly, of undulating surfaces and wide, open valleys, alike well wooded, of round swelling downs of perennial verdure, and of broad plateaux of Heath or Furze of an orange-dusted bluish-green, or a sheet of red-purple. The Heather in bloom and Elms and Maples in autumn are, perhaps, the gayest masses of colouring which we have. It is the prevalence of deciduous trees, with their melancholy winter associations, that has created our fondness for evergreen shrubs. In the British flora itself we have, it must be confessed, but few species that can be spoken of as fine-foliaged plants. It is hardly in accordance with horticultural usage to mention under this head the beauties of our Oaks and Beeches, the dark gloss of the Spanish and Horse Chestnut; nor do we generally speak of the small greens of the border or rock-garden as "fine-foliaged plants." The Fern-like delicacy of the lesser Meadow Rue, of *Corydalis*, of *Spirea Filipendula*, or the Milfoil (*Achillea Millefolium*), the mossy tufts of *Saxifragas*, *Herniaria*, or the Alpine *Cerastium*, and the characteristic foliage of the Sandwies, the Wood Sorrel, Herb Robert, the perfoliate Yellow Wort, or the Spotted Arum or Orchids are alike rather out of the category.

I cannot pass over the beautiful water plants which we possess—the leaves of the Water Lily and their miniature the Frog-bit, the grey swords of the Yellow Iris, and the grace of the Arrow-head; but what may fairly be classed as fine-foliaged plants are of a yet different type. The largest which I have classed among them ought, perhaps, to rank as trees. These are the Mountain Ash (*Pyrus Aucuparia*), the Holly (*Ilex Aquifolium*), and the Arbutus. Each pinna of the elegant leaf of the first of these is finely toothed; "the armed and varnished leaves" of the second, as Evelyn calls them, need no commendation of mine; and of the third, I need only say that it is naturalised on the carboniferous limestone of St. Vincent's Rocks, Clifton, and might well be in some few spots elsewhere. The Box and trim Privet, next in size, are wanting in character, and pale before the glory of the Dwarf Elder (*Sambucus Ebulus*), sometimes known as Danewort, a truly noble plant, of which an illustration is given (see p. 85) which can tell more than any words of mine. It is rare in a wild state; seldom exceeds 4 ft. in height; has smooth leaves and a pink tinge to its white cymes of blossom. May we soon see it in many a garden.

After it in order of size come the well-known Spurge Laurel (*Daphne Laureola*), the silvery cut-leaved Sea Wormwood (*Artemisia maritima*), the large, but perhaps not beautiful, leaves of the Deadly Nightshade (*Atropa Belladonna*), and the two *Spireas*, the Willow-leaved (*S. salicifolia*), a handsome shrub with pink flowers, suitable for moist plantations, and the well-known Queen of the Meadows (*S. Ulmaria*). Next I would mention our twining and climbing fine-foliaged plants; first among which must come the "Ivy never seen," with its varied forms and exquisite contrasts of greens in the stalks, leaves, leaf-veins and blossoms, with tints of red and purple

and the black of its berries. Alike beautiful in habit, shape of leaf, and surface-gloss is the Black Bryony (*Tamus communis*), whose bronzed heart-shaped leaves in autumn can only be compared in elegance to the young leaves of the same plant in spring. Even more beautiful in outline, though without the glossy surface, are the leaves of the Birthwort (*Aristolochia clematitis*), whilst the Wild Hop (*Humulus Lupulus*), and White Bryony (*Bryonia dioica*) may be mentioned together as having an elegant habit and outline and a lively colouring. Lastly, we have the shining tangle of the prostrate Periwinkle (*Vinca major*). A group of composite plants next claims attention—the grand Scotch or Cotton Thistle (*Opopordum Acanthium*), a glorious plant, with the curious and effective Milk Thistle (*Silybum marianum*), with its shining, white-veined leaves, and the monstrous foliage of the Great Bur-dock (*Arctium majus*), suitable for the banks of a wood-traversing stream. The cut leaves of the Crisped Tansy (*Tanacetum vulgare* var. *crispum*), and perhaps of the Ragwort (*Senecio Jacobæa*), a coarse-growing plant, with the rough, undivided leaves of the Great Torch Mullein (*Verbascum Thapsus*), the Foxglove (*Digitalis*), and the Comfrey (*Symphytum*), and the graceful Fennel (*Foeniculum*), and some of its allied Umbellifers, such as the Carrot, deserve notice. The leaves of the Carrot are often most exquisitely tinted, and are valuable for table decoration. To this order also belongs the Sea Holly (*Eryngium maritimum*), with its glaucous spiny leaves, very unique in appearance, and not difficult to cultivate in sandy soils.

Last, but by no means least, would I write the praise of the Great Water Dock (*Rumex Hydrolapathum*), the finest of our "near-shore" plants as far as foliage is concerned. Along the banks of the Colne, near West Drayton, it may be seen in all its grandeur.

Others might have been mentioned, especially among smaller plants, such as the Wood Spurge, the Helioberis, the Musk Mallow, the Columbine, the Cyclamen, the Lungwort, the Ivy-leaved Toadflax, Solomon's Seal, the Lily of the Valley, and the little Moneywort (*Lysimachia Nummularia*), which turns to a lovely pink in autumn; but the above are, I think, the best of what we may fairly term our native fine-foliaged plants.

G. S. BOULGER.

**Chamærops Fortunei in Lincolnshire.**—I have a beautiful specimen of this hardy Palm which has been planted out here in the north-east corner of Lincolnshire for these last two years, and has had no protection except a straw band round the stem every winter. Of this plant I am very proud, for all the plants that I have seen out-of-doors have been wretched objects to look upon. As regards treatment, in the first place, it must be in a sheltered spot, where no wind can reach it. Secondly, it must be protected from snow, which breaks all the leaves. In autumn, say the end of November, I begin in the centre and tie every two leaves face to face till the whole are collected like a fan when opened out. I then take eight partite laths, tie them across front and back, making a frame for the leaves; and thus they remain until spring, when each leaf will be found perfect. This plant had eighteen leaves when tied up perfect.—J. DEANE WAITE, *Manby Rectory, Louth.*

**Plants in Flower at Newry.**—In Messrs. Rodger, McClelland, & Co.'s nursery, at Newry, a great many plants are now very fully in flower, amongst which the most noteworthy are—*Hamelis arborea*, quite covered with blossoms; *Correa cardinalis* and speciosa; *Azara dentata*, going off; *Lonicera fragrantissima*, rather later than usual, and only partially flowering; *Berberis Beali*; *Arbutus Andrachne*, the latest to flower; *Filaria angustifolia*, flowers not very showy; *Schizostylis coccinea*, one of the very best late-flowering herbaceous plants in cultivation; its spikes were injured by frost about Christmas time, but they are now recovering, and in a few days, if mild weather continue, they will be in fine condition. *Azara Gilliesii* is excellent as far as foliage is concerned; it is as green and fresh at this season as that of Ivy, and is altogether one of the most effective of the genus to which it belongs.—T. S.

**Wintering Bulbous-rooted and other Hardy Plants.**—In wet districts many of the choicest of hardy border plants perish, or become weakened at the roots, through cold; it is, therefore, necessary to provide against this by protecting the roots in some way. At the Wellington Nursery, where the soil is cold, such plants as the rosy, crimson-flowered *Brava geminiflora*, *Schizostylis coccinea*,



A BRITISH PLANT WITH FINE FOLIAGE: THE DWARF ELDER (*SAMBUCUS EBULUS*).

*Tritonia aurea*, and *Commelina cælestis* are successfully preserved by being lifted in autumn, and having their roots laid in dry soil, in cold frames or sheds. The different kinds of *Oxalis*, too, are treated in a similar manner; their bulbs have now started into growth, and if planted in March or April they will flower all through the summer. The bulbs of *Arum cornutum* and *A. maculatum* are laid in sand in a cool shed, a way in which they keep much sounder, and are more likely to grow satisfactorily than those left in the open ground, even if protected. Many more plants of similar character would be benefited by being treated in this way, and an advantage would be gained by having the ground vacant, so that it could be thoroughly dug and manured as might be required.—S.

**Imported Bulbs of *Lilium auratum*.**—For the last three years I have purchased annually four or five dozen of imported bulbs, at a cost of about 1s. each, and I can confirm the statement of Mr. Hardy (see p. 49), the accuracy of which your correspondent "Dunedin" questions as to the satisfactory results to be obtained from them. The sizes ran from 2½ in. to 3½ in. in diameter, and all grew satisfactorily, and produced from five to nine flowers from each bulb, though two bore respectively twenty-seven and thirty-eight on one stem. I made the purchases in January, and had them potted three in 9-in. pots, and placed in a cold Vinery till they started, soon after which they were put into a frame under a north wall till the inclement weather was passed. When their growth was completed they were transferred to my conservatory. Those purchased last year began to bloom in August, and the last of them is only now fading. By slightly forcing those purchased in previous years I have had continuous bloom for nine months. In the north of England I have not had satisfactory results from those planted outside.—T. B.

**Is a Lily an Annual Bulb?**—The origin of a Lily is a germ or seed-bud, we are informed; but would it not be better to trace the Lily from the seed, and follow it through its various stages up to maturity (its flowering period)? If a Lily dies annually, how is it that the bulb grows larger year by year? I hold in my hand a Lily bulb grown from seed sown last year. If this Lily were an annual, this little bulb, which is about the size of a Pea, would surely flower. But no; it will continue to grow for a few years to come, and then flower. Common sense, therefore, tells me that the Lily is a perennial. That the germ or seed-bud constitutes one of the modes of reproduction I admit, but I cannot look upon it as the origin.—H.

—"Dunedin" (see p. 27) quotes a writer in the "Journal of Horticulture" as saying, "the same bulb has thrown up a spike," &c. I suspect the writer only meant the same plant, not to express an opinion what part of the bulb produces the new year's flower. The question raised by "Dunedin" is a most interesting one to Lily growers. It seems to me that *Lilium* like *Lilium giganteum*, where the old bulb clearly dies, and *L. superbum*, where only the new bulb flowers, give facts in his favour; but *L. tenuifolium* rather points the other way. I especially noticed one bulb of this Lily when reporting it. The flower of 1876 was figured in *Elwes' "Monograph of Lilies,"* Part II., and noticed in the letterpress for the unusual number of its flowers—eleven. Last year it had thirteen flowers, and last autumn I was glad to see that the bulb had still increased in size. I have not the pleasure to know "Dunedin," or even who he is, but if there be any *Lilies* in my collection which he has not had access to, I shall be most happy to see him here next potting season, and to take up any bulbs he would like to examine.—GEORGE F. WILSON, *Heatherbank, Weybridge Heath.*

**Early Flowers in the Isle of Wight.**—The following is a list of flowers now growing in the open garden here without any artificial heat or attention. The following are flowering freely, viz., purple *Veronica* (in the shape of large shrubs), *Arbutus*, Bay, white Broom, *Euroyonus*, Rosemary, *Lacustrinus*, *Berberis*, yellow *Jasmine*, yellow *Alyssum*, *Roses* (of several good kinds—dark crimson, pink, and yellow Tea-scented), *Fuchsias*, *Nasturtium* (in full flower, and with leaves unharmed by frost), *Mignonette* (luxuriant, one plant being 7 ft. in circumference), *Primroses* (various kinds besides the common yellow), *Violets*, *Periwinkle* (very large and bearing numerous blooms), *Wallflowers* (several kinds), *Lavender* (in flower), red *Valerian*, *Stocks* (the Ten-week, Glove-scented, and Brompton varieties), *Virginian Stock*, *Carnations*, *Candytuft*, *Campaula pyramidalis*, *Polyanthuses* (gold-laced and other kinds), *Saponaria calabrica*, white *Rocket*, *Margold*, *Christmas Roses*, &c. *Snowdrops* are in full flower thus early (January 21). Many kinds of English Ferns are in perfection, and show no signs of dying down. I may add that in the kitchen garden we have had Marrows in open quarters without any protection; a dish of new Potatoes to-day; Mint quite 12 in. high; Parsley as fine; and Fennel 16 in. high. Broad Beans are in flower, and are 18 in. high. Most of the fruit and ornamental trees are budding.—H. W. H., *Wolberton, St. Lawrence, Isle of Wight.*

## GARDENING FOR THE WEEK.

### Greenhouses and Pits.

Take plants of *Libonias*, and keep them for a short time in a warm pit, and when root action again begins transfer them to an intermediate house. Divide the rhizomes of the variegated-leaved *Acorus javanicus*, and keep the divided portions for a time in gentle heat. From male *Aconitas* in flower gather the pollen, and keep it dry between bits of glass for future use. Start into growth, in a warm pit, tropical *Orniums*. Re-pot and start some *Hæmatanthes*; they may be placed upon the floor in a warm house or pit, or on a back shelf. When there is any appearance of frost, it is a safe practice to put on a little fire sufficiently early in the evening to get some heat into the pipes in good time. This, amongst ordinary greenhouse plants, will be beneficial, provided the temperature does not rise above 40°. Should continued frost set in be careful that the plants are not placed too near the pipes, or they will get their roots dried by the heat. *Cinerarias* and *Calceolarias*, more than most plants, cannot bear being placed in such a situation; a low pit, if such exist, is the best for these plants, where they can stand on a bed of coals, with a hot-water pipe round it to exclude frost. If a place of this description be at hand, they will make satisfactory progress, and maintain their large bottom leaves in a healthy state. *Cinerarias* do not well bear heat to bring them on, but if the seeds be sown in good time, they will come in without using a high temperature. The deliciously-scented *Daphne indica* should find a place in every collection, keeping it during the winter at the warmest end of the house, but always being careful not to overwater it. If a few plants of *Deutzia gracilis* be placed in a warm house, they will come on gradually into flower. *Rhododendrons*, *Callas*, *Trees Carnations*, *Heliotropes*, *Mignonette*, *Lily of the Valley*, *Tulips*, *Hyacinths*, *Narcisus*, *Kalmias*, *Jasmines*, *Weigelas*, *Prunus sinensis*, *Lilacs*, *Ghent* and *Indian Azaleas*, *Camellias*, *Hippæastrums*, *Violets*, *Polargoniums* of different sorts, and several other plants might be brought to the flowering stage in early fruit-houses, and afterwards removed to the greenhouse. Such as are soft-wooded should be kept as near the glass as possible, and hard-wooded deciduous plants should be placed by themselves, so that they can be freely syringed. *Violets*, if planted out in frames on a bottom-heat, afford more flowers than under any other circumstances. Proceed with the staking and tying of specimen hard-wooded plants. Keep *Heaths* in the freest ventilated portion of conservatories, water them moderately, and neatly stake them. Remove plants of *Solanum Capsicastrum* when the berries begin to drop or shrivel, and save a few of the best berries for seed. The old plants, too, may be saved for next year's fruiting, by placing them under the stages or in frames, keeping them moderately dry for a time, then pruning them back closely, and planting them outside in a rich border in April. A few of the earliest-rusted plants of *Fuchsias* and Lemon-scented *Verbenas* may be pruned a little, and started in a genial warm temperature; just give the others enough water to keep the soil from being dust-dry. A few plants of *Lilium auratum* may now be brought into an intermediate house to start; great care being taken in watering, until the shoots have emerged some inches from the soil.—T. B.

### Orchids.

The material to be used in potting Orchids should be kept under cover, for if left in the open air it becomes saturated with water, and the most important part of it, the fibre, decays. Those who have their peat out-of-doors should place some under a shed, in order that it may get dry by the time it is wanted. If very wet, it may be built up one turf wide round a shed, a space of 3 in. or 4 in. being left between each turf to facilitate the drying process. Sphagnum Moss to be kept as sweet as possible and in a living state; it should be placed on a loft over some cold, airy shed, or on some boards over the rafters. Do not press too great a bulk of Sphagnum together, otherwise it will turn sour, and when used injure the plants. Living Sphagnum Moss is in many cases a test of good culture. It has been said that if cultivators can only succeed in growing the Sphagnum, the plants potted in it will take care of themselves. The demand for Orchid flowers for the decoration of vases, ladies' hair, &c., is unusually great, and such choice varieties as *Odontoglossum Blniti*, *O. pulchellum*, *Ceoloyne cristata*, *Lælia alba*, *L. anceps*, *Angræcum sesquipedale*, *Phalenopsis grandiflora*, *Schilleriana*, and *amabilis*, and *Cattleya Trianae* should be grown in dozens. *Dendrobium heterocarpum* is one that should have a place in every collection, not on account of the beauty of its flowers so much as for its perfume. *Cattleya maxima* should be more common than it is; and if grown in the Mexican house, it is almost certain to do well. It requires little shade during summer, and will produce blooms late in autumn. *Dendrobium chrysanthum* should now be put in baskets or top-dressed, as

the case may require. It should also be supplied once a week with weak manure-water, and the young growths should be sprinkled on bright days with pure water. This species should be suspended at the warm end of the Cattleya house until it has completed its growth, when it should be placed in a house to ripen free from shade. Keep plants of *Dia grandiflora* well supplied with water after they have begun to grow; also *Odontoglossum Bluntii*, *O. Pescatori*, *Oncidium macranthum*, and *Masdevallias*, all of which should be well supplied with water, in order to keep the *Sphagnum Moss* in a free-growing state. The latter should be encouraged to cover the surface of the pots. Now is a good time to look over plants and to make a list of such as require re-potting. Great care will now be required, in order to keep up a regular temperature, which should be allowed to fall a few degrees rather than rise; less moisture should also be used.

#### Hardy Flowers, Alpine Plants, and the Wild Garden.

An herbaceous border should be situated in the pleasure-grounds, with an aspect fairly open to the sun, and not overshadowed by trees. It should be about 8 ft. wide, and backed up by a bank of evergreen shrubs. This is an important point. Even the colours of our most brilliant flowering plants are more effective when seen against a background of those varying shades of neutral tints which are available in our mixed shrubbery. There are few places where a border of this sort cannot be formed. It is by no means necessary that it should be straight; a good bold sweeping curve is, in some respects, preferable, as it reduces stiffness and formality, which, if not entirely dispensed with in an herbaceous border, should be a matter of importance. Having selected a border, the next point will be the character of the soil. If it is necessary to invade the lawn, all the better, as the majority of these plants have a liking for fresh soil; therefore, after the removal of the turf, test the drainage, and be sure that there is no danger of any part of the border becoming waterlogged; rather put in an extra drain than run any risk, and let the drains be, if possible, 3 ft. below the surface, as the roots of the plants are partial to these aerial arteries. If the soil be a strong clay, instead of removing a portion of the clay and replacing it with loam, raise the border to a height of 12 in. or 15 in. There are exceptions; but, as a rule, herbaceous plants like a tolerably stiff and retentive soil. The front of the border, where the dwarfier and more delicate-rooting plants will be placed, may require some of the sub-soil taking out, so as to secure a depth of about 12 in. above the clay bottom. This done, give a good dressing of well-decomposed manure, such as an old Mushroom-bed will furnish; an equal proportion of leaf-soil, and about a barrowful to every 6 ft. of border of old mortar or plaster from any old buildings, or the same quantity of sand. Dig over the whole to the full depth of soil, so as to thoroughly mingle the materials together; it must then be left loose till early in March, when it will be in a condition for planting. If the soil be of a light sandy nature, and lying on a gravelly sub-soil, remove a portion of the gravel by trenching, and if it be at all possible, the use of an equal amount of strong soil, incorporating this with the natural soil—adding manure of a somewhat stronger character than recommended under the previous conditions, and omitting the leaf-mould and the mortar-rubbish as unnecessary in this case. Circumstances may occur in which it may be more convenient to remove some of the shrubs, so as to obtain the necessary width of border. In this case the treatment will be different. The remarks on drainage will hold good, but the ground must be trenched at least 2 ft. deep; in the bottom of each trench, as opened, 4 in. or 5 in. of any strong manure may be placed, and as the first spit of soil is turned over on the top of the manure, it should be trodden well down, so as to give it firmness. The trenching process completed, a surface-dressing of materials, the same as those previously described, should be lightly forked in. It will be well, even though a couple of months intervene between the formation and the final planting, to tread the border well over and thoroughly consolidate it, as herbaceous plants like a firm root-hold. Light surface soil tends to surface-rooting, and thus incapacitates plants from passing unscathed through even a moderate drought.—J. C. N.

#### Trees and Shrubs.

The planting of all kinds of deciduous trees and shrubs, the buds of which are fast swelling, should now be brought to a close as soon as possible. After planting, all should receive a good mulching of half-trotter litter; and if the appearance of this be objectionable, scatter a little fine soil over it. Trees should never be planted in a hollow, but on the summit or side of hills. In such positions they always look more natural, and show off to better advantage, and help to bring out any slight undulations in the ground in the most favourable manner. If the weather continue mild, *Anonas*, *Rhododendrons*, *Box*, and plants of this kind, that always lift with good balls of earth, may be moved with comparative safety. April is a good month for transplanting evergreens, and any choice specimens

should be left till that time. The ground between rows of *Conifers* not intended to be removed this spring should be dug over, but not so as to injure the roots. A rough weeding is necessary before digging, otherwise the overturning of the soil transplants the weeds. When the layers of deciduous plants, such as *Limes*, *Planos*, *Poplars*, *Cornuses*, &c., are sufficiently rooted, they should be removed and transplanted, so as to permit of the ground being dug. Insert cuttings of deciduous trees and shrubs in sheltered places, such as in narrow borders, at the base of walls or hedges, in rows 6 in. apart, and 1 in. or thereabout between the cuttings, which should consist of last year's wood cut into pieces from 6 in. to 9 in. long. *Limes*, *Poplars*, *Elders*, *Weigelas*, *Spiræas* (such as *prunifolia*), *Ribes*, *Dentzas*, *Cornuses*, *Buddelas*, *deciduous Magnolias*, *Viburnums*, *Jasminum nudiflorum*, *Willows*, and many other plants may be increased from cuttings inserted in this way between January and March. Retain the covering of Birch branches and other material laid over beds of seedling *Rhododendrons*, *Arbutuses*, *Cotoneasters*, &c.; and should hard frosts come, give some additional covering. Transplant *Conifers* of various ages, but not so thickly as to touch one another in the rows.

#### Indoor Fruit.

In the event of severe weather setting in, it will be wiser to economise the strength of Peach and Nectarine trees than to push them on with extra fire-heat, as a little loss of time can always be made up when the weather is favourable. Continue to maintain a sweet moist growing atmosphere by means of frequent syringings, and damping all wall and border surfaces. Endeavour to admit a little fresh air every day, more or less, according to the direction of the wind; easterly winds demand caution. If the houses be close-glazed, a very little top-air may be allowed to remain on all night during the blooming period. Maintain a temperature of from 50° to 55° at night, allowing a rise of from 15° to 20° with sun-heat. Now is a good time to get in the seeds of early Melons, which should be started in a steady bottom-heat of 80°. A bed of sweetened litter and leaves should be ready in a heated pit or house, in which to plunge the seed pots. Sow in dry loam; one seed should be inserted in the centre of each pot, and covered very lightly. Place the pots on the fermenting material in the pit, and fill in between them with sawdust, which is clean and keeps down rank steam. No water should be given until the seeds have germinated. Water at a temperature of 50° must be used. See that the borders in which Fig trees are growing are thoroughly moistened to the bottom, and begin forcing with temperature of 50° at night, syringing the trees freely with tepid water, and maintaining a moist atmosphere. As the trees begin to grow, gradually increase the temperature, and rigidly attend to stopping the shoots at the third or fourth joint by pinching the points. For starting pit Figs, no heat is so general as that contributed by fermenting manure, and for this purpose a bed of it inside the pits and in which the pots could be plunged so as to have a bottom-heat of 75° or 80°, is of material benefit to the plants. Attend to re-potting plants, and mulch over the surface of the soil in the pots with horse-droppings, or other rich manure. When Cherries are forced early, the temperature must be kept low, never allowing it to rise above 50° at night until the fruit is set. When they are in flower, the temperature may be raised a little, and a little fire-heat and ventilation given at the same time. For early forcing, Strawberry plants with good plump crowns should be selected; and those in rather small pots, with good matted roots, always set their fruit the best. Introduce them, according to demand, into a pit, Peach house, or Vinery, having at first a temperature of 45° to 50° at night, and keep them on shelves near the glass. When they are in bloom, and when the fruit is set, increase the temperature about 10°, and always keep them in airy positions, and well attended to as regards watering. Muscats require 5° more heat from the time they are coming into bloom until they are mature than any other sorts. In Vineries, where all the shoots have been once stopped, the temperature may be allowed to rise to 85° before giving a little air at the top; but no favourable opportunity should be neglected to admit fresh air, as growing Vines stand very much in need of it at this season. Attention must be given to the thinning of bunches and berries on permanent Vines. When all have been thinned, the inside border must be supplied with a copious watering. If this can be had of the temperature of the house, so much the better. A dusting of guano may with advantage be put all over the surface of the border before watering. When plants that are liable to be infested by red spider are placed in Vineries, a vigilant eye must be kept on them. If syringing be discontinued when the bunches are in bloom, it should be resumed immediately after the fruit has fairly set. No time should be lost in pruning late Vines, and cleaning the rods and house with as much care as has been exercised in former ones. After this has been accomplished, admit all the air possible, so that the Vines may have that rest before being started again which the

constant firing has hitherto prevented them from enjoying. Any odd bunches of fruit still hanging should not be allowed to interfere with these proceedings, but be cut and stored in the fruit-room.

#### Hardy Fruit.

In pruning orchard trees, have every branch clear of its neighbour, and so thinned that, when windy, they do not chafe together. The long and ugly spurs should be shortened back by cutting a few off each year, and in this manner gradually getting rid of all. Lichen and Moss must be cleared off, and, if necessary for its thorough destruction, the stems and branches painted with a mixture of quick-lime and soot. A good dressing of either fresh soil or manure should afterwards be given; and if digging amongst the trees be impracticable, leave it as a mulching over the roots. Raspberries should, at the earliest opportunity, be thinned out; all the old fruiting canes of last year should be cut away, and the new canes regulated, after which give the ground a good coat of rotten manure. Gooseberry and Currant bushes may be pruned, and the branches of each well thinned out. All kinds are best pruned on the spur principle, with the exception of Black Currants, and these bear the finest fruit on the wood of the previous year. Planting all kinds of hardy fruit, when the ground is in suitable condition, should be pushed forward, as it is desirable that such work should be completed early. The same remarks apply to trees growing too freely, which require root-pruning to induce greater fruitfulness.—W. W.

#### Kitchen Garden.

As soon as the surface of the soil is dry enough, go over such crops as Spinach, Onions, Lettuce, &c., with the Dutch hoe. The sooner all vacant plots of land are trenched or dug the better. Finish planting Box or other edgings; turn the gravel paths, and have them thoroughly trampled and rolled down. Sow early Peas in warm, sheltered positions; Ringleader and William the First are suitable; or, for small gardens, Tom Thimb or Beck's Gem may be substituted. The dwarf Fan or Cluster Bean is a good companion for the Gem Pea; it is very prolific, and occupies little space. A few early Potatoes may also be planted in a warm position, but unless the means are at hand for protecting them when they come up, the chances of success are remote. Early Horn Carrots may now be sown, but in cold positions Carrot seeds lie a long time in the ground, and under such circumstances it will, for very early crops, be better to cut a wide trench, and fill it with warm manure; cover it with 5 in. or 6 in. of light soil, and protect it with glass or other covering. Sow a few Wood's Fringe and French Breakfast Radishes and protect them as suggested. Where an autumn supply of Brussels Sprouts is required, a box or two should now be sown under glass. Plant out from the seed bed autumn-sown Cabbages to succeed those planted last September. Stir the soil with a fork between the rows of early Cabbages, selecting a drying day for the operation, and afterwards earth them up. Make a small sowing of Celery, in pans or boxes in heat, for favouring purposes. When the weather is suitable, and the ground in good working condition, a portion of the autumn-sown Onions should be transplanted. Select for them a piece of land that was manured and deeply dug in the autumn or early winter; wheel on a good dressing of charcoal dust or charred refuse, spread it evenly over the surface, and rake or fork it in. Soot also may, at all times, be beneficially applied. Make the ground tolerably firm, and put in the plants, not too deeply, 1 ft. row from row, and 4 in. apart in the rows. Make a sowing of Veitch's Autumn Cauliflower in pans in heat. Take up the remainder of the crop of Jerusalem Artichokes; select the best for use; place them in a cool cellar or shed, with a little dry sand strewed over them to keep them from shivering.

#### Vegetable Forcing.

In fine weather give as much air as can be done safely to Potatoes, Carrots, &c. Earth up early Potatoes that may require it with light rich soil that has lain in a warm shed a few days. Potatoes with their tops near the glass must be well covered up at night, to prevent the frost injuring them. When the early Radishes have all been drawn from amongst the first crop of early Horn Carrots, thin out the latter to about 1 in. apart, and, in order to fill up the holes and level displaced soil, sift a little fine rich soil all over the bed, and then moisten with tepid water.

#### Diary.

January 28.—Sowing Marrow Pea is boxes for making Green Pea soup. Putting in cuttings of Colous, Pelargoniums, Alternanthera, Fuchsias, and Ageratum. Getting more Strawberries into gentle heat, and removing more forward ones to the Peach-house. Getting on with pruning and nailing. Turning over Mushroom manure to sweeten.

Jan. 29.—Sowing Sweet Basil, and pot Marjoram; also nine rows of William I. Peas on a warm border. Planting an early border with Ashleaf Kidney Potatoes. Top-dressing a Vine border (Lady Downes)

with a mixture of new loam, old plaster mortar, charcoal and horse manure. Proceeding with the digging and trenching as far as the weather will permit.

Jan. 30.—Sowing another frame with Wood's Early Fringe Radish; also an early border. Planting a three-light frame with Ashleaf Kidney Potatoes that have been previously started. Looking over Pelargoniums, picking off dead leaves, and stopping them where required. Turning over leaves and manure in Muscat-houses, and adding a little more hot material, so as to keep up a moist temperature.

Jan. 31.—Sowing Cyclamen seeds in gentle heat. Putting in cuttings of Verbenas, Lobelias, Heliotropes, and Petunias. Giving late Peach-house a good watering. Getting peat and loam into Vinerias to warm, so as to be ready for potting Pines. Looking over Grapes in bottles, taking out any bad berries, and filling up the bottles where required. Making up hotbeds for Potatoes, Cucumbers, Melons, &c.

February 1.—Potting off Pelargoniums. Cutting back large Fuchsias, and putting them into gentle heat. Moving Cinerarias, Calceolarias, Verbenas, and other plants into a large pit for purposes of fumigation. Covering up another Seakale bed, and filling up another three-light frame with Asparagus for forcing. Getting more Rhubarb roots into Mushroom house to force; also a little more Dandelion and Chicory.

Feb. 2.—Putting in cuttings of Nasturtiums and Mesembryanthems. Looking over Parsley in frames, and picking out all decayed leaves. Cleaning up pleasure-grounds, and rolling down all gravel walks firmly. Looking over fruit-room and removing all fruit that are bad. Cleaning up kitchen garden walks. Looking over Pines, and watering them where required. Fruit in use for dessert—Pines, Grapes, Pears, Apples, and Nuts. G. W. P., Dorset.

#### CISTERNS FOR STORING RAIN-WATER.

THERE are a few things to be determined accurately before a cistern is made; these are the locality, the depth, the form, the capacity, the material, the cost, and the manner of constructing and preserving

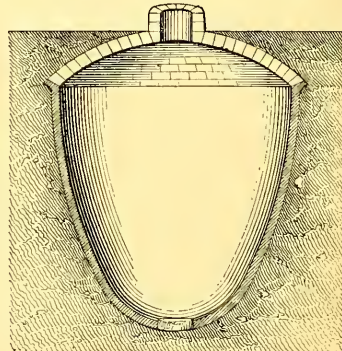


Fig. 1.—Cement Cistern (arched).

it. The locality in which a cistern is built should be such as will be convenient for receiving the supply of water, and also for drawing it for use, and it must, by all means, be either naturally so placed that surface water cannot enter it, or it must be made so artificially by raising a low mound around it. The depth should be such as to maintain a proper coolness in summer, and prevent freezing in winter. The top of the cistern should therefore be not less than 3 ft. beneath the surface of the ground. The shape should be that which will give the greatest strength with the largest capacity. Both of these are gained by using the circular form both for the sides and the bottom and top. Where the greatest strength is required, as in loose sandy soil, an egg form will give this, and with very little loss in capacity. The usual form is shown at Fig. 1, and there is no better shape than this where strength is the first consideration. Where economy of space and material is desired, the form shown at Fig. 2 may be adopted. This is circular, and a circle encloses more space than any other figure having the same length of line around it. The top, if of brick or stone, should be arched, or if covered with timber and earth, the most durable kind of wood should be procured. In the latter case the ends of the timbers should have a bearing of at least 2 ft. on the earth at each side of the cistern, and should be bedded in cement, as shown at Fig. 3. The capacity may easily be found by taking the diameter in feet and multiplying it by itself,

thus getting the square of the diameter. This is reduced to round measure by multiplying it by .7854, and ontong off the last four figures. A sufficiently near approach may be made by taking three-quarters of the square as the round measure. This gives the area in square feet, and for every foot in depth the number of cubic feet contained. As there are 7½ gallons in every cubic foot of water, and 30 gallons in a barrel, the number of barrels contained in any size may be soon ascertained. By doubling the diameter the contents are increased four times. Thus a round cistern 4 ft. in diameter will hold a little over 3 barrels for every foot in depth; if 8 ft. in diameter, it will hold 12½ barrels for every foot; but if 12 ft. in

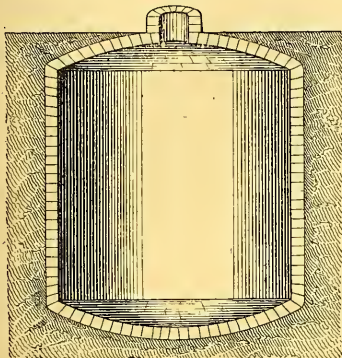


Fig. 2.—Cylindrical Brick Cistern.

diameter, it will hold nine times as much, for if the diameter is enlarged three times, the contents are increased nine times; and if enlarged four times, the cistern will hold sixteen times as much water for every foot in depth. Thus a great advantage is gained by making the cistern as wide as possible. Cisterns should be constructed of the most durable materials; and to preserve the purity of the water, these must be perfectly insoluble and unchangeable. Good hard-burnt brick, laid in hydraulic cement, or, as it is otherwise called, water-lime, because it will set hard under water, is the best material. The next best, or as good under some circumstances,

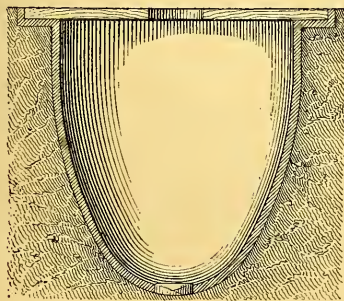


Fig. 3.—Cement Cistern, covered with plank.

is stone. Stone, however, being more bulky than brick, requires a larger excavation, and therefore costs more for labour. In the absence of brick, cement alone makes an excellent material both for durability and cleanliness. Wood of any kind should never be used, as it quickly decomposes, and charges the water with poisonous substances, which produce disease. The cost of constructing a cistern will depend upon its size and the material selected. The length of wall around it may be found by multiplying the diameter by three and one-fifth. Thus one 8 ft. in diameter will be over 25 ft. around it. Fourteen bricks will lay 1 square ft. of wall 8 in. or one brick thick; twenty-five will lay 1 square ft., 12 in. or one and a half brick thick. Thus for every foot in height an 8-ft. cistern will

require 350 bricks if the wall be one brick lengthwise thick, or 180 if it is a half-brick thick. For a small cistern the bricks may be laid in this manner, but those over 6 ft. or 8 ft. in diameter should have an 8-in. wall to resist the outside pressure, especially if the soil be of gravel or sand. To lay 1000 bricks, two barrels of cement will be required if used clear, but there may be one barrel of sand need to one of cement without any danger of weakening the wall. Where expense is no object as compared with durability, we would use clear cement. Where the wall is made of cement, it should be of such thickness as will perfectly sustain the sides of the excavation; but if the soil be solid clay or hard gravel, a 2-in. or 3-in. wall will be strong enough. If the sides be of sand or loose gravel, the wall should be 4 in. thick. The manner of constructing the cistern is as follows: The excavation having been made large enough to allow for the thickness of the wall, the bottom should be first covered with brick, or with a layer of cement; a flat stone should be placed in the centre to stand upon. If the cistern be of brick, nothing further need be done than to place a layer of cement smoothly and bed the bricks closely upon it, beginning in the centre and laying them in circles with the outer ends further apart than the inner ones, and keeping the spaces equal and even. When the bottom is covered, cement should be thoroughly worked into the spaces with the trowel. The cement should be mixed so thin as to spread very easily. The wall should be in the same manner until the top is reached. The last few rows should be laid so that the bricks incline, as shown in Fig. 2. If the wall be of cement, the bottom should be first laid, and then as much of the wall as will stand firmly until it is set. When this is done, a thin layer of cement should be laid upon the earth up to the top, just as a mason would plaster a wall. This will hold to the earth and soon set, and prevent loose sand from falling down. The portion of cement left to set should be made rough and uneven at the top, so that a good joint may be made when the next is laid on. As soon as the first part is set, more wall may be built up, and so on until the top is reached. As this is reached, the wall should be made thicker, and the top should be beveled off, as shown in Fig. 1, so as to give support for the arch. In case of loose earth, which renders the excavation difficult to be made, the plastering may be begun at the top, and as 1 ft. in depth is dug out, the side may be covered 1 in. thick with a coarse cement, made by mixing one part of hydraulic lime with four parts of coarse, sharp sand. This will confine the loose earth and prevent caving. A second coat of richer cement, and a finishing coat may be laid on, when the whole is dug and covered with mortar. After the rough wall is built a finishing coat of clear cement, made very thin, should be laid on, and when this is perfectly dry a final finish should be made by washing the surface over with a thin wash of cement and water laid on with a brush. This closes up all the cracks. If desired to have an insoluble surface, the wall may be, lastly, brushed over with a solution of water-glass (silicate of soda and potash); this combines with the lime of the cement, and makes a coating of silicate of lime, which does not favour the water. This will form naturally, in course of time, from the cement itself, but it may be made at once by using the water-glass. One barrel of cement, mixed with two barrels of sand, will make 9 cubic ft. of mortar, and this will make 1 ft. in height of wall 4 in. thick around an 8-ft. cistern. Thus 12 barrels of cement and 24 barrels of sand will be required to make the bottom and the wall of a cistern 8 ft. wide and 10 ft. deep, or holding 125 barrels of water. One extra barrel of cement will be needed for the finishing coat, and another with 5 barrels of sand, or half sand and half gravel, for the floor for the timber covering.—“American Agriculturist.” [Concerning these cisterns, Mr. Simpson, Wortley Hall, near Sheffield, writes to us as follows:—“We have a number of cisterns made here in the way just recommended both above and below ground, and nothing could be better or more enduring. If they do crack, a lick of cement puts all right in a few minutes. It is always worth while, however, to line the hole or excavation with a single brick first rather than lay the cement on the earth at once, unless the soil be hard and firm.”]

**Sewage and Market Gardening.**—Market gardeners admit that sewage farms have great advantage over their culture in being supported by the constant regulated supply of water to the city, and in being protected from droughts and the irregularities of rainfalls. It may be added that the sewer manure farms have a peculiar advantage over the market garden farms, as well as ordinary farms, in the ready and superior means of feeding the plants by liquified as compared with the common feeding by the solid manure. I have known a liquid-manure farmer who regulated his plant-feeding as he wanted woody fibre, the leaf, or the fruit developed, and who at will could change the colour of the leaves in twenty-four hours. This could not be accomplished with solid manures. By the liquified

manure culture the character of the produce is largely changed; there is a larger production of farinaceous and saccharine matter. The liquified manure culture converts some plants almost into new ones. The seaweed *Rhobarba* has been sought for their excellence to make champagne or a superior still hock. It may be hoped that this liquified manure culture will develop and accustom the people to new and superior edibles as common food, to give relief from the terrible consequences of main dependence on single crops—an evil against which the increasing insect visitations are giving additional national warnings.—EDWIN CHADWICK, *Park Cottage, East Sheen.*

## THE CAVE MUSHROOM.

(Continued from p. 68.)

### *Soiling the Beds.*

To soil a bed is to even the whole of its surface with a layer of soil specially prepared for the purpose, and about  $\frac{3}{4}$  in. in thickness. The Paris Mushroom growers use for this purpose the chips and powder of the stone which has been taken out of the quarry, and which may be procured in large quantities either on the floor of the quarry, or on the surface of the ground around the shaft. This rubbish is passed through a sieve, and the finer portions mixed with fine, light, dry earth, in the proportions of three of the former to one of the latter. The mixture is then watered so as to form a dry paste, in which the fingers will leave an impression. The addition of the earth to the powdered stone favours the development of the Mushroom. In the quarries the earth for soiling the beds is brought to the spot in baskets, carried on the back in knapsack fashion, and placed in heaps in the paths which separate the beds from each other. It is then uniformly spread over the beds by means of a wooden shovel, about 6 in. in width, with a short handle. The layer, which should be about  $\frac{3}{4}$  in. in thickness, is pressed lightly down by the shovel and smoothed, in order that it may adhere firmly to the bed. It is then watered by a very fine-rosed can, and it is allowed to dry until the next morning. The following day the surface of the beds is well beaten with the back of the wooden shovel just described. It must be beaten down so firmly, that it adheres thoroughly to the surface of the bed, so as not to be disturbed by the subsequent waterings. After soiling and beating, the beds need no other attention until the Mushrooms make their appearance, but they must be carefully watched and watered from a can with a very fine rose whenever the surface shows any signs of getting dry and white. About forty days after soiling, the first young Mushrooms begin to make their appearance, and form a fitting reward for the patience and perseverance which have been shown. On the other hand, it only too often happens that, through the neglect of certain precautions, a failure takes the place of success, and the grower loses his time, labour, and money. The action of the powdered stone is due to the nitrous salts with which it is always strongly impregnated, which furnish the Mushroom with an abundance of nitrogen, which is necessary to its existence. We may, in fact, as will be seen further on, replace the crushed stone by old lime rubbish, which has been pounded and sifted, and which, from containing large quantities of nitrous salts, greatly favours the development of the Mushroom. It is in consequence of the fertilising properties of the nitrates that Dr. Labourette has recommended them for artificial manures. The results obtained by him are very remarkable, but this system of cultivation has not yet passed beyond the experimental stage. We have already stated that a bed is ready for soiling from seven to eight days after the spawn has been inserted. The time may vary, according to the plan of the quarries and the height of the roofs of the galleries. Galleries with high roofs are always liable to be permeated by strong currents of air, their mean temperature being about 52° Fahr., and they are best for summer use; while those with low roofs, having a mean temperature of about 65° Fahr., are better for winter work. When it is necessary to soil a small bed in a cellar, it may be done by the hand, or with a kind of box made of Oak, 16 in. long and 10 in. wide. M. Renaudot, with his usual ingenuity, tried to perform the operation by machinery, but he was obliged to give it up, owing to the crookedness of the galleries, and consequently of the beds. I

also attempted to follow M. Renaudot's example by the use of a cylinder, working by means of cog-wheels mounted on a couple of ordinary wheels, but the difficulty of moving about in the narrow galleries of the quarries, and the impossibility of approaching the beds leaning against the walls, put an end to my experiments in this direction.

### *Mushroom-growing in the Open Air.*

Formerly the Paris market was supplied with Mushrooms by market gardeners, who grew them on beds in the open air, but they only began to make their appearance in the month of September; first of all, because the storms which usually occur before this date rendered useless all efforts to grow them without shelter; and, secondly, because the practice of forcing vegetables being much less common at this period than at the present time, Mushrooms were eagerly sought after during the earlier months of the year. Mushroom growing in the open air differs in no way from that which is carried on in the quarries, except in one or two minor details, which we shall proceed to point out. The choice and the preparation of the manure are the same in both cases. The manure heap is commenced, about the beginning of September, as near as possible to the spot where the bed is to be made. Where the soil is light and open, the heap may be made on the bare ground; if, however, the soil be heavy and damp, the drainage must be provided for by laying down a bed of broken lime rubbish, or by digging a trench about half a spit deep all round the heap, to keep it healthy and dry. After the heap has been well turned over for a fortnight, the manure may be taken to the place where the bed is to be made. The width of the bed should not be more than 2 ft. 3 in. at the base by 2 ft. high, the top being finished off in a double slope, as before described. The bed is built up by the fork, as, being in the open air, there is plenty of room to work. The material is then pressed down, trimmed neatly by means of a line, and allowed to rest for five or six days. The temperature of the interior of the bed is then tested, as before described, and the spawn is put in the usual way, taking care only to employ those pieces which are perfectly dry. This precaution is a very important one, for at this season of the year there is always an amount of rain, fog, and even snow, which is quite enough to damp the spawn without artificial aid. If fresh, moist spawn be used, there is great danger of its becoming rotten. If the weather be rainy, the bed, after spawning, ought to be covered over with straw mats, or clean stable litter, until the time comes for soiling. At the proper time the bed is soiled, with the precautions already prescribed, after which the whole is covered over with a layer of straw or clean litter. This covering must be removed from time to time, as it becomes soaked with the rain or melted snow. The first appearance of the crop ought to take place about the beginning of March, and the supply should last until April or May. When the first Mushrooms make their appearance, the manure generally becomes heated, and the soil dries up. In this case the straw covering must be taken off night and morning, and the surface of the bed well watered. The gatherings should be made in the morning, not in the evening. The covering is taken off and the gathering is then made, after which the holes are filled up in the usual way, and the covering restored to its place. The gatherings should be made every two days. An exceptional circumstance took place during the very mild winter of 1873-4. Several beds which were made in September began to yield as early as Nov. 11, and were productive until the May following.

### *Method of Growing Mushrooms without Manure.*

We have already seen in the first part of this treatise that the action of materials containing nitrous salts, such as saltpetre, had a great effect upon the development of the Mushroom. By fully carrying out this principle, I have succeeded in growing Mushrooms without the use of manure by the following process:—Take a cubic yard of old lime rubbish, and reduce it to fragments the size of a Hazel-nut. Moisten the mass, and transfer it to your cellar. Against one of the walls make a sloping bed of your lime rubbish, about 2 ft. 3 in. wide and 2 ft. high, the lower edge being kept in its proper place by means of thin boards. Smooth the surface with the hand. Prepare some lumps of spawn until they are fit for use, and

plant them in three rows, the first row being 8 in. from the wall, the second in the middle, and the third 8 in. from the lower edge. The lumps of spawn in each row should alternate with those of its neighbours. The spawning being finished, cover the whole over with river sand, or fine stone dust passed through a fine sieve, so as to form a layer about 1½ in. in thickness. The sand should be fresh, but not damp. As soon as the surface of the sand becomes dry, it must be watered lightly with a solution of 2 oz. of saltpetre dissolved in 10 gallons of water. It must be watered with great moderation, for any excess of moisture would rot the spawn. At the end of about six weeks the Mushrooms ought to begin to make their appearance. By following this inexpensive process, and by renewing the bed in a different part of the cellar from time to time, we may have a plentiful supply of Mushrooms all the year round. I give, to wind up with, an example which has been reported to me of the ease with which Mushrooms propagate themselves when they find a medium suitable to their wants. The perfection of the town of Clermont-Ferrand is installed in the buildings of an old convent built of granite. Saltpetre, or at any rate some nitrous salt, seems now to be contained in the stone, for near the horses' stables there is a kind of cellar underneath one of them, which is only used as a temporary receptacle for the litter. This cellar is much larger than is necessary, so that the litter is sometimes heaped at one part, and sometimes at another; but whenever the manure is removed, there always grows upon the spot it has occupied an abundant and regular crop of Mushrooms, without any pains having been taken with their culture.

#### Mushroom Destroyers.

Mushroom beds in cellars are frequently ravaged by rats, mice, snails, &c.

MICE.—Mice betray their presence by the prints of their front teeth, which they leave on the portion attacked. Rats make holes in the beds. Against these two kinds of pests we can only use the ordinary traps, or flower-pots turned upside down, one edge of which is supported with half a Walnut, with the kernel turned inwards.

SNAILS.—The grey snail often invades the beds, but as its passage over them is always recognised by the track it leaves after it, it may be easily caught by visiting the beds at night, and by placing here and there, within its reach, little heaps of damp bran or bits of Cabbage-leaf. It is very fond of these two baits, and is certain to be found feeding on them.

WOODLICE.—Woodlice, which are always to be found in damp places, also destroy the beds. They may be caught by placing in their haunts Potatoes, cut in halves and hollowed out. Every morning these traps should be examined, and the woodlice destroyed by boiling water.

BEETLES.—Two insect larvæ, which live on decomposing matter by reducing it to extremely fine particles, cause great damage by eating the spawn, thereby breaking up the reproductive filaments. One of these larvæ, which is commonly called the "Beadle" (*Suisse*) by the French growers, is the *Aphodius fimetarius*, one of the family of the Lamellicornes, of the genus Scarabæides. The larva of the "Beadle" is ¼ in. long and ½ in. broad. Its head is reddish-brown, and its horned mandibles very strong. The white transparent skin allows its internal organs to be seen, and its feet are white. The perfect insect is a small beetle ¼ in. long and ¼ in. across. The wing cases are yellow and streaked; the thorax, head, feet, and the under part of the body are black. The antennæ are yellow, with three joints. The other larva is that of the *Dermestes tessellatus*, a beetle of the family of the Clavicornes. The larva is like a little white worm. The head and mandibles are black, with two antennæ ending in clubs. The body is of a dirty white, and the skin is transparent, like that of the last-mentioned larva. It has six feet, and walks quickly. The wing cases, head, and breast of the perfect beetle are black, the feet brown, and the under part of the body white, marked with four black spots on each side of the wing cases. The body is oval, and the head small and bent downwards. The only means of fighting these grubs is by hunting for them with patience and perseverance. It is a difficult matter, too, for, when searching for them amongst the manure, we do more damage than we are seeking to prevent.

FLIES.—The manure attracts clouds of flies into the quarries. They deposit their eggs in the beds, and the larvæ, when hatched, destroy the soil by reducing it to fine powder. They are about 1-6th in. long and 1-25th in. in thickness. They spin a cocoon ¼ in. long, from which they soon emerge in their perfect state. These flies may be destroyed by placing about a number of pans filled with water, to which a few drops of oil of turpentine or soapy water have been added. The flies are attracted by the odour and drown themselves. They may also be caught with a floating light, in which they will burn their wings and fall into the water.

MITEs.—These are small insects, of a pale yellow colour, which, I think, belong to the parasite Acari. This little pest is wonderfully active; its body is ¼ in. long and transparent. The six legs, which are also transparent, project beyond the body, and the head is armed with a sucker. This insect is the parasite of the beetles mentioned above; also of the ordinary beetle, which is so very common in manure heaps. These parasites are found in crowds upon the scraps of straw in the manure heaps, the heat of which seems to favour their development. By watering the spot on which the heaps are made with water, containing in suspension fresh lime, I should think these insects might be easily destroyed, as their skin is very thin.

#### BOTANIC GARDEN, CAMBRIDGE, MASSACHUSETTS

Judging by the annual report of this garden, just received, its condition seems to be rapidly improving under Mr. Sargent's able directorship. The work of re-arranging the hardy plants, referred to in last report, has been continued, and it is expected that the re-arrangement of the garden will be completed during the present year, or at latest by the spring of 1879. During the past year 4018 square ft. of new rockeries have been built and nearly planted; and, as most of the ground used for this purpose has heretofore been considered unfit for plant growing, the capacity of the garden is considerably increased. The following plants of especial botanical interest, in addition to many others of less importance, have flowered in the garden during the year, viz.:—*Agave yuccifolia*, *Calypso borealis*, *Calycocarpum Lyoni*, *Clematis Davidiana*, *Cucurbita palmata*, *Erythronium purpurascens*, *Lewisia brachycarpa*, *Livistona chinensis*, *Momordella macrocarpa*, *Moricandia sonchifolia*, *Nymphaea flavia*, *Oncosmodium Thurberi*, *Orchis rotundifolia*, *Phalodendron Amurensis*, *Pinguicula lutea*, *Silene Baldwinii*, *Tillandsia usneoides*, *Tulipa Greigi*, and *Zephyranthes Treatii*, n. sp. The small arboretum, which was commenced during the past year on the grounds surrounding the observatory, has been considerably extended, and is now very nearly completed. The arboretum proper is reported to be doing good work. To its establishment, Mr. Sargent states, can be directly traced the planting during the past season of nearly half a million trees in the New England States alone, and amongst these may be mentioned the American White Ash, a tree of the first economic value, but one which has been rapidly disappearing from all but the more recently settled portions of the country.

Tree-felling by Machinery.—A public trial took place the other day on the Ronpell Park Estate, near Tulse Hill Station, of a tree-felling machine, the patented invention of Messrs. A. Bamsome & Co., of Stanley Works, King's Road, Chelsea. There were several timber merchants, engineers, and gentlemen connected with the colonies present. The first tree felled the other day was an Elm, 2 ft. 9 in. across the cut. The machine having been adjusted, the saw was set in motion, and the tree fell in less than four minutes. In a few minutes the machine was fixed to the second tree, an Elm 3 ft. across the cut, and the tree fell in a little less than eight minutes, there having been some interruption, owing to the saw now used being a new one, which had been too sharply ground. The third Elm, 2 ft. 6 in. in diameter, came down in seven minutes and a half. In seven minutes more the machine was at work on the fourth tree, which was about 2 ft. 6 in. in diameter, and which fell in less than ten minutes. When the work goes on uninterruptedly, the task is accomplished with great rapidity. Four or five other trees were felled, one of them, with a diameter of 22 in., being sawn through in a minute and a half, and, on account of the small size of the tree, without the use of the chain. In a private trial five trees were felled, inclusive of the time occupied in moving and adjusting the apparatus, in thirty-five minutes. In the heart of one of these trees, by the way, was found an entire brick. The saw was not made to cut bricks, but as it was driven by steam it had no time to debate the point, and so went

right through the impediment with the loss of a tooth. As the saw cuts well into the tree, wedges are driven in, as is usual in felling. It was the general opinion of those who were present at the trial that the machine was perfectly successful, and that where there was much wood to fell it would be of great service, particularly in American, Indian, and colonial forests, which it was desired to clear.

## THE KITCHEN GARDEN.

### VEITCH'S AUTUMN BROCCOLI.

FOR several years past I have had to rely on Snow's Winter White Broccoli to succeed the latest Cauliflowers, and, as a rule, by having several successive plantings, we have had few gaps in the supply; but it is a difficult matter to get Snow's in anything like a true form, as some years it has come in exactly at its proper season, and in succeeding seasons it has been fully a month too soon or too late. Last year, however, having found a small planting of Veitch's Self-protecting Autumn Broccoli to come into use just at the desired season, we have this year grown it largely and with most satisfactory results, as we have had an abundant supply daily that promises to last until the early spring varieties are fit for use. We sowed the seeds of it the first week in April, and as soon as the plants were large enough to handle, they were pricked out into nursery beds until the first crop of Peas was cleared off in the end of June, when drills were drawn, and the young Broccoli plants put out 2½ ft. apart, on Mr. Gilbert's system, with a crowbar, on solid land; one good soaking of water, and an occasional surface-hoeing, were all the attention which they received until November, when they presented as dwarf and even a surface as I ever saw in a plantation of Broccoli, every plant being short and sturdy in the stem, with a fine head of leaves that curled over and enveloped the heads so completely as to defy any moderate frost. As a precaution, however, against any sudden visitation of severe weather, we have laid them slightly sloping to the north, and packed dry Fern and litter securely among them, reserving a supply for effectually protecting overhead should frost become intense, as I find Broccoli or Cauliflowers are much better in quality when protected in this way than when lifted and placed in close pits or collars. As we planted a large plot of this variety side by side with Snow's Broccoli under exactly similar circumstances, I have had a good opportunity of comparing results, and up to the present time all the produce has been from the new variety, which is still producing heads in various stages of development. It is greatly to be desired that this fine Broccoli may be preserved true, as, up to the present time, I may safely assert that growing varieties of Broccoli that have been warranted fit for winter use, and that have eventually come in with the ordinary spring crop, has been the most vexatious affair belonging to kitchen garden produce with which I have yet had to deal; for, no matter how large or well ordered a kitchen garden may be, it is impossible to regulate the supply if the varieties of vegetables planted cannot be depended upon to be fit for use within a reasonable limit, allowing for the variation that takes place in the seasons.

JAMES GROOM.

Henham.

**Early Sown Brussels Sprouts.**—I was looking the other day at two beds of Brussels Sprouts, both growing in the same garden. The plants on one were sown in a box under glass in February last, potted singly when large enough to handle, and brought forward in a light, cool frame till the weather had settled in April, and then planted in a well-manured, open site, 2½ ft. apart each way; the other plot was furnished with plants sown in the usual way in March in the open air. The difference in every way was so much in favour of the first-named, that any little extra labour will be well bestowed, especially where it is necessary to obtain the greatest bulk and quality of produce from limited areas. If a succession be required, the better plan will be to make two sowings—one early, under glass, and the other in the open ground in the end of March. Too often such crops are sown too thickly, thereby not only wasting good seed, but the young seedling plants lack that vigour of constitution which can only be obtained by giving them at all times sufficient breathing space. In very backward districts, where the aid of glass cannot be

had in early spring, I should sow in autumn; but only a few seeds should be sown then, as, if sown too early, some of them may bolt in spring, and frequently a few days or a week will make all the difference, especially if the winter should turn out to be mild. When sowing in autumn I have always found October to be the most suitable month, varying the time from the beginning to the end of the month according to the season and situation. Autumn sowing, however, may be looked upon as a means to suit exceptional cases, and in no instance need it be adopted where the first sowing in spring can be made under glass.—E. HOBDAY.

**The Winter Heliotrope** (*Tussilago fragrans*).—"Salmon icps" (see p. 50) recommends the introduction of this plant into gardens and pleasure-grounds, but my advice is to keep it out of them, for when once it gets possession of a piece of ground there is no getting rid of it, as it spreads in all directions most rapidly. It has been a perfect nuisance here for many years, and though we have repeatedly forked over large plots of ground containing it, and seemingly picked out every particle of root, and afterwards covered the ground with fresh turf, it has forced its way through the Grass and grown stronger than ever. I quite agree with "Salmoniceps" as to its fragrance, its easy cultivation, and its hardiness, but, at the same time, I would be thankful if he can inform me how I am to get rid of it, as it is a most troublesome plant, and must be a source of discomfort wherever it grows in such masses as it does in this neighbourhood.—J. CLARKE, Cork.

## QUESTIONS AND ANSWERS.

**Apples.**—Could any of your readers inform me where the following Apple trees are to be got? The list is one which I copied from a correspondent's letter in *THE GARDEN* three or four months ago. I have tried several Apple growers, but have not succeeded in getting them. The sorts I want are—Slade's, the Hatchin Pippin, Blue Pippin, Aromatic Russet, Red Streak, Mashay Pippin, Royal Monard, and Box.—G. W.

**The Myrobalan Plum as a Fence Plant.**—Have any of the readers of *THE GARDEN* tried this Plum as a substitute for Quicks? If so, will they kindly give me their experience as to its value? also any hints as to planting, &c.? I have a great deal of hedging to do, and Quicks are very slow growers when properly attended to.—OXON.

**The Best Acacias.**—There are several varieties of small Acacias now in the market at Cannes. Which are the best kinds for a greenhouse or out of doors in England?—L. [The following will be found to be a good selection, viz.—*A. armata*, *Hicorea*, *ovata*, *pulchella*, *vestita*, *Drummondii*, *ericarpa*, *juniperina*, *retundifolia*, and *grandis*. *A. dealbata* has been found to do well even against walls in favourable localities in the southern counties.]

**Indoor Climbers.**—We have a corridor here between the dining-room and conservatory; it is 5 ft. long, 1½ ft. wide, front and back 11 ft. high, and span-roofed, the front and roof being glass, and the back a wall, which we want to cover with climbers that would also run over the roof. Will some reader of *THE GARDEN* kindly name what kinds would suit us best. I may add that three years ago I planted it with *Taeniocissis*, *Passifloras*, and some other plants, which did well for two years, then got sickly, and at last died. The hot-water pipes for heating the hall in winter run along the front of the corridor, and maintain an amount of heat which is useful for plants in pots that have been brought in from other houses where they had been forced; but I think the warmth thus obtained kept the climbers growing until they were exhausted, and then died. The corridor is only heated for about four months in winter; during the rest of the time it is used as a conservatory. There is a narrow border in which the climbers can be planted.—W. W. KAYSON.

**Propagating Variegated Hollies.**—I have a large variegated Holly, which has been in my shrubbery more than forty years, and which is now—as it has often been before—covered with berries. Can I reproduce the variety by sowing the berries as seed, and, if so, when, and in what soil or situation should they be sown? I presume grafting would be best, but what age should the wood of the graft be? as Hollies grow so slowly as to make very little new wood. Any information on this subject would be thankfully received.—H. R.

**Paris Exhibition.**—Mr. John Wills, of Onslow Crescent, South Kensington, is, we are informed, about to erect at the Paris Exhibition an ornamental glass structure, 80 ft. by 20 ft., in which it is intended to maintain a collection of choice plants and flowers, arranged from an artistic point of view, for six months.

**Wistaria on Trees.**—We shall be very much obliged to any reader for information as to where a good specimen of *Wistaria* running over a tree or trees in this country or any other may be seen.

**Large Specimens of *Araucaria imbricata*.**—Mr. Ernest Bergman will be much obliged to any of our correspondents who will give him some details concerning the height and size, position, and age of the largest *Araucarias* now growing in the United Kingdom.

"This is an art  
Which does mend Nature: change it rather: but  
THE ART ITSELF IS NATURE."—*Shakespeare.*

### LOCKED GATES AT KEW.

A DEPUTATION of gentlemen, including the clergy, coming mostly from Richmond and Kew, waited upon Mr. Noel, Whitehall Gardens, on Wednesday, to again urge that Kew Gardens ought to be open to the public at more reasonable hours than at present. Nothing could be more temperate in tone than the reasons which were urged in order to effect this by Messrs. Nott, Drabble, White, Maxwell, Coleman, Selle, and other gentlemen, but, notwithstanding this, no satisfactory answer could be obtained, though the deputation was received with courtesy by the First Commissioner. To ourselves, every one of the speakers seemed to err on the side of moderation in not asking for the unreserved opening of the gardens, the houses excepted. Somebody has impressed the people about Kew that "science" requires the gardens to be closed for half the day, and even the most outspoken of the speakers accepted this nonsense in its entirety, and said they did not want the Botanic Gardens to be open at all, except at the absurd hours at which they are now open; but we tell them, and all whom it may concern, that this is not fighting half the battle. We do not speak from the point of view of the Kew or Richmond people at all, but from the point of view of horticulturists and botanists of England and throughout the world; and we say that it is an injustice to keep these noble gardens shut up during the best hours of the day. Even in the case of people who live on the spot at this time of year, if they are there at the moment the gardens are opened, there is very little time in these short days to see them at that end of the day when people are the least disposed to visit them. Throughout the whole of the winter and spring the most agreeable time to visit Kew is the bright morning and noon; in summer, too, it would be more agreeable to persons visiting London to go out to Kew in the early morning or even before breakfast, as many would do. Numbers of persons come from our colonies and America to London to whom a visit or several visits to Kew is important; and we speak from experience when we say that the time and convenience of these people are very often thwarted by the absurd rules that exist there. Then, taking the case of anybody in London wanting to see a certain plant in flower, or to look up any other question at any time of the year, is it not monstrous that this cannot be done as in any other national botanic garden? Mr. Gerard Noel said, in the course of his observations, that "there was no place where so much liberty was given as at Kew," and spoke of the Garden of Plants in Paris as a place more difficult of access than Kew, and for which payment had to be made at times! Now the Garden of Plants is the very opposite of a model of a national garden for us, but it is quite open to people throughout the day, with the exception of one or two small departments of very little interest to the public. There is, however, no reason to go so far for examples. Of late years the plants put out in the various parts of the London parks are even more choice and costly than those at Kew, as, for example, in various parts of Hyde, Battersea, and Victoria Parks. Yet there is no reason for keeping the public out at any time. People may be seen in Battersea, Hyde, and Victoria Parks enjoying the flowers in the morning sun. Surely if this be possible in London itself, with all its roughs and its millions, it is no less possible at Kew. To those who know anything of botanic gardens and their management, the "scientific purpose" objection to their being opened at reasonable hours would be amusing if it were not so very untrue and so very puerile, and one feels ashamed that anyone connected with the beautiful science of botany could urge it. How have "scientific purposes" suffered in Edinburgh, and Dublin, and Paris by the opening of scientific gardens at an earlier hour? However, a still weaker reason than this

was urged by the Chief Commissioner—"that a great many of the visitors did not arrive till long after one o'clock in the day." This opinion is evidently not an ill-considered one, as it has been uttered more than once in public and in the press. Considering how thoroughly well known it is in London and elsewhere that Kew Gardens are not open till the afternoon, we are not astonished that people do go after one o'clock. It is only the poor holiday-makers, who are not informed of the matter, who crowd outside the gates before they are open. Horticulturists may be a long-suffering race, but they are not so extremely foolish as to gather outside the gates of Kew before one o'clock with the hope of getting in. It is greatly to be regretted that Sir Joseph Hooker should not take a broad view of this matter. It is well known that he, and not the Chief Commissioner, is the real objector to the change desired. His conduct in this particular will tend to strengthen the charge of cliquism which is so often urged against the "Kew school," not by horticulturists, but by botanists. The matter cannot rest here. There never was a more reasonable demand, and it must be granted sooner or later. The question of expense is no excuse. Surely the first and most legitimate use for means in such a garden is that it may be seen by those who pay for it. We very much doubt, however, if early opening would increase the expense in any material way; but assuming for a moment that it would, the answer is—save it from things less needed than the opening of the Gardens. We could give, as no doubt many others could also give, various instances of very heavy expenditure at Kew for objects very much less important than that of opening the gardens at all reasonable hours of the day. The hours should be from six o'clock until dusk throughout the summer, and in winter from nine o'clock till dusk.

### CHRISTMAS ROSE BLOOMS MADE WHITE.

IN the majority of gardens there are no white flowers out-of-doors to speak of in winter, with the exception of that most useful of all flowers, the common Christmas Rose (*Helleborus niger*). The large-flowered variety of this is quite a mistake for decorative purposes. I fancy I have seen a small-blossomed sort, and that is really what is wanted—a Christmas Rose half the size of the ordinary kind, not one nearly as large again. But the Christmas Roses with which one meets in the majority of gardens are not white, but pink, or more or less suffused with pink or a dirty purple, and as this is the white flower within the reach of all which I venture to recommend, it is only reasonable that the way to make it white should be first pointed out. Well, there are two ways within reach of most people; some would add a third, and plant it in light soil, but that is not effectual, and is often impossible. Soil will be best only to advert to the two modes of making the Christmas Rose white. The first is to plant it in a warm, sheltered, partially-shaded situation; this seldom fails. It is the cold wind chiefly that makes this white flower pink or purple. I have patches of it in my mind's eye as white as driven snow behind walls, or fences, or snug on the sheltered sides of shrubberies; and others nearly all purple, set in the teeth of the wind, or rudely swept by the blast. My next mode of insuring white Christmas Roses is to cover them with glass; this does not mean a wooden box and glass light, far less the lifting of the plants and placing them in pits, frames, or houses. Such disturbances are ruinous to the perpetual supply of Christmas Roses; but the firmest means of protection with glass, such as the placing a few bricks on either side of a patch of Christmas Roses, and then laying a loose square or two of glass over from one to the other. Such cold and simple protection is sufficient to make Christmas Roses spotless as the driven snow. One of the finest exemplars of the success of such glass protection which I have ever seen was a border at the end of a greenhouse planted with Christmas Roses about 1 ft. apart. A few long squares of glass were laid across, and in the middle of January the ground was as white with Christmas Roses as an old orchard is with Snowdrops in February. Blooms had been cut from them since Christmas, and hundreds might have been cut when I saw them, and all without a spot. In fact, flowers of them in the drawing-room were so pure and spotless, that they were mis-

taken at a distance for the more rare but hardly more beautiful *Eucharis amazonica*. Christmas Roses also flower much more freely under slight protection than when exposed. This plantation of them had been treated in the way just named for years, care being taken neither to plant nor sow anything among them in summer, to allow no treading on their crowns, and to cover them with glass by November 1. Thus managed, they were always in flower before Christmas, and continued in flower till the first week in February, soon after which the glass was removed.

D. T. FISK.

**Boltonia latissquamma.**—This, though having a strong appearance of relationship to *B. glastifolia*, may nevertheless be distinguished from it very readily. Besides, its foliage being more glaucous, it does not grow quite so tall. Above all, it is distinguished by its flowers being larger and of a beautifully delicate rose colour, instead of being white, as in the first-named species. They are also much more abundant; and, owing to their ligules being much more numerous and placed in several rows, it is probable that before long this species will give varieties with double flowers. We may, however, mention that already *Boltonia latissquamma* is a very beautiful ornamental plant, which, by the abundance of its flowers (which last up to the first frosts), brightens up our gardens at a time when all other flowering plants have almost disappeared, which in itself is no small merit. Cut and placed in water, the flowers of this *Boltonia* will last for several days, and may be used to adorn our rooms, which is another good quality to be placed to its account. Up to the present time the propagation of this *Boltonia* has only been effected by division of the roots. Thanks, however, to the numerous experiments made by M. Henri Vilmorin, we can now raise it from seed, as we do *Asters*, *Golden Rods*, or *Solidagos*, with as great ease as if they were ordinary annuals. This discovery will allow us to obtain varieties, which it was nearly always impossible to do as long as we could only propagate the plant by root division. Like the other *Boltonias*, the *latissquamma* is a native of North America, and was first introduced to horticulturalists by Professor Asa Gray. To all its other merits *B. latissquamma* adds that of novelty, having been introduced into France in 1875.—E. A. CARRIÈRE, in the "Revue Horticole."

—Up to 1875 only three varieties of the genus *Boltonia*, which are all indigenous to North America, and consequently perfectly hardy in this country, had been introduced to European gardens, and these were known under the distinctive appellations of *B. asteroides*, *B. diffusa*, and *B. glastifolia*. Of these the first named is figured in the 52nd volume of the "Botanical Magazine" (t. 2554), and the last in the 50th volume of the same work (t. 2381). In appearance of flower they closely resemble some of the varieties of those well-known hardy border plants so seldom now seen, even in very old-fashioned gardens, known as *Michaelmas Daisies*. The fourth, or more recently introduced species, *B. latissquamma*, is said to be a great improvement on the others in size of flower and brilliancy of colour, producing blossoms of a beautifully delicate rose colour. It is more like the *B. glastifolia* in habit and form of flower than to either of the two other varieties named. It is also said to be exceedingly free-flowering, and the blooms, when cut, last well in water. These plants have hitherto been propagated only by division of the tufts at the root; but seed of this new and beautiful variety is now being distributed by Messrs. Vilmorin, the well-known seedsmen of 4, Quai de la Mégisserie, Paris, grown and saved by them at their own sea grounds in the neighbourhood of the French capital.—W. E. G.

**Gentians.**—Besides the happily common garden Gentian, and its exquisite companion *Gentiana verna*, a plant by no means easy to grow, I have two or three equally beautiful autumnal Gentians, some of which I have had better known. *Gentiana septemfida* is a large-growing Gentian, with clusters of blue blossoms which open in the sun; a good plant for any border. *Gentiana gelida* is somewhat similar, but rather smaller in its growth, and larger in its clusters; but *Gentiana gelida* Wallichi is the finest of all. This is, I understand, a seedling variety of *gelida* raised in the Edinburgh Botanic Garden. It is much larger and richer in all its parts, and altogether one of the grandest late summer border plants I have ever seen. *Gentiana ornata* is a most lovely carpet plant from the Himalayas, and may probably be as manageable as an *Aubrietia*. It blooms in the autumn.—FRANK MILES, *Bingham, Notts.*

**The Winter Heliotrope** (*Tussilago fragrans*).—I can fully endorse Mr. Clarke's opinion (see p. 92) with regard to this *Colt's* foot. I have in my garden a piece of ground 60 ft. square, on which I should like to build a rotery, and from which I should like (if anyone can tell me the way) to banish it, for in vain have I trenched the ground, forking out the roots, and in some places even covered it

with gravel. The only difference that I can perceive is that this year it is flowering more profusely than ever, which certainly is an advantage if you must have it. There are undoubtedly places in the wild garden where it is perfect, giving, as it does, a fragrant bloom in this the month most unproductive of outdoor flowers of any throughout the year, and at other seasons covering the ground with a carpet of handsome foliage; but I am sure that amongst other herbaceous plants it ought not to have a place, as when once it is thoroughly established, its removal becomes a matter of great difficulty.—E. F., *Petyards Hall, Swaffham.*

—Mr. Clarke (see p. 92) will experience some trouble in getting this plant extirpated from his garden where its roots have got a firm hold. I had once a patch of it in a corner in the kitchen, and, although bounded by a hard gravel walk, it spread about in all directions, and I only got rid of it by digging a strong dose of salt amongst the roots, and keeping the ground salted till all disappeared. Before doing this I made a plantation of it in a wood, where it might spread as rapidly as it liked, and covered the foliage slightly with Oak leaves. In severe winters, when in flower, I have some straw hurdles made to protect it, and I know no winter-flowering plant so grateful in perfume in the open air as a bunch of winter *Heliotrope*. The flowers are produced in great abundance, and they last in perfection a long time in water.—WILLIAM TILLEY, *Welbeck.*

**The Double Agapanthus.**—This is being largely imported by Messrs. Henderson, Pine-apple Place. Its easy culture, and the attractive character of its flowers, as well as their usefulness for bouquet-making, will doubtless soon gain for it extensive culture.

**Dendrobium Wardianum.**—A good display of this attractive *Orchid* may now be seen in the Pine-apple Nursery. The pseudo-bulbs, in some instances, are from 2½ ft. to 3 ft. in length, and studded with blossoms, a result brought about by thoroughly ripening the growth in autumn, and by subjecting the plants to all the light possible, and abundance of air when the flower-buds show themselves.

**Azalea mollis.**—A number of plants of this are now in flower in Messrs. Veitch's nursery, where they are making a fine display. Their colours are most brilliant, and, considering how easy the plant may be forced into bloom, this variety must soon become popular in every garden in which winter flowers are valued.

**Daphne elegantsissima.**—This is a pretty, variegated form of the well-known *D. indica rubra*, its flowers being similar in every respect to those of that kind. Its leaves are edged with a band of bright yellow, and plants of it treated liberally in a warm greenhouse are highly ornamental. It thrives best in a partially-shaded place, planted out at the end of a greenhouse, in which the shoots are allowed to cover the wall.

**Azalea narcissiflora.**—When grown in the form of a standard this *Azalea* has a fine appearance in the greenhouse early in the year. Its white, semi-double flowers develop themselves with very little forcing, and they last in good condition both on the plants and in a cut state for a much longer period than those of most of the other kinds usually found in flower at this season.—C. S.

**Camellias in the Lucombe Nursery, Exeter.**—Just at this season the chief attraction in this nursery is the *Camellia* house, the trees in which are loaded with blooms of the most delicate colours, and the thousands of buds that are just bursting indicate that for some time to come they will continue to be furnished with flowers. Judging from their size, some of the trees must be very old, but increasing age seems only to make them more prolific in the production of handsome flowers of almost every colour.

**Wreaths on Trees.**—The engraving on the opposite page shows some graceful wreaths of the common Irish Ivy, trained from hole to hole of a short grove of fine *Clauze* trees, on each side of a fountain basin. The Ivy is planted between the trees, where it grows vigorously; and it is so trained that the wreaths seem to fall to the ground from the trees. Above the wreath of Ivy there is a smaller, lighter wreath of the *Virginian Creeper*. The effect of the two is very charming, that of the Ivy being good throughout the year. Very often good gardens, and important spots in gardens, suffer from not paying attention to simple ornament of this kind. In the case in question the trees were very well of themselves, but these elegant wreaths give a fresh charm to the spot, and gracefully adorn both the ground and the stems of the trees.

**Orchids at Kingston.**—A good variety of *Odontoglossum Rozellii* is now in bloom in Messrs. Jackson & Sons' nursery at Kingston. Associated with it are also the beautifully-scented *Scaccolabium violaceum* and the white-flowered *S. Harrisonianum*, together with well-bloomed plants of *Phalæopsis*, all of which combine to make an effective display.—S.

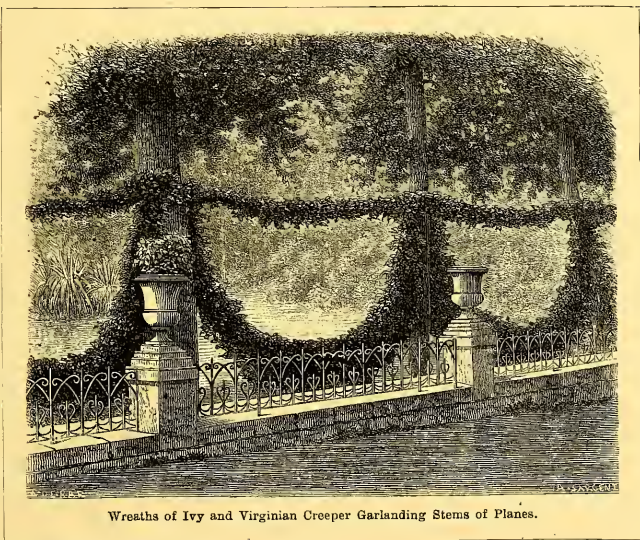
## HARDY CLIMBERS FOR WINTER ADORNMENT.

IN most gardens there are positions where it is desirable to produce as cheerful an appearance as possible during winter, and where climbers, either on walls, arches, or trellis-work, may be made a conspicuous feature. Some dislike Ivy on buildings; but, even where such a prejudice exists, there can be no objection to its employment for covering arches or rustic work of any kind; and as there are now so many beautiful varieties of Ivy, a more extended use of it would add to the appearance of many gardens. Among fruit or berry-bearing wall plants scarcely anything has a brighter or better effect than the scarlet-fruited evergreen Thorn (*Crataegus Pyracantha*). Though not so fast-growing as some plants, when once a wall is covered with it, if the pruning and training be judiciously managed, it has a rich and striking effect in winter. I saw the other day, in a neighbouring village, a good-sized house, the front of which was completely covered with it, and the bright berries were set so thickly amongst the dark foliage as to arrest attention. *Cotoneaster microphylla* may be used as a wall plant under similar conditions, and it is very effective, both

when in flower and afterwards, when the numerous small scarlet berries are ripe. It grows freely in good soil. It is with regret, however, that I plant it where I know rigidity of training is required, as its habit of growth, when left to itself, is so elegant and graceful, as to clearly indicate that it is a plant better suited for the rockery or semi-wild scenery than for a position where every spray must be orderly and circumspect. There are several winter-flowering deciduous shrubs that are indispensable where bright, cheerful effects are desired, and foremost among these must be placed *Jasminum nudiflorum*, which at this season is loaded with bright golden blossoms. One almost wishes that it had the sweetness of the common Jasmine, but it is quite scentless. For covering any wall up to 12 ft. or 14 ft. it is most suitable, but I have never seen it growing above that height. I have it against a wall 30 ft. high, but it seems to stop when about half-way up, and makes but little upward growth afterwards. A later-blooming yellow-flowered companion may be had in *Forsythia viridissima*. It is even more hardy, free-growing, and vigorous than the Jasmine just referred to; and both, if growing on a wall, should be pruned back moderately as soon as the blooming is over, as they flower principally on the young shoots made in summer, and by cutting pretty well back, a larger number of elegant graceful sprays, of moderate length, are always obtained. The Japan Allspice (*Chimonanthus fragrans*) is quite indispensable in a collection of winter decorative hardy wall plants. Its flowers, which are freely produced from the time the leaves fall till well on through the winter, are deliciously scented. A small handful of the leafless flowering sprays will give fragrance to a large room. It is a free-growing shrub, and should have the shelter of a wall to preserve and protect its blossoms. There is a large-flowered variety of it, too, which is even better

than the type. *Berberis Darwini* should be planted wherever a good winter flower shrub is desired, as both foliage, wood, and flowers are so glossy and bright. It submits readily to training, and grows freely enough in good soil. When well established, it flowers profusely and almost continuously in winter. *B. stenophylla* is a free-growing, beautiful hybrid, not quite so erect in growth as *Darwini*; in this respect it partakes rather more of the character of its other parent, *B. empetrifolia*. It is a very desirable and handsome variety, either for a wall or for any other position. I have occasionally used the common evergreen *Berberis*, *B. Aquifolium*, for covering low walls, and very effective it is for walls not more than 3 ft. or 4 ft. high. *Garrya elliptica* is a dark-foliaged, handsome evergreen, of free, quick growth after the first two years, or when well established. It should be planted in good well-prepared soil, and will then speedily cover an unsightly wall. Its long catkin-like inflorescence is at this season both singular and interesting. *Escallonia macrantha* is one of the best and handsomest late-flowering evergreen, of comparatively recent introduction; or rather, I should say, it is not new, it is far

from being as common as it deserves to be. It is well suited for a wall where only choice subjects are admitted. In sheltered positions it will flower during the greater part of the winter. *Kerria japonica* I saw years ago brightening up many a cottage porch and front in Worcestershire in early spring, and its yellow rosette-shaped flowers are pretty and cheerful on low walls. Its height does not, under ordinary circumstances, exceed 6 ft., or 7 ft. *Lardizabala biter-nata*, although reputedly tender, should be tried in all sheltered situations where variety is sought, as it is very distinct, both in foliage, flower,



Wreaths of Ivy and Virginian Creeper Garlanding Stems of Planes.

and habit of growth. It would in most cases be advisable to protect it a little in severe weather for the first year or two, till well established, as afterwards cold would have less effect upon it. Several of the *Louiceras*, or *Honeysuckles*, should be added to the list, including *L. fragrantissima* and *grata*; indeed, a wall wholly planted with different kinds of *Honeysuckle* would be highly interesting. There are many plants well adapted for low walls that would not be suitable for loftier positions, notably *Pyrus* (*Cydonia*) *japonica* and its white variety; and, in point of fact, almost all of our flowering shrubs, both evergreen and deciduous, may be so employed if desired. In sheltered positions, *Laurustinus* will flower nearly all winter, and there are few shrubs brighter or more effective for walls not exceeding 10 ft. in height. I have seen *Cornifolia glauca* growing freely on a low wall in Norfolk; and the early flowers of *Magnolia purpurea*, when trained against a wall, are very beautiful. Where an unsightly wall has to be hidden without breaking up the formal outline, a row of *Cupressus Lawsoniana* planted quite closely at the bottom of it, and about 18 in. apart, will soon produce an elegant wall of living green. All strong branches must be tied to the wall, and the small twigs cut back with a sharp knife.—E. HOBDAY.

## EVERGREEN WALL PLANTS.

WE now possess a varied and excellent assortment of plants, both deciduous and evergreen, suitable for all situations and for mostly all purposes — for covering walls, open fences, palings, roeteries, trees, and for forming screen for covering unsightly objects. Taking evergreen species first, let us begin with the Ivy, of which there are numerous varieties, some of them exceedingly neat and pretty, and particularly effective in winter and spring, when many other plants are leafless. For covering walls or other objects quickly, none of the varieties surpass the common Ivy. A few plants put in here and there will cover a large space in one or two years. Ivy delights in a good rich soil, and it is worth while to place some well-rotted manure about the roots at planting time, if quick and luxuriant growth be an object. When planting Ivy for covering walls, or for forming screens, we have usually taken up good patches of it where it grew on the ground, and planted them in the mass. This beats any other plan for quickness. Ivy does not grow readily unless it has good roots to begin with, and these it never wants when growing on the ground. In many places it is employed for covering bare surfaces under trees, where nothing else would succeed, and from such places large patches of it may be cut out with a spade; but they should always be taken from the outside, where the growing points are, cutting in with the spade in a parallel line with the growth as much as possible, till roots are found in quantity, which will be a few feet from the outer edge, and then cutting across so as to secure a large square piece with plenty of growing points. It should be removed with the sod and soil adhering to the roots, and planted against the object to be covered, taking care to bury the roots deep enough, and to support the top with strips of band till growth begins and the shoots take hold themselves. We have seen unsightly walls completely covered in this way in a single summer. There are a number of green varieties of the Ivy, with large heart-shaped and lobed leaves, which are ornamental in their way and rapid growers, but which can hardly be said to be superior to the common kind. The variegated kind, named *Hedera maculata major*, may be mentioned, however, as an excellent variety, and nearly as good a grower as the common Ivy; but it is apt to run back to the green state if grown in too rich a soil. There are several neat-habited green sorts that are highly ornamental and suitable for covering limited spaces on walls. Against dark-coloured stone they are not seen to advantage, but a light ground shows off their small, neatly-cut, and closely-placed green leaves effectively. Some of the weaker-growing kinds do not cling readily of their own accord, and must be nailed; but such sorts it is better not to plant. The variegated gold and silver kinds are amongst the best wall plants which we have. In most kinds the variegation is very distinct, and the habit neat, the leaves alternating on the shoots, lying close to the surface of the wall, and look-almost as if they are pasted on. They should be in every collection of wall plants, and deserve a good position. The best are *Hedera elegantissima*, *Cavendishi*, *nana variegata*, *Silver Queen*, *anrea variegata*, and *tricolor variegata*. Those who wish to make a selection should first see the different varieties together. The Bramble is not reckoned an evergreen, perhaps, but it retains its leaves so long in some situations as almost to come under that head. The very free-fruited, Parsley-leaved variety is a tremendous climber, and grows at a great pace, and when planted against palings or open fences, it soon forms a formidable barrier. It is worth while planting it in good soil at the beginning for the sake of its fruit, which is so excellent and useful; and if the long shoots be trained along the fence for the first year or two, they will take care of themselves afterwards, with a little trimming now and then. The Evergreen Rose (*R. sempervirens*) is a strong and rapid-growing variety, unsurpassed by any other for covering walls or roofs and fences, and it is very hardy. There are two or three varieties of it, some producing red and some white flowers. It may be planted in almost any situation, and is a sure grower. For covering arbours and covered ways, it is an excellent subject. *Jasminum revolutum* hardly needs description. It is a free grower, but needs training and nailing in order to cover the wall properly. It produces large yellow flowers, grows in any ordinary soil, and is a good seaside plant.

## Deciduous Wall Plants.

The deciduous section of hardy climbers furnishes us with a better and more varied list of suitable subjects than the evergreen section. The Clematis almost deserves to be named first. All the varieties mostly, and they are now numerous, thrive in almost any soil, and in the most exposed situations, both in England and Scotland. For covering high or low walls, or fences, or for draping trees and similar purposes, they are unequalled; they grow rapidly, and flower early and profusely. *C. Jackmanni*, one of the first raised of the new race of hybrids, is still one of the best, if not the very best, for general planting. It flowers most profusely, as most of the varieties do, good plants being generally covered with masses of rich purple flowers of large size. The size of the flowers is, however, much influenced by culture, frequently measuring 5 in. or 6 in. across when the plants are grown in a good soil. When the Clematis is grown against a wall it may soon be made to reach the top, and spread out laterally as well, so as to cover a large amount of space if the quick-growing and rambling shoots be carefully trained, for they soon run into an inextricable bundle if not watched and nailed as they grow. After the plants have covered the space allotted to them they need less training, but should be pruned in closely every winter. Young plants should also be cut well down for the first year or two, in order to induce strong growths and good flowers. An ordinarily good garden soil, well manured, suits admirably, but fresh manures must not be placed close to the roots. When planted to cover roeteries, trees, or fences, the great point is to give the plants a good start by planting them in rich soil; but after they get up they are almost better left to themselves to grow as they please. In such situations slugs are sometimes very troublesome, as they eat the young buds as fast as they grow, and we are not sure that field mice do not also eat them. The only preventive is watching and trapping till the young shoots get woody and strong, and they should not be cut down too near the ground when pruned. The list of varieties is a long one, and new ones are being added to it; but among the best may be named: *C. Jackmanni*, purple; *lauginosa*, light blue; *rubella*, claret; *Fortunei*, white; *Lawsoniana*, reddish-purple; *Mrs. James Bateman*, lavender; *rubro-violacea*, maroon; *Lord Loudesborough*, rich mauve with dark stripes; *Otto Frøbel*, blue and white; *Miss Bateman*, white; *Lady Caroline Nevill*, bluish-white; *Henry*, cream colour; *Star of India*, violet-purple; *Vesta*, an early-blooming white variety, with fine large flowers. *Ampelopsis Veitchii*, or *A. tricuspidata*, is an exceedingly beautiful wall-climber, which, though introduced a dozen years ago or more, is still but imperfectly known. It is one of the neatest and most attractive of wall plants, is perfectly hardy, and grows fast. A plant of it put out against a wall two or three years ago is now some 20 ft. high, and is the admiration of everyone who sees it. A few others, planted only two years ago out of 3-in. pots, are now near the top of a 12-ft. wall. It is the neat habit of the plant, and the fresh green foliage, which changes to dark chocolate in autumn, and later to bright crimson, that render it so attractive. In habit we can only compare it to the neatest-growing of the Ivies. The shoots adhere to the wall so closely, by means of their little tendrils with holdfast-like appendages, that a pin point can hardly be inserted between the wall and the leaves, which are placed alternately and so closely as almost to overlap each other. The warmer and sunnier the exposure, the better coloured will the foliage be; but the plant itself thrives famously in open situations against trees, and soon clothes their stems with a verdure of changing hue. It succeeds best in a good rich light soil, and after it has once laid hold of the wall it wants no further attention in the way of training or nailing. *Ampelopsis hederacea*, the common Virginian Creeper, is too well known to need description. It is one of our best climbers, and is particularly valuable for covering arbours and fences, owing to its rapid growth and abundance of fine foliage, which also changes to crimson in autumn, though it does not approach *A. Veitchii* in that respect. It is, however, so accommodating in its habit, that it can be trained in almost any fashion, the long supple shoots bending and twisting easily in any direction. It succeeds in any common soil. *Aristolochia sipho* is a quick-growing plant, and its ample leaves render it particularly useful for covering arbours,

summer-houses, and similar structures. It is a native of North America, and is very hardy, growing fast in exposed situations even in the north, where we have seen it employed for covering trellised work in the open grounds. It prefers a light, well-drained soil, and the shoots should be tied in as they grow, to prevent them getting into confusion. With the *Wistaria* we are all familiar, and as a handsome-flowering wall plant it is unequalled. There are two or three varieties of it, but the blue and white are the best; and of these two the blue is the most vigorous grower and freest flowerer. One plant, if placed in a tolerably warm situation against a wall, may be trained so as to cover an enormous amount of space in a short time. There is a plant at Archerfield, in East Lothian, which, if we remember rightly, runs nearly the length of the garden wall, some 150 ft. or 200 ft., if not more. It needs a well-drained site, a good soil, and plenty of root room, and it will grow freely on any aspect, except the north. It is not a confused grower, like the *Clematis*, but requires to be trained carefully as it grows, in order to cover the wall quickly and uniformly. The shoots may be bent in any direction, according to circumstances. There are about ten or a dozen varieties of *Honeysuckle* now in cultivation; but the best are what are called the common white and the red, viz., *Lonicera Shepherdii*, *fragrantissima*, *scarlet Trumpet*, and the now well-known *L. aureo-reticulata*, or variegated-leaved variety. For general planting, the common native *Honeysuckle* is the best. In the shade the flowers are more delicately coloured and pretty, but in exposed situations they are more fragrant. The *Honeysuckle* needs little attention; indeed, it flowers best when left quite undisturbed, and, as for training, the less it is meddled with the better, after it has covered the objects it was planted to hide. It is an excellent subject for archways and bowers, and it may be trained so as to drape the branches of trees in a very ornamental manner. Indeed, it usually makes itself at home amongst the branches without any assistance in the way of training, and it seems particularly partial to the *Hazel*, which it coils itself round in the most regular manner, embracing it so tightly that it checks the circulation of the sap, and the bark consequently swells out and over the stem of the *Honeysuckle*, as it does over a ligature, the result being a spirally-fluted rod, much sought after by the woodman for making walking-sticks. Among other miscellaneous subjects suitable for our purposes may be named different varieties of the *Rose*, notably *Gloire de Dijon*, the *Ayrshire*, *Banksian*, and *Boursault* *Roses*; the hardier *Grape Vines*; and *Bignonia radicans*. Among herbaceous and annual climbers the following will be found exceedingly ornamental and of easy culture:—*Calystegia pubescens*, *Convolvulus*, *Tropaeolum speciosum*, *canariense*, *Nasturtium* of the *Tom Thumb* and *Lobbianum* class, and the usual seedling varieties, *Scarlet Runners* and *Sweet Peas*, all of which may be employed with success and good effect to cover rustic fences or rooteries.—"Field."

**Abutilons.**—For indoor decoration none of the *Abutilons* excel *A. Darwinii tessellatum*. It is compact and dwarf; its leaves are conspicuously variegated with gold and green, and from every shoot are produced a profusion of bright red bell-shaped blossoms. Mr. Wills has a number of it for decorative purposes.

**The Flame *Nasturtium* (*Tropaeolum speciosum*).**—A light soil appears to be the chief requisite for the growth of this pretty climber. In my garden, the soil of which consists of a loamy sand, having a sharp slope to the south, it grows both in the full sun and in the shade in great luxuriance, even becoming difficult to eradicate, as every little bit of its roots grows. Others, however, do not appear to find it so easy to cultivate, as I have often given it more than once to the same person. It does not flower quite so freely in the shade as in an open situation.—*Chislehurst*.

**The *Clematis* of the Future.**—This, I am told, is *Madame Grange*. This new *Clematis* I have not seen in bloom, but I saw a large stock of it the other day at Mr. Smith's nursery, Worcester. It is said to be a deep violet with maroon mid-rib, redder than any other *Clematis*, and in every way equal to *Clematis Jackmanni* for hardness and bloom. *Madame Grange* is a cross raised by M. Lecoqne between *C. lanuginosa* and *Jackmanni*. I have a great liking for *C. Viticella grandiflora*, owing to its red colour, but this is said to be very much better.—*FRANK MILLS, Bingham, Notts.*

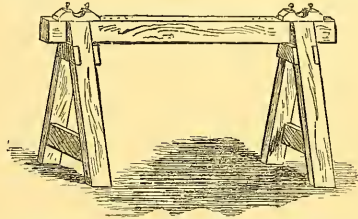
**Self-watering Flower Pot.**—In THE GARDEN of the 19th inst. (see p. 62), this flower-pot is described as a new invention. Allow me to direct attention to an extract from one of the gardening papers, dated May 23, 1874, from which it will be seen I had the very same kind of pot made and exhibited; indeed, I have made this pot for five years, but have had little or no sale for it.—*J. MATTHEWS, Weston-super-Mare.*

## TREES AND SHRUBS.

### TRANSPLANTING TREES.

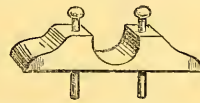
(Continued from page 82.)

WHEN lifting large shrubs, such as common and Irish Yews, Hollies, Portugal Laurels, and Conifers, having spreading branches larger than the McNab transplanting machines are able to take in, they are moved in the following manner, which is somewhat on the same principle as the McNab transplanting machine. This mode of lifting is what we call the tressel and roller system. The balls are all prepared with canvas, staves, and ropes, as formerly described, and the bottom boards are the same as those used for the large McNab transplanting machine. Two strong lifting-ropes, each 26 ft. in length and 3 in. in circumference, are put below the ball, one at each side, so as



High tressels, furnished with movable cradles.

to lie beneath the ends and in the grooves at the bottom of the lifting-boards. Stout 10-in. broad planks are then put across the pit, one along the back and another in front, having an upright support in the middle of each, fixed into the soil, in order to enable them better to sustain the pressure caused by the lifting. Two 10-in. planks must also be placed along the hole, resting across those first placed in position, to support the feet of the tressels. These planks must also be provided with upright supports, one being placed under the centre of each plank. Two tressels, each 5 ft. high and 9 ft. long, made with wood 9 in. deep and 3 in. across, are placed one on each side of the plant, but along the ends of the lifting-boards, each tressel being provided with two movable cradles, one being fixed on the top of each



Cradle detached, showing the iron pins and groove to receive the windlass roller.

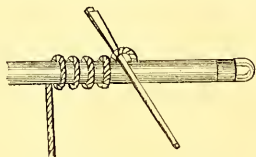
end of the tressels by means of two iron pins. Eight or ten holes are formed along the top ends of each tressel, at uniform distances apart, for the purpose of widening or contracting the spaces between the cradles according to the size of the ball to be lifted. Two strong iron windlass rollers are also necessary, each 8 ft. 2 in. long and 14 in. in circumference, provided



Iron windlass roller.

at each end with strong semi-circular pieces of iron securely bolted into them, but in opposite directions. These rollers are put across the tressels, the ends resting in the cradles just described, but always parallel with the bottom or lifting-boards, keeping the ends of them as far over the tressels as possible, as the winding up often causes them to work either to the one end or the other. The ends of the lifting-ropes are now brought up inside and over the iron rollers, working each toward the end, as seen in the annexed woodcut. This is done by doubling the rope with a slight twist, and giving the end of each three or four turns round the iron roller, keeping the

doubled portion for the insertion of a strong iron or wooden hand-spoke or winding-pin. Strong iron hand-spokes are also used for each end of the iron rollers. It sometimes happens that we prefer the lifting-ropes, put single four or five times round the iron roller, and made to hang down instead of being formed into a loop for a hand-spoke, a man being placed at each for the purpose of keeping the rope tight and holding fast the portion of rope wound off, leaving the winding up entirely to the men at the ends of the windlass-rollers, not less than two to each, according to the weight of the ball. If the top of the plant be high or heavy, it is necessary to have two or three guy ropes to keep the top steady during the lifting. When tressels 3 ft. high are used, the men can all stand on the planks which support the ends of the tressels, but when 5-ft. high tressels are employed, the men at the end of the windlass-rollers must stand on raised planks, while the men in charge of the loose ropes stand on the lower planks. But when hand-spokes are to be used for the side lifting-ropes, it is generally advisable to place a plank along each side, resting either on tubs or boxes, so that all the men may stand on it. After the plant has been raised above the level of the hole with the high tressels, two strong planks are put across, immediately below the ball and between the legs of the tressels, on which a strong, low, broad four-wheeled machine is run. While the plant is suspended a canvas is put over the machine and the plant is lowered on to it. Where the 3-ft. high tressels are employed (and they have long been used here), it is necessary to have four square blocks, one at each end, on which extra planks are placed, on which the tressels are to be raised. By this means the plant can be lifted sufficiently high to run the machine below it. After resting, all the apparatus may be



End of windlass-roller.

removed, fixing securely the ends of the lifting-ropes over the ball and the canvas to the rings and hooks placed round the sides of the machine. All the planks, tressels, and rollers can now be taken to the new pit; if not far distant, the machine can be taken along on planks, but if far and the ground hard, it may be conveyed along the walks either by means of horses or ropes. When the new pit is reached, the planks are put across, all being supported as before. The plant is then run on the centre planks immediately over the hole. The tressels and rollers are again applied, and the lifting-ropes adjusted to them. The plant is now raised a little, so as to allow the machine and centre planks to be withdrawn, and the plant is lowered cautiously to the bottom of the pit. This is generally done by having all hands at the ropes, and allowing the ball to go down gradually. When resting, remove the outer bottom boards and lifting-ropes, and see that the plant is standing perfectly upright; if not, it can easily at this stage be placed in that position. When upright, pack soil firmly in all round, then remove the rack-rope, staves, and canvas, adjust the roots, and fill in with prepared soil, and water freely. The tressel and roller system, as here described, is what we generally employ for the re-tubbing of Palms and other large, heavy exotics, for which purpose it is admirably suited.

It sometimes happens that a large tree or evergreen shrub has to be removed in consequence of its pressing on another equally good plant. In order to save the duplicate specimens, the subject to be moved can be prepared in every respect as described for the tressel and roller system. In doing this, an open trench is generally cut to the depth of the ball, and in the direction in which it is intended to move the plant, say 18 ft. or 20 ft. Planks, tressels, and rollers are now put round, the lifting-ropes adjusted, and the plant is raised about 5 in. or 6 in. While suspended, level the bottom, and place underneath it two planks or battens, then one of the low iron

rollers just described, or a few detached rollers, either of wood or iron—small hollow iron gas-pipes, cut of a uniform length, are what we frequently employ. When the small-framed rollers are not in use, it is necessary to place two short planks or battens immediately above the detached rollers; the plant is then lowered on them, and then drawn along with ropes on a series of planks or battens, all of a uniform height, to the point where it is intended to stand. After levelling the surface of the soil originally thrown out, the planks, tressels, and rollers are put round; the plant is again raised a few inches for the removal of all the planks and rollers, and then lowered. After taking out the bottom boards and lifting-ropes, and removing all the tressels and rollers, as well as the rack-ropes, staves, and canvas, the hole and trench are then filled in.

A similar operation as has just been described, but without the aid of machinery, can be and is not unfrequently performed in the following way:—The plant is prepared with canvas, staves, and rack-ropes, and care is taken that the lowest rack-rope is kept as low down on the ball as possible, twisting it extra tight with the rack-pin. Before undermining, the ball must be sufficiently ranced to the sides at four different points. This done, lower the soil at the bottom of the hole about 6 in. deep all round the ball, but without interfering with it. When done, excavate the one side nearly to the centre. If the lower rack-pin be tight, and the side rances sufficiently strong, the necessary excavating can be done without much difficulty. Care, however, must be taken both to have the surface-soil, as well as the bottom of the ball, as level as possible. First, place on the surface of the ground two planks or battens, above them three or four short wooden rollers, of a uniform diameter, and above them other two short planks or battens, fixing them tightly to the bottom of the ball. When the one side is completed, excavate the opposite one, and adjust planks and rollers in the same way as on the other side. If any centre soil should remain, it can now be removed, and the plant will rest entirely on the planks and short rollers. A few long rollers must now be at hand (wooden ones will best answer the purpose); one is put in as far through as possible in front. Under planks must now be laid at the bottom of the open trench to the extent to where the plant is to be taken, keeping the worst ones to the end, so as to be immediately under the plant when settled. By means of the larger rollers and a strong rope, the plant is drawn along, the short rollers coming out one by one, and the long ones taking their place. As it is often impossible without injury to withdraw the bottom boards, rollers, and planks, it is best to leave them in; and therefore the worst planks are kept to the end for this purpose. Soil is packed firmly in below all round; some bricks, of a uniform thickness, can also be inserted, and the soil filled in to the level of the bottom of the ball. Remove the rack-ropes, staves, and canvas then fill in with soil, and water freely. This method of transplanting is by no means uncommon in gardens where little transplanting is required. By this system I have seen many fine old evergreens removed because interfering with others, and all have succeeded well. Great care, however, is required in the different phases of the operation, particularly in keeping the surface of the ground level below the ball.

Royal Botanic Garden, Edinburgh.

JAMES MCNAB.

(To be continued.)

#### IDESIA POLYCARPA.

THE accompanying illustration of this interesting tree was made from a specimen sent to us last summer from the grounds of J. Luscombe, Esq., Combe Royal, near Kingsbridge, South Devon. It is a Japanese tree which was not known to science until 1866, when it was described by the Russian botanist Maximowicz, who met with it in cultivation at Nipon and Yedo, and ascertained that it was a native of the island Kiusin, at the foot of a mountain called Hikosan. Mr. Luscombe describes it as a handsome tree-like spreading shrub, with fine foliage; but, according to Professor Maximowicz, it attained in Japan the dimensions of a large tree. The leaves, which have crimson stalks, are irregularly serrate, slightly cordate at the base, the larger ones measuring about 6 in. across, bright green above, and whitish or almost glaucous beneath, with five prominent branching nerves, which are reddish towards the base. The



IDESIA POLYCARPA (NATURAL SIZE). Drawn by H. Hyde.

flowers are dioecious; the males, which are those represented in the accompanying illustration, have from four to six yellowish-green spreading sepals, and an indefinite number of pale green filaments with orange anthers. Each blossom is about  $\frac{1}{2}$  in. across; they form long, gracefully-drooping, branched racemes, springing from the axils of the upper leaves. The female flowers are similar in appearance, but are succeeded by very numerous orange berries, which appear, from dried specimens communicated by the discoverer to the British Museum Herbarium, to be about as large as a small Cherry. The flowers are deliciously fragrant, their odour resembling that of a Vanda; and although their colouring is not brilliant, their effect, combined with the red leaf-stalks, the varying green of the leaves, and their elegant drooping habit is extremely pleasing. The tree belongs to the Order Bixineæ (or Flacourtiaceæ), to which our gardens have not hitherto been largely indebted. It was named by M. Maximowicz in commemoration of a Dutch traveller named Ides; Mr. Luscombe's plant of it is upwards of 10 ft. in height.

**The Cherry Plum as a Hedge Plant.**—In reply to "Oxon's" inquiry about this Plum (*Prunus myrobalana*), see p. 92, as a hedge plant, allow me to state that my father first introduced it for that purpose nearly thirty years ago. I cannot say what induced him to try it in that way, but I presume it was on account of the following peculiarities that belong to the plant, viz., its very hard, unyielding wood, almost metallic in its texture, its formidable spines, and last, but not least, its capability of growing vigorously, even in soils of the poorest and most exhausted description, and its non-liability to the attacks of insects or disease. We have evidence of its value as a hedge plant on the driest and poorest soils, on wet bog lands, and on moist and rich fen lands. It has other merits besides; it is about the best stock in existence for almost all kinds of Plums and Apricots on poor soils. As it flowers very early in the spring, some have thought it would impart this habit to the kinds of fruit worked on it, but experience has proved that not to be the case. Were our English market gardens surrounded by fences of *Myrobalana*, with varieties of Plums suitable to the various districts worked at intervals along their tops, the fruit-producing capabilities of the country would be vastly increased, without its being necessary to devote any extra land to the purpose.—G. E. EWING, *The Nurseries, Norwich.*

**A Good Fence.**—A post and rail fence better than anything I have ever seen, patented or unpatented, is made as follows:—Set the posts 9 ft. apart, or 2 ft. less than the length of the rail used. Bore  $1\frac{1}{2}$  in. hole through the posts 1 ft. from the ground, and at right angles with the direction of the fence. Bore three holes above this on 9 in. apart, one above the other, and drive in wooden pins in all four holes to project 4 in. on each side of the post. Lay your rails on these pins, close to the post on each side. Bore a 3<sup>d</sup>th's hole above the top rail, and another one  $1\frac{1}{2}$  in. below the bottom pin. Take a piece of wire 10 ft. or 11 ft. long, and pass half its length through the top hole, and cross it under the top rail; cross it again under the second rail from the top; cross it again under the third rail, and finally cross it under the bottom rail by slipping the ends of the wire through the small hole, and bring them around in front of the post and twist them together. This makes a cheap strong fence, that will turn horses and cattle; but if sheep are kept, a board should be nailed at the bottom, or a fifth rail added.—"Albany Argus."

## NOTES AND QUESTIONS ON TREES AND SHRUBS.

**Effect of Smoke on Trees.**—Mr. Acock, who for many years past has been making experiments with trees planted in the vicinity of his cotton mill, near Manchester, finds that the Plane, which does better than any other tree in London smoke, will not grow at all in that of Laneshire; but, on the other hand, he has been very successful with the Beech, Sycamore, Birch, Wych Elm, and Turkey Oak, but the Lime does best of all.

**A Good Example.**—Sir Horace St. Paul, of Ellowes Hall, Dudley, has consented to have about 30 acres of his waste colliery lands at Cosley levelled and cultivated, with the view of finding employment for a large number of men who are suffering great privations owing to the depression of trade. As there are thousands of acres in a similar useless condition in the Black Country it is thought the example will be followed by other land owners. At least, something as good as cluders will be got out of it. When everything has been tried and found wanting, no doubt we shall have others returning to the mother of all real wrenths—the earth.

## ORCHIDS.

### WINTER FLOWERING KINDS.

WINTER is certainly not the season when Orchids are at their best; in fact, they are now at their worst, for fewer species are in flower at this time of the year than at any other. Nevertheless, numbers of species are in flower this month, as the annexed list will show; moreover, those who cultivate Orchids in any quantity always have this advantage, that whatever the time of year may be, they always have something in flower—always something curious and interesting to observe. The subjoined list contains over a hundred sorts which flowered during the month of December. The first on the list are *Angreacm eburneum* and *sesquipedale*. There can be no question as to these two plants, with their fine bold spikes of ivory-white flowers, being worthy of a place in every collection, more especially *A. sesquipedale*, which is one of the most extraordinary-looking Orchids grown; some of its flowers have tails that measure as much as  $11\frac{1}{2}$  in. in length, and I have heard that they even grow sometimes longer than that. *Anguloa Clowesi* is another grand plant, its large, yellow, erect flowers reminding one of a well-grown Tulip. This is one of our most aromatic species, possessing, as it does, a very powerful odour of Aniseed, which I have never known any other plant in this Order to have. *Ansellia africana*! who could help admiring such a noble-looking plant as this is when well grown, its tall, gracefully-arching, pseudo-bulbs leafy at the top, and its great panicles of yellowish-green flowers spotted with crimson, showing well above the leaves, form altogether one of the most attractive-looking plants grown. *Barkeria Skinneri* is remarkable for its racemes of bright magenta-coloured flowers, which look quite gay at this dull time of the year. *Brassavola cordata*, with its long, thick, half-round leaves and elegant drooping spikes of green and white flowers, is more curious than beautiful, though it makes a good contrast to the brighter coloured species. *Bletia acutipetala* has pretty crimson-purple flowers, enlivened by a yellow crest on the labellum, as in *Barkeria Skinneri*. *Bletias*, however, will never become favourites, as they have the straggling habit so common amongst Epidendrams; still, they are well worth growing. I had almost overlooked an exceedingly pretty plant, one very rarely seen, but well worth growing—I mean *Bifrenaria racemosa*; the flowers of this are almost pure white, with broad recurved petals, three or four in a raceme, and they stand well above the leaves. *Bolbophyllum auricomum* is a pretty little gem, with erect spikes of white and yellow flowers; it must be seen through a magnifying-glass, however, if one wishes to observe all its beauties. What a contrast is our next on the list, *Bollea Patini*. Here we have a large, massive-looking flower, with sepals, petals, labellum, and column of a very pale dirty blue colour, relieved by a faint tinge of yellow; the most remarkable part of this flower, however, is the column, which is very large and shaped like a hood, overhanging a lip of which the greater part consists of a large, solid, ridgy crest; this is a bold-looking flower, but the colour is not decided enough for it ever to become a favourite, *Bollea Latindeli* being much prettier.

We now come to that wonderful genus *Catasetum*, all the species of which appear to have the same wonderful power of ejecting their pollen-masses on certain parts of the column being touched; and *C. viridi-flavum* is no exception to the rule. The flower is of a yellow tint, the labellum forming a large bag, completely enclosing the column, and at the bottom of these horns which form the irritable part of the flower, but I may here remark that these singular flowers are not irritable when they first open; on the contrary, it is nearly always a couple of days before they will answer to the touch and eject their pollen. The stigma of *Catasetum*, too, is also different, as apparently it is never viscid nor in a condition to receive the pollen, and this corroborates Darwin's idea, who remarks that in "*Catasetum* the sexes are distinct." Of Lady's Slippers (*Cypripediums*), thirteen species, hybrids, &c., flower in mid-winter. They are most useful plants, as they remain long in flower, and when out of flower, the foliage of many of them, like that of *C. venustum*, *C. pardinum*, *C. Swartzianum*, and *C. javanicum*, &c., is by no means unattractive. My favourite amongst them is the rosy-tinted *C. Sedeni*, a hybrid raised in

Messrs. Veitch's nursery by Mr. Seden. The last new species, *C. Boxalli*, has pretty, apple-green flowers, somewhat resembling those of *C. villosum* in colour, but instead of the upper sepal being veined with dark brown, it is covered with large, chocolate-coloured blotches, giving it a very distinct appearance. Let us now turn to *Cymbidium sinense*, a species that used to be much admired years ago when Orchids were rarely to be met with in cultivation; its spikes of brownish-yellow flowers, veined with crimson, have a pretty appearance, but it is now out of date, having had to make way for more fashionable plants. *C. Mastersi* is a species well worthy of a place in any collection, its elegant, drooping spikes of pure white flowers being very beautiful. Who, too, would be without the two *Calanthes*, if only to use the blossoms for bouquets? I mean the pretty white *C. vestita*, with its crimson or yellow eyes, and the pink *C. Veitchi*, one of Mr. Dominy's hybrids. *Colax jugosus*, too, has exceedingly beautiful flowers; this plant has the habit of a *Maxillaria* or a *Lycaste*, with large solitary blossoms at the end of radical peduncles; the sepals, which are pure white, are of good texture, and the petals and labellum are white, spotted with crimson; altogether a very attractive and distinct-looking flower. Of the genus *Cattleya* I have only one to mention, viz., *C. marginata*. This is a very handsome species, much like a *Sophrontis* in shape, but not so large as many of the grander sorts; it will, however, always be a favourite on account of its beautiful, broad, lilac sepals and petals, and rich crimson lip, frilled and edged with white; its compact habit, too, is much in its favour.

Let us now speak of the genus *Dendrobium*; foremost amongst winter-flowering species belonging to it may be named the beautiful *D. primulinum*; the colour of the sepals and petals is a lovely, soft, pale purple, which contrasts admirably with the lip, which is white in front, and streaked with crimson at the base. It is also compact in habit, the flowers being arranged alternately on each side of leafless stems, as in *D. cretaceum*, *D. ocellatum*, &c.; it is, indeed, so much like the latter, that Lindley said that perhaps they ought to be united; there are many points, however, in which they are decidedly distinct. Another beautiful species is *D. heterocarpum*, sometimes named *D. aureum*; this is a general favourite, not only on account of the unique colour of its flowers, which are produced from the ends of the stems, but also because of the delightful fresh scent of Cowslips which it diffuses around. There is, moreover, in flower now the new *Dendrobie*, *D. superbiens*, which promises to be a valuable addition to the genus. Its magenta-purple flowers, resembling those of *D. bigibum*, with their broad recurved petals, and a lip shaped like that of a *Lælia*, are arranged at the end of a long, erect, arching flower-stalk, and have a very graceful appearance. Then we have such well-tried kinds as *D. fimbriatum ocellatum*, *D. densiflorum*, and *D. Farneri* with its delicate colouring; also the ever useful *D. nobile* and *D. tetragonum*, about the last of which there is no great beauty; but it is worth growing on account of its neatness and singular appearance; the sepals and petals are yellowish-green edged and tipped with red, and the lip is white spotted with red; the lateral sepals are very long and attenuated and twisted at the base, so as to cross one another in front, whilst the dorsal sepal is bent down between them, giving the flower much the aspect of *Masdevallia gibberosa*. *Epidendrums* are, as a rule, not much cared for by Orchid growers, but still the different shades of rose and vermilion in such species as *E. elongatum*, *E. paniculatum*, and *E. Ibaguense* must not be entirely despised. *Lycaste Skinneri* is another well-known Orchid which, with its many varieties ranging from almost pure white to dark crimson, must satisfy everyone's taste; it is easily managed, too, for I have had one growing in an ordinary sitting-room for several years. It received little attention, but care was taken to keep the leaves quite clean by using the sponge pretty often, and the pot was placed over a pan always kept full of water. By these means it increased and flowered as well as in an Orchid house. *Cypripedium insigne* and *C. venustum* also succeed managed in this way; and I once saw in a cottage window as fine a plant of *Oncidium ampliatum* in full flower as one would wish to see. *Lælias*, with their large, rich-looking flowers, so much like those of *Cattleyas*, are exceedingly beautiful, *L. autumnalis*, with its soft rose-coloured blossoms, being very acceptable at

this season of the year; but what a pretty species is *L. albida*, with its pure white flowers! they are as odorous, too, as they are pretty, for they have a powerful scent of Almonds. *Maxillarias* are, now-a-days, much neglected; yet *M. picta*, with its orange flowers, almost white behind, and spotted with crimson within, is very pretty. *M. venusta* is, however, an exception, as its large, snow-white flowers cause it to be much sought after.

*Masdevallias* have lately become great favourites. *M. Veitchiana*, the finest of all *Masdevallias* as regards colour, reminds one of a scarlet coat with a crimson scarf over it; *M. amabilis* and *M. ignea*, too, are equally brilliant. How these three plants, with their blaze of colour, light up an Orchid-house; one does not think of winter whilst such flowers are to be seen. *M. tovarensis*, too, with its snow-white blossoms, and the purple-dotted *M. polysticta* and *M. melanopus*, are all gems, and one cannot wonder at their having become such favourites. *Mesospindium sanguineum* has warm, rosy-tinted flowers, but they are too small, and the flower-stalks are too straggling. *Neottia maculata* is a plant seldom seen, but it is well worth growing on account of the exceedingly bright crimson of its flowers.

As regards *Odontoglossums*, no one could help admiring *O. Alexandræ*, which is one of the finest Orchids in cultivation. Its near ally, *O. Pescatorei*, too, is very nearly as good, and another magnificent *Odontoglossum* just now in flower is *O. cirrhosum*. *O. Inseleyi* has grand flowers, more particularly the variety *leopardinum*, which is much finer in its markings than the old *O. Inseleyi*. Then there are *O. Rossi*, and our old friends *O. Bictonense* and *O. Uro-Skinneri*, the latter remarkably like the former, but double its size. From *Odontoglossums* to *Oncidiums* is but a step; in fact, it is a very difficult thing to say where one ends and the other begins. True *Oncidiums*, however, will never take one's fancy like *Odontoglossums*, as their panicles of flowers are mostly so very straggling. *O. cheiroporum* is the most compact of them all, and will be always welcome. *O. ocellatum* and *O. ornithorhynchum* are also very pretty, the rose and purple tints in these two species being very rare in this genus, in which the predominating colours are yellow and brown. That little gem, *Ornithidium Sophronitis*, has the largest flowers of all the *Ornithidiums*, and is a very pretty little plant, with bright scarlet flowers, though very rarely seen. Passing by *Phaius grandifolius*, a very old Orchid, we hasten on to the magnificent "Indian moth" Orchids, *Phalenopsis grandiflora* and *amabilis*. These two are, in their way, quite as lovely as *Odontoglossum Alexandræ*, but they have not the airy grace of the latter. They are very much alike, the only difference being that *P. amabilis* has more crimson round the crest of the labellum, and the leaves are of a darker green than in *P. grandiflora*. There is one other distinction, however, which I have noticed in these two species and it is rather a curious one. If the pollen-masses with their pedicel and gland of *P. amabilis* be withdrawn on the point of a pencil, the pedicel in a few minutes doubles itself backward on to the gland; whereas in *P. grandiflora* it bends forwards—a curious physiological fact. *Pleurothallis*, *Polystachias*, and *Rodriguezias* we must also pass over, as they are seldom grown, but must stop to give *Restrepia antennifera* a good word. *Restrepias* have an aspect peculiarly their own, caused by their extremely slender dorsal sepal and petals, and the connate boat-shaped lateral sepals. *R. antennifera* is one of the finest, the crimson markings on the white ground being very neat. What a useful plant is *Sophrontis grandiflora*, with its compact habit, and intense scarlet flowers just raised above the leaves; a few plants of this judiciously placed here and there in an Orchid-house have as fine an effect as the little old woman in a red cloak so often introduced in a landscape painting. I have nearly got to the end of my list, but I cannot possibly pass over *Saccolabium giganteum* and *violaceum*. How deliciously inviting do their close spikes of white and purple flowers look, and what a sweet scent they have. My last three are well-known plants, at least two of them, viz., *Vanda tricolor*, with its fine spikes of yellow and crimson flowers, and *Zygopetalum Mackayi*. What a useful old plant the latter is, and it has also the additional recommendation of being very sweet scented. The other *Zygopetalum* (or *Zygosepalum* as it

is now called) *Z. rostratum*, is seldom seen in collections, though I once saw it exposed for sale as a cut flower in Covent Garden, its large white blossoms having, I expect, obtained for it that distinction.

The following is a list of some of the best Orchids that flower in winter, including those just alluded to:—

<i>Angraecum eburneum</i> sesquipedale	<i>Dendrobium super-</i> <i>biens</i>	<i>Odontoglossum In-</i> <i>slayi</i>
<i>Angulos Clowesi</i>	tetragonum	<i>Bictoneense</i>
<i>Ansellia africana</i>	<i>Farmeri</i>	<i>cirrhosum</i>
<i>Barkeria Skinneri</i>	nobile	<i>claireps</i>
<i>Bifrenaria racemosa</i>	fimbriatum ocula-	<i>Pescatorei</i>
<i>Brassavola cordata</i>	tum	<i>Karwinski</i>
<i>Bletia acutipetala</i>	densiflorum	<i>Rossi</i>
<i>Bobophyllum aurico-</i> <i>mum</i>	<i>Dicrypta Baueri</i>	<i>Oncidium Cebolleta</i>
<i>Bollea Patini</i>	<i>Epidendrum ciliare</i>	<i>excavatum</i>
<i>Catasetum viridi-fla-</i> <i>vum</i>	elongatum	<i>suave</i>
<i>Cypripedium Sedeni</i>	cochleatum	<i>crispum</i>
javanicum	thagense	<i>haetatum</i>
concolor	variegatum	<i>chrysochorum</i>
venustum	paniculatum	<i>enclatum</i>
paradinum	equitans	<i>tripetrum</i>
<i>Roezli</i>	diffusum	<i>orthorrhynchum</i>
longifolium	<i>Isochilus linearis</i>	<i>retlexum</i>
<i>Harrisonianum</i>	<i>Lycaste Skinneri</i>	<i>Ornithidium Sophroni-</i> <i>tis</i>
<i>Schlimmii</i>	<i>Laelia autumnalis</i>	<i>Phaius grandifolius</i>
insigne	<i>Lindleyana</i>	<i>Phalenopsis amabilis</i>
<i>Boxalli</i>	albida	<i>grandiflora</i>
<i>Crossianum</i>	<i>Maxillaria picta</i>	<i>rosea</i>
<i>Swainianum</i>	foreata	<i>Pleurothallis prolifera</i>
<i>Cymbidium sinense</i>	variabilis	<i>ophiocephala</i>
<i>Mastersi</i>	venusta	<i>Polystachia luteola</i>
<i>Calanthe vestita</i>	<i>Masdevallia amabilis</i>	<i>grandiflora</i>
<i>Veitchi</i>	melanopus	<i>Rodriguezii secunda</i>
<i>Colax jugosa</i>	<i>Veitchiana</i>	<i>Barkeri</i>
<i>Cattleya marginata</i>	igna	<i>Restrepia antennifera</i>
<i>Dinema polybulbon</i>	polysticta	<i>Sophronitis grandiflora</i>
<i>Dichaea picta</i>	<i>tovarensis</i>	<i>Saccolabium giganteum</i>
<i>Dendrobium primidi-</i> <i>num</i>	<i>Mesophipidium sangui-</i> <i>neum</i>	<i>violaceum</i>
heterocarpum	<i>Neottia maculata</i>	<i>Vanda tricolor</i>
bigibbum	<i>Odontoglossum Uro-</i> <i>Skinneri</i>	<i>Zygopetalum Mackayi</i> <i>rostratum</i>
	<i>Alexandrae</i>	ARTHUR B. COLE.

**A Finely-flowered Odontoglossum.**—A plant of the beautiful *O. Alexandrae*, growing in a comparatively small pot in a villa garden at Clapton, is now bearing a spike of bloom 4 ft. long, furnished with eight large, crisp, beautifully-tinted blossoms. The house in which it is grown is but a few feet square, but this plant, as well as others associated with it, go far to illustrate how well the most valuable Orchids may be grown by villa residents, even where their glass structures are little better than a simple heated frame.

**Orchids in Flower at Tottenham.**—In the collection of Orchids belonging to Mr. Day, at Tottenham, there are just now several plants in flower of an attractive character. Notwithstanding the loss of a large number of buds of *Phalenopsis* through the heavy fogs which have lately been experienced in the neighbourhood of London, there is on these plants a fine display of bloom. The pure white *P. grandiflora* is bearing flowers very large in size, and which contrast effectively with the showy blossoms of *P. Schilleriana*, *P. leucorhoda*, and the beautiful natural hybrid *P. casta*, a kind intermediate between *P. Schilleriana* and *P. amabilis*. *Saccolabium* are also well in flower, especially the beautifully-scented white-flowered *S. Harrisonianum*. An excellent specimen of the useful and showy *Angraecum eburneum* is bearing three very large flower-spikes. In a cool conservatory are several well-flowered plants of the variety of *Odontoglossum Inslayi* called *Leopardium*, associated with *Dendrobium*, *Lady's-slippers*, and *Coleogyne*. In such a situation the flowers last for a longer period, and are much more enjoyable than when kept in a warm, damp atmosphere. In another house a good display is made with the chocolate and white-flowered *Miltonia cuneata*, the dwarf and beautiful white-flowered *Cypripedium niveum*, the sulphur-coloured *C. concolor*, *Laelia anceps*, *Lawsoniana*, and the ivory-like *Lycaste Skinneri alba*. With these are also associated good examples of *Laelia praestans*, the brilliant violet-pink *Barkeria Skinneri*, which forms such a striking contrast to the snowy flowers of *Odontoglossum Alexandrae*, the curiously speckled *O. blandum*, and *O. cirrhosum*. On a plant of *Oncidium orthorrhynchum albidum* are several graceful spikes of small white flowers with golden stamens; and a specimen of *Odontoglossum pulchellum majus* bears nearly thirty spikes.—C. S.

## PLATE CXIII.

## MASDEVALLIAS.

(WITH COLOURED FIGURES OF SOME OF THE BEST KINDS.)

Drawn by Mss. DUFFIELD.

A FEW years ago *Masdevallias* were almost unknown in Orchid collections, *M. fenestrata* (with singular-looking, brown flowers), *M. civilis* (with dull-coloured, disagreeably-scented blooms), *M. infracta* (with inconspicuous blossoms), and a pretty small-flowered kind called *M. maculata* (which, as far as I know, was at that time confined to the collection of the late Count Schiller) being all the varieties with which cultivators were acquainted; and, indeed, in appearance they bore so great a resemblance to the genus *Pleurothallis*, that little was expected of them. Travellers often spoke of the marvellous beauty of kinds which they had seen, and of their dazzling colours; but it was long before they reached us in the form of living plants. The annexed plate represents some of the handsomest species and varieties at present in cultivation; but it is impossible to do full justice to their rich shades and depth of colour on paper, beautifully drawn and coloured though the plate in question is. The great beauty in most Orchids lies in the labellum and petals; but in the *Masdevallias* these organs or parts of the flower are reduced to a minimum, and in many instances brilliantly coloured, and the points of the cup prolonged into slender tail-like appendages.

The following are a few of the best species, viz.—

**M. Veitchiana.**—The colours of this fine species are difficult to describe, the shading being so extraordinary. They consist of rich orange-scarlet and yellow, shot with intense purple. It is a native of the Cordilleras of Peru.

**M. ignea.**—This species comes from New Granada, and is remarkable for having the upper division of the calyx bent down over the throat; the colour is intense red, shaded with crimson-purple. It has already produced several varieties.

**M. tovarensis.**—The flowers of this species, which are usually borne in pairs, are as white as snow. The old stems should not be cut, as these develop new buds from the apex. It is a native of Tovar, in Columbia.

**M. Harryana.**—This grand species, which comes from New Granada, has produced many varieties, some much finer than the typical form. They vary in colour, from reddish-crimson to violet-crimson.

**M. coccinea.**—Of this the late Professor Lindley said: "The flowers are as red as a soldier's coat." Outside, however, they are tawny-yellow. It is a native of New Granada.

**M. Davisii.**—In this species the flowers are of a uniform, rich orange-yellow. It is a native of Peru.

**M. Chimera.**—The flowers of this do not depend so much upon gay colours for their attractiveness as upon their wonderful form. They are large, the points of the tripartite calyx being very much lengthened out into long, tail-like appendages. The colour is yellowish and brown, and inside the blossoms is a profusion of long hairs. It is a native of New Granada.

**M. Lindeni.**—In this species the flowers are medium-sized, and in colour a rich magenta. It is a most attractive and pleasing plant. A native of New Granada.

**M. polysticta.**—This is a small-flowered species, which bears numerous blossoms upon each spike; in colour they are white, beautifully freckled with crimson dots. It is a native of New Granada.

*Masdevallias* would appear to be the coldest of the cool Orchids, and to luxuriate in a soft atmosphere well charged with moisture, but yet with an abundant supply of air. The pot, in which they are grown must be thoroughly drained, and the compost should consist of rough peat and living *Sphagnum* Moss intermixed with just a small portion of sharp sand. They have no stout pseudo-bulbs in which to store up moisture, and therefore must never be allowed to get dry; indeed, they seem always to be growing, and if treated properly, they will bloom several times in a season. In fact, it may be said with propriety that they are perpetual bloomers, and their flowers contrast strikingly with those of *Odontoglossum*



A GROUP OF MASDEVALLIAS



Alexandra, O. Pescatorei, O. cirrhosum, and others, while as respects culture, they associate with them admirably.

W. H. G.

[Our plate represents a group of species gathered from Messrs. Veitch's Masdevallia-house at Chelsea.]

## GARDEN BOTANY.

### Introduction.

**GENERAL CONSIDERATIONS.**—The study of the phenomena of plant-life has been very much retarded and complicated by botanists and teachers of botany themselves, not willingly, of course, but none the less surely. Instead of its being popular, as a means of developing the observing powers of children, and adding to the pleasures of adults, it has come to be regarded as something too difficult for anybody with little leisure to attempt to take up, and as something consisting mainly of unintelligible names, and perplexing technical terms. Even many intelligent gardeners, who are obliged to acquire some knowledge of the names of plants, will have nothing to do with what they call botany, because they associate it with a bewildering terminology. It is the same with a very large proportion of amateurs, who cultivate extensive collections of plants for the beauty of their forms and colours, and the fragrance of their flowers. Many of them know a great deal about their plants, and ask, "what is the use of studying botany?" apparently unaware that they actually possess a great deal of essentially botanical knowledge, which a very little systematic study would render clear and profitable. On the other hand, there are many self-styled botanists, whose idea of botany is limited to making a collection of dried plants, and affixing their Latin names, wherewith they seek to mystify their sensible acquaintances, but only succeed in making themselves ridiculous. They know, may be, the plants by sight, and they know very little more. These collectors, whether of plants, butterflies, or birds, are very tiresome and objectionable people, for they ignore good English names of objects, and would shoot the last bird, or root up the last plant of a rare species, to put it in their collections. Knowledge of this kind by itself is worse than useless; it is not science, or botany, or natural history, and the possessors are in the same unfortunate condition as those persons who understand a number of languages without being able to converse in any of them on any intellectual theme. Yet the time they have devoted to the acquirement of this superficial knowledge of a subject would have been amply sufficient to obtain an insight into the life-history of some plants or animals. In effect, names are of secondary importance, given for the purpose of distinguishing objects; and therefore it is unadvisable to load the memory with the names of objects to the exclusion of knowledge of the objects themselves. A perfect appreciation of the external beauty of a plant or animal which appeals directly to the senses, is not incompatible with a serious interest in its structure, mode of growth, reproduction, &c. A surgeon or a painter may admire the human form, but an intimate acquaintance with the way in which it is built up is as necessary for the one to be able successfully to practice his profession as for the other to be able to produce really artistic pictures.

**OBSTACLES TO THE STUDY OF BOTANY.**—The assertion that botanists themselves have actually indirectly discouraged the study of botany is easily substantiated. Botany as a science has existed little more than a century; and, as researches proceeded, it became necessary to devise terms to designate different parts and modifications of parts. As was unavoidable in the infancy of a science, writers on the subject carried on their investigations independently, and each one proposed and employed what terms he chose. Some endeavoured to simplify as much as possible, whilst others seem to have made it their object to render everything as difficult and obscure as possible. Different botanists used some of the same terms to designate diverse parts or modifications, causing great confusion and contradiction. In course of time the accumulation of terms had become so great, and their application so uncertain, that reform was imperative. Reforms are proverbially slow, and in this case there were several causes to prevent their speedy

accomplishment; amongst them the impossibility of withdrawing from circulation the faulty text-books, and inducing authors to overcome their vanity, and devise a uniform system of nomenclature. By degrees, however, much has been effected, and a great many of the useless terms have been expurgated. So far as systematic botany (classification of plants) is concerned, the preparation of descriptive works, written in English, on the vegetation of our colonies has been the means of simplifying the terminology; and the translation into English of foreign works on vegetable physiology has served the purpose of introducing the terms generally employed by the principal labourers in this department of botany. Botanical teaching in this country is now tolerably uniform—taking the Universities and principal London hospitals, at least—and is based upon living specimens. The object of these paragraphs on plant-life is to set forth, in as simple language as possible, the structure and growth of plants, and their various vital processes so far as they are understood at the present time.

**NECESSITY OF CONSULTING RECENT WORKS.**—Here it may be observed that botany, especially physiological and anatomical, has advanced with rapid strides during the last quarter of a century, and important discoveries are constantly being made, upsetting earlier assumptions and theories; hence the necessity that great care should be exercised in the selection of a text-book, otherwise the student may have to undergo the difficult and disagreeable process of unlearning much to which he has devoted valuable time to acquire. Books only a few years old teach a great deal that is now known to be erroneous, and, therefore, the latest text-book, compiled by a thoroughly competent botanist, is the only one that can be safely used. But, although great progress has been made of late years, some of the functions and phenomena of plant-life are still very obscure, and we can only say that research points to this or that solution of these problems. To make these lessons, if they may be so termed, as perfect and trustworthy as possible, as far as they go, the writer has consulted not only the best English authors, but also the works of some of the foremost foreigners, such as Sach's "Lehrbuch der Botanik" and Duchartre's "Éléments de Botanique." With some few necessary exceptions, references to authorities and literature are omitted. Either of the works just named may be confidently recommended to the student who has mastered the elements, with the caution to be careful to procure the latest edition. There is an English translation of the third edition of Sach's "Lehrbuch."

**TECHNICAL TERMS.**—The set of terms employed by Mr. Bentham in his "Outlines of Botany," which is prefixed to most of the Colonial "Floras" hitherto published, will be adhered to as closely as possible, and used in the same sense. Doubtless some few departures from this rule will have inadvertently crept in, but these exceptions will not affect the whole. Moreover, it is a good many years since Mr. Bentham drew up his glossary, and he himself, one may safely say, would make some alterations in a new edition. In one respect these series of paragraphs will differ from most elementary works on botany, inasmuch as being addressed chiefly to persons whose avocation is the cultivation of plants, or who are familiar with living plants, everything that strikes the writer as bearing upon practical operations will be introduced. By way of illustration, independently of the woodcuts, repeated references are made to familiar common garden and wild plants. It is believed that this mode of treating the subject will not only relieve it of a certain amount of tedium, but also make it more instructive. Everything is as clearly and fully explained as appears requisite; but, as it is not specially intended for children or people unfamiliar with plants, it did not appear desirable to write down to their level. Without some application, nothing worth knowing can be learnt, though it may be safely asserted that any one starting with an acquaintance with the outward forms of plants, and knowing the names of a sufficient number referred to in illustration of certain facts, has very little serious study before him in gaining a general insight into the economy of plant life. The study of botany is really nothing more nor less than an arrangement of the plants, to which names have been given for the purpose of identification, according to their structural affinities, the way in which they grow, what their

food is, and what are the functions of the different parts, &c. As to the practical utility and the importance of the study of plants, it seems really unnecessary to say much; for do not plants supply, directly or indirectly, nearly every want of man? For food, clothing, fuel, artificial light, and pure air we are indebted to the vegetable kingdom. Coal is but the remains of vast prehistorical forests, silk is woven by the silkworm that lives upon the leaves of trees, and plants in their process of nutrition absorb noxious gases from the atmosphere and restore the oxygen necessary for the healthy development of animals. How some of these processes are effected is still a matter of conjecture, but what is known is none the less interesting because all is not known.

**DEFINITION OF BOTANY.**—In its widest sense botany includes all knowledge appertaining to the structure, life, products, &c., of plants, and is conveniently divided into the following branches, some of which will be separately treated in the sequel. I. Vegetable Morphology (sometimes called Organography and Comparative Anatomy), relating to the various organs and their external forms and modifications. II. Vegetable Anatomy, the internal or minute structure of the tissues forming the plant. III. Vegetable Physiology, the study of the various vital phenomena of plants and the functions of their different organs. IV. Vegetable Chemistry, the composition of the substances of the tissue and the products of assimilation. V. Systematic Botany, the description and classification of plants. VI. Economic or Applied Botany, the sources of vegetable products and their uses; and VII. Geographical Botany, or Phytogeography, which treats of the dispersion of plants over the surface of the earth. Some other special branches are distinguished as Vegetable Organogeny, the study of the development (growth) of the different organs; Vegetable Teratology, which treats of the anomalies and monstrosities that occur in the flowers and other parts of plants; and Vegetable Pathology, treating of the diseases of plants. Several of these branches will be but slightly treated upon, especially Anatomy, Organogeny, Teratology, and Chemistry; whilst others will be explained with considerable detail. But the divisions will not be rigidly adhered to, because it will save a good deal of space and repetition to state, for instance, what the function of an organ is when treating of its name and place.

**PREPARING PLANTS OR PARTS OF PLANTS FOR EXAMINATION.**—Fresh plants, in hot or dry weather especially, should be placed in water for a short time as soon as possible after cutting, when they will imbibe sufficient to keep them from withering for some time. This applies particularly to cut flowers or shoots to be sent by post, or otherwise, to a distance. Let them take as much water into their tissues as they will, but on no account sprinkle flowers with water, as it causes the parts to drop and decay, instead of preserving them. Pack them in as near air-tight tins as can be obtained, without any foreign material whatsoever. Flowers that have once withered never hold so long, other things being equal, as those which have not. Dried plants, or parts of plants, should be soaked in water or boiled for a short time previous to examination or dissection. Germination, or partial germination, will facilitate the determination of the nature of seeds and embryos. A simple microscope or pocket lens, a sharp penknife, and some needles fixed in small handles, are all the instruments necessary as aids in studying the external characters of flowering plants. To see their minute structure, and to follow the development of the cryptograms or flowerless plants, a compound microscope is indispensable, and some practical instruction in the art of preparing and mounting objects.

**HOW PLANTS DIFFER FROM ANIMALS.**—Organised beings—that is, animated beings—are divided into two kingdoms, the animal and the vegetable. In a general way it is not difficult to determine to which of the two kingdoms an organism belongs; but each kingdom includes a number of microscopic creatures of exceedingly simple structure; and on the confines, as it may be termed, of the two kingdoms, or a point where there seems to be a transition from one to the other, there are some of doubtful and debatable nature. The most ingeniously constructed definitions

break down somewhere in the chain, and it is not unreasonable to suppose that no such thing as a hard and fast line exists between the two kingdoms. But there is rather a formidable objection to the theory that there is actually a connecting link between plants and animals on the limits of the simplest forms of both, unless we assume that evolution in the contrary directions has taken place. It should be briefly stated here that some naturalists now believe in the possibility of all the present plants and animals having descended by evolution, or gradual change, from a simple form or forms to successively more complex structures. The fact that the simple organisms still exist side by side with the more complex is explained in this way, that evolution is effected by a process of natural selection. Other naturalists argue that because the progeny of any particular plant or animal exhibits a considerable range of variation, which may be still further increased by selection and isolation, it does not follow that there is no limit to it, and that, in course of a long series of years, the descendants will be totally different in form and structure from the parent. Neither does it seem certain that because species and genera and families pass into each other, with few interruptions, there is no other way of accounting for it, save by descent from a common stock. These are matters for individual thought and further research, and dogmatising on either side is inconvincent and fruitless. Whilst it is beyond all question that many existing very distinct forms in both kingdoms were not specially created, but have descended from others, the evidence adduced in support of the theory of evolution, as opposed to creation, is not conclusive. With this allusion to the diversity of opinion respecting the origin of species, &c., the theories may be left to take care of themselves; but whatever we accept or reject that cannot be supported by absolute proof, it should not interfere with our endeavours to solve the problems of Nature. Disregarding the lower microscopic organisms of doubtful nature, which do not come within our province, plants differ from animals most essentially by the manner in which they feed. The food of plants is invariably liquid or gaseous. Not the least particle of solid matter can enter their system; whereas, the food of animals is chiefly solid, and taken into a stomach, where it is subjected to a process of digestion to extract the nutrition from it, leaving a residuum to be excreted. Again, the food of plants is exclusively inorganic (except of a few leafless plants, destitute of green colouring matter), and is assimilated or prepared in all the young green parts. All parts of plants are built up of cells of different forms, and are homogeneous throughout, leaving nothing in their structure answering to the stomach and other internal organs of animals. The plan of growth in plants is totally different from that of the more highly organised animals, inasmuch as interstitial growth soon ceases; that is to say, each joint (internode) of a plant, makes its longitudinal growth in one season; and, although it may, and usually does in woody plants, increase in size, it does not increase in length. This may easily be verified by measuring, or even noticing, the height at which branches are given off from any tree with which we have been familiar for some years. If this were not so, our dwarf trees would grow into standards, and our trained trees would require new branches put on at the base as the stem lengthened. Plants are, as a rule, destitute of every power of movement. The vital principle in the two kingdoms seems to be indistinguishable, though animals are endowed with properties or faculties apparently not enjoyed by plants. Sensibility and instinct seem to be exclusively attributes of the animal kingdom, though some writers have sought to show that plants possess, the sense of feeling and display a kind of instinct. To anyone unacquainted with the singular mimicry of plant forms by zoophytes, it would seem almost superfluous and useless to say anything about these distinctions; but many of those curious organisms, or rather aggregations of individuals, might easily be mistaken for plants.

**INDIVIDUALISM IN PLANTS.**—Most plants are not individuals in the sense of being indivisible, and therefore some writers consider them as congeries of individuals. If we are so unfortunate as to lose a limb, even as a young baby, the loss is altogether irreparable; but each bud in a plant will develop into an independent plant possessing all the attributes of the

parent. Indeed, in some cases, as in *Bryophyllum* (fig. 1) *Begonia*, &c., the leaves themselves are capable of giving birth to new plants; and in many other plants, such as the Pilewort and some of the Lilies (fig. 2), little bulbs are formed in the



Fig. 1.—Leaf of *Bryophyllum calycinum*, with a plantlet developing from each notch. (Reduced.)

axils, and these, falling to the ground, grow into independent plants. This naturally leads us to the consideration of a

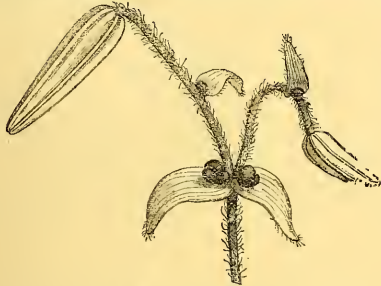


Fig. 2.—*Liliun bulbiferum*, with bulbets in the axils of the leaves.

whole plant, or an individual plant, as we shall term it in spite of its divisibility, without losing any of the properties of a perfect individual. W. B. HEMSLEY.

**Vegetation on the Shores of the Mediterranean.**—I have just returned from Naples and the south of Italy—to my favourite San Remo, and find vegetation, that has been battered and crippled by the dire Tramontana around Naples, here in gardens skirting the Mediterranean unscathed, and beautiful in its development and inflorescence. The garden of the Hotel Victoria stretches down nearly to the beach, the railway passing between the garden and the tidal-mark of the deep blue waters of the Mediterranean. It is a sheltered nook, and I am not surprised to see shrubs, usually grown under glass in England, here in fair flower in the month of January. I would especially mention the *Datura cornigera* (fl.-pl.) quite hung over with its long, fragrant flowers. *Abutilon album* and *Achania Malvaricus* are growing side by side, the *Achania* offering its sweets to the noble violet-bee, which hums past on rapid wing. The delicate colouring of the flowers of the *Abutilon* contrasts most happily with the green of the leaves. Everyone is at once interested in the dark flowers of the *Achania*. Then, what more glorious plant than the *Sparmannia africana*, with its parti-coloured stamens, that remind one in their tinting of the *Capparis* on the Lake of Como. There is something almost wonderful in the colouring of stamens! In both instances Nature has enhanced the beauty of the flower by her painting of the stamens. A fine climber, holding its own with beautiful effect, is the Cape *Tecoma*. Surely it could not be so full of flower at the Cape as it is in our garden at San Remo. Why, there is spray after spray of its ruddy orange blossoms. The *Eucalyptus globulus* is only partially covered with its fair flowers. A *Myrticort* in growth, it is the most rapid of all the tribe. Young trees soon

attain size and proportions. Its service, where malaria prevails, is now fully established. The *Salvia cardinalis* is very gay here all the winter, and is a general favourite. The same may be said of the *Cassia*, which is just now a perfect picture. These are the most conspicuous in the gardens of San Remo in the winter. It would be easy to supplement the list with as many more, but these flower more shyly, and I do not care to enumerate them with the others.—PETER INGBALD, *San Remo, January, 1878.*

## THE INDOOR GARDEN.

### WINTERING TENDER PLANTS.

Is it possible to keep tender plants in an unheated pit in winter? This question, which has often been asked, I answer yes, although many have no doubt failed in doing so. I suppose, however, no one would from choice attempt to keep tender plants in cold frames in winter; yet having the means of readily applying fire-heat to plants that can be kept in health in a low dry temperature, always provided the frost be kept out, is not altogether an unmixed good. True, too much fire-heat may not directly kill plants in the same way that frost would do; still, when a higher temperature is maintained than is necessary, it tends to exhaust plants, renders them unhealthy, encourages the presence of insects, and generally shortens life. One of the chief reasons why many fail to winter plants in a cold frame or pit is, they pot their plants or strike their cuttings too late in summer. Every cutting of such plants as *Pelargoniums* or *Verbenas* should be put in by the 1st of August or before that date, and all tender plants which it is desirable to lift and save should be potted early in September in light sandy loam, just merely shortening back the roots a little, cutting back any straggling branch, and taking off a few of the largest leaves. Unless this be done, the plants do not become sufficiently established to stand any hardship in the shape of either damp or frost. Some years ago I was asked, when clearing a flower garden in autumn, to give away any plants that were not required amongst the cottagers in the town and neighbourhood. The result was that the first year I had a good many applicants, but gradually they decreased, until at last none came. If I could have given away any plants well established in pots, they would gladly have had them; but many of them found that after buying pots the plants died during the winter—in some instances, no doubt, through frost, but mainly from want of that hardiness and maturity of growth that early potting and standing thinly in the sunshine always impart. In order to carry tender plants through the winter safely without fire-heat, they must have a careful preparation. *Verbenas*, *Calceolarias*, *Fuchsias*, and similar plants may be kept with little trouble, as it will take a very severe frost to hurt them when covered with litter; but in the case of *Pelargoniums* it is often the damp that kills, especially if the plants be imperfectly established. In wintering half-hardy plants, *Calceolarias* alone excepted, there must be freedom from damp, i.e., there must be a pure sweet atmosphere, and the temperature must not fall much below the freezing point. A degree or two of frost will not do much harm, provided the coverings are not removed too hastily after the weather breaks; but it must not be forgotten that if frost be allowed to enter at all, the plants are exposed to considerable risk. Making, however, every allowance for the difficulty of combating damp in cold pits, and for the thought and care required to guard against the admission of frost, yet neither of these objects is so difficult to attain as at first sight might appear. To secure a dry atmosphere, the floor of the pit or bed must be well drained; it must not hold moisture in suspension, to be drawn up by every gleam of sunshine that falls upon the glass. In the case of an ordinary brick pit with a brick bottom, like most of the old-fashioned forcing pits, all the manure that may have been used for spring forcing should be cleared out, and a temporary stage of boards erected, so that the plants may occupy a light position, and yet be at least 6 in. or 8 in. from the glass. The pit, when the spent manure is cleared out, will hold a much larger body of air; and the plants being placed in its midst, will run much less risk from damp settling on them than they otherwise would do. The smallest notch of air admitted from the outside will cause a rapid circulation, and much of the success will depend upon the attention and care bestowed upon the ventilation. No dead or decaying matter must ever be allowed to remain amongst the plants, and no plant should be watered until it is absolutely necessary to keep it from flagging, and not a drop should be heedlessly spilt. Should there at any time appear symptoms of damping amongst the plants, scatter dry dusty peat, wood-ashes, or sand amongst them; or, in bad cases, dress the affected parts of the plants with quicklime. If the pit cannot be provided with a temporary stage, and the plants have to stand on a coal-ash bed, there should be at least 6 in. or 8 in. of porous material beneath the ashes, to make sure of good drainage;

and, if at any time the precautions I have already named against damp are not sufficient, take the plants all out the first fine calm day, and spread an inch or two of the driest ashes that can be had all over the floor of the pit, at the same time lime-washing the walls; and, when all is finished, return the plants to the pit. This will be found a most effectual cure, and where plants have to be wintered without fire-heat, it is always advisable to keep a stock of dry ashes at hand. Keeping plants in cold pits is much a question of forethought—of trying to anticipate all difficulties before they arise. Any who puts things off or forgets them will fail, and had better not attempt it. I will now just briefly glance at the means employed to keep out frost. If the thermometer falls below 12° in the open air, it will penetrate through a 9-in. wall of brickwork; and it is as well to hear this in mind, for sometimes I have known thick coverings placed over the glass, and a sense of security indulged in, without thinking that the frost could enter through the brickwork. Therefore, when frost is apprehended, some means must be at hand for sheltering the walls, if composed of brickwork, as well as the roof; turf or earth walls are much better frost-resisters than bricks. There is nothing much better for covering pits during severe frost than long dry straw. When used in bulk it incloses a considerable quantity of air, and dry air, motionless, forms an almost impenetrable barrier to cold. When the straw becomes wet it is not nearly so good, as the water forces out the air and lets in the cold. I have known plants sometimes covered up for a month without taking any harm, but after a severe frost the coverings must be removed very cautiously; first let in a little light at the back, gradually increasing it as the foliage gets injured to it; air should be admitted in a similar manner. In fact, there is as much necessity for caution in these particulars as there would be in treating any case of deprivation in the human subject. Air must be given freely at all other favourable opportunities, in order to maintain the plants in a healthy vigorous condition.—“Field.”

#### BOMAREA CARDERI.

EARLY in the autumn of last year I noticed in Mr. Bull's nursery this fine new plant beautifully in flower. It belongs to the *Amaryllidæ*, but in its general habit and appearance it has nothing in common with the more generally known members of that family. It is a climbing, or more properly speaking, a twining evergreen plant, not unlike the *Vanilla*. The shoots spring from the base much in the way of those of a *Lappageria*, and they are about the thickness of those produced by strong specimens of that plant. It has handsome deep green oblong lanceolate foliage, 7 in. or 8 in. in length. The flowers are borne on the points of the shoots, and in form are not unlike those of a *Lappageria*, but instead of being reflexed at the points they are slightly compressed; the three sepals are pale pink, the petals, also three in number, are pink, suffused with green, and profusely spotted with black, a distinct and pleasing combination of colours; the cluster of flowers collectively forms a beautiful drooping cyme, not less than 15 in. in diameter. It is evidently by far the finest *Bomarea* that has yet flowered. As I understand that it is found at a considerable elevation in New Granada, I should imagine that an intermediate temperature would suit it. It is quite possible that ultimately it may be found to enocence in a greenhouse; in either case, it may be looked upon as an acquisition. It will be better adapted for clothing an end wall, or draping a pillar, than for running up the roof, as its natural disposition is continually throwing up fresh shoots from the bottom inasmuch as its being clothed with foliage down to the base. It succeeds in a medium-sized pot, but would, no doubt, be more at home planted out in a border of moderate extent, where its roots would have room to extend in a way that would insure vigorous top-growth, for in all plants that possess this habit of pushing up from the base the production of flowers is always proportionately augmented by the increase of strength. T. BAINES.

#### EARLY FLOWERING HARDY PLANTS UNDER GLASS.

I FIND no plants to yield at this early period of the year such rich tints in the hardy plant-house as the deep-coloured *Polyanthus* and *Primroses* that have been lifted from the open ground and potted for that purpose. It is easy to secure a good stock of these, as a packet of seed produces abundance of plants; and once a few dozens or hundreds are secured, there are plenty to lift for indoor decoration, and also enough still left for out-of-doors. Whether in a bed of seedlings or in a bed of propagated kinds, some plants will inevitably show bloom earlier than others, and these should be lifted into pots and placed in a cool house, in order that their blossoms may be

allowed to develop themselves without any check from bad weather. The Chinese *Primrose* certainly has the advantage of our hardy kinds; inasmuch as it produces larger trusses and larger flowers at an earlier period of the winter, but these cannot exist in frost; whereas the hardy *Primrose* or *Polyanthus* is in no danger, even if often frozen under glass. What the flowers lose in size by comparison they gain in richness and variety of hue, and can easily be grown by anyone, whilst the Chinese *Primrose* is much more difficult to deal with. Plenty of these hardy spring flowers are in bloom at the beginning of the new year; and as with a stock of plants a continuity of flowers can be had for four months, it can hardly be said that these do not repay any trouble that may be taken with them. *Hepaticas*, *Scillas*, *Snowdrops*, *Pansies*, and many others of the earliest gait to bloom are now fast pushing into flower, and are exceedingly gay in pots. The pretty *Myosotis* disitiflorus is already showing its buds, and, put under glass, will be in full bloom in a week or two. A box of this for a window, with a quantity of the scarlet *Anemone fulgens* planted amongst it, would be both rich and effective. This grand *Anemone* is fast showing bloom, and maintains its character as the earliest of its family. The two best *Violets*, *Marie Louise* and *Victoria*, though not effective as pot-plants, nevertheless diffuse a most delicious perfume throughout the house. A. D.

#### FOUR OPUNTIAS.

*Opuntia crassa*.—This is one of those plants that delight in sunshine, and the brighter and warmer it is the better they like it. It grows until its weight becomes too much for its base, when down it tumbles, and starts again from the bottom. The stems, which are very fleshy, are glaucous green in colour. I have had pieces of them 1½ ft. across and 2 ft. in height. I have seen it trained on a trellis 18 ft. high, and consisting of twenty pieces of flattened stems, that is, the widened-out parts between the joints.

*O. pubescens*.—This is a stout-growing plant of a curious metallic hue, and with sets of spines like little cushions, apparently inoffensive, but when they get into the skin they are very troublesome. Its flowers are handsome. A full-grown plant is about 1 ft. or 1½ ft. in height.

*O. clavarioides cristata*.—The spines of this singular plant are stellate in form, small, and harmless. Its skin is copper-coloured, and covered with grey scales, as its name implies. It is very variable, no two shoots being over alike. It is a fragile variety, and should be kept on a shelf near the light, and out of general reach.

*O. exuviate*.—This, the most formidable of all the genus, has a way of holding fast whatever touches it. If it be touched by the boot, one has to pull hard to get rid of it. Its spines are about 1½ in. long, white, like a quill; their outer cases can be pulled off, leaving the spine intact, which has a hook at the apex like a fish-hook. The plant itself grows about 2 ft. high. In California it is quite enveloped in spines, but in this country they do not grow so freely. It may be easily shaken to pieces; and to have a good appearance, young plants of it should be struck every year or so and grown on into specimens. J. CROUCHER.

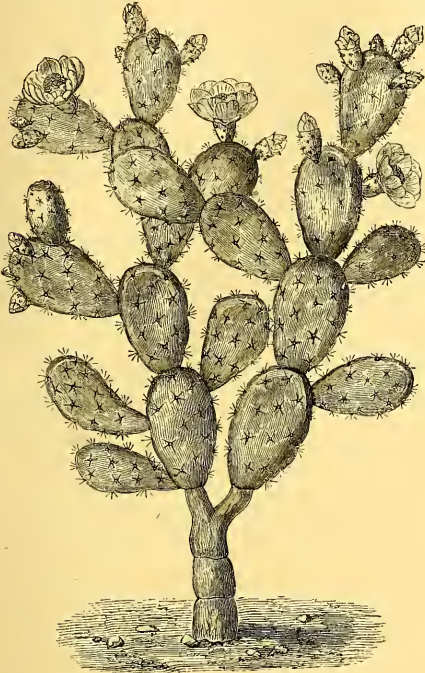
*Subury House, Hammersmith.*

#### NOTES AND QUESTIONS ON THE INDOOR GARDEN.

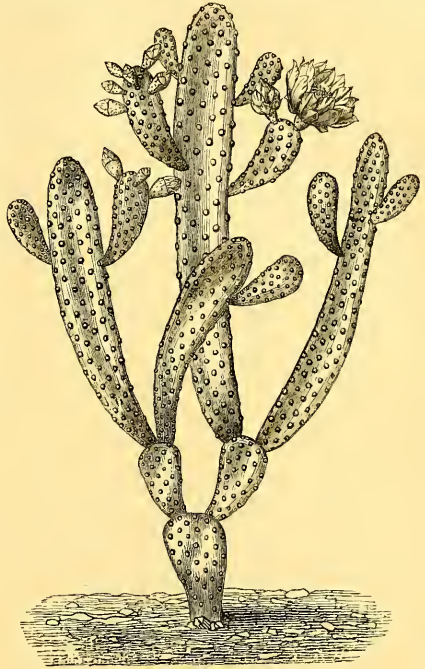
*Epidemidiums for Forcing*.—Good established roots of these beautiful hardy plants in pots make excellent subjects for forcing into flower in March and April. They should be kept in a cold frame until the end of January, when they may be introduced to an intermediate-house and placed on a shelf near the glass. In a few weeks, if kept well supplied with water, they will come into flower, and their blossoms will be found to be very useful in a cut state.

*Eurya latifolia* as a Window Plant.—This is one of the most effective half-hardy shrubs which can be employed for window decoration. Its habit is good, and its leaves, being very smooth, are easily kept clear of dust. Even in unshelving positions, and during the duldest months of winter, the young growths assume a rich, bronze colour, which, in contrast with the white and green variegation of the older foliage, has a lively and pleasing appearance.

*Allium flavum* from Seed.—This may be easily propagated, by means of seed sown in autumn, as soon as it is gathered in small pots or pans in a cold pit or frame. The principal point requiring attention is preserving the seedlings from damp whilst in a small state. This can only be done by giving all the air possible whenever the weather is favourable. If planted out in March they will flower well the next year; *A. carinatum* may also be treated in the same way.—S.



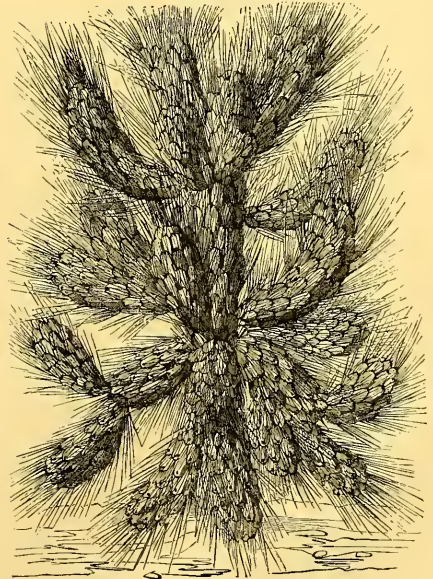
*Opuntia crassa.*



*Opuntia pubescens.*



*Opuntia clavarioides cristata.*



*Opuntia exuvata.*

## GARDENING FOR THE WEEK.

**Orchids.**—There is no class of plants wherein cleanliness from insects is more necessary than in that of Orchids. That worst of all pests that infest them, white scale, should be diligently sought for, as, if allowed to increase to any extent, it does serious injury, especially to such as the different species of *Vanda*. It is difficult to get rid of. For down to the inner base of the leaves, where it is difficult to get at. For its removal I have found nothing equal to a home-made brush, consisting of a moderate number of long, stout bristles tied firmly to a thin bit of wood, with which the scale must be gently removed. If the plants are much affected, the operation requires care, without which the leaves get injured so as to cause their turning yellow and prematurely falling off. For the more exposed surface of the leaves a sponge will be sufficient. White scale is most difficult to eradicate from the greater portion of the scaly covering of the stems, where it is not easy to dislodge. Brown scale, although it is of a puny description, never attaining anything near the size on the thick, fleshy-leaved section of Orchids that it does on the generality of other plants, yet it is most injurious if allowed to get to any considerable head. It is much easier to dislodge, as it is more disposed to keep on the upper portion of the leaves than the base. I would caution those who have not had much to do with Orchids against being induced to use any form of the numerous insecticides recommended for the destruction of insect life, as I have never found any of them that would kill the insects without injuring the plants. A good and simple application of Scotch snuff may be dusted into the crowns of the plants when affected with thrips during the summer, but this should not be used until the leaves have made some progress, so as to be partially solidified; but where the plants are grown with sufficient light and air, without too much heat, they will usually bear syringing overhead enough to keep this troublesome little insect from finding a lodgment down at the bottom of the partially-opened leaves, without the water having the effect of injuring these, as it would if the plants are grown in a way to make them soft and tender. Means should be taken, whilst Orchids are now comparatively at rest, by repeatedly going over them, to reduce insects as low as possible. The atmosphere of the warmer Orchid-house, so long as the plants are at rest, should be kept sufficiently dry, but it is not well to carry this too far, or the effect will be that the pseudo-bulbs and leaves will shrivel too much. The different varieties of *Calanthe vestita* and *Veitchi* require a somewhat different treatment, as the case of the majority of plants, be kept in a temperature much lower than that of the majority of plants, so some parts of their growing season, as if kept too cool, young buds that are to form next year's growth do not grow plump and advance as they ought. The bulbs are also very liable to rot if the temperature is at all too low. It will shortly be time to commence potting; for this, preparation should at once be made by getting all the materials ready. Where there is a considerable number, it takes a much longer time to move them than the case of any other description of plants; but if a calculation be made of the quantity of peat that will be required, and this is broken in pieces and the Sphagnum wanted also prepared, the work can be got on with much quicker. A few words upon the preparation of these may be of use to those who have not had much experience in the cultivation of Orchids. Taking the Epiphyll Section collectively, growing naturally as they do with their roots in a great measure exposed to the full influence of the atmosphere, and their habit of adhering so closely to whatever they cling to, little reflection is needed to show that their roots are little calculated to bear confining in any material of a nature such as to become adhesive or confine them from the air, and they are likewise so constructed as to suffer more than other plants by removal; hence it becomes requisite to see that the material in which they are potted is of a nature that will last as long as possible without becoming decomposed. From this arises the necessity for its consisting of as much fibrous vegetable matter as can be obtained with the greater portion of the earthy part removed. The Sphagnum should be all carefully hand-picked, so as to clear out the whole of the bits of Grass and other matter that usually grow intermixed with it, for if these have got dry before the Sphagnum used, they will at once turn mouldy as soon as water is brought in contact with them, which, although it may not injure the roots of the plants, still looks unsightly, and hastens the decay of the Sphagnum. In potting the thick-rooted species, such as *Vandas*, *Aerides*, *Saccolabiums*, *Phalenopsis*, and *Angrecums*, it is necessary to be guided by the condition of the plants. If the pots or baskets in which they are growing are already large enough, and the plants in a healthy, thriving condition, they will be found to have quantities of roots firmly attached to the sides of the pots and baskets, from which they cannot, with even the greatest care, be removed without a great deal of mutilation. In the case of these, I have found it good practice to lay the plants down on their sides on the potting bench, work out all the old material, and then with the syringe and tepid water to wash the whole clean out, cutting up all dead roots; after which, replace the drainage, and fill it down moderately firm. This requires more time than taking the plants completely out, but if it is carefully performed, the check inseparable from total removal is avoided. Such as have to be removed altogether from the pots should be taken out with no more breakage of their roots than is unavoidable. The time of potting will, to a great extent, be regulated by that when the plants were put to rest, and the time that an

increase of heat and moisture will be applied, such as to induce growth; but with *Aerides*, *Saccolabiums*, and *Yandas*, it is essential that the potting be carried out before any progress is made in pushing up their flower-stems, or these are all but certain to receive such a check as to prevent their advancing further. *Vandas* and *Saccolabiums* do not require, nor will they bear, taking the different varieties collectively, so long a rest as many Orchids.—T. BAINES.

**Stoves and Green-houses.**—All *Allamandas*, *Bougainvilleas*, and *Clerodendrons* (climbing ones) should be cut back at once if not already done, and repotted very firmly as soon as convenient, using good loamy soil, enriched with a little decayed manure, but not encouraged to make growth. Keep the soil rather dry after potting, insert the principal stakes, and preserve the young growths from getting broken. Plants of *Poinsettias* and *Euphorbia japonica* (where done blooming) should be stored away on back shelves, under the stages, or in any other place where they can be kept dry in an intermediate house or the coolest end of the stove. *Aphelandras* done flowering may be treated in the same way, and those coming into bloom should have plenty of water, and a position near the glass. Do not allow any young plants to suffer from want of root room, but give them a shift as soon as they require it. Of stove bulbous plants at rest, start a few into growth, for early use, but it is too soon yet to start the general stock of these. A few *Nymphalises* should be introduced into a moist and temperature to encourage them to open. Placing igniconets in a little warmth will assist its flowers to open. Keep the plants near the glass, so that they do not become drawn, and tie them out neatly to a few thin sticks. Lilies that are pushing through the soil must have more water given them. Cuttings of *Verbena* and *Fuchsias* will root quickly in sandy soil if they can receive a little heat under a bell-glass. Old *Fuchsias*, that have been dried off in the autumn, may now be pruned. The branches should be cut well in, and the plants reduced in height. They may then be placed in heat, and, as soon as they have pushed a few roots, may be shaken out and re-potted. Soil if not under cover for the general potting of greenhouse plants, should be placed in a dry open shed, where it will receive plenty of air; lay it as open as possible for this purpose, and occasionally turn it over. Sand, also, should be placed where it will dry. Tree or perpetual *Carnations* are easily cultivated, and produce quantities of flowers for cutting. *Garibaldi*, *Life Guardsman*, *Valliant*, *Hubert*, *Vulcan*, *Clara Belle*, *Bewitching*, *La Belle*, *Miss Jolliffe*, *White Rival*, *Avalanche*, *Prince of Orange*, and *Golden Eagle* are all good winter-flowering kinds. In order to have good flowering plants in autumn and winter, select the best and strongest-rooted cuttings, which insert in a large 60-sized pot, placing from five to six cuttings round the edge. Plant them moderately firm, and place them in a bottom-heat of about 75°. In making the cutting or piping, the two lower leaves should be thoroughly peeled off the wood, leaving nothing but clear soft wood below the joint; then with a sharp knife, cut close up to the joint. The best soil in which to strike such cuttings is loam and leaf-mould, with plenty of sand. As soon as they are well rooted, pot them off in small 60-sized pots in a sandy loam free from wire-worm, and well mixed with plenty of sand. Place them in a frame with a bottom-heat unti again established, keeping them close to the glass.—H. G.

**Indoor Fruit.**—Vine's eyes which were potted a month ago should be plunged in a bottom heat of 30°. Squashes may be plunged in an early Pine bed or a heated frame. If deficient in number, peas may still be potted and plunged with the others. Turves 6 in. square should be cut, the Vine eyes placed in the centre, and a number of them set in a wooden box. Put the boxes on the top of the hot-water pipes in a warm house. Care must be taken that the turf does not get too dry; if this should happen, each turf should be lifted out separately and dipped in a pail of water. Another method is to fill a common propagating-box with soil to the depth of 4 in., place the eyes 6 in. apart in this, and treat them as in the former case, until the above stated height of 18 in., when a large knife should be run through between each row going down to the bottom at every cut; six days afterwards they should be cut similarly in an opposite direction. This forms them into squares by cutting all the long leading roots, which soon produce a host of rootlets. They should be taken out and potted before the roots again run into one another's squares. As time permits, the soil for Pines may be prepared for potting. Do not cut the turves with a spade or other implement, but tear them asunder with the hands, and divide about the size of hen's eggs. These turves, intended to supply later fruit, should remain in a low temperature, and the drier they can be kept consistently with health, the more certainly will they show fruit when desired. Avoid letting any water come in contact with or rest about the fruit while in bloom; inattention to this results in deformity. Holes and distorted development, which are sometimes seen in Pine fruit, arise from this kind of mismanagement, and nothing renders fruit more unsightly. In looking over suckers which were put in early in autumn, those with their pots full of roots should be intended to supply a fruit, and should be taken out into fruit prematurely. When re-potted, do not plunge them in a bottom-heat over 75°, as it is not yet time to encourage much growth in them. Smooth Cayenne and other kinds supplying fruits until the Queens are ready should receive careful watering and be otherwise closely watched. A little

air admitted during sunshine, and a slight damp overhead when shutting up, greatly helps the fruit to swell freely.—J. M.

**Flower Garden and Pleasure Grounds.**—All valuable kinds of Cupressus, Juniperus, Retinosporas, Thujas, Thujiopsis, Yews, Aucubas, Alaternas, Arbutuses, variegated Hollies, &c., should be planted at such distances from each other (say 15 ft. or 20 ft. at the least) as will afford sufficient space for the specimen to attain its natural form and dimensions; and in order to produce a finished or an immediate effect, the intervening spaces should be filled in with the more common varieties of evergreen and deciduous shrubs, such as the common and Portugal Laurels, Green Hollies, Lilacs, Spireas, &c., which should be gradually cut away from time to time, as found necessary, in order to give space to the more valuable specimens, as they continue to require the same. Examine clumps or belts of Rhododendrons and other American plants, and if any of the more delicate varieties are being overgrown by the more vigorous-growing sorts, let them be cut away to the necessary extent, or removed altogether. It is, in many instances, advisable to lift and re-arrange plantations of this kind about once during every three years, unless the plants have already attained dimensions which will not admit of its being done. Where, however, the plants are of moderate size, they may be moved at almost any season, with little or no risk, as their roots seldom extend far, and this circumstance renders it easy to transplant them. If the weather is favourable for the making of any alterations or improvements which may be contemplated in the grounds or gardens, which necessitate the removal of soil, and the laying of turf, &c., or the working of the soil, and the sowing of seeds, or the sowing of seeds, whether they may consist of the formation of flower-beds and borders, the making of walks, leveling and laying of turf or planting of Box, and other edgings. The planting of hardy herbaceous perennial plants may also be proceeded with. There are now so many really valuable hardy herbaceous and Alpine plants well suited to this purpose, that many of the tall coarse-growing species may with advantage be discarded. A somewhat liberal use, however, may be made with safety of such genera as the Delphinium, Dianthus, Myosotis, Penstemon, Phlox, and Iris. Where sub-tropical gardening is carried on, the seeds of various kinds of plants used for this purpose should be sown now, in order that they may be had sufficiently strong when the time arrives for planting them out. Sow in heat in seed-pans, pot the plants off singly as soon as they are large enough to handle, and grow on as rapidly as possible. They may consist of the various Ricinus, Cannabis gigantea, Nicotiana Würgandioides, Solanum Warscewiczii, while dry roots of the Cannabis, Brugmansias, &c., should be at once placed in heat with a view to increase by cuttings or divisions. *Humea elegans* may be sown in September, and potted off singly during the autumn, may now require to be potted into larger pots, as they are allowed to become root-bound, they will invariably lose their lower leaves. Pot off also rooted cuttings of choice Hollyhocks which may have been inserted during last autumn into pots some 4 in. in diameter; keep them close for a few days, and, when fairly established in their pots, they will only require the protection of a cold pit or frame until the time arrives when they may with safety be planted out where they are intended to flower. Cuttings of Verbenas, Petunias, Ageratums, Coleuses, Resines, &c., should be inserted in well-drained pots, or some 6 in. or 8 in. in diameter, using a soil composed of sifted leaf-soil and peat, or fine sand; place the pots containing them in a hot bed until fairly rooted, when they should be gradually inured to the temperature of an ordinary greenhouse, with the exception of the two last-named species, which will for some time longer require to be kept in a higher temperature. Spring-flowering plants and bulbs will soon begin to attract attention, so keep the beds and borders containing them free from weeds and littery matter of all kinds. Remove litter or worm-casts from the lawns by frequent sweeping, and pass a heavy roller over it as often as possible, while the same should frequently be done with gravel walks, in order to render them firm and comfortable.—B. G.

**Kitchen Garden.**—Peas, started in gentle heat under glass, should not be allowed to draw up weakly; but when about  $\frac{1}{2}$  in. high, should be removed to a cold frame. In sowing Peas on a narrow border, either draw the drill close to the wall, or form a bed, or run them obliquely across, so that the rows may range from south-east to north-west, in which aspect they will get the full benefit of the sun. Even early Peas should have plenty of room, at least 4 ft. from row to row, and two rows of Brown Cos Lettuce should be put in between each two rows of Peas. Autumn-sown Peas, that are now up, should have a ridge of earth drawn up on each side of them, and they should be sticks placed to them to form a protection; in addition, Spruce, Fir or Yew branches may be placed on the windward side of them, and a row of them in the middle. Scatter soot over and about them; this not only keeps sparrows and slugs at a distance, but also strengthens their growth. Draw the lights off Cauliflowers in frames every fine day, and give air freely to those under hand-lights during mild weather, dressing them at the same time freely with soot or wood-ashes. Cauliflower plants in pots or shelves in heat near the glass should be moved to cold frames to harden off. If there is space indoors, a few of the strongest might be shifted into larger pots for early use. Lettuces planted in slightly-heated frames or pits last November will now be turning in, and a row or two of them should be sown in a hot bed, or in a lit and shaded frame, in order to plant in gentle heat; also in a warm position at the foot of a south wall. Give air freely to forced Asparagus when fairly through the soil, to colour and flavour it; if the weather is sunny and drying, give a light watering, occasionally of weak liquid manure, in which about 2 oz. of salt to the gallon has been dissolved; continue to mat up at nights, as, although the days may be mild, the nights are uncertain. Where young Onions are

required for flavouring salads, sow the Queen, or the common Silver-skinned, in boxes in heat. Sow also, at the same time, the same kind on a warm border for accession; or a few roots of Chives may be lifted from the border, planted in boxes, and brought on gently in heat for the same purpose. Pot in succession Mint, Tarragon, Borage, Balm, &c. Sow a little Basil in heat for early use, and Sweet Marjoram, if no supply was secured in boxes in autumn. Make up a hotbed for early Turnips in the following manner: Dig out the soil, in a warm sheltered place, 1 ft. deep, and 6 ft. or 8 ft. wide, extending as far in length as is considered necessary, and casting the soil about equally on each side; fill the space so excavated with hot manure and leaves, treading it well down and laying the bed with a slope to the south; return about 6 in. or 8 in. in depth of the soil, and make it down fine; draw drills 6 in. apart, and sow the early Strap-leaved Stone Turnip thickly; fill in the drills with sifted soil. Where this mode of supplying earth-warmth can be assisted by top-coverings of glass, or light handy frames made of stout laths, thinly and neatly thatched with straw or reeds, success may be rendered certain, as the ground will be kept from freezing, and germination and growth go steadily on. The covers should be taken off every fine day after the young plants come up. Early Carrots, Turnips, &c., should be left much thicker than will be desirable further on in the season. As they will be used in a young state, the largest being drawn first, leave room for the remainder to grow.—E. H.

#### Diary.

**February 4.**—Sowing 100 pots of Osborn's Early French Beans. Potting off variegated Pelargoniums. Making a large hurdle-frame, and thatching it all round, ready for choice early Peas, to be sown over Pines, and watering them, where required. Beginning the pruning and making of Apricots. Making up another new Mushroom-bed. Covering up more Endive to blanch.

**Feb. 5.**—Sowing a box with Brussels Sprouts, and putting them into gentle heat; also a little Chervil, All-the-Year-Round Lettuce, and Capsicum. Potting off Cucumbers and Melons. Looking over Grapes in bottles, removing all bad berries, and filling up the bottles where required. Taking up all the Jerusalem Artichokes, and getting the ground heavily manured and dug for another crop.

**Feb. 6.**—Sowing Marrow Peas in boxes for making Green Pea soup; also Carter's dwarf crimson Celery. Putting in cuttings of Alternantheras and Coleus. Disbudding Early Black Hamburg Vines, and tying them down where required. Preparing ground for Parsnips. Springing early Peach-house night and morning where the fruit is well set. Thinning out Radishes, and renovating the things round the frames.

**Feb. 7.**—Sowing Cucumbers and Melons, also Parsnips in holes previously prepared for them. Putting in cuttings of Verbenas, Heliotropes, and Salvia. Removing Strawberries from pits to the Peach-house. Potting off the pits. Turning over Celery manure. Celery has been previously mixed with salt and soot, getting on with digging and trenching as fast as the weather will permit.

**Feb. 8.**—Sowing two rows of Fortyfold, two rows of G. F. Wilson, and two rows of James's Prolific Marrow Peas. Potting off autumn-sown Heliotropes and Verbenas. Putting a few sticks round the Early Ribbair, and covering it up with long litter to bring it forward. Cleaning up the pleasure grounds, and rolling down all newly laid leaf. Planting two three-light frames with Ashleaf Kidney Potatoes.

**Feb. 9.**—Potting smooth-leaved Cayenne Pines, and re-arranging first house. Turning over regularly the manure and leaves in Muscat-house, in order to produce moisture for softening the buds. Giving Early Black Hamburg inside Vine border a little warm water. Looking over fruit room, and clearing away any fruits that are bad. Cleaning up the kitchen garden. Fruit in use for dessert: Pines, Grapes, Pears, and Apples.—W. G. P., Dorset.

**Roses.**—The December number of the "Garden de Roses" reports that Messrs. Souper and Notting have, in the journals at Luxembourg, a collection of 1302 varieties of Roses. They comprise 15 Centifolias, 24 Provins, 15 Multifloras, 60 Moss, 42 Perpetual Moss, 150 Teas, 29 Noisettes, 41 Bourbons, 733 Hybrid Perpetuals, to which must be added Perpetuals of recent date, bringing the total of Perpetuals to about 1000.

**Tea Rose Cornelia Cook** is now, says the "New York Rural," one of the most popular of all the Roses used by the bouquet makers of New York during the winter months. The buds are long and much pointed, the colour being nearly pure white and the fragrance delicious.

**The Rice Paper Plant** (*Aralia papyrifera*), which is now being used so freely for ornamental purposes, is the tree from which in the Island of Formosa only, the Chinese make a choice kind of paper. The most common tree for paper-making is the paper Mulberry, an cocoran in many southern towns, Nashville especially, as a shade tree. All American trees have been apparently raised from one separate tree, as they are all named plants. In France a writer raised in the "Gardens Monthly" states that he saw female trees covered with immature fruit, and that thousands of seedlings are annually raised in the nurseries.

**ORCHARDS**, once so common in many parts of the country, seem to be passing away with the manor-houses of which they were the frequent appendages. Yet are not only useful but ornamental, and on this ground alone their gradual extinction is a matter for regret.

## THE KITCHEN GARDEN.

### FORCING POTATOES.

THERE are some who think that, because they have only a garden frame or a few old lights to spare, it is useless attempting to force Potatoes, but if they have these appliances, and a little stable manure or fresh-gathered leaves wherewith to impart the necessary bottom-heat, they are as well circumstanced for forcing Potatoes as they need desire to be. In order, however, to economise the fermenting material as much as possible, and impart a regular genial warmth to the soil, the best plan is to get together some rough hedge prunings, a few faggots, branches of trees or any rubbish that will lay loose and hollow enough to allow heat to pass freely amongst it. This collected, the next thing is to measure out a piece of ground a trifle larger than the frame, on which to build a foundation with such of the above-named gatherings as are available to set it on. If this is done to the height of about 1 ft. or 18 in., fresh fermenting material can be added at any time, and a much less quantity suffices than if the bed were built up solid in the ordinary way. Not only is this the case, but it often occurs with hot-beds after they get a weight of earth placed on them that the heat rapidly declines and soon ceases altogether, and that at a time when most wanted, whereas if formed with a base of rough stuff, a lining can be added at pleasure, by which means a uniform temperature may be maintained as long as the crop requires its assistance. Another advantage in making forcing beds up in this way is that the manure requires no previous preparing by being turned to sweeten it, which is a great thing considering the amount of labour such work involves, and that at a season when there is much else to be done. With a frame so made up, a barrow-load or two of fresh manure or leaves may be thrown around it at any time, and the waning heat thus revived and kept steadily on,

which could not be done were the bed close and solid, as then it is impossible to drive it in. In selecting a site for the frame, a sheltered, sunny spot should be chosen, so as to get as much benefit from the solar rays as possible, and prevent cold, cutting winds, that generally prevail during February and March, from blowing the heat out. To stop the soil from running amongst the faggots, or whatever material is used for the foundation, 6 in. or so of short litter or leaves should be scattered, and on this the mould for planting the Potatoes. The most suitable for this purpose is such as is of a light rich sandy nature, in which the Potatoes will not only produce a great number of tubers, but they will all come with bright clear skins, and this adds greatly to their appearance and quality when cooked. A soil containing lime rubbish or fresh crude manure is sure to spoil them by rendering them scabby or causing warty excrescences or other deformities, and should therefore be avoided where fine quality is aimed at. To make

the most of the room without unduly crowding, the tubers may be planted in rows at 1 ft. apart, and about 8 in. from each other, which affords ample space for the tops if they are kept sturdy and strong by giving plenty of air. Those who happen to have the convenience of a small forcing house or other warm place may considerably forward the sets by laying them in sifted leaf-soil in boxes to give them a start, and this is a capital plan, as a great many may be packed in a small compass and time saved while the frame and bed are being got ready. Many plant in small pots to commence, but they are in no way better than a shallow box, and take much more room and time to handle, as when laid in the latter they can be quickly transferred without the least injury. We are just moving some now that have been so treated, and they shift with masses of roots, and a tuft of leaf-soil as big as one's fist which will be a great help to them till they make further progress, and till they require something more substantial on which to lay hold.

In most gardens it is the practice to make up a hot-bed to sow seeds on, but the same thing may be done in a Potato frame, and valuable space thereby economised by making it serve the double purpose. Such things as early Celery, Cauliflower, Lettuce, and Brussels Sprouts may all be raised in this way, and pricked out elsewhere later, and when they require more room. When sown amongst Potatoes, it should be in rows midway between, as there they will get more light and air without interfering with the main crop or that with them, as would be the case were they scattered all over the soil. Even where a small frame is made up specially for the above-named vegetables, a sowing of Radishes may be made; the best and quickest of them in coming in is the Olive-shaped and Wood's Early Frame, the latter rather longer and larger, and always good and tender. If the seeds of these are soaked for twelve hours in warm water before sowing, they will germinate much quicker, and be ready for use out of the way

of the Potatoes before they want earthing up, which is very desirable, as the tops are apt to get knocked about during that operation. In sowing the Radishes or other seeds between it should be done thinly, as nothing is gained by overcrowding, for it is always better to have one strong plant than two weak ones, and especially is this the case with such things as Brussels Sprouts, Cauliflower, &c., that rarely do well unless their stems are stout and stocky. Although Potatoes succeed best with a little root warmth all through the growing period, top-heat, except what is afforded by the sun, is inimical to them, and should therefore be avoided by giving plenty of air on all favourable opportunities by tilting the lights at the back so as to avoid cold currents, which, if allowed to pass through the frame while the leaves are young and tender, cause them to curl, and thus injure the crop. A month or so later on in the season beds may be quickly made up by digging a shallow pit in the ground in which to put from 1 ft. to 2 ft. of fermenting



Garden Streamlet, with Groups of Yuccas and Water-side Plants.

material to give the Potatoes a start, and carry them on till the weather gets warmer to finish them off. Places of this kind answer admirably to keep up a supply after those forced early are over, and by turning the manure and adding a little fresh about the middle of May, the frames may be most profitably utilised for growing summer Melons, which, with early closing, ripen off well without much trouble or attention. Sunken beds such as these are well out of the wind, and therefore lie snug and warm, besides which, being low down, they are easily managed in the way of watering, covering up, &c., so that for late work they are all that can be desired. Even without such aid as a hotbed affords, Potatoes may be obtained at least a month or six weeks before they can be got from open borders, however warm and favoured their position may be. To do this, however, it is necessary to select a sheltered, sunny spot, where the soil is naturally light and dry, and then to make up a temporary frame by the use of any spare boards, to be either covered with straw hurdles or old lights for the purpose of warding off frost and keen winds. Where turf can be had, a better and more permanent structure may be easily made, and one which will be found to be exceedingly serviceable for many purposes, as, by the use of glass to lay on, any half-hardy plants may be safely wintered, or salads and a variety of other things grown in them. Next to brick, such frames are the handiest and most useful places anyone can have, and the present is a good time to build and turn them to immediate account, which can be most profitably done by starting with a batch of Potatoes and any other light crop that may be required between. The best Kidney varieties for frame culture are the old Ashleaf and Myatt's, the former a fortnight or so the earlier of the two, but not nearly so productive or hardy, two qualities that render the latter much sought after, as they are of fine flavour and excellent in other respects; indeed, for general purposes, they are the most useful Potatoes grown to afford a supply up to the middle of July, till which time there are none to equal them, either for growing on the open borders or under glass. Those who prefer Round to Kidney will find the Early Handsworth equal to any, and, having short, close tops, they are suited for frame work or growing close under the foot of a south wall. By planting these, or either of the foregoing, in a warm, sheltered position of this kind, a good supply of new Potatoes may be produced before the end of May, should the season turn out anything like favourable; and even if frosts occur, they can be easily protected by placing at night a few Laurel or other evergreen branches in front. However grown, the great thing is to select good, sound seed with strong, vigorous shoots, and these can only be obtained by laying the tubers out thin in some light, airy place, where they can come slowly on. Potatoes for sets should never be more than one deep, for if they are, those below must inevitably have long-drawn shoots, and these, under such circumstances, are sure to be bleached and tender, a condition in which they are easily susceptible of cold or wet, and this is one of the reasons why crops are so often defective. Anyone, therefore, having stores from which they intend to plant should see to them at once, as this is the time the tubers begin to sprout at a rapid rate; and unless allowed plenty of room and kept cool, they soon take harm. For Kidneys and all choice garden varieties there is no better way of storing them than that of having shallow boxes, with bottoms formed of laths nailed on 1 in. apart, between which the air has full play and strengthens the shoots as they form. Such boxes as these may be packed one on the other in any light shed, and a great quantity of Potatoes may be thus stored in a small compass. In order to keep them apart and admit air between, strips of wood should be nailed in the corner of each, or laid loosely across, so as to afford a distance of 2 in. or so, which, with the open bottoms, will be ample if the place in which they are set is kept as cool as possible.

It often occurs at the end of the season, after planting is over, that there are many more sets than are wanted, or that there are some left over from the general store, the largest and best of which may be turned to good account during the following winter. If these have the shoots rubbed out in the summer as they form, and are kept in a cool, damp cellar, they will, if buried in moist sand or fine soil, emit a quantity

of young tubers around them instead of forming any top growth; and although these are not equal, in point of flavour, to such as are grown in frames, they are a great rarity at or just after Christmas. A boxful buried and put into any warm place about six weeks before they are wanted will be found ready for use at that time; and as they do not require light, anyone may have them indoors in a cupboard, or the corner of any spare room. S. D.

**Leucocjum estivum as a Winter-blooming Plant.**—It may not be generally known that this Snowflake can be had in bloom in January, such, however, is the fact. But I would not recommend it to be forced so early, except when white flowers are required. By forcing so early, the spikes of bloom are smaller than those that open in February, when one can have them quite as good as those on plants grown out-of-doors. My plan is to lift the bulbs carefully in autumn without disturbing them much, and to pot them in such a way that the clumps just allow a little new soil to be put in the pots; after potting, I put them in a cold frame or pit until they begin to start, when they are forced as occasion may require. After blooming I harden them off, and then plant them out-of-doors; but, if need be, they can be divided before planting; they will then be ready for next autumn. If the bulbs be divided at potting time there will be no bloom; indeed, bulbs should not be pulled to pieces, except one wants to get up a stock.—JOHN CLEWS, *Headfort, Kells, Co. Meath.*

**Garden Streamlet.**—The well-formed little streamlet, shown on the opposite page, struck us not only by its beauty as being worthy of illustration, but from the handsome groups of Yuccas that are used along it so effectively. Generally watercress plants have not the fine, persistent leaves of these, but are such as die down in winter. Yuccas are more generally grown on dry ground, but in this case they thrive admirably along the water, intimately associated with Flags and other watercress plants. Such a streamlet offers excellent positions for a great variety of beautiful flowers. Such would easily make mixed borders far better than the old type.

**Swedish Turnips.**—Everybody complains of the dearth and dearness of vegetables at this season, and yet there is an excellent vegetable which we never use at our table, but give, by cartloads, to oxen and sheep—to wit, Swedish Turnips. At this time of the year, when they are fresh and sound, a single large Swedo Turnip will make a far better dish than white Turnips or Carrots. They must be mashed with milk and butter, Pepper and salt, and, if carefully strained, will be found to be of a good consistency, and particularly pleasant in flavour. But it does not pay the greengrocers to sell them, so they are very indignant at being asked for anything of the kind, and the reader had better ask a friend in the country to send him a hamper of them on trial. The price of the hamperful, containing enough for some twenty dishes, ought to be under half-a-crown.—"Truth."

#### NOTES FROM KEW.

ONE of the earliest and handsomest of all the vernal Crocuses is *Crocus Imperati*, from Calabria, which may now be seen in fine flower in the Kew collection. Both surfaces of the inner perianth segments, as well as the inside of the three outer ones, are of a fine, pleasing blue, prettily feathered with purple; the outside of the three outer ones are yellowish, each marked with three, deep purple, feathered lines. The yellow throat and anthers and the orange-coloured stigmas make an extremely attractive combination. Another recommendation possessed by this species is, that its leaves are produced and well developed at the same time as its flowers. Another most charming Irid is *Xiphion Histrio*, a native of Mount Lebanon, its nearest ally being *X. reticulatum*. The dark green, narrow leaves are about 1 ft. long; the slender scape is not so long as the leaves. In the flowers, which are 3 in. in diameter, yellow, grey-blue, and dark purple are represented. This very beautiful, hardy, bulbous plant should be extensively grown.

Among hardy shrubs, in addition to the yellow-flowered *Jasminum nudiflorum*, from China, and the fragrant, white-flowered *Lonicera Standishii*, also from China, a pretty little tree *Nitailia cerasiformis*, from California claims our attention. The white blossoms on its pendulous axillary racemes are already opening, in spite of the favourable weather. This neat-growing member of the Rose family ought to be much more frequently met with.

*Stapelia glandulifera*, a very pretty, small-flowered species, is in flower in the Succulent-house; the five corolla segments are so thickly covered with stalked, club-shaped, white glands as almost to hide the small reddish spots and bars and the yellowish ground colour.

The best greenhouse plants of this week are the following:—*Acacia dodonaeifolia* is a neat-habited, graceful bush about 6 ft. in height; the phyllodia are narrow, about 2 in. long, and the shortly-stalked, globular heads of yellow blossoms are produced freely from their axils either singly or in twos or threes. *Acacia Drummondii*, with its bi-pinnate leaves and catkin-like spikes, is too well known to need description; it is still one of the very best of that section of this beautiful genus. *Kennedya Lindleyana* is a handsome climber, with pinnate leaves and upright racemes of deep purple-blue flowers. With one or two exceptions, the *Kennedya* are natives of Australia, and nearly every one is well worthy of cultivation. *K. ovata rosea* has rather large, ovate leaves, and axillary racemes of rosy-pink flowers. Another variety of the same species, with white flowers, is also very pretty. One of the finest of all half-hardy shrubs is the New Zealand *Cianthus puniceus*. To the resemblance of the keeled petal to the beak of a parrot it owes its native name of Parrot-bill. From the axils of the pinnate leaves hang oval clusters of crimson flowers about 3 in. in diameter, measuring from the tip of the standard to the end of the keel. In tolerably sheltered spots, where some sort of protection can be afforded during winter, this is one of the most gorgeous of wall plants. *Triteleia uniflora* bears forcing readily, and is very charming with its narrow, Grass-like leaves and numerous starchy, whitish-blue flowers. The slight Onion-like odour the flowers emit is, however, somewhat against them.

In the Orchid collection are to be seen in bloom many species, the most interesting and beautiful of which we now mention. *Cattleya Trianaei*, from Mexico (as seen at Kew), has large flowers; sepals and petals white, suffused with rose; lip large, waved, and crisped, with yellow throat, and deep border of very rich crimson-purple at the apex. *C. Lindleyana*, from Brazil, has thick, fleshy, narrow-channelled leaves; its flowers, when first opening, are greenish-yellow, but turn to white when older; the apex of the lip is reddish-purple, and the whole of the flower is spotted and suffused with red. Although not one of the most handsome of the genus, this is well worth a place in the Orchid-house. *Laelia Dayana* is a very distinct, small growing, and free-flowering species; the sepals and petals are rosy-pink, the lip deeply bordered with purplish-red at apex, whitish at base, and furnished with several prominent dark purple ridges. The flowers of *L. alba* are white, with the exception of the three parallel yellow ridges in the centre of the lip; the base of that organ, as well as the under side of the column, is copiously dotted with reddish-purple. *Dendrobium Linawianum* is a very beautiful evergreen species, after the style of *D. nobile*; the delicate purplish-rose and white flowers are very charming. *Brassavola venosa*, from Central America, is a free-flowering plant, and grows best, as at Kew, on a block suspended from the roof of the house. It has thick, narrow, fleshy, channelled leaves, and several flowered spikes of large blooms; sepals and petals white, narrow, lip large, and bearing reddish spots at its narrowed base. The new *Grasdanan Odontoglossum Pescatorei* is a most beautiful plant; it is a pity that it is not more easy to manage. It does best in a cool house. The spreading sepals and petals are pure white, while at the base of the lip rosy-purple, reddish-brown, and yellow markings find a place. The long, arching spikes of the large, waved, and crisped flowers of *O. Blunii* are exceedingly handsome; every part of the flowers is snow-white, with the exception of two or three brownish spots at the apex of the lip, a yellow blotch at its base, and the reddish-brown markings of the column. *O. pulchellum* and its variety *najus* are well worth growing; the leaves are narrow, and the white flowers, which are produced on upright scapes, are, in spite of their small size, very attractive. *Dendrobium glaucum*, from the Philippine Islands, is a most desirable Orchid, and one, moreover, of easy cultivation; its drooping spikes of small, ivory white, very fragrant flowers, are exceedingly graceful. In its native haunts this is found on trunks and branches of trees; in cultivation, however, it seems to do best when treated as a pot plant.—†

**Camellia Blooms Refusing to Open.**—We have a large house planted with Camellias, which seem to be in excellent health, judging by the dark green appearance of their leaves; but I am afraid that something must be wrong with them, seeing that they make little apparent progress in the way of opening their blooms, while, on the other hand, they are in several instances pushing fresh growth. There has been little fire-heat in the house all winter, and air has been admitted on every favourable occasion—side air, at least—the top ventilation being so constructed, that when taken off in the autumn we cannot conveniently put it on till the following spring, when it is left on night and day. Several of the Camellias have shed a good many of their buds, though I am not aware that they have ever been dry at the roots. Indeed, from the luxuriant growths which they have made, one would almost imagine that they had had too much water.

Will someone conversant with *Camellia* culture kindly inform me in what I have erred? and if they think the flowers will expand, notwithstanding the fresh growth which the plants are making? If moderate-sized plants that are planted out be potted now, could we have them in bloom next Christmas? Last year they were in bloom about the beginning of January, and continued in that condition till well on in April; but this year they will at least be a month later, if not more. Should I give them a top-dressing? they have had nothing in that way for some years.—D. W.

## NOTES AND QUESTIONS—VARIOUS.

**Wistaria sinensis on Trees.**—In a semi-wild garden here we have two plants of *Wistaria* which, judging from the appearance of their stems, which are thick and corrugated, I should imagine to be nearly a century old. One has taken possession of a purple Beech, from which it hangs in festoons, and has a very pleasing effect; and the other, which has overrun two Laburnums, is still more attractive.—W. WILKS, *Usted Park, Galamian*.

—*Wistaria* may be seen here growing on trees—on the Laburnum, on Pines ponderosa, and on a Douglas Fir 40 ft. high.—A. WATERER, *Knap Hill*.

**Colletias in Sussex.**—The *Colletia cruciata* flourishes well at Ashburnham planted in a strong clay, in which it withstood the severe winter of 1869-70 without the least protection. What is the difference between this variety and *C. Bicktonensis*?—A. HOSSACK, *Ragley*.

**Destroying Woodlice.**—What is the best method of destroying woodlice in frames and greenhouses?—T. F. B. [In pits or frames woodlice may be destroyed by pouring boiling water round the walls to which they betake themselves during the daytime, but care must of course be taken that it does not injure anything. In greenhouses they may be trapped by placing slices of Potato on the stages amongst the plants, examining them every day, and killing such as have congregated under them.]

**Double Allamandas.**—Allow me to inform "E. H." (see p. 39) that some ten years ago a plant of *Allamanda* under my care produced several double flowers. I, however, failed to perpetuate it, and the following season not a trace of the sport could be seen. I trust that "E. H." will be more fortunate.—A. HOSSACK, *Ragley, Alecton*.

**Azalea Buds Drying up.**—I have tried for two seasons to grow a couple of *Azaleas* in a small greenhouse in my garden, but I find that, although new growth is made and plenty of flower-buds are set every spring, the buds never open at all, but the new growth begins again and the buds apparently dry up. Will any of your readers kindly say what is wrong in my management? I keep the temperature of the house at about 59° during the winter by means of hot-water pipes, and I sprinkle water on the pipes occasionally to prevent the air getting too dry. When the new growth is completed, I put the plants out-of-doors under a north wall till the autumn, and water regularly.—W. J. T., *Bristol*.

**Diseased Mushrooms.**—Will you kindly inform me what are my Mushrooms, two of which I send you, and if you think them fit to eat?—A. B. [The Mushrooms sent have their gills deformed by a parasite mould (*Hyphomyces lateris*). The mould is not uncommon; far too common in some places. When Mushrooms are diseased in this way they are not fit for the table, as a sort of decomposition has set in. Some persons (and with good reason) believe certain moulds to be very dangerous.—W. G. S.]

**Destroying Tree Stumps.**—What is the best way of removing or destroying roots and stumps of large Decid trees? Grubbing them up and blasting is too expensive, and for the firing obtained by rooting them up is not considered worth the power classes' while to do the work. I have been informed that by boring an auger hole in the stem, filling it with saltpetre, and leaving it so for a few months and then setting fire to it, that all will smoulder away. Can this be true?—"IRELAND." [Several methods of destroying tree stumps have been given in *THE GARDEN*, especially in Vol. I. Kerosene employed in the way you name is said to burn them up.—S.]

**Hotchkin Pippin.**—In answer to "W. G.'s" question as regards this Apple (see p. 92), allow me to say that it is sold by Messrs. Wood and Ingram, of Huntingdon, and by Mr. Henry Clark of Wing, near Oakham, under the name of the Rutland Foundling. Some years ago it was in the nurseries at Sawbridgeworth, but the late Mr. Rivers did not consider it good enough to put in his select list of Apples, and it never appeared in his catalogue. I am still using in the kitchen the Waltham Abbey Seedling, the Colini, the Blenheim Orange, and the Hotchkin, all excellent bearers, but though still sound, they have lost their freshness.—B. S.

**The Ball at Arundel Castle.**—At the recent ball at Arundel the magnificent apartment known as the Barons' Hall was appropriated for dancing, and was decorated in a beautiful manner by Mr. John Wills, who sent there a great number of choice plants and flowers from his stores at South Kensington. At intervals round the room were groups of stately Palms, springing from beds of Moss, Ferns, and flowers. There were many Lilies of the Valley in full bloom, also *Poinsettia* and lovely Orchids and *Camellias*, together with the more modest *Primulas* and *Cyclamens*, interspersed with a large variety of handsome foliaged plants. Mr. Gates' band from Brighton occupied a raised orchestra at one end of the room amidst a charming display of Palms and flowers.

No. 325.] SATURDAY, FEBRUARY 9, 1878. [Vol. XLII.]

"This is an art  
Which does mend Nature: change it rather: but  
THE ART ITSELF IS NATURE."—*Shakespeare.*

### CAMELLIA BLOOMS REFUSING TO OPEN.

BUT for the fact stated by "D. W." (see p. 112), that his plants had shed a great many of their buds, I should have said that there was nothing the matter with them, only they were probably a month later than last year. That has been also the case with a house here this season. Last summer was, on the whole, dull and wet, and Camellias in cool houses were thus retarded in their growth. Neither, perhaps, ought a good many buds falling off to be accepted as any proof of much being wrong with the plants. Some good growers hardly thin Camellia buds at all; few, perhaps, do so to a sufficient extent. Bud-shedding is often nothing more than Nature taking that important duty into her own hands. As to present measures, remove all the fresh growths back to the old wood. This will hasten the development of the flower-buds, and often improve the plants by forcing them to push several shoots instead of one. Camellias in some localities, and some varieties in most places, manifest strongly this tendency to premature wood-making. The simple, strong, and effectual remedy is, to break it off sharp by the old wood. The sooner this is done the earlier the flowers close by the base of the shoot removed will expand. One of the most active causes of this wood-making in advance of the flowers arises from attempts to force the flowers to open by additional warmth and moisture. Camellias cannot be forced at the final stages with impunity. Anything like stimulating treatment causes them to shed their buds by wholesale. The sap that does not flow up the flower-buds shoots past them into the wood-buds, and is expended in premature growths. As these are mostly developed on the strongest and most vertical shoots, the result is an irregularity of wood growth alike in regard to place and time, as well as the loss of the flowers. Hence even for symmetrical growth, as well as uniformity of bloom, the removal of these early shoots is desirable. Yes; plants potted up now may be had in flower by next Christmas. If the flowers are very late, either pick them off or give them the chance of remaining on and expanding under forced treatment. Place the plants, as soon as potted, in a Peach house or Vinery at work, or other house where a temperature of from 50° to 60° can be maintained. Keep the atmosphere very moist, and see that the sun does not shine directly on the leaves while in a young and tender state. During the season of wood-making Camellias will bear sharp forcing well. As soon as the wood is made and the incipient buds formed on the ends of the shoots, cooler treatment must be adopted, or a second growth or the shedding of the flower-buds will be the consequence. If "D. W." has the means of warming his Camellia house, or will adopt a close, moist, forcing mode of treatment after his plants have finished flowering, and will continue it long enough until the wood is ripened and flower-buds formed, he may then have his house of Camellias in flower next Christmas, or soon after. By following a similar method for several years, Camellias may be timed to flower at any season from September onwards. From the description given and symptoms of health and vigour manifested by the Camellias in question, I would not recommend any top-dressing or stimulation with liquid manures. The plants seem overfed, if anything, and occasionally that will cause them to cast their blossom-buds in showers. Possessed of an exuberance of vital power, and relieved of the natural load of developing and supporting a crop of flowers, nothing is more likely; while few things are more provoking than that the plants should run prematurely into wood-making. D. T. FISHER.

Hardwicke House, Bury St. Edmunds.

### ANEMONE FULGENS.

IN a short article in THE GARDEN a week or two ago, the present was recommended as the best time to increase this Windflower, or to be more correct, if I remember it aright, as a good time to perform the operation of division. The writer stated that his plants would be shortly in flower, a fact which showed that they must be far advanced in growth. Now I respectfully beg to suggest a different course. I have under my charge a pretty good stock of this very beautiful plant (about 2000), and my experience is that it should always be lifted as soon as ripe, and that the roots should be kept dry until planting time comes round, which may begin in July, and be continued at intervals until December. The proper time to increase the

plant is at the time when it is planted; break the roots up into the smallest bits and plant at once; do not break them up any length of time before planting. It would, I think, be altogether wrong in practice to plant the roots whole, and after they have become established to take them up for purposes of increase. If they were divided at planting time they could not be again increased as soon as they are furnished with leaves; for although there is little doubt that they could be lifted with balls of earth, and with all their fibrous roots entire, and removed to some other position after growth had commenced, still the best practice is to leave them undisturbed after they are once planted in the form of dry roots until they have ripened off again. The advantage of successive plantings will be obvious on the principle that one cannot well have too much of a good thing. My first roots this season were not planted till the end of August, and now (Feb. 4) the first flowers are on the point of opening, whereas the last planted ones are only just beginning to peep above ground. T. SMITH.

Newry.

**Orchids at Tunbridge Wells.**—In the collection of Orchids now being formed by the Rev. R. Kinleside, at Sanbury House, I saw the other day the following in flower, viz., upwards of fifty plants of *Phalopsis Schilleriana*, varying greatly both in size and colour; one plant in particular had flowers of an unusually rich deep purple hue. There were also between fifty and sixty *P. amabilis*, some of the flowers of which measured  $\frac{3}{4}$  in. across; likewise fine masses of the snowy-white *Coleogyne cristata*, *Calanthe Veitchi* and *C. vestita rubro-oculata*, the comparatively rare *Odontoglossum Roezli* and its fine companion *O. Roezli album*, the beautiful *Cattleya maxima*, *Dendrobium moniliforme*, and the charming little *Leptotes bicolor*. There was moreover, a fine display of *Odontoglossum crispum* (Alexandre), some of the spikes of which bore as many as from twelve to sixteen flowers; and associated with it were *O. triumphans* (bearing twenty-two fully expanded blossoms), *Lesia anceps*, *Oncidium cucullatum*, *Odontoglossum roseum*, *O. Pescatorei*, and *O. glorieum*, the last bearing twenty-one flowers on a spike. *Lycaste Skinneri* and its many varieties were also in bloom; also the bright scented *Sophronia grandiflora*, which is quite a gem at this season of the year. The plants are all in good condition, and, as a collection, will probably be long rank as one of the foremost among the many that are to be found in various parts of the country.—JAMES BARNSHAW.

**The "Wild Garden."**—Illustrations for a re-written and beautifully illustrated edition of this book are now being drawn in black and white by some of the best artists in London and Paris. These illustrations will show some of the results already obtained, and suggest what is possible with many types of vegetation. This book is written in the interest of the most charming phase of picturesque gardening, and we should be greatly obliged to any persons interested in such for permission to see any photographs or sketches showing beautiful flower life in a wild or semi-wild state. What is wanted are not portraits of individual flowers, but wreaths, fringes, or colonies of them as they arrange themselves in a wild state, or are permitted to do so in the garden. American readers would also greatly oblige by letting us know if any photographs are obtainable showing flower life in the Northern, Eastern, Western, or Pacific States.

**Anemone blanda.**—Mr. Barr has lately had this early blue Anemone in his office in King Street flowering freely in a pot. It is probable that this Windflower would prove most valuable for blooming in pots or shallow pans in winter and very early in spring, when good blue flowers are often scarce. This Anemone is no doubt common in parts of Greece, and it is to be hoped that it will soon be among sorts readily obtained, being indeed the finest of all winter-flowering blue hardy plants; although like the Apeanine Anemone, it possesses great value in flowering so much earlier than that well-known species.

**Rhododendron Veitchi.**—This, one of the finest of tender Rhododendrons, has been for some time past in flower in the Exotic Nursery, Chelsea. Its blossoms are very large and waxy, and of snowy whiteness, with the exception of the lower petal, which is slightly tinted with yellow. The edges of the petals are beautifully imbricated, and the perfume delicious.

**Solanum Empress.**—This is the name given to a new and improved Solanum. It is dwarf and compact in habit, and bears berries in profusion. They are large in size, oblong, and bright scarlet in colour. Plants of it put out-of-doors in good soil early in spring, and lifted in September, make handsome specimens, which become covered with fruit. Mr. Williams, in whose nursery I met with it, finds that pinching out the points of the shoots in autumn has the effect of keeping the plants from making over vigorous

growth at the expense of fruit; the size of the berries is also thereby increased, and the plants themselves are rendered more bushy.—C. S.

**Dendrobium japonicum.**—This, which is one of the prettiest and most useful of Dendrobies, differs in habit of growth from all others of the genus. It is easily cultivated, and produces an abundance of pure white blossoms that are invaluable for small bouquets. It is now in flower in Messrs. Rolissons' nursery at Tooting, where there may also be seen the beautiful blue-flowered *Vanda cœrulescens* Boxalli, the orange-scarlet-flowered *Ada aurantiaca*, and several other water-blooming kinds.

**Hardy Flowers at Tooting.**—Beds of Crocus Imperati in Mr. Barr's nursery at Tooting are covered with blossoms, and at Mr. Parker's I saw the other day a few bright flowers on *Anemone fulgens*, also blooms on *Galanthus Imperati* and *Crocus Sieberii*. Helioleles in variety still continue to bloom freely, and the large blue flowers of *Gentiana acaulis* are being produced in abundance on well established plants.—S.

**Maadevallia ignea superba.**—This brilliant form of *M. ignea* is now in bloom in the Victoria Nurseries, Holloway. Its blossoms are very large and almost as high coloured as those of *M. Veitchii*. The plant, which is a free-grower, produces blossoms in profusion.

**Two New Ferns.**—In Mr. Wills' nursery at Anerley have been raised two new *Adiantums*, which, when they become known, cannot fail to be appreciated. One has light, slender fronds with drooping pinnae, reminding one of those of the sensitive plant when touched; the other has a dwarf, sturdy habit, and short, stiff fronds, resembling in size and appearance those of *A. Farleyense*, but they are much greener and harder, and more likely to stand better than those of that variety.—S.

**Chinese Primulas.**—There is now a fine display of these in Messrs. Carter & Co.'s nursery at Forest Hill, consisting of upwards of 1000 plants of the finest kinds. Amongst them may be seen the elegant Fern-leaved white and red varieties, Brown's Exquisite, a magnificent variety, with flowers the size of a five-shilling piece, the peculiar striped variety called Village Maid, and other equally good kinds. Messrs. Carter grow these plants annually wholly for the seed which they produce.

**The Double-flowered Epacris.**—Plants of this *Epacris* are now coming freely into bloom in Mr. Bull's nursery at Chelsea. It is a free-growing plant, sometimes making shoots from 18 in. to 2 ft. long, studded their whole length with small ivory-white blossoms. When plentiful, this double-flowered *Epacris* will doubtless be largely grown for market, as well as for other purposes.

**Tillandsia zebrina.**—For decorative purpose this *Tillandsia* is unequalled by any other of the genus. It is by no means difficult to grow, and, when furnished with their brilliant inflorescence, well-grown plants in 6-in. pots, set in vases and in similar positions, are strikingly effective. A quantity of well-grown plants of it are now in flower in Messrs. Rolissons' nursery at Tooting, and we also saw some hundreds of small plants of it being grown on for decorative purposes in Mr. Wills' nursery at Anerley.—S.

**Three Rare Orchids.**—*Aerides Huttonii*, a distinct species from Java, is now in flower in Messrs. Veitch's nursery, at Chelsea; its blossoms are bright rose-pink, spotted with white. *Epidendrum Wallisi*, a new species, has bright yellow flowers, and will, when established, be an acquisition. A large-flowered variety of *Angraecum sesquipedale*, in the same nursery, is now bearing four or five ivory-white blossoms, which, when fully expanded, will measure nearly 9 in. in diameter.

**Kentiopsis Lindeni.**—This is one of the most effective Palms for winter decoration which we possess. It has broad, massive, fan-shaped leaves, of a bright bronze colour, which, when associated with green-leaved kinds, produce a fine effect. We saw good specimens of it lately in Messrs. Rolissons' nursery at Tooting.

**Ageratum album.**—For supplying cut bloom in winter this *Ageratum* is extremely valuable. It grows well in pots, and established bushy plants of it produce abundance of white, button-shaped flowers for months in succession. It is grown by several London nurserymen for this purpose.

**The Botanical and Central Horticultural Societies of France** have agreed to hold, during the Exhibition, an International Botanical and Horticultural Congress. It will commence on August 16th, and will last a week. It will be held at the Central Horticultural Society's offices, 84, Rue de Grenelle, St. Germain, Paris. Other French and foreign societies interested in horticulture and botany are invited to send one or more persons (Members) to repre-

sent them. Excursions and visits to the different scientific establishments will take place in the intervals between the sittings of the Congress. Any persons wishing to be present are requested to send in their names, &c., to the President or to the Secretary of the Commission of Organisation, 84, Rue de Grenelle, St. Germain, Paris.

**Odontogoria (Davallia) aculeata.**—This pretty little deciduous Fern is not often met with, but it is one which is well worth culture, on account of the various uses to which it may be put. It has graceful fronds, from 1 ft. to 1½ ft. long, and finely-cut pinnae, the undersides of the fronds being armed with small sharp spines. Good plants of it may be seen in Mr. Ley's nursery at Croydon.—S. C.

**Pelargonium Lothair.**—Amongst scented-leaved *Pelargoniums* none surpasses this as to its beauty, and for clothing pillars or rafters in greenhouses it is most useful, producing, as it does, at every point trusses of pretty little, perfectly-formed, bright crimson blossoms, spotted with maroon. These, too, are produced without any forcing, and when gathered the petals do not fall nearly so soon as those of most *Pelargoniums*. It is grown in Messrs. Jackson's nursery at Kingston.

**In a Small Garden.**—The engraving of this subject (see p. 122) shows a type of garden which may be created on a very small space of ground, and yet one which gives as much satisfaction as many an extensive place. The small open lawn is fringed here and there with tufts of Grasses, choice Conifers, flowering and evergreen shrubs, and occasionally a strong tuft of a handsome herbaceous plant isolated in the Grass. These elements of the picture are not so changeable as the contents of the flower-beds, which are simple in outline, and arranged here and there round the outer walk.

**Finely-flowered Eucharis amazonica.**—A pair of plants of this *Eucharis*, in Mr. Williams' nursery at Holloway, are now very attractive. One plant is furnished with forty flower-spikes, and the other with thirty-five, and each of these bears five or six blossoms and buds. Altogether, therefore, the two plants will probably produce nearly 400 blossoms.

**Dendrobium luteolum.**—As a companion to the white-flowered *D. japonicum*, this well deserves attention. Its flowers are of a delicate sulphur colour, somewhat resembling those of *D. Pierardi*. It is robust in growth, and flowers freely. A number of plants of it are now in bloom in Messrs. Low's nursery at Clapton.

**A good Winter Tropæolum.**—The best *Tropæolum* which we have seen for furnishing bright flowers in winter is one used by Mr. Cannell, at Swanley, for covering the rafters of his greenhouses. It is a free-growing kind, which even at this season produces an abundance of flowers, with rich yellow petals, spotted with dark maroon. The edges of the blooms are toothed, and suggest the idea that this variety is a seedling the result of a cross between the well-known *T. canariense* and one of the scarlet-flowered kinds.

**Imnathophyllum miniatum princeps.**—This is one of the most beautiful forms of this valuable winter and spring-flowering plant. Its blossoms, which are large, are produced on stout, fleshy stalks, and usually open all at once. The petals are broad and waxy, and very delicate in colour, the inner portion having a rich creamy tint, whilst the tips are orange-scarlet. It is now in flower in Mr. Bull's nursery, where, contrasted, as it is, with the old form, its superiority to it in every way can at once be seen.

**Cypripedium insigne Maudslayi.**—A good display of this, perhaps the most useful of all the Lady's Slippers for general purposes may now be seen in Mr. Williams' nursery at Holloway. Its flowers are much larger than those of the well-known *C. insigne*, and the upper petals, which are margined with a band of pure white ½ in. broad, are spotted with delicate purple on the inner side. This variety flowers quite as freely as *C. insigne*, and is certainly, both in size and beauty of flower, greatly superior to it.

**Special Prizes at the National Rose Society.**—Among the special prizes announced for the meetings of the present year are a cup or piece of plate given by Rose growers for sale as the chief prize for the class for twenty-four Roses, single trusses (amateurs); a cup by Mr. Edward Mawley, for the best six Roses (amateurs); a five-guinea cup by Mr. W. Robinson, of THE GARDEN, for all Roses; and a cup by amateur exhibitors for the first prize for thirty-six Roses (nurserymen).

**Sycamore.**—It is well known that in England this name is given to a species of Maple, *Acer pseudo-Platanus*, while in this country the Button-wood (*Platanus occidentalis*) is the popular Sycamore. The true Sycamore (*Ficus Sycamorus*), a native of Egypt and Palestine, has oval, cordate, entire leaves, having no resemblance to either the Plane or the Maple. We have never been able to learn the history of this confusion of names.—"Bulletin Torrey Club."

## THE FLOWER GARDEN.

### A LIANE IN THE NORTH.

We often read of the beauty of Lianes or giant creepers that climb through the tropical forests, garlanding high trees with wreaths of leaves and flowers not their own. In visiting the nurseries of Messrs. Van Eden, at Haarlem, last spring, we were agreeably surprised to see a Liane, in the shape



A Liane in the North.

Aristolochia and Deciduous Cypress in Messrs. Van Edens' Garden at Haarlem.

of the well-known *Aristolochia Sipo*, or Dutchman's Pipe, which had clambered high into a fine old deciduous Cypress. Being much interested in this long-established companionship, we were able to procure, through the kindness of Messrs. Van Eden, photographs of the tree and its Liane, from which the engraving we now publish was drawn and engraved. When we saw it the leaves had not appeared on either the tree or its companion, yet the effect of the old rope-like stems was very picturesque. Messrs. Van Eden inform us that the *Aristolochia* ascends to "a height of 35 ft. 6 in. on the tree.

Some of the stems of the Liane are 7 in. in circumference. It is more than sixty years of age, and has always been in the same place and position—always friendly with the Cypress. For many years the tree has been known as a 'fine specimen;' but of late years it has suffered much from sea winds—the situation having become more exposed." We have had it engraved in the best manner as much for what it suggests as for what it represents.

R.

### ROSES AND ROSE SOILS.

ROSES are best moved before the close of the year, yet doubtless there will still be a good many to plant. With all kinds, excepting the Teas, no time should be lost in getting them into the places where they are to be grown; for not only do the buds after this time begin to push, but the roots commence to move also, after which transplanting has a more injurious effect upon their ability to make growth and flower during the ensuing spring and summer than when the planting was carried out earlier, when they were quite at rest. As to the places and positions in which Roses should or might be planted, a good deal has been said that is totally impracticable, such as covering the walls and chimneys of houses in towns, and other places of a like description, with them. It must ever be borne in mind that, in order to grow Roses successfully, the soil must be suited to their requirements; but, above all, the atmosphere must be moderately pure. All the art of the cultivator can never make them succeed where the air is charged to any considerable extent with smoke and gases inimical to vegetable life. Roses are more sensitive in this respect than most plants. Of this I have been long convinced by actual experience, when all that it was possible to accomplish had been done in the way of efficient drainage where required, and the introduction of soil best adapted to their wants, even to the extent of providing the hole in which they were to be planted similar to the practice generally followed in making a new Vine border; yet it was all to no purpose. In a smoky atmosphere they cannot live, much less grow satisfactorily. As a matter of course, the strongest-constituted varieties bear up against adverse atmospheric conditions better than the more delicate kinds; but, in their case, it is merely a lingering existence.

As is well known, Roses will succeed fairly well in the majority of soils where the land is not absolutely too wet or of too light and sandy a nature. Where the former is the case, it can always be remedied by efficient drainage; and where the ground is too light, this can be got over by the introduction of a sufficient quantity of good holding loam, or liberal additions of marl or clay thoroughly pulverised before being incorporated with the natural soil; but where the land is of a very sandy character, the additions recommended must be applied without stint. On such ground where Roses, even when worked on the Manetti stock, or on their own roots, could scarcely be made to live, by the application of 6 in. of heavy loam, added to 4 in. of marl or clay, I have been able to make them succeed satisfactorily. Of course, where the land requires such additions as these, only a limited extent can be planted; but Roses are such general favourites, that everyone possessing a garden is anxious to grow them; and as very many find themselves in localities where the soil is naturally of such a character as that just indicated, they are willing to incur any reasonable amount of labour and expense that will enable their culture to be carried on if only to a limited extent; but where such additions to the soil as the above are necessary, no time should be lost as regards preparing the ground. Where the soil is naturally deficient in strength, it becomes doubly necessary to discriminate as to the varieties which should be grown. It is much better to cultivate a score of vigorous, strong-constituted kinds than to extend the list to an indefinite number of weak growers. I look upon all the different stocks, both dwarfs and standards, on which Roses are grown as evils, though in some cases they may be said to be necessary ones, inasmuch as in the case of new varieties, if all were propagated on their own roots, the public would have much longer to wait and much higher prices to pay before they could possess them; and even with the commonest kinds budding and grafting facilitates the production of Roses in a way that effects saving

both in time and price; yet little else can be said for the use of stocks. No doubt where soil and climate are such as to fully answer the requirements of Roses, they will succeed almost any way; but the greater portion of the land in the kingdom is not of this nature, and in light soils especially I have found the Hybrid Perpetuals particularly to succeed on their own roots in a way not possible where a stock of any description was used; the Teas, of which there are now so many beautiful varieties, like a comparatively dry bed; they do equally well on their own roots, or when grafted so low that they ultimately emit roots above the junction with the stock. There is one evil connected with the use of stocks of all sorts more or less, to which Rose growers of the most limited experience can testify, that is, the production of suckers; the attentive cultivator always removes these as soon as they make their appearance, but this only limits the evil. More than half the energies of the plants are frequently directed for weeks to the formation and development of suckers, that often extend underground for 1 ft. or 1½ ft. before they make their appearance above the surface, and which, if even traced to the point from which they spring and removed, are so much lost to the plants; therefore I should advise all who grow Roses on a limited scale to gradually get their collection on their own roots.

As to the time of pruning Roses, a considerable allowance should be made consequent upon the different conditions under which they are grown. No greater mistake can be committed than indiscriminate early pruning, especially in mild winters, for, when such occurs, Roses begin to push the buds near the extremities of their shoots by the middle of January; these go on, leaving the buds near the base dormant. Such winters are almost invariably followed by severe spring frosts, that destroy these early-developed shoots, which, though no doubt they have, to some extent, weakened the plants by their production, may be said, nevertheless, to have acted as safety-valves by which the lower buds, that have to produce the wood and flowers for the ensuing season, have been kept in their wonted latent condition; whereas, if the pruning had taken place soon after the beginning of the year, these lower and only remaining buds, left to depend upon for the season's crop of flowers, would at once have been excited into growth, and subsequently suffered death or destruction by the spring frosts. Late pruning, no doubt, means comparatively late flowering, and in the most favourable parts of the kingdom it is well to, at all events, prune a few early, so as to have some flowers more forward, but even where climatic conditions render Roses less liable to suffer through cold nights in spring, it is a much safer course to defer pruning the greater portion until the middle or end of March. Roses, under fair conditions of soil and climate, will succeed well on a north wall; but, as might be supposed, from being so little in such a position under the influence of the sun, they are considerably later in pushing growth, hence it follows that they may with safety in such situations be pruned earlier; in fact, the sooner from the present time the better. On east and west walls, where the energies of the plants become excited sooner, it is well to defer the pruning a short time yet, although, as will be easily understood, plants under the protection of a wall on these aspects will not suffer through spring frosts to an extent that would occur if growing in the open ground. Tea Roses in pots ultimately intended to be turned out had better not be planted yet for a few weeks, keeping them in the interim as cool as possible, so that they may make the least amount of growth.

T. BAINES.

**White Christmas Roses.**—It is a mistake (see p. 93) to suppose that the only white variety of this plant "within the reach of all is more or less suffused with pink or a dirty purple colour," and that the flowers require to be "made white" by protection. I believe that the "dirty white" variety, as I call it, and which is perfectly useless as a decorative subject, is often supplied for the pure white kind; for I had a number of such plants sent to me by a respectable London firm, and though the plants were grown on a warm south border, and protected with hand-lights in winter, they did not change their hue in the least, and in the end I threw them to the rubbish heap. The variety which we have now I got out of a farmer's garden, quite exposed, where I found it producing an abundance of

almost pure white flowers. When the blooms are fully expanded a faint streak of pink is, in some cases, to be observed on the outside of some of the petals, but 3 ft. off the buds and flowers look as pure white as a Camellia. They have been very serviceable to us for the last six weeks, and there are a good many flowers to gather yet. I cannot see that the hand-light protection makes the least difference to the colour, for the flowers are no whiter with us than they were in the farmer's garden. I use the lights to prevent the rains from spattering the flowers with mud. The plants are growing in a heavy soil.—J. S., *Wortley Hall Gardens.*

### ALPINE AURICULAS.

WHAT is the difference between a "shaded" and an "unshaded" Alpine Auricula? and what is to be understood by these terms? These are questions that may now be put with advantage. A shaded Alpine has two tints on the marginal colour, the one dark at the base, the other paler on the edge of the pip; and so the deep colour shades the paler tint on the circumference. It will generally be found that these shades may be said to be related pretty nearly to the same colour, and maroon or claret-coloured flowers will be edged with red, or bronzy-red, or some such tint. In the case of flowers with violet, blue, or mauve grounds, the edging will be of much the same cast, but of a much paler shade. The more equally adjusted and clearly defined these two tints are, so much the nearer may the flower be said to approximate towards the florist's ideal of perfection, provided form and substance are also in combination. An unshaded Alpine Auricula is a self-coloured flower, destitute of shading, and this type is largely represented in the fine new varieties raised by Mr. C. Turner and others. Now the northern florists—or shall I say the rules of the National Auricula Exhibition held in Manchester every year—do not recognise these unshaded or self Alpines; they are there regarded as nondescripts, and would be disqualified in the Alpine classes. We may be disposed to disregard the rules which require a self show Auricula to be properly self in colour, and at the same time reject a self Alpine, and require that it be two-coloured or shaded; but they are none the less sacred in the estimation of the northern florists, and they stand by them. We owe much to these northern florists. They have held aloft the lamp of life of the Auricula at a time when it became almost extinct in the south. They inherit in perfect truth the opinions and predilections of a race of florists who in the last generation were past masters in the art of Auricula culture, and they have done good service to floriculture by the exercise of their floral faith. They see much of marvellous beauty in many flowers that do not come up to their ideal, but they reject them in consequence. They grow to admire and exhibit, and their admiration is most drawn out towards what would rank highest on the exhibition table. In the south, where the cultivation of Auriculas is just passing through a time of revival, the shaded and unshaded Alpines Auriculas can be shown together.

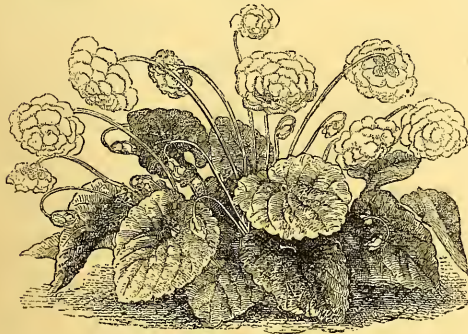
I shall not soon forget when I first saw Mr. Richard Gorton's beautiful new-shaded Alpine Mauve Queen in flower at Manchester. The base of the margin is violet-mauve, shaded off to a tint of silvery mauve. When these two shades are bright and distinct, without the base clouding the soft margin, the combination is perfect. The shaded Alpines require a great deal more skill on the part of the cultivator to get pips of fine character than the unshaded flowers. It is only occasionally that Gorton's Mauve Queen will shine out in all the perfection of its delicate beauty; it is a variety requiring to be grown in a rather poor soil to get it to flower in character, and then it should have a little stimulus to throw lustre and finish into the pips. Some other fine-shaded Alpines will be found in Turner's Bronze Queen, a distinct and beautiful variety; Dolly Varden, Queen Victoria, John Leach, Jessie, Novelty, Ovid, and Tennial, all from the same raiser; and Gorton's Diadem, a fine new-shaded flower raised in Manchester. Happy is he who can obtain a plant of each of these, for he will possess much to interest and instruct him. Alpine Auriculas are further divided for show purposes in the north into two other divisions—white centres and golden centres. Many of the most delicate-shaded Alpines have white, cream, or custard centres; while some of the darker-ground flowers have golden centres. The latter are the more attractive, because the centre is more radiant, and forms a more marked contrast to the marginal colour. It was found that the censors at the Auricula shows favoured the golden-centred in preference to the white-centred flowers; hence the creation of two distinct classes for show purposes. It is worthy of remark that, while the golden centre is regarded with so much favour in the Alps varieties, there must be no departure from the purity of the whiteness in the paste of the self-show Auriculas, and any approach to cream or custard would be regarded as a serious defect.

Last spring there was exhibited a remarkable break in the section of shaded Alpine Auriculas raised at the Bedford seed grounds, which

had great interest for cultivators. In this case dark-ground flowers were shaded with a clearly-defined band, like the regular edging to a Picootee, and generally this was white, or almost so. It was the well-defined character of the edging, and the marked contrast it presented to the body colour—the terms “ground colour” and “body colour” being synonymous—that attracted so much notice. The flowers were a little under-sized, but it was the first time that the seedlings had bloomed, and size is invariably discounted a little at the first time of flowering. When these new types are again seen, we shall be able better to appraise their value. Mr. Richard Gorton, Eccles, Manchester, one of the foremost of the northern Alpine *Auricula* cultivators, grows his Alpines in much smaller pots than cultivators of *Auriculas* generally do the edged varieties. The soil is also a little poorer. Some say, to get the shaded Alpines perfect, they must be grown in poor soil; but Mr. Gorton takes exception to this. There is always lustre about his flowers, as well as size and regularity of marking. He grows in a somewhat lighter soil than he does his show varieties, and in this the plants root with great freedom. Charcoal is freely mixed with the soil, and a free drainage is afforded to the pots. The Alpine *Auricula* so well repays attention, that it is especially commended to the notice of lovers of hardy flowers. D.

### NEW DOUBLE WHITE VIOLET, BELLE DE CHATENAY.

It is probable that no one looking at the annexed representation would recognise it, at the first sight, to be that of a Violet. The



New double White Violet.

flower of the single Violet is irregular, while in this new double variety all semblance to the usual structure of the Violet is lost, and we have in place of the normal flower a mass of petals, so arranged as to make a full double. M. L. Paillet, of Paris, the introducer of this novelty, asserts that it is the most beautiful of all Violets, a statement which we incline to the belief that the plant will warrant. Apart from growers who supply the demand of cities—and it is a large one—for Violet flowers, the choice varieties of the European Fragrant Violet (*Viola odorata*) are not much grown. Beyond a clump of the common single form in a shady place, to yield its sweetest of all flowers in early spring, we see but little attention given to the Violet in private gardens. With but little trouble one may, however, have Violets from January until May, when they bloom in the open ground. Plants, obtained by setting out runners in spring in rich soil, and giving all the water they need in dry weather, may be set early in autumn in a common cold frame. Allow them to grow until winter comes, then fill up with leaves, put on the sash, and over that a shutter. Of course, the plants must be treated like others under glass, and have abundance of air on mild days, and water as needed. A frame of three sashes, with boards to separate it into three parts, may be uncovered, one sash at a time at intervals of two or three weeks, and thus keep up a succession of flowers.—“American Agriculturist.”

**Dwarf Peony Perfection Aster.**—Every one admires Truffaut's Peony-flowered Perfection Asters, but to many their tall growth is objectionable. M. Ernest Benary, of Erfurt, is this season offering a selection under the above name, which, he states, has the large and perfectly-formed incurved flowers of the tall type, with a compact habit, the plants barely attaining 12 in. in height. These will form

good companions to the race of new dwarf *Victoria* Asters, which for some purposes, at least, will yet bear dwarfing a little more. For cuttings from it, there is no Aster which can compare with Boetzee's dwarf *Boquet*, which averages about 8 in. in height; it branches freely, and bears large numbers of flowers, which are produced successively. It is much to be preferred to the dwarf *Chrysanthemum*-flowered kind for cuttings from during the summer.—D.

### HARDY WINTER FLOWERS.

THE long-continued unseasonably mild weather, that has had such an influence in prolonging the blooming of autumn-flowering plants much beyond their usual time, has not had a similar effect in inducing the early appearance of such plants as do not show themselves until we get fairly into the new year. In fact, many of the earliest of these seem to be later than ordinary. In Mr. Ware's nursery at Tottenham even such plants as *Scilla sibirica*, *Snowdrops*, and *Crocuses* are not nearly so far advanced as usual at this time. The charming North American *Iris*, *Sisyrinchium grandiflorum* and its white variety, here are as much real winter-flowering plants as the Christmas Rose. Both varieties were in bloom last week, also a long bed, in a sheltered position, of seedling plants of *Helleborus abchasicus*, which showed every shade of colour from deep purple to white, and differed quite as much in the size and habit of the plants as in the colour of the flowers. Amongst the few really winter-blooming plants, if the present season is to be taken as evidence, is the Algerian *Iris alata*, the sky-blue flowers of which have kept on opening continuously since November, with more still to come. It is one of the most desirable plants that can be grown, and deserves a place amongst the most select of hardy flowers. The white blossoms of *Iberis gibraltarica* were just beginning to expand. In frames the white hoop-petticoat *Narcissus* (*N. Bulbocodium*), grown in pots, was well furnished with its chaste, delicately-scented flowers, contrasting beautifully with the true old double crimson *Primula*, also under glass protection. I noticed in one of the houses a large quantity of the Cape Orchid (*Disa grandiflora*) newly imported, fine masses just beginning to grow. They were just as they had been dug up in large tufts, with their native soil still attached to them. T. B.

**Campanula macrostylis.**—This fine bell flower grows about 15 in. or 18 in. in height, and has a branching, candelabrum-like habit; from the branches are produced numerous handsome-shaped cup-like flowers of large size, having a whitish ground colour, charmingly and deeply reticulated with violet. The stamens are large and prominent. I first saw this beautiful *Campanula* at the exhibition of the Weston-super-Mare Horticultural Society last August, where it excited much interest. Like many of the annual *Campanulas*, its seeds are very minute, and should be sown in a light, warm, sandy soil; they will not succeed in heavy ground. As this *Campanula* is very scarce, cultivators should take great care of it, until in course of time they discover by experience how best to manage it.—D.

### NOTES AND QUESTIONS ON THE FLOWER GARDEN.

**Winter-flowering Begonias.**—I can fully endorse all that Mr. Cleve says in favour of *Begonia manicata*, and I would strongly recommend those who require flowers, at this season of the year, to give *Begonia hydrocotylifolia* more extended cultivation. Its habit is more compact than that of *B. manicata*, and the flowers, which are pinkish, are produced on strong stalks, and are more lasting than those of that variety. Last season I planted out all my old plants of *B. manicata* in the spare spaces in shrubberies, where they did well and formed quite a distinct feature in such situations.—A. HOSSACK, *Ragley*.

**Hyacinthus candicans Hardy.**—The beautiful *Hyacinthus candicans* is yet but little known, and its extreme hardiness has been unsuspected. Seed sown in the summer of 1876 in the open ground germinated freely, and the little bulbs were left exposed to the severe frosts of the succeeding spring, and were found to be quite fresh, and throwing out roots in the month of March. This proves that the *H. candicans* is not only hardy, but more hardy than most of our spring bulbs.—“Florist.”

**Making Plants Hardy.**—Nothing contributes more to rendering plants hardy, for enduring the sharp cold of winter, than a dry bottom. In the first place, a dry soil induces an early ripening of the wood, and we have known this early ripening to make more difference than 20° in temperature. A wet soil causes a late and watery growth, which is easily winter-killed. In the second place, trees and plants standing in a soil not soaked with water will bear greater cold than the same trees water-soaked at the roots. It is well always to bear these facts in mind and to act accordingly.—“Country Gentleman.”

## A FEW NOTES ON GARDENING IN GREECE.

We have received the following interesting communication (from Athens) from Dr. Xavier Landerer, Apothecary to the King of the Hellenes, Professor of Technology at the University of Athens, and Honorary Member of the Pharmaceutical Society of Great Britain :

The modern inhabitants of the Hellenic Kingdom are as great lovers of flowers as their ancestors. Flowers are abundant in every garden, the seeds and bulbs being brought from other parts of Europe, the poorer gardeners even being themselves conversant with horticulture. It will appear hardly credible to the inhabitants of more northerly climes that on the occasion of the festivals of Christmas and the New Year thousands of bouquets, containing Lilies and Roses of enormous size, are to be had for 3 fr. or 4 fr., such bouquets costing 20 fr. or 30 fr. in England or Germany. In all parts of Greece hot-houses are to be found, where the most beautiful flowers in the world are cultivated and improved; in fact, the art of horticulture is extending day by day. All kinds of European vegetables grown under the sunny sky of this classical land are as tender and as finely flavoured as those grown in other parts of Europe. The climate of Athens seems to suit trees from both the hottest and the coldest climates in the world, and in the gardens of the King's Palace we may see alleys of ordinary evergreens side by side with the beautiful Pepper tree (*Sobinus Molle*). Other branches of horticulture are also progressing greatly. Greece may also be called one great Olive garden, except where the Grape, the Lemon, and the Orange dispute the supremacy of the oil-giving berry. The Greeks have much to be thankful for to their soil and climate. The amount of wine made last year was valued at 50 millions of fr., while the amount of oil reaches nearly 80 millions in good years. Many thousands of wild Olive trees are scattered about the mountains, where they are dug up, replanted, and improved by cultivation. The Patras Currant also forms an important item.

All kinds of fruit trees are also found in this happy land, which seems to have been specially blessed by Nature. Greece produces about 100 millions of Lemons every year, which are exported eastward, some of them going as far as Odessa. It should be remembered that each Lemon sells retail at a penny or twopence. Millions of Oranges and Mandarins are also produced annually. A good Orange will cost from 2 lepta to 3 lepta (1d. to 1½d.), and a good Mandarin 1 lepton to 2 lepta (¾d. to 1d.), the whole of the Citron tribe being very plentiful. Citronelles and Adam's Apple from the Citrus decumana are grown in the Island of Naxos, pickled in salt and water, and exported to Odessa. Strawberries and other fruits are coming into increased cultivation day by day, thanks to improved systems of irrigation.

Hundreds of thousands of ornamental trees, such as the Pine, have been brought down from the mountains and planted in gardens; also the Arbutus, which in the days gone by was sacred to the goddess Aphrodite under the name Myrthos, various Mediterranean Heaths, sea-shore plants such as the Pancratium odoratissimum, whose tiny leaves speedily fill a room with the most delicate odour, and many others are beginning to play an important part among our cultivated flowers.

Wine growing is also making great progress, the vineyards increasing in size and number yearly, and excellent Greek wine is now exported to all parts of Europe. When grown in well-kept vineyards and cleanly made, this wine is very like Moselle. It is rich in astringent matter and phosphoric salts, hence it ought to be of great service to convalescents.

XAVIER LANDERER.

Athens, Dec. 27, 1877.

Frogs.—It is necessary to combat the absurd notion that frogs do any manner of harm in a garden. They are probably the gardener's best friends. The food of the frog—the highest authorities tell us—is wholly of an animal character, consisting of slugs, worms, and insects of nearly every kind. Wire-worms are its favourite diet. In the beautiful gardens of Monte Carlo, near Monaco, there are literally thousands of frogs; and the gardens in question are, perhaps, the most trimly-kept pleasure-grounds in Europe. So we learn from an abstract in a country paper.

**Euonymus as a Climber.**—We have been growing the climbing Burning Bush (*Euonymus radicans*) for several years past, unawares of its value for covering unsightly objects, as we use the Ivy. Now we are assured that it clings bravely to rough walls or to trees, and is preferable to any other plant available for that purpose. It has glossy, dark green foliage, and, what is better still, is evergreen. There is a variety with silvery-white variegations, and one similar to it with a pink tinge. The variegated forms have been found useful for edging beds and other ornamental work. It has been recommended as a climber where Ivy will not succeed. It is quite as easily increased by cuttings as Ivy, and it makes thrifty growth in almost any soil, although it seems to prefer a light loam.—"New York Tribune."

## THE FRUIT GARDEN.

## PEARS WHICH RIPEN FROM JANUARY TO MARCH.

SEVERAL bad seasons having occurred in succession, open-air fruit culture has come to be looked upon as doubtful work. Especially have good Pears been lacking; for even when the blossoms have escaped the frosts of May, the last two seasons at all events, there has been no sun in autumn to add flavour to the fruit; still, we must not give up in despair, but hope that better seasons are in store for us. When the seasons are at all favourable, the following are amongst the best Pears which ripen from now onwards to the end of



Fig. 1.—Josephine de Malines.

March. Let us begin with Josephine de Malines (Fig. 1), a well-known Pear, and one of the very best in every respect. It is the only real good Pear we have tasted since the beginning of the new year. The tree is rather straggling in growth, and requires to be well pinched in—summer pinching. The fruit should never be gathered till danger from frost makes the operation imperative, for if gathered too soon the flesh is sticky and dry; but when allowed to remain as long as possible, it is buttery, melting, and highly aromatic. The flesh is sometimes (always when good) of a pale salmon colour. Zephirin Greigore (Fig. 2) is also an excellent Pear, a very prolific bearer; but the blossoms, being more susceptible of injury than many others, tend to neutralise its free-bearing qualities. We have only got it in bush form, for which its habit is well suited, being of sturdy, short-jointed growth. Where wall-room could be spared for it, doubtless it would prove to be one of the very best of late Pears, the flesh possessing a rich vinous piquancy. Easter Beurré (Fig. 3) is too well known to require description. Unfortunately, the last two seasons the spring frosts have with us destroyed nearly all its blossoms, and fruit of it has been scarce, and what there has been has been spunky and kept badly. The tree is a vigorous ripener, is from Christmas to the end of March. The tree is a vigorous grower, and the fruit is finest on the Pear stock, but most fruitful on the Quince. Passe Colmar (Fig. 4) is another well-known and very generally grown Pear; and not the least of its good qualities is, that it has been constant through all the bad seasons, thus proving it to be hardier in constitution than



Fig. 2.—Zephirin Greigore.

many others, and therefore a desirable variety to cultivate. The fruit is medium-sized, very handsome, being, when fully ripe, of a bright lemon colour, with reddish russet on the side next the sun, and of a rich aromatic flavour. Beurré Gris d'Étver (Fig. 5) is a very handsome fruit of passable quality for a late Pear, but it should be grown on a wall. It does no good either in bush or pyramidal form, and is but a shy bearer even on a west wall. Ours is on the Pear stock; possibly on the Quince it would be more fruitful; its season for ripening is February. Ne Plus Meuris (Fig. 6) is not a good representation of the fruit, for though sometimes it is long, as shown, it is more frequently roundish-obovate, and very uneven in outline. It is a most excellent late Pear, ripening from February to April, the flesh being rich and piquant, if grown on a wall, as it always should be. If grown as standards or pyramids, it becomes gritty, and is only fit for stewing; it is a saro cropper, and a good grower. Besi di St. Waast

(Fig. 7) is an excellent, though little-grown Pear, about the size and shape of Flemish Beauty, but more uneven in outline. The flesh is juicy and sugary, and, though occasionally gritty, by no means unpleasantly so. The tree is of good habit and constitution, and does well, grown or trained in any form. *Beurré d'Areberg* (Fig. 8), is another most excellent December and January Pear, larger than the preceding, of handsome form, with light yellow and russetty skin. The flavour is rich and highly perfumed, quite equal to a good *Doyenné du Comice*. The tree is a good bearer, and though it does well as an espalier or standard, it merits a wall.

W. W. H.

#### A FEW NOTES ON POT-VINE CULTURE.

It is hardly worth while to go to the expense of growing Vines to produce ripe Grapes before the beginning of April, as *Lady Downes* can be had of excellent quality, plump in

stute *Foster's White Seedling*, as the best white for pot culture. I have a gentle bottom-heat, about 85° in one of the pits; the pots are plunged in that, and I do not apply any water until the buds have pushed through the ground. If the soil seems to be over dry, I merely syringe over it. When the young Vines have grown a few inches, I re-pot them into 6-in. pots. The pots are again plunged in the bed, and when the roots have reached the sides of the pots, these ought to be raised out of the beds, and be placed merely upon the surface. The next shift is into 8-in. pots, and by this time the season will be well advanced, and the temperature of the house by night may range from 65° to 70°. Water freely when the Vines are in active growth, and syringe the leaves with tepid water twice daily in the morning, and also in the afternoon, when the house is shut up. I generally contrive to have the young Vines in a sufficiently advanced state to be potted into

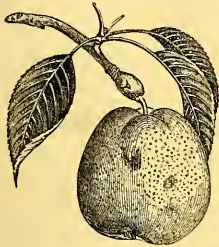


Fig. 3.—Easter Beurré.



Fig. 4.—Passe Colmar.



Fig. 5.—Beurré Gris d'Hiver.



Fig. 6.—No Plus Mours.



Fig. 7.—Best di St. Waast.



Fig. 8.—Beurré d'Areberg.

berry, with green foot-stalks, and covered with bloom at that date. There are few, however, who will not appreciate good *Black Hamburg* Grapes in April, and the best way to obtain them at that date is a question of considerable importance to gardeners. Of course, where expense is no object, early Vineries can be built to succeed the late house, and the size of them be regulated by the supply. There are, on the other hand, many gardens well furnished with *Cucumber* and *Melon* houses, or rather pits, which could be spared to grow a crop of early Grapes. This is my own case. I had *Melon* and *Cucumber* houses built, but we do not require the whole for that purpose. I found that they were also well adapted for growing Vines in pots. I could not purchase the Vines, and had no alternative but to raise them from eyes.

In January, or the first week in February, I put the eyes singly in 3-in. pots, in pure turfy-loam, with a little sand. The varieties were *Black Hamburg*, with a few *Duckland Sweet-water*; but if I had to do the same thing again, I would sub-

stitute *Foster's White Seedling*, as the best white for pot culture. I have a gentle bottom-heat, about 85° in one of the pits; the pots are plunged in that, and I do not apply any water until the buds have pushed through the ground. If the soil seems to be over dry, I merely syringe over it. When the young Vines have grown a few inches, I re-pot them into 6-in. pots. The pots are again plunged in the bed, and when the roots have reached the sides of the pots, these ought to be raised out of the beds, and be placed merely upon the surface. The next shift is into 8-in. pots, and by this time the season will be well advanced, and the temperature of the house by night may range from 65° to 70°. Water freely when the Vines are in active growth, and syringe the leaves with tepid water twice daily in the morning, and also in the afternoon, when the house is shut up. I generally contrive to have the young Vines in a sufficiently advanced state to be potted into

their fruiting-pots by midsummer, or, at the latest, by the second week in July. After this their growth is exceedingly rapid. It is a race against time, and they ought to have as much heat as they will bear with a moist atmosphere. In hot weather in July the temperature in the afternoon may rise to 90° or 95° without injury, but I always ventilate early in the morning, admit a little air at six o'clock, increasing the ventilation as the sun's rays act upon the glass. With this treatment the canes will be brown and hard by the end of August, and they will also be exceedingly strong, with large, plump eyes.

After this time I gradually decrease the amount of atmospheric moisture, and admit more air, leaving the ventilators open a little at night. During October I allow the ventilators to be freely open night and day, and by the end of that month the Vines will be ready to place in the forcing house. I find that they start best if the pots be plunged in a very gentle bottom-heat, say 80°; a bed of leaves is as good as anything.

The temperature of the house should be about 50° at first, and it may range from that to 55°. When the buds are fairly started, raise it at once to 60° or 65° in mild weather. I do not care to have the temperature higher than 65° at night until the Vines are in flower. During this time a higher temperature is desirable, and it may range from 65° to 70° until the Grapes begin to colour. The pots I use for fruiting are 11-in. and 12-in. ones, and the compost merely consists of good turfy loam, not too much rotted, but sufficiently so to kill the Grass; this is torn to pieces by the hand, and a 9-in. potful of crushed bones, with as much charcoal, is added to each barrowful. In potting, press the compost in firmly with a wooden rammer. I do not plunge the pots after the Vines have fairly started, but have been most successful with those that have been placed on a stage about 6 in. above the hot-water pipes. Each Vine will furnish about six bunches of Grapes, and finish them off well. I never use Vines a second time, but have given them away, when they have been planted out and succeeded well, bearing a crop of fruit the next season.

J. DOUGLAS.

### FRUIT CULTURE IN THE UNITED STATES.

TO THE EDITOR OF THE LONDON GARDEN.

In this country, at the present time, there is no other branch of horticulture receiving so large a share of public attention as that of pomology. This is especially true in all our fruit-growing regions, and I speak advisedly when I state that we have more capital and labour employed in this interest than in all others pertaining to the garden. About twenty years ago the great cry all through the land was, "plant more fruit." The press took up the earnest refrain, and reiterated it in every village and hamlet in the Union. Nurserymen enlarged their facilities to an enormous extent and with wondrous rapidity, and the business suddenly expanded beyond all precedent. The people had heard the advice, and were resolved to act upon it without delay. The ordinary business of farming, as commonly applied to tillers of the soil, had become an old story to them; it was hard work, incessant toil, with profits small, and uncertain at best. They read of Bartlett Pears bringing from 5 to 10 dollars per bushel in New York; of Plums selling by the barrel at the price of a ton of hay. They were told that this bushel of Pears could be grown on any soil, and in almost any location, and from a small tree a few yards from the graft; and that from 100 to 150 such trees would grow on an acre; and all this with very little labour after the trees had once become fully established, and that then they would continue to increase in productiveness each year, and attain to a great age. Downing said this was so, Wilder and Thomas endorsed it; and the whole circle of pomologists agreed to it. And it was so; every word of it was true. Who can look back over those years without feeling and knowing that those promises have been more than realised? Thus it was that the people plunged into the fruit business from Maine to California. They bought trees, Vines, and plants, raised, increased, and propagated them; calling into existence such large and extensive nursery firms as Ellwanger and Barry, with 700 acres of land, and over 2000 varieties of fruit; and scores of other prominent firms in different sections. Thousands, yes, millions of acres were thus speedily converted into fruit gardens and orchards. Many of these received careful and intelligent culture; some, of course, were sadly neglected, and rewarded their owners in proportion, for surely it was not promised that they would succeed without some care and attention. Those who were earliest to embark in the business, together with others who used special care in cultivation, were, of course, first in the field. They grew fine fruit, obtained highly-remunerative prices, and at once increased their acreage. Then, in regular succession, as the skill and labour of each had succeeded, came the thousands of other growers with their large supplies. The market literally teemed with the luscious load; but it proved expansive and elastic. Our rapidly-increasing population, and a growing popular taste for fruit, absorbed it all, and paid fair prices without a murmur. But, as the years rolled by, these millions of trees grew very rapidly; and trees that a few years previous produced one bushel, now gave three; and each year the long rows were

being extended, until the amount of fruit grown in the United States has become simply immense.

Some idea of the magnitude of our fruit culture may be formed from the fact that we now have 4,500,000 acres devoted to it, upon which it is carefully estimated there are 112,000,000 Apple trees, the same number of Peach trees, 28,000,000 Pear trees, and 141,000,000 Grape Vines. The value of the produce of the above for the past year has been placed at 50,000,000 dollars for Apples, 56,000,000 dollars for Peaches, 14,000,000 dollars for Pears, 2,000,000 dollars for Grapes, 5,000,000 dollars for Strawberries, and 10,000,000 dollars for other fruits. Marshall P. Wilder estimates our fruit crop at nearly one-half the value of the Wheat crop. In 1875, the Maryland and Delaware peninsula alone produced between 7,000,000 and 8,000,000 baskets of Peaches; and during the past season over 3,000,000 quarts of Strawberries were shipped from Norfolk, Virginia, 1700 pickers being seen in the fields in one day. These statements will serve as a general basis for an intelligent estimate of our present productive capacity. Our late war carried with it half a million consumers; cheap and rapid transit is bringing foreign and tropical fruits in more active competition with our own; and now, for the past year or two, the whole aspect of the fruit business is gradually changing, and, except in particular instances and special localities, the supply frequently exceeds the demand. Car-loads of Peaches are annually thrown from the docks in New York for the want of consumers; and last summer whole fields of Strawberries were allowed to rot on the plants for the same reason; which will be more easily understood, perhaps, when I state that over 10,000 bushels were received at New York in a single day; Cherries barely paid for marketing; Pears were slow and dull, resulting in heavy losses from decay while awaiting sale; and in 1876 Apples were almost unsaleable, large quantities rotting in the orchards, simply because it would not pay to market them.

The past year the Apple crop was very light, from the fact that usually, in this country, the Apple tree bears a full crop but once in two years, whether from bad management or whatsoever cause, and this being the off year, prices have ruled higher; and thus I might go on down the entire list of Raspberries, Blackberries, Currants, Grapes, &c., with some few trivial exceptions, and show how fully we are supplied. But the question arises, then, in view of these facts, shall we still continue to increase our already enormous productive capacities? or cut down and plough up a portion and devote it to better-paying crops? or shall we simply fill up rows decimated by the ravages of insects, disease, and death? I would not, however, counsel the adoption of any very radical measures at present, for the obvious reason that the wonderful provisions of Nature can usually be relied upon in such contingencies; for even now many of our trees and fruits are becoming infested with insects and maladies, concerning the habits and causes of which we know very little, and each year we are introduced to a new lot of these strange creatures, that baffle our skill and puzzle our brains to a very large degree. The old enemies of the Apple are reappearing with augmented force and vigour, and the villainous knight of the crescent leaves his unwelcome autograph in our Plum orchards more abundantly than ever. Our once thrifty Pear trees are struck as if by lightning, and die by the hundred; the most vigorous branches frequently blacken in a day, the leaves droop and wither almost while we stand watching them; we ply the saw and shears promptly, removing all affected parts, but in a few days we are dismayed to find other and larger portions. At first we could remove the parts without seriously disturbing the symmetry of the tree, but now it has laid hold of a prominent branch. Still, we saw it out, giving up form, and only hope for life. But, alas! a few more weeks of sawing out, and the battle is over. The shrivelling enemy has crawled down the trunk, the black flag is out; and, instead of the saw and pruning shears, we resort to the axe and the spade. We ask our pomologists and scientific men about it, and they tell us it is "blight;" and to-day that is all we know about it. Theories are promulgated by the volume, but our Pear trees die annually by the thousand from this disease; and I am fully confident that the real cause thereof is yet wholly unknown. Up to this time no reliable information has

appeared, and I think we may justly regard the Pear blight as the most profound problem now presenting itself to the pomologists of the nineteenth century; and the man who succeeds in solving the mystery and prescribing a remedy will be a benefactor in the garden of mankind. It will thus be seen that Nature is doing much to balance our operations in modern fruit culture, and the business has been elevated from a mere occupation to the higher plane of science. We must study now in order to raise fine fruit successfully; it will not grow without the ingredient of brains existing somewhere in the management. We are now canning and drying fruits very largely, besides exporting to an increasing extent. Even many of our perishable fruits, by means of improved appliances, are arriving across the water in good condition; hence the apparent over-production is doubtless in a fair way of speedy adjustment.

Kingston, N.Y., U.S.A.

H. HENDRICKS.

## THE KITCHEN GARDEN.

### SEED POTATOES.

It is now desirable that Potato stores should be thoroughly overhauled, and the tubers picked and turned carefully. As a rule, Potatoes are keeping well, especially where placed on a dry bottom or in boxes. No seed tubers should now be in pits, or in heaps or bulk in any shape, as their eyes will push, and once that is the case, the productive power of the tuber is largely diminished. In all good gardens this work will be seen to without reference to weather; but it is too frequently the case that it is left until wet days come, and sometimes before these occur much mischief is done. There are few growers who will not find some diseased Potatoes amongst their stock, as even with the greatest possible care in the selection of seed sound and healthy, some will turn out rotten after a few months' storing. Broad open shelves, placed somewhat closely one above the other, admit of a large quantity of seed Potatoes being stored in any fair-sized shed; and if plenty of air be given when the weather permits, the tubers will remain firm and almost dormant until planting time. It is an undoubted fact that a seed tuber, if kept dry and in an airy place, will never throw a shoot above an inch or so in length, and with it a few partly-developed roots. It is only when kept seceded from light and air, or where there is moisture, that this growth is made, and then it must be either pulled away or the sets planted with these shoots attached; but if done so, it is most probable that such shoots will decay, and perhaps the plant will altogether perish. Those who have to purchase their stock seed tubers instead of having saved some for the purpose, should obtain it at once, both to make sure of being supplied and also to get good samples. There are indications that the seed stocks of many good kinds are this year smaller than usual, therefore the first-comers will be both first and best served. It is also a great benefit to the grower that, having his seed-stocks early to hand, he can get them exposed and matured before planting. As regards planting, gross culture for the production of heavy crops and large tubers is an undoubted mistake. A healthy, clean crop is better than a diseased one of twice or even twenty times the bulk. Raw manure should never be applied to land intended for the growth of Potatoes, but the deeper the soil is worked the better. Let all redundant moisture get freely away from the roots, and the plants will be a medium-sized, hard-wooded haulm than a coarse, succulent one. The comparative freedom from disease that has in years past characterized certain kinds arises from the fact that the haulm is of a firm, fibrous nature; and if such kinds be grown in soil of but moderate quality, and free from raw manure, a sound crop may be almost assured. For a first early kind intended for early market or home consumption, good soil, with a liberal dressing of manure, may answer, as the crop generally is thus forced and lifted for immediate consumption; but for all main crops manure should be avoided.

A. D.

**Scarcity of Vegetables.**—Living in the midst of market gardens where hundreds of acres are devoted to the growth of vegetable produce for the London market, I read with surprise the quotation given in your column, from "Truth," as to the assumed scarcity of market vegetables. Never, perhaps, was there greater abundance, and rarely have growers had to complain that winter crops sold so badly. All kinds of greens have been growing from the time they were first put out until now without check, and much faster than they could possibly profitably be got rid of. There can be no greater

mistake than to assume that growers hold back their produce to get an exorbitant price; so far from that being the case, they are only too glad to sell at a reasonable profit. In all directions acres of fine Savoy Cabbages are literally bursting from want of sale, and it may curiously be remarked that it is to be regretted that so much good food should be thus wasted; but it is not the grower's fault. When prices are so low that it will not pay to cut a crop and send it to market, it can hardly be expected that the grower should be so indifferent to his own interest as to lose by it. The great want is a more intimate connection between grower and consumer, not so many middle dealers, fewer profits, and quick returns. London is very deficient in the matter of vegetable markets. Instead of one there ought to be twenty, where the consumer may purchase of the grower retail, and get the vegetable produce of our gardens fresh and cheap. Growers would be delighted to get 2d. for a bunch of Turnips, or for heads of Cabbages or Coleworts that now cost 4d. As a rule, however, they get about 1½d. out of that sum, and the rest goes into the pockets of the dealers. Garden vegetables, when fresh and good, rank truly amongst the most healthy and valuable of all forms of food.—A. D.

### WATERCRESS IN FRAMES.

I HAVE been gathering Watercresses at the rate of three bunches daily from a two-light frame for these last three months, and I could now gather twenty or more bunches, if needed. I find that Watercress is esteemed more than all other salads at this time of the year, and fortunately none of them can be produced more easily. About one-third of the frame mentioned is filled with plants in 24-sized pots, which are placed in Saakale-pot lids turned upside down; a little stingle is placed in the bottom of the pans, which are sunk in ashes to keep them firm, and they are then filled with water (rain water I find the best), which is replenished as it wastes. A second batch grown in 48-sized pots, placed in some old evaporating troughs, answered admirably. Single was placed in the troughs to stand the pots upon, and the troughs were filled with water, as before mentioned. The remaining portion of the frame was filled by pricking Cress out in soil, which was merely placed upon the ashes. I found the 24-pots the most productive, although the Cress from the 48's was the first ready for gathering, being a week or ten days earlier than that pricked out in the frame; but the latter forms a good succession and is more productive than the former. I shall certainly adopt the planting-out system more extensively next autumn, for I believe the Cress to be better flavored than that grown in pots. I do not suppose that this system would answer in the summer months, as it would be difficult to provide enough moisture to give satisfaction. The position of the frame is on the north side of a Thorn hedge about 4 ft. 6 in. in height, which increases in height as the summer advances, which is just what is wanted for affording shade. The soil I employ for pricking out the Cress in the open frame is composed of very strong loam with a small admixture of decayed manure pressed rather firmly to hold the water as long as possible. For pots I use a compost made lighter by adding decayed leaf-soil and a little river sand. The worst enemy I have is the slug; I, however, manage to keep them pretty well at bay by placing a little salt round the base of the frame outside. I find the brownning of the Cress depends chiefly upon the amount of air and light given during the growing period. In favourable weather the lights are tilted about 1 in. at the back, which is not allowed more than four hours in the middle of the day during the winter. As the temperature increases, more air is admitted after the outtings are established, but the frame is closed early in the afternoon, giving a thorough watering overhead.—J. P., in "Journal of Horticulture."

**White Worms in Celery Plants.**—What is the best cure for these? Would salt, which is extensively used for Asparagus beds, be equally available? Mine is very light sandy soil; that, perhaps, may induce worms.—E. [The best preventive for worms in Celery is to mix plenty of salt, soot, and lime with the manure that is to be employed in trenches. They should be added to the manure some weeks before it is used, during which time it should be turned now and then. The mixture just named also benefits the growth of the Celery, which will lift clean and spotless compared with that grown in the ordinary way.—S.]

**Lost, Stollen, or Strayed.**—What has become of the famous Tycoon Radish, asks M. Carrière in the "Revue Horticole," that enormous Radish which, either on account of its size, form, or good qualities, was named after the first prisoner in Japan, and about which the whole horticultural press was speaking some time since? I may as well say at once that it has not quite been forgotten, and that if the first seeds which were introduced did not respond to the opinion which had been formed of them, there are others which have been imported since which are much more promising.

## PLATE CXIV.

## A GROUP OF FANCY PANSIES.

Drawn by Miss DUFFIELD.

THE term "fancy" is applied to that section formerly known as the Belgian Pansy, first introduced into this country about twenty years ago, at which time the flowers were remarkable only for their peculiar and fantastic colours, but very deficient in both form and substance. Since that time, however, and more especially during the last six or seven years, florists have devoted much attention to their improvement, and have succeeded in so thoroughly changing their character that one can now scarcely recognise in them a single feature of the original. In 1871, the Scottish Pansy Society, seeing the necessity for having some points of perfection fixed as a guide both for judges and exhibitors, drew up the following properties as a standard;—First, form to be a perfect circle; second, texture to be thick and velvety; third, colours to be clear and well defined, and not to run into each other; fourth, smoothness, the petals to lie close and evenly on each other, and the edges to be smooth and not fringed; fifth, size, any flower under  $1\frac{1}{4}$  in. in diameter to be disqualified. As in the show Pansy, the eye should be small and compact, not running into the blotch, and placed exactly in the centre of the bloom. The blotch should be solid and circular, and the larger the better; indeed, the large blotch, more than any other point, distinguishes the fancy from the show Pansy. At the same time, the society just named encouraged the cultivation of this class by offering prizes, the result of which has been most satisfactory; and now there are flowers combining the most beautiful



In a small garden (sunset).

and brilliant colours with the fine form and regular marking of the show Pansy. Pansies, on account of their easy cultivation, have always been grown chiefly by cottagers, but since the introduction of the fine fancy varieties, they have become fashionable border plants everywhere; and this is not to be wondered at, as nothing can be more attractive than a collection of their varied and brilliant colours.

The habit of the fancy Pansy is more robust and vigorous than that of the show Pansy, and it can be grown successfully in localities and soils where the other would barely exist. Cuttings from the side shoots and centre of the plants can be got in abundance in August and September, and should be put in a shady bor or cold frame in soil composed of loam, leaf-mould, and sand, where they will root freely, and with a little protection they may be left there until planting time in March or April when the weather is suitable. Care must be taken to leave the cuttings uncovered, except during frosty weather, as damp is perhaps the worst enemy with which they have to contend. When blooms are wanted in May the plants require to be put out in October or November, and slightly

protected during frost. Fancy Pansies will succeed in any good garden soil; but when grown for exhibition, the ground ought to be well prepared, if possible the previous year, by trenching, manning, and green-cropping. The situation should be open, and sheltered only from the north and east, but not under the shade of trees. They may be planted 9 in. apart each way, and during dry weather in summer an occasional thorough soaking with water, and where convenient a mulching of old manure, spent Hops, or Cocoa-nut fibre will considerably prolong their season of flowering, and keep the plants in better health. A small stake to each plant is useful to keep them from being shaken by the wind. In shading for a show, great care must be taken to cover the bloom only, and not the plant, as no plant is so easily drawn as the Pansy. Blooms should be collected every morning for three or four days before a show, and kept in cold water in a cool airy shed or cellar.

Pansies are easily raised from seed sown in pans in August or September, and kept in a cold, well-ventilated frame during winter, or in the open border in spring, and if planted out when fit to handle they will flower well in summer and autumn.

Of course, when particular varieties are wanted, plants must be procured, as they do not come true from seed. Beginners, when ordering plants, would do well to state whether they want them for decorative or competition purposes, as for the former robust habit and free-blooming properties are of more importance than the fine quality of the individual flower. As a guide to those unacquainted with the latest improvements, we append a list containing a collection of the finest in their different classes, and we think the Scottish Pansy Society should now classify them under different colours, as they have already done

with the show varieties, so that growers of a limited number might be able to have as great a variety of colour as possible. Some of the selfs show merely a narrow margin of the ground colour round the petals, all the rest of the flower being covered by the blotch.

WHITE SELFs.—Countess of Strathmore, John Hampton, Miss McMicking, Mrs. Cree, Mrs. Felton, and Miss Wallace.

YELLOW SELFs.—Buttercup, Duchess of Edinburgh, George Bryce, Gretchen, Miss Darling, Mrs. Taylor, and Queen of Yellows.

BLUE SELFs.—Blue Jacket, Camperdown, Robertson Munro, True Blue, William Blackwood, and Zimmerman.

RED, CRIMSON, AND AMARANTH SELFs.—Andrew Dougall, Edward Moir, George Wood, James Grieve, John Boyd, Louise Milne, Major Molesworth, Mrs. Birkmyre, Redbraes, and Thos. Grainger.

FINE SHADED AND RETICULATED FLOWERS WITH RICH COLOURS.—Bessie, Cairngorrum, D. Cavin, J. B. Downie, Louisa, Mrs. Black, Mrs. Whitton, Nelly Thomson, Wm. Nimmo, and W. E. Gumbleton.



FANCY PANSIES AS THEY ARE.



**WHITE PICOTEE EDGES.**—Auntie Cuckoo, James Skinner, Maggie Paterson, Mrs. Crawley, Mrs. J. T. Fleming, Mrs. John Welsh, Mrs. Neilson, and Wonder.

**YELLOW PICOTEE EDGES.**—John Currie, Monarch, James Robert Welsh, Mrs. Alexander Ingram, P. W. Fairgrieve, Wm. Melville, William Robinson, and William Ziegler Welsh.

The Pansies represented in the annexed plate were drawn by Miss Duffield just as they appeared on their arrival from Edinburgh, whence they were sent to us by Messrs. Dickson, of Waterloo Place, who cultivate these and many other hardy flowers to a large extent. As many of our readers are aware, it has long been the custom to exaggerate and distort flowers of this kind in plates published in illustrated periodicals devoted to horticulture. We believe this system to be as prejudicial to the interests of the commercial growers as it is distasteful to all who love flowers. Many may have seen plates showing Pansies as large as tea-saucers, drawn perfectly round by the aid of the compass, and as hard as if made of tin. We do not say that Pansies are not often larger and finer than those shown in our plate; the present state of colour-printing will not always allow of preserving the softness and delicacy of colour of well-drawn designs of such flowers; but we will always endeavour to secure designs drawn after Nature, and never instruct the artist to follow arbitrary rules as to form, outline, and size. These Pansies, then, have no pretensions to be the ideal beauties desired by certain cultivators, but they will be none the less interesting to those who love flowers on broader principles.

## GARDENING FOR THE WEEK.

### Hardy Flowers.

**Carnations and Picotees.**—If these have continued in a healthy condition thus far, the probabilities are greatly in their favour that they will not be injured by spot or damping off now. If the weather is fine, the glass lights should be removed entirely from dawn until dusk, and on mild nights the lights should be tilted; a free circulation of air is conducive to the continued health of the plants. The damp, thick atmosphere prevalent about large towns, charged, as it is, with sulphur, is much more hurtful to the plants than frost. They are not so easily injured by gales as Auriculas, but it is as well to avoid exposing them to cold east winds. Clear the plants from dead and decaying leaves, remove weeds from the pots and stir the surface. Have the soil properly prepared for potting, and put in a dry place. It is not wise to keep the soil under cover always so that it becomes dusty-dry, but in winter it ought to be placed under cover long enough to bring it into good condition for use. I mix it up at once, so that it is ready for use when required. A good compost is loam of a turfy nature five parts, one part rotten manure, and one of leaf-mould. The heat pots are those of 7 in., 8 in., and 9 in. in diameter. Many persons use 10 in. and 11 in., but they are not necessary, although it is probably much easier to layer the Grass when the pots are large. See that the pots are washed and placed ready for use.

**Pinks in Beds.**—We have just gone over the beds, picking out the weeds and carefully removing the withered leaves at the base of the plants. The surface of the ground has been stirred over to the depth of 1 in., pressing the plants into the ground at the same time with the fingers. Alternate frosts and thaws throw the plants out of the ground, and the leather-coated grub pays nocturnal visits to the plants. They eat voraciously, and must be watched at night with a lamp, or they may be found by day buried near the plant just under the surface of the ground. A practised eye can detect the presence of the grub by the appearance of the ground above where it is hid.

**Pansy Beds.**—These were looked over at the same time, and the surface stirred up in the same way. This work should now be done, taking advantage of the first opportunity when the weather is fine. If Pansies have been wintered in pots, they should now be planted out. The soil should be rich, and it ought also to be deeply trenched, so that the plants may be able to carry themselves bravely over the hot weather in summer. Many persons complain that Pansies do not succeed about London and in other districts of the south of England. They certainly do not thrive so well as they do in Scotland and the north of England during the summer months, but in spring and autumn they do equally well. By planting in rich soil deeply trenched, and placing manure on the surface of the beds, and watering directly hot weather sets in, they will do very well in most seasons.

**Cuttings of Herbaceous Phloxes.**—These should be put in if they are sufficiently long. I pot the cuttings singly in thumb pots, and place the pots on a gentle hot-bed. They root very quickly, and, if well managed, will flower the same season. The cuttings may be put in in handlights out-of-doors, but they do not form roots so quickly, and will not do so well. If the plants have been wintered in frames, they may be planted out in beds of rich soil at once 20 in. apart. The early flowering section *P. pyramidalis* does not succeed well in hot districts in the south, but the late-flowering section *P. decussata* makes a glorious display either in beds or planted in the back rows of the herbaceous borders.

**Propagation of Dahlias and Hollyhocks by Cuttings.**—The Dahlia roots may be placed thickly together in boxes, and just covered over with fine soil. Place the boxes in a house with a temperature of 55°, and take the cuttings when they are 2 in. long. They strike freely in small pots plunged in bottom-heat in the same temperature. I generally pot my choice Hollyhocks, and from each stool a number of growths will start; these are taken off with a heel attached and potted in light soil, the same as Dahlia cuttings. The Hollyhock is also propagated by grafting the cuttings on a small portion of the root of another plant. It is best not to water for a few days. Keep them shut up in a close frame. The bottom-heat for Hollyhocks should not be more than 85°; a higher temperature generating steam causes the cuttings or grafted plants to damp off.

**Top-dressing Auriculas.**—This must be attended to early this month, especially if they were potted in May. Plants that were potted in August or September are not much improved by top-dressing. This work must be done in a careful manner, else more harm may be done to the plants, from injury to the roots, than they will receive of good from the fresh stimulant. The pots may be taken into a shed, and the work could be done in wet weather, but the plants must not be uncovered while it rains. About 1 in. or 2 in. of soil may be removed from the surface, working it out carefully with a label; a portion of prepared soil may be put on the surface at once, and be pressed down firmly with the fingers. During this operation all decaying leaves and other matter likely to cause decay should be removed. Green-fly is a troublesome pest, and this should be cleared off with a small camel-hair brush. If the plants have been much infested with aphid, a careful scrutiny must be made for it, and, as a further precaution, the plants may be fumigated with Tobacco-smoke after they are put back in the frame. The soil for surface-dressing should be richer than that used for potting. I sometimes use the compost that had been prepared for Hyacinths; if there is any of it left, by adding more rotted cow manure to it, just enough to make the material about equal parts loam and manure, a little pounded charcoal added keeps the soil sweet. Many of the trusses are now appearing, and from this time the plants must be protected by the frames being covered with mats on frosty nights. If the frosts are severe, double mats may be used. Those who have the advantage of heated pits for their plants will be able to defy frost, and it is much easier to preserve the plants from injury. Low pits where the plants can be placed near the glass are best for Auriculas. The temperature need not fall below 35° on any occasion. Air the frames or pits as freely as possible, but if high winds prevail, the lights must be tilted on the side opposite to that from which the wind is blowing.

**Gladioli.**—These are such useful flowers for cutting to decorate large vases and for other purposes, that it is very desirable that their flowering period should be prolonged. It is a good plan to pot a number of the largest roots of the earliest flowering sorts. Place the pots in a cold frame where they are protected from frost; and after they are started, plant them out on an early border. I manage to protect them from frost by inverting a flower-pot over each plant. Should frost threaten at night, the pots are removed in the morning, when the danger is over. The soil used to pot the bulbs should be good loam, to which is added a fourth part of leaf-mould. A little clean sharp sand should be placed under and over the bulbs.—J. DOUGLAS, *Loxford Hall, Uford.*

### Orchids and Orchid Houses.

The effect produced in an Orchid house by the position and arrangement of the plants is a matter worthy of consideration. Far the greater portion of these plants are epiphytal, and, consequently, they are in a more natural position when grown on blocks or in baskets, and suspended from the roof than otherwise, and the situation is much more in accordance with their naturally grotesque appearance. Another advantage to plants individually so treated is, that they are placed in the most favourable position for making strong, robust growth, consequent upon their being nearer the roof glass, and thus under the influence of a greater amount of light than when placed upon stages in a lower position. There is one considerable drawback to the principal bulk of the plants in a house being grown in this way; it is that without care the drip from them after the operation of watering acts injuriously upon such plants as occupy the stages underneath; but with care this can generally be avoided with

comparatively little loss of space. There is also another disadvantage, especially in houses that are so constructed as not to admit a maximum of light to the inmates; the suspended plants necessarily shade those below them to a considerable extent, but this is a great measure may be rectified by having the houses in situations where there are no objects existent to intercept light, a condition of the greatest importance, and one to which, if due consideration had been given, half the Orchid houses now in existence throughout the country would have been differently situated. Of equal importance is the construction of the houses, so as to have them built in a way to admit all the light possible. The low, dark erections too generally seen, either lean-to, or run up against existing walls to save cost, and the side-roofed, the side-and-end-roofed, the roof only being of glass, are a result of the most short-sighted economy which it would be possible to imagine in providing places wherein to grow these, the most valuable of all plants. True, there are some species that will not succeed under the influence of strong light, but these are comparatively few, and if a good number be suspended from the roof, these may be made to do duty in reducing the amount of light to such as only require it in limited quantities.

**Evils of Shading Orchids.**—In the case of the few Orchids that will not bear full exposure to light, it is a very easy matter to subdue it in keeping with their requirements. This is a subject I have before urged, yet it would be difficult to refer to it too often. If ever an individual plant of any Orchid is seen possessing more than usual strength and substance in either bulb or leaf, as is generally the case both combined, it will almost invariably be found to have been grown in close proximity to the glass, either near the roof or up to the side-lights or end of the house. The attempt, under artificial cultivation, to imitate the dense shade existing in the evergreen forests, the scene of the species are found indigenous, and the impression that this was necessary in a cultivated state, has been most fatal in its results; the difference in our too often leaden atmospheres, contrasted with the all but continued cloudless sky in tropical countries, has not been sufficiently taken into account, combined with the totally different effect produced upon the plants by the necessary more or less confined condition of the atmosphere of the house in which they were grown, as compared with the open air, even where this was reeking with moisture. This most essential element of light is so potent in its influence, that it often goes far to equalize the other conditions of an adverse nature to which plants may be subjected. For instance, I have seen such species as *Vanda corulæ*, indigenous, as it is, to the high cool district of Khasya, continue to grow strong and vigorous in a temperature many degrees too hot for any Orchid when suspended with its head within a few inches of the glass in a very light house; and this is only one instance out of many that I have seen bearing out this view.

**Modern Orchid Houses.**—We seldom now meet with an Orchid house pleasing in appearance, as was usual when these plants were less generally grown. Many who only commence with a few gradually go further, until they appear to be satisfied with nothing less than the possession of almost every known species, amongst which there are numbers in nearly every genus so far inferior to others as to deserve a place; the result resulting from this, are that the labour attending the whole becomes so great, that none receive the attention they require; the next is, that the plants are crowded together often as thick as the pots will stand, which is seriously detrimental to the whole. It is no uncommon occurrence now to see whole houses filled with *Odontoglossums*, *Masdevallias*, *Lycastes*, and the like huddled together as close as a bed of winter Onions, with nothing to break the monotony of the even surface except the few plants that happen to be in flower. In Orchid growing, as in all other things, selections of the best, and only the best, are always the most satisfactory. Where a large number of plants are suspended from the roof, their weight is a considerable strain upon the rafters, to meet which it is necessary to have these well tied together with iron rods; but it would be no difficult matter to introduce a moderately light iron framework immediately under but independent of the roof, yet so placed as to exclude little or no light, on which to hang the plants. In addition to the numerous *Dendrobies* that are naturally of a drooping habit usually grown in baskets, most of the *Phajans*, such as *D. J. de Vriesei*, *D. J. de Vriesei*, *D. J. de Vriesei*, and others of similar habit are seen when the flowers, or better, the plants hanging over the sides of a basket than when tied upright in pots in the more ordinary way; the growth they make and flowering capabilities grown in such a position are far in advance of what are made when further from the roof. There are some species, such as *Dendrobium albo-angueinum*, that generally refuse to grow altogether unless suspended. There are no plants with which I am acquainted wherein the substance and enduring properties of the flowers are so much influenced by the conditions under which growth is made as Orchids, frequently to the extent of their lasting quite double the length of time.

**Orchid Baskets.**—When Orchids are to be suspended in considerable numbers, it becomes necessary to choose a material which will support the baskets made that is light, will look well, and last long. The objection to iron wire is, that even when galvanised, it soon becomes rusty, in addition to which the roots getting interlaced round it, the plants cannot be got out without these roots being broken when it becomes necessary to renew the material. Copper wire baskets are expensive, and with them the same objection exists as to the roots. The rustic earthenware baskets, though handsome and enduring, are considerable in weight; the nice-looking baskets made of maple and ash or woods of a like nature, and others of a like perishable character, are so far objectionable that they soon rot, and when far decomposed the roots force their way right into the wet, spongy mass, often causing their destruction. The best baskets I have ever tried or seen are made of fossil Bog Oak. They are light,

easily made, will last long, and are unexceptionable in appearance. This wood is easily worked; it splits up readily; and if used 1 in. in diameter, it will last a dozen years or more. One of the greatest advantages in its use is that it does not rot right through like other timber; the decayal fall from the outside, and it will hold together till gradually reduced in thickness to that of an ordinary pencil. The most effective collection of Orchids I have ever seen was a very select lot, the greater portion suspended in baskets made of this material, with a moderate number occupying the stages below, consisting of such plants as *Lycastes*, *Zygopetalums*, *Vandas*, *Miltonias*, and others of similar character. Even such species as *Calanthe vesicata*, when grown in baskets from the roof, will attain a size of growth and flowering capability such as I have never seen more than half equalled by this plant when set on stages in the usual way. Bog Oak can be obtained from most of the north of England peat districts at the cost of ordinary firewood. Spring-blooming *Cattleyas*, such as *Mossie*, *Warneri*, *amethystina*, and any that flower after a rest from the preceding season's growth, as also *Lælia purpurata*, *elegans*, and others of a like description often suffer at this season through the flower-sheaths decaying; they usually turn black and become wet and rotten; and if nothing is done to prevent it, the flowers, now in the shape of small terminal buds on the extremity of the bulbs enclosed by the sheaths, frequently are destroyed by the wet, putrid mass. As soon as ever the sheaths are observed to be thus affected they should be split open from the top down about one-half their length, which will very soon cause them to dry up. I have tried splitting them down to the bottom, or cutting them off altogether, but when so treated the flower-bud frequently dies—I believe, through the cause of sudden exposure to the light, as it is no uncommon occurrence to see *Calanthe vesicata* from the buds that have been enclosed, but simply been furnished with the small terminal bud unenclosed.—T. BAINES.

### Conservatories.

These should now be gay with Dutch bulbs, Cyclamens, Chinese Primroses, *Cinerarias*, *Camellias*, *Azaleas*, forced shrubs, *Epericeras*, *Heaths*, *Acacias*, and a few other plants. The pretty water plant *Apongeton distachyon* now in full flower both in the coolest part of the greenhouse and in cold frames is so easily grown, that a large inverted bell-glass, or flower-pot, or pan with all holes stopped up forms a sufficient home for it. Pot, out back, and start into growth in the warmest corner of the greenhouse some *Fuchsias* and *Lemon-scented Verbenas*. Some *Cineraria* seed may be sown in gentle heat, to furnish flowers late in autumn; and young *Cyclamens* may be pricked off into pots or pans. *Mignonette* should now be sown in pots for early blooming; plants of it that are up should be thinned, and *Tree Mignonette* should be trained and tied into proper form. *Propagolus* should be trained twice a week, and as soon as their flower-buds are well set, weak manure-water may be freely given to them. Remove dead leaves from all plants in pots, and stir and top-dress the soil. Divide and re-pot plants of *Isoplepis gracilis*, and place them for a time in a moist heat. *Selaginellas* may also be separated and potted in a mixture of loam, peat, and leaf-mould in equal proportions, with a good admixture of sharp sand. Borders of these little plants may also be renovated. If a good stock of seedling Ferns be at hand, one or two of a sort may be inserted in a pot containing *Hyacinths* and *Tulips*; they hide the surface-soil, and render the pots more pleasing in appearance. Greenhouse Ferns should be kept as dormant as possible yet, especially such as are deciduous, and also hardy Ferns in pots, but a dust-dry condition is injurious.

### Indoor Fruit and Forcing Department.

**Pines.**—Prepare a good stock of soil for potting these, and lay it under cover for some time prior to using it. Water the plants but sparingly, avoiding too much drought, or, on the other hand, a sodden condition of the soil. For stock plants maintain a night temperature of 70° and a bottom-heat of 80°; 10° lower temperature will be quite enough for succession plants, which should not be excited till the end of the month.

**Vines.**—These should not be allowed to carry any of last year's fruit till now, and if any bunches are still hanging on them they should be cut off at once, with pieces of the wood attached to them, inserted in bottles of water and kept in the fruit-room; this allows the vines to be sparingly pruned, and to be got in readiness for starting into growth at any time when required. Give some manure-water to pot Vines that are swelling fruit, and keep them in a brisk, moist temperature; 65°, with a dry atmosphere and a little air, are necessary for such as are in bloom.

**Peaches, Nectarines, &c.**—Syringe trees of Peaches and Nectarines that have set their fruit, and attend to disbanding and watering, whether the plants are in pots or borders. Keep Figs in pots in a bottom-heat of from 75° to 80°; if maintained by means of fermenting material, so much the better. Syringe daily and supply water moderately. Keep those for late work in sheds or turned on their sides under stages quite dry.

**Cucumbers and Melons.**—In preparing for Cucumbers place a little mound of good soil in the middle of the bed over the manure, and let it rise to within 6 in. of the glass; one mound under each light is sufficient. Shift seedling Cucumbers into larger pots, and a day or two afterwards pinch out the top of the leading shoot. Maintain a night temperature of 70° both in pits and frames for Cucumbers and newly-planted-out Melons.

**Strawberry Plants.**—Keep up a succession of these; early Peach houses or Vinerys will be good positions for the earliest batch; succession fruit houses for the next earliest crop, and frames for a late supply.

### Hardy Fruits.

**Fruit-Buds and Birds.**—During this month birds often greatly damage the bloom-buds of bush fruits. See that the trees that were threaded over some time since, or syringed with lime and soot-water, are effectually protected; if the thread has become black, or been removed by the wind, run a few more strands round each bush, or apply more of the lime mixture with the syringe. Such appliances cost little in labour or material compared with the loss of a crop of fruit, and permanent injury to the trees by the bloom spurs being destroyed.

**Standard Apples or Pears** that have been planted through the autumn and winter, even if staked at the time, should be examined to see that it has been effected before the March winds begin to blow, for they will be injured if not well secured.

**Peaches, Nectarines, and Apricots** on open walls will require immediate attention in the way of pruning and nailing, for if these operations are deferred too long, the buds get so prominent as to be knocked off in quantities during the progress of the work. Apricots, bearing, as they do, a good deal on spurs, do not require so free a use of the knife as the others. On the contrary, as much of the wood should be nailed in close to the wall as possible, as on a frosty night the bloom thus situated will frequently escape, where such as is further from the wall gets destroyed. Do not leave the shoots of Peaches and Nectarines too crowded, and in pruning reduce them to something like two-thirds their original length, as near as may be, always cutting back to wood buds, which are easily discernable from their long pointed shape as compared with the round blossom buds. If the shoots be strong, they will contain numbers of double bloom buds, with a wood bud in the middle; this centre bud will form a leader, without which the fruit will not swell freely. Sufficient foresight should always be exercised in pruning Peaches and Nectarines to see that provision is made to supply the trees in all parts with young wood for the coming year, that is, by cutting a sufficient number of the shoots out to make room for the new wood. In the spring, and where there usually exist several wood buds, the best placed of which should be grown on to form a shoot for tying in the following year in place of older wood, which it may be advisable to remove. For the same reason, in pruning at the present time, it is well to cut out any long, straggling branches that have no bearing wood upon them, except near or at their extreme points. In pruning these trees, obviously the first consideration must be the current season's crop, but at the same time, by a little forethought, the operator will easily see where it is advisable to encourage a shoot for next year's bearing. It is the want of this kind of attention that reduces the numbers of these trees to nothing, but strong, bare wood, unfruitful except at the points of the shoots. Young trees are in the same way often spoiled by leaving the strong shoots too long, instead of shortening them well back. It should always be borne in mind that at whatever point the shoots of such trees are cut back to from that point, several young shoots will usually push, but not lower down nearer the base; consequently it will readily be seen where next year's shoots should be induced to spring from, so as to properly furnish the future tree.

As soon as a tree is pruned, nail it at once. The right way to proceed in this is to begin in the centre of the tree, taking a branch straight upwards, selecting for this, as near as the eye can decide, the one that will leave an equal portion of the tree on each side, and nail this in regularly over the allotted space. This applies, in pruning and nailing, to both dwarf and standard trees of the above-named fruits. There is another matter to which trainers should attend, and that is, never to nail the shoots too tightly. Every shoot ought to have double its thickness of room allowed in the sheds, so as to admit of its thickening. It is also most essential not to bruise the bark, as there are no trees so liable to gum, if the bark be bruised, as Peaches and Nectarines.

### Kitchen Garden.

When the mornings are frosty, manure may be wheeled on to open quarters; the remains of spent crops, such as Cabbage or Brussels Sprouts, should be cleared off, and preparations made for other crops. Make new plantations of Strawberries, if such was not done in autumn. Make new plantations of Jerusalem Artichokes, Early Garlic, Early Garlic, Shallots, and Boscabeau in rows 1 ft. apart, and 6 in. asunder in the rows. Tansy, Tarragon, and some other herbs should have their crowns divided, and fresh plantations made, if necessary, with the divisions. A bed of Parsley should be hooped over expressly for winter use, and immediately on the appearance of frost some Pea-stakes, evergreen boughs, mats, or any other material at hand, should be thrown over the hoops; and should very severe frost set in, some Fern should even be placed over the mats. Some Onions for seed may likewise be protected; also some Parsnips and Jerusalem Artichokes, in fact, the two latter should be lifted altogether, the first to be stored and the room given to other crops, the last to be replanted. Turn manure heaps at the same time, saving the roughest litter for protecting vegetables and for covering frames; the more decayed part can be used for spring cropping. Manure and leaves for hot-beds should also be turned and well mixed together. Tools should be repaired, baskets mended, canvas screens for protecting fruit trees put in order, nets for placing over seeds got ready for that purpose, and many other things done for which time cannot be spared hereafter.

**Walks and Weeds.**—Where gravel has got black and unsightly, 3 in. or 4 in. of the surface should be turned, and, if deficient in gravel, some should be added to the top, giving the whole a thorough rolling as the work proceeds. The walks in a kitchen garden, where anything

approaching an orderly system of gardening is attempted, should be as well drained and constructed as those in the pleasure ground. Now is the best time to go over walks generally, and hand-pick all weeds, whilst the surface is soft. Market gardeners who grow for profit and who no doubt calculate the return they expect to get for every shilling they expend in labour, set an example in respect to weeds that amateurs and others would do well to follow. With them it would be a difficult matter at any season to find a bushel of weeds on an acre; their system is to destroy every weed as soon as it vegetates, by frequently stirring the ground.

### Forcing Early Potatoes and Carrots.

Look to those seed Potatoes placed in shallow boxes for sprouting and planting next month; they should now be pushing strong sprouts hard and green, that is if they are in a place in which they can receive sufficient light. They will generally get enough if the boxes are placed under a greenhouse stage or on the floor of a cold Vinery, or in a shed or empty room of any sort where there is enough light to prevent their drawing up weakly. Some stable manure and leaves in equal quantities, if the latter are at hand, should be got ready to make up slight hotbeds for early Potatoes and Carrots. Let these fermenting materials be well shaken together and allowed to lay for ten days or so, turning them over once during that time to sweeten, then make up the beds about 2 ft. thick, and at once apply the frame, in which put about 10 in. of soil in a moderate dry state, and plant about 4 in. deep any early Kidney varieties. These are the most suitable for forcing, as they do not make such large tops as some others; place the tubers 10 in. asunder in the rows, which should be 14 in. apart; room will thus be left for a thin crop of Radishes, which should be sown at once over the surface, raking in the seed. There is not much danger of a bed of this kind getting too hot, yet over-heating does sometimes occur, thereby injuring the Potato plants that are in the centre. When the bed is made and soiled, insert a stick trial right down in the middle of it; this can be drawn out daily for a week or two, and felt so as to ascertain the heat, which should not rise above 70°. If there is any doubt about the temperature, plunge a thermometer in the bed, and if it indicates more than the heat just named, get a stout stake and drive it right into the side of the bed to the centre in several places, leaving the holes so made open for a few days, so as to allow the heat to escape.

**Carrots.**—A bed for Early French Horn Carrots may now be made, and soiled to the same depth as for the Potatoes. Let the seed be sown at once in rows 8 in. apart, covering it with  $\frac{1}{2}$  in. or so of soil. If a good body of warm leaves is at hand, the manure may be dispensed with altogether, or not more than a fourth of it need be used, in which case the beds may be made up once without further operation of the materials, as leaves are not liable to get too hot. Give air every day as soon as the crop appears above ground. If there happens to be a deficiency of autumn-sown Cauliflower or Lettuce plants, a few seeds of these may be sown in pans or boxes, and placed in beds such as the above, where they will soon vegetate, and when large enough to handle they should be pricked out in a frame or under hand-lights, from which they should be afterwards transferred to the open ground.

### Diary.

**February 11.**—Sowing on early borders Early Short Horn Carrots and Radishes. Putting in cuttings of Tomatoes and of Solanum capsicastrum. Re-potting a late batch of herbaceous Calceolarias. Earthing up early Potatoes in frames, and renovating the linings. Levelling down and preparing ground for the main crop of Parsnips. Breaking up loam and peat for potting Pines, and putting it into Vineries to warm.

**Feb. 12.**—Potting smooth Cayenne Pines, and re-arranging another house. Sowing Cucumber and Melon seed, also a little more Sweet Basil and Borage. Forking over and levelling down Celery ground for Peas. Planting a frame with Potatoes that had been previously brought forward in boxes. Looking over all trees and shrubs that are staked, and supplying them with new stakes and ties where required.

**Feb. 13.**—Sowing the main crop of Parsnips, consisting of the following sorts, viz, the Student, Maltese, and Hollow Crowned. Potting Lilian anarum, and putting it into gentle heat. Putting in cuttings of Coleus, Alternantheras, and a few more Vine eyes. Thinning out Radishes. Forking amongst herbaceous plants, and digging flower borders.

**Feb. 14.**—Sowing a box each of Carter's Dwarf Crimson and Sandringham White Celery. Putting in cuttings of Fuchsias, Crotons, and dwarf Ageratum. Potting off Cucumbers and Melons; also Coleus and Alternantheras. Removing Cyclamens, Primulas, and Cinerarias from Melon pits to late Vineries. Stopping and tying down young shoots in the early Vinery. Getting all digging and trenching finished up as fast as the weather will permit.

**Feb. 15.**—Sowing a few rows of Prickly Spinach; also Mammoth Long-pod Beans and a box of Golden Preshum. Emptying Cucumber and Melon pits, and refilling them with fermenting material. Getting Peas that had previously been sown in turf planted in rough frames. Disbudding Peach trees in the early house. Cleaning up the pleasure ground, and rolling down all turf and gravel that require it.

**Feb. 16.**—Sowing Mustard and Cress. Potting of Heliotropes, Fuchsias, and Tomatoes. Shifting Humae elegans, also a few pots of Musk, and getting in a good batch of Lily of the Valley. Giving the early Vinery and Peach house a good watering with warm water. Passing a sack of hair brush over Straw-beds, and blowing to assist to rot. Looking over Grapes in bottles, removing any bad berries, and filling up the bottles where required. Fruit in use for dessert—Pines, Grapes, Pears, and Apples.—W. G. P., Dorset.

## GARDEN BOTANY.

(Continued from page 105.)

## The Plant.

THE fact that a perfect plant will spring from a detached shoot, or bud, or even from the margin of the leaves of another plant, under certain conditions, as well as from a seed, is a great aid in comprehending the significance of the transformations to which different parts of a plant are liable, and enables the student to accept without hesitation the theory of the nature and morphological affinities of the different organs as explained further on. Taking the whole of the vegetable kingdom, including the lower cryptogams, or what are popularly termed flowerless plants, it presents an inexhaustible diversity of forms, varying from 1-10,000 part of an inch, as the Bacteria, mentioned again below, to 450 ft. in

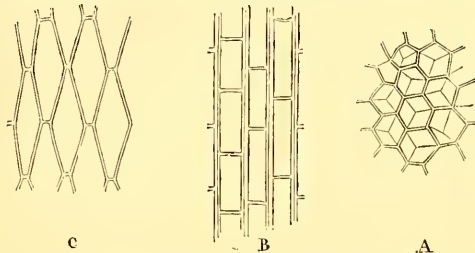
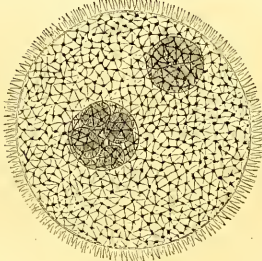


Fig. 3.—Some of the varieties in the shape of cells forming vegetable tissues.

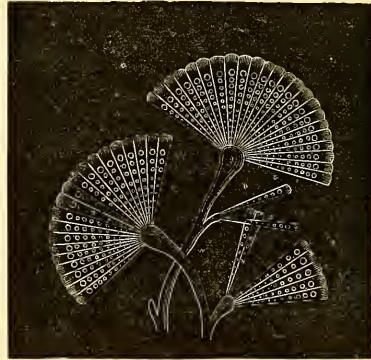
length or height, as some of the Australian Gum trees. Each of these organisms is in itself a perfect plant, endowed with vital phenomena. The minute structure or anatomy of plants will be treated separately, but it may be useful in rendering more intelligible what follows to give a few words of explanation in this place. All parts of all plants are built up of various modifications of cells or hollow sacs (fig. 3), which may remain hollow, and independent, or eventually become filled with solid matter, or the partitions between some of them may disappear, resulting in the formation of long cylindrical cells. The cells collectively constitute the vegetable

Fig. 4.—A colony of *Volvox globator*, a spherical union of hundreds of separate plants, the ordinary diameter of the whole colony being about one-third of an inch, and the separate plants about one-five-hundredth of an inch in diameter.

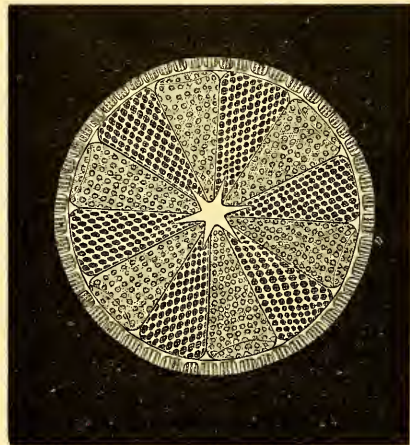
tissue, of which different kinds are distinguished. Broadly speaking, vegetable tissue differs fundamentally from animal tissue in that each of its constituent cells contains the vital principle which may or can give birth to a separate plant. It is true that not all modifications of cells are known to possess this property, though it is possible that they do at some stages of their existence. What takes place in the leaves of *Bryophyllum* (fig. 1) occasionally occurs in other parts, instances of which will be given in treating specially of the reproduction or propagation of plants.

MINUTE PLANTS.—Beginning at the bottom of the scale of vegetable life, where the individuals are so minute as to be

absolutely invisible to the unaided eye, and whose forms can only be detected by the most perfect and powerful microscopes hitherto constructed, they are extremely simple in structure, many of them consisting of a single cell only; others of chains of cells, with every gradation up to the most complex structures. Among the most minute are the Bacteria, an obscure

Fig. 5.—A very highly magnified figure of *Liemophora splendida*, a one-celled alga.

race of organisms, often associated with diseases of men and animals; whether they are the cause or consequence of disease is still, perhaps, an unsolved problem. The microscopic unicellular organisms are many of them exceedingly elegant and beautiful, and are of some simple form or variously branched; they live separately or in colonies. *Volvox globator* (fig. 4), for instance, is social, and lives in families or colonies enclosed in a common membrane. Each of the individuals is provided with two tails,

Fig. 6.—A very highly magnified representation of *Heliopelta Mikii*, an elegant one-celled alga found in Guano.

or cilia, which penetrate the membrane, and give the whole colony a revolving motion. Figs. 5 and 6 are highly magnified representations of two members of a numerous family called the Diatomaceæ, which are remarkable for their siliceous beautifully marked coatings. Ascending in the scale of plant-life, a gradually greater complexity of structure is met with, and greater differentiation of organs, associated with a greater

distinction and separation of functions. But although some of the sea-weeds are almost trees both as regards size and form, they present no differentiation of parts into stem and leaves, &c. It is the same with the fungi (figs. 7 and 8). Some of these live entirely underground, as the Truffle; whilst



Fig. 7.—*Boletus edulis* (reduced), the spores very highly magnified. No distinction of stem and leaf in the plant.

others have an intricate underground growth called the mycelium (spawn), but the spore-producing part appears above-ground—the Mushroom, for example. Passing without notice some of the smaller groups, the Mosses are the first in which we find a differentiation of stem and leaves (fig. 9). In the

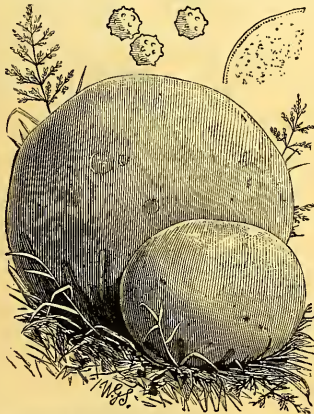


Fig. 8.—*Lycoperdon giganteum* (reduced), and the spores very highly magnified.

Mosses we also find a distinct kind of fruit, but it does not come within our province to describe its nature here, especially as it is very complicated. This passing allusion to the lower cryptogams is for the purpose of directing attention merely to the existence of forms exhibiting a gradual transition, as it were, to a more highly-organised condition, such as we find in most cultivated plants.

**FERNS.**—The first group of plants, or the lowest as regards organization, which concern us more closely are the Ferns (fig. 10). In most Ferns there is a distinct stem and leaves. The stem may be erect, as in the accompanying figure, or it may be creeping, either above or beneath the

surface of the soil. Sometimes it is almost obsolete, and the bases of the leaves crowded together close to the ground. The leaves vary very much in form and manner of division,

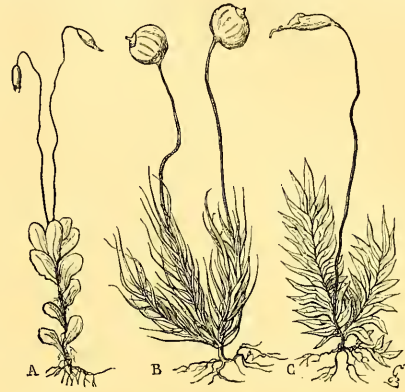


Fig. 9.—Various forms of Moss, showing distinct stems and leaves.

being many times divided, as in fig. 10, and having the appearance of branches bearing numerous small leaves, or they are undivided, as in the Hart's Tongue Fern. For reasons, more fully explained elsewhere, the leaves of Ferns are termed fronds. The principal reason is that they bear a kind of fructification, usually on the under surface or margin, but sometimes on differently shaped ones. Thus in Ferns, although there is a more or less marked differentiation of the plant into stem and leaves, the latter are clearly not of exactly the same nature as those of Fennel, for example; but what is important to note is the absence of flowers. Nevertheless, a Fern produces something analogous to seed. An examination of the fructification, such as we find on the fronds



Fig. 10.—*Alsophila excelsa*, or Tree Fern, much reduced.

of Ferns, with the naked eye reveals little; but with an ordinary pocket lens we are able to distinguish clusters (naked or covered with scales) of bodies as represented in fig. 11. Each of these is a spore-case (sporangium), and when mature, bursts

open, freeing a fine powder. The granules of this powder are very minute, and differ so materially in their nature from the seed of flowering plants, although they play the same part, that they have received the distinctive appellation of spore. Under the head of germination the differences in the development of plants from spores and seeds are pointed out.

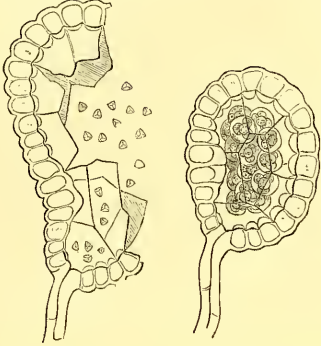


Fig. 11.—Spore cases (sporangia) of a Fern, many times magnified. The figure to the right represents a closed sporangium; the other has burst, allowing the spores to escape.

**DIFFERENT TYPES OF FLOWERING PLANTS.**—The next step takes us to flowering plants, three types of which will be cursorily examined for the purpose of pointing out the names of the principal different parts and organs of plants. Exceptions will be left out of consideration in this place, because they will be better understood after we have dealt with each of the organs separately, and because a very large proportion of



Fig. 12.—Sorghum, an example of a graminaceous plant, very much reduced.

flowering plants belong to one or the other of these types in so far as the nomenclature of their different parts is concerned. All three of these plants, it will be observed, possess certain characters in common, although in habit and general aspect they are totally different from each other. Each of them has its root, stem, leaves, and flowers; the roots offer no striking dissimilarities, but the leaves of figs. 12 and 13 are, in general

features, alike, and very different from those of fig. 14. These three plants, then, present two types of foliage, characteristic, it may be said, in general plan of two large divisions of the vegetable kingdom, and associated with other important differences, especially in the structure of the flowers and fruit. The flowers of the Grass (fig. 12) are comparatively inconspicuous, taken separately, and are of much the same colour as the foliage, and the envelopes are chaffy scales. This figure is introduced here for the purpose of contrasting with the others, and for giving a general idea where important characters are



Fig. 13.—*Tritileia uniflora*, one-half natural size. (See text under Perianth.)

to be found, and therefore we need not enter into particulars of the floral structure of Grasses at present. Moreover, it would be confusing at this stage. Neither will the flowers of *Tritileia* (fig. 13) be examined in detail; the only part to be noted now is the floral envelope, or petals, as the parts of it are termed in popular language. In this plant the floral envelope consists of six pieces, three inner and three outer, alike or similar in shape and colouring. This kind of floral envelope is called a perianth, and is common to a large number of familiar plants, as Hyacinths, Tulips, Crocuses, Lilies, and their allies. The parts constituting the perianth are spoken of as segments

or leaves. The reasons for a special name to designate this kind of floral envelope will become apparent as we proceed, because in speaking or writing of it as a perianth, a distinct and tolerably well-defined meaning is conveyed, and repetition is avoided.

EXAMINATION OF A BUTTERCUP PLANT.—Let us now take a Buttercup (figure 14) and examine it a little more in detail, as it presents all the parts the most highly-organised plant contains, though some of them are rather small. It is from modifications of these parts or organs that

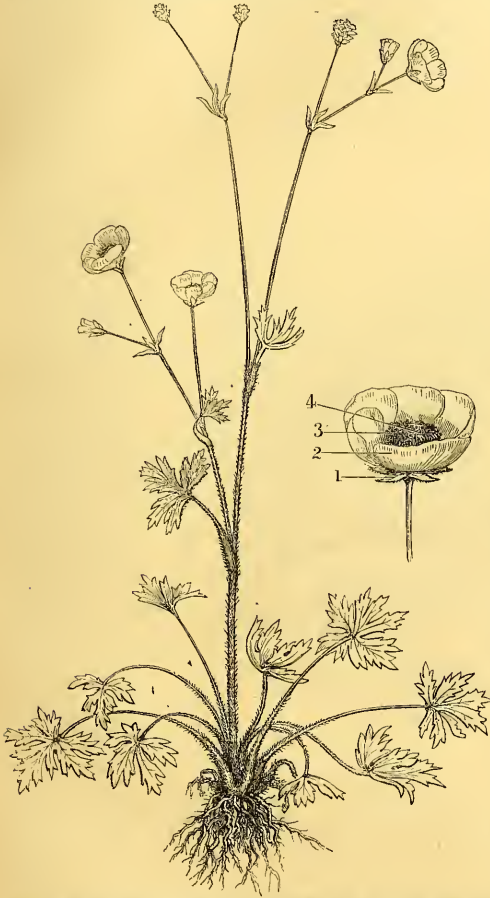


Fig. 14.—*Ranunculus acris*, Buttercup or Crowfoot, in flower and fruit, one-third natural size. A flower, natural size; 1, calyx; 2, corolla; 3, stamens; 4, pistil. The arrangement (estivation) of the petals is not quite correct.

characters are obtained whereby plants are distinguished in conversation or in written descriptions, hence the necessity of thoroughly comprehending at the beginning of our studies the correct use of the terms employed to denominate the organs. The familiar Buttercup (fig. 14) will serve as a model plant, and a knowledge of its structure the foundation for comparisons with other plants. In the first place we note that there are two essentially different systems, the root-system and the stem-system; the former avoids the light and grows in a downward or underground direction, whilst the stem grows in the atmosphere and seeks the light. Taking the parts

growing on the stem from below upwards, at the base there is a tuft of leaves crowded together near the crown of the root, and therefore called root-leaves, or radical leaves. These leaves consist of two distinct parts, a stalk and a blade. The stalk of a leaf receives the distinctive name of petiole. Passing upwards, the stem and its branches also bear leaves, with gradually shorter petioles, until the blade is seated close upon the stem, sessile. Continuing upwards, the blade itself becomes more simple, and those of the joints of the last ramifications of the stem are reduced to small, scale-like, undivided organs, and are called bracts. An important fact to bear in mind is that on many plants, including the Buttercup, the passage from leaves to bracts is so gradual, that it is impossible to distinguish between them beyond calling the uppermost ones bracts, though for descriptive purposes it is useful to make this distinction. Each branch terminates in a cluster of organs, termed collectively a flower. On examination, without the aid of any magnifying power whatever, a Buttercup flower will be found to consist of four sets of organs, easily distinguished from each other; they are not mixed up indiscriminately together, but those of each kind form one or more circles or whorls, always the same in position in relation to the other kinds. The floral envelope, or covering differs materially from that of *Triteleia*, being, in fact, double, and consisting of differently formed and coloured series of



Fig. 15.—Section of a flower of Buttercup, showing the position of the sepals, petals, stamens, and carpels of the pistil.

organs. The outer series is called the calyx, and the five pieces of which it is made up the sepals. The calyx is usually green and smaller than the inner floral envelope, or corolla, the five components of which are petals. Within the corolla is the third series of organs, which are altogether different from the sepals and petals, and very numerous. They are slender bodies, enlarged at the top, from whence they emit, through two longitudinal fissures, at some stage of their existence, a powdery substance. This is the pollen, and the organs bearing it stamens, by some writers given the collective name androecium. The centre of the flower is occupied by a group of organs (carpels) forming the pistil, or gynœcium. Each of these carpels, as may be seen in fig. 15, has a hollow cavity (ovary), containing a solitary young seed. Long after the sepals, petals, and stamens have fallen away the carpels will be found adhering (see fig. 14) until the seed is ripe, when they, in their turn, drop. This rapid sketch of a complete plant is introductory to the study of the different organs, their modifications and functions separately. W. B. HEMSLEY.

The Manure called "Le Floral," first noticed in THE GARDEN some two or three years ago, has been proved to have a remarkable effect in promoting rapid and sturdy growth in plants. It is in the form of a powder, readily soluble in water, and is said to contain all the elements essential to plant growth. Messrs. Sutton & Sons, of Reading, are the sole agents for it in this country. Not the least part of its value is the ease with which it can be applied both to plants in pots and to those out-of-doors.

Killed Seed.—At a recent prosecution under the Seed Adulteration Act a lawyer explained that the admixture of killed seed was formerly a practice not limited to fraudulent persons at all, but adopted by many under the guise of competition, and did not become fraudulent until so stigmatised by Act of Parliament, a statement which might appropriately end with a whole row of !!

Ms. JAMES LLOYD collected during his lifetime the material for building two large conservatories, modelled after those in the Kew Gardens, London. A party of liberal gentlemen have just purchased the property and presented it to the city of San Francisco, to be placed in one of the parks.—"Anglo-American Times."

## TREES AND SHRUBS.

## TRANSPLANTING TREES.

*(Continued from p. 98.)*

WHERE large plants must be moved to a distance, and no proper lifting machine is at command, it is not unusual to open up a plant and surround it with a box, afterwards working a bottom under it by undermining. During the year 1842 a large Decidua was removed from Rosepark, Edinburgh, to the estate of Milfield, near Falkirk, a distance of 25 miles. The tree was 20 ft. high, with a stem 2 ft. 5 in. round, and the circumference of the branches before being tied up was 60 ft. A pit 4 ft. deep was first formed on one side of the tree, quite straight, and smoothed down perpendicular, cutting off all the large roots that would not submit to bending, but retaining carefully all fibres. At 2 ft. below the surface an excavation was commenced. A number of boards were prepared, each 6 ft. long, 6 in. broad, and 2 in. thick; these were put under the

bottom one by one while the excavation was proceeding. After the first bottom board was placed, the sides being all previously prepared entire, one of them was put on and securely ranced against the bank. Each bottom board, when placed, was strongly supported below with an upright post placed within 8 in. of each end. This went on till the undermining was a half-way under one side. The opposite side was done in the same manner till the plant was quite open below, the box side being also put to and ranced. Stout 8-in. broad planks were next put below, to support the ends of the bottom boards, but

outside of the temporary supports first placed under each. Two of the same size were also placed along the middle, and secured with iron straps to the ends. At the four corners very strong square posts were fixed in the ground, and placed so as to support the two 8-in. broad planks placed longitudinally under the bottom boards. During the first part of the operation, viz., the undermining, the soil right and left was not disturbed. The next part of the business was to lower the soil down to the base of the box on one side, then placing against it the board prepared for it, and securely fixing it with iron straps to the bottom, as well as to the ends. The soil on the opposite side was also removed, and the board prepared for it secured likewise. The box, 6 ft. square and 2 ft. deep, now stood entirely on the supports put under the corners and sides. After putting heavy planks below in a sloping position, the uprights were then withdrawn and rollers introduced. On these rollers the plant was drawn out of the hole by means of two fixed windlass crabs, and by the same contrivance was drawn on a low four-wheeled Lawrie. Being present during most of the above work, I was delighted on witnessing the operation, and particularly observing the forethought dis-

played in every movement by Mr. Hepburn, the gardener at Milfield. I have since seen the tree in its new situation (four years after the removal), and I am happy to say it was then looking well.

The next kind of transplanting which I shall allude to are those systems done on a gigantic scale, but chiefly on the screw-raising principle. For this particular branch of transplanting, the palms due to Mr. William Barron, of the Elvaston Nurseries, Derby, a gentleman who has done more for the transplanting of very large trees, both evergreen and deciduous, than any other planter in this country. Mr. Barron's heavy transplants are all removed in an upright position, and in all cases with great success. The balls of all are previously prepared, and all made of a square shape. Planks and chains are worked below the mass of roots; a large four-wheeled machine is then put round it, previously removing the heavy screw bars from behind. After being properly adjusted, the chains supporting the bottom planks are fixed to the powerful screws, which are wound up, and the tree stands suspended in the machine sufficiently

high to clear the ground, and in this position it can be taken along the public roads, guyropes in all cases being necessary, as well as in all stages of the lifting. The late Mr. Stewart McGlashen, whose portable transplanting apparatus I have previously described, has also a transplanting machine for lifting large trees with heavy balls, but instead of preparing the balls, as is usually done, a strong iron oblong frame, hinged at the corners, is laid on the ground round the tree; a series of solid iron spades are then driven into the ground immediately inside of the iron frame, and securely fixed to



Old Judas tree in the Garden of Plants.

it with powerful screw tension-rods. Strong battens are then placed longitudinally on the top of the frame, and securely fixed at the ends with chains. A large and heavy machine on four wheels, two large and two small, is then put round the tree, previously removing the back part of the apparatus. After everything has been put in working order, the screws are fixed to the chains, and the mass is screwed out of the ground, and the tree hangs suspended in the machine, and is conveyed by horses to its destination. Mr. McGlashen's heavy transplanting machine is rather complicated and expensive; it, however, answers the purpose, as I have myself seen, the chief drawbacks being tap roots and stones; the latter are often very troublesome while inserting the spades.

The only other kind of transplanting which I shall notice is the Janker system. This method has been long in practice, and was extensively employed in the Royal Botanic Garden here by my late father during the years 1821-22-23 while transplanting a number of the taller deciduous trees from the old Botanic Garden at Leith Walk. The trees most suitable for Janker lifting are those between 25 ft. and 45 ft. in height. In all cases the roots were prepared the year previous to lifting.

At Allanton, Lanarkshire, the late Sir Henry Stewart did good service by this mode of transplanting, as fully described in his *Planters' Guide*, published in 1828, and where a representation of the Janker system may be seen (p. 251, plate 3). As no balls of earth can be lifted by the Janker system, it is necessary, in order to secure safe transplanting, to have all the tree roots prepared the previous year; and if done for two years, so much the better for the safety of the plants. This opening up is accomplished by digging a trench from 4 ft. to 6 ft. from the base of the stem all round, care being taken to save all the roots that it is possible to do. This can only be effectually done by forking out the soil with a close-fined fork either all round at once, or one-half at a time, the latter method being preferable. When one-half of the circumference is done, working to within 1 ft. of the stem, and after cutting away any injured roots, fill in with some prepared soil for the better development of new roots. When one-half has been completed, prepare the other side in the same manner. A little water may now be given with safety. During the following year some of the trees may put out comparatively few healthy leaves; the roots, however, will be making progress, but infinitely better during the second. Three guy-ropes are fixed to the top of the tree and temporarily secured to posts. Strong planks are put across the hole exactly the width of the Janker wheels. The Janker for transplanting purposes is generally prepared with broad, high wheels, and with a strong frame on the upper side immediately over the axle. This frame must be well cushioned on the upper surface for the protection of the bark. It must also be supplied with several strong books and rings. A stout rope is fixed to the ring at the extremity of the Janker pole previous to its being placed upright against the tree. When so placed, it is necessary to fix the top of the tree securely to it, a ladder being used for the purpose, care being observed to surround the bark, in the various parts where tying is necessary, to prevent chafing. The chief securing being to the cushions immediately above the axle, a strong rope is generally put under the root, and fixed to a ring at each end of the Janker axle. When all is ready, the rope attached to the end of the Janker pole is drawn down, and, if properly balanced, it will rest on the Janker, men being placed to attend to the top, either by holding up or drawing down during its progress along the gravel to the new hole, which is done by a horse, chains being fixed to the Janker axle for the purpose. After the hole is reached, planks are again put across it; the Janker is then drawn to the middle so that the roots shall be immediately over the hole; secure the wheels in their places with stones, to prevent them moving while the work is going on. By means of the three guy-ropes originally fixed to the top, and the one at the Janker pole, the tree is drawn upright. Care is necessary in this stage that the guy-ropes be carefully attended to, particularly if the hole should be too deep for the roots. When upright, by means of the ladder, untie all the fastenings from the Janker pole, secure the guy-ropes, and fill up with prepared soil, spreading the roots carefully out while the filling in is going on.

From the number of partial failures which I have seen by the Janker system of transplanting, particularly those removed without root preparation and with all their branches entire, I prefer having the branches of Janker-moved trees foreshortened when the tree is laid on its side. It will generally be found, after two or three years, that such foreshortened trees, although they are made to look a little bare for a time, will ultimately make excellent specimens; while the branches of many of those planted entire, and in many cases root-prepared, are often covered with dead wood, and after-branching has often to be resorted to in order to get them to break out from the old wood, often taking many years to make up, all from the want of branch-foreshortening at the time of transplanting.

Botanic Gardens, Edinburgh.

JAMES McNAB.

**An Old Judas Tree.**—This ranks amongst the best of flowering trees, but when old it is not much valued for beauty of form. The engraving on the opposite page shows an old specimen of it that has always seemed to us remarkable from the point of view of form alone. It is, of course, when in full flower, an object of great

beauty. The Judas Tree is one of the most neglected in modern planting, though there are good specimens of it to be seen here and there in old gardens. The one which we figure grows in front of one of the buildings in the Garden of Plants.

#### NOTES FROM KEW.

SEVERAL of the very fine Himalayan *Rhododendrons* are opening their blossoms in the winter garden. A very lovely variety of *R. arboreum*—noted a month ago—has a broad, rose-coloured limb which gradually fades into a pure white throat marked at the base with a deep, blood-red blotch; it is called *R. arboreum* var. *limbatum*. The under surfaces of its leaves are silvery white. One of the hardiest of all the Himalayan *Rhododendrons* is *R. nilagiricum*, with bright rose-coloured flowers. *R. argenteum*, a native of Sikkim, and growing at elevations of from 8000 ft. to 10,000 ft. above sea level, is a noble species; its large leaves are about 1 ft. long, and broad in proportion, silvery white beneath. The heads of large flowers are pink in bud; as these expand they gradually whiten; a blood-purple spot surrounds the stamens at the base of the tube. Perhaps the most beautiful of all the Australian *Acacias*, where unlimited space can be afforded it, is *A. dealbata*, the delicate foliage and the large, drooping, branched panicles of bright yellow, globular flower-heads being without equal for grace and beauty combined. For the foliage alone this is well worth growing in a small state. Another noteworthy *Acacia* is *A. hybrida*, a plant distinct from, but similar in habit, &c., to *A. armata*. Besides possessing all the good qualities of that well-known favourite, in my opinion it is a more graceful plant. *Tetranthera*, *Tremandra*, or *Tetratecha hiruta* (for it bears all these names) is a very free-flowering Australian shrub. Its Heath-like foliage sets off its numerous saucer-shaped, reddish-purple flowers to great advantage. All the members of this genus are charming plants, and worthy of every general cultivation. *Hedroma* or *Genetyllis fuchsoides* is a most lovely greenhouse shrub with small neat foliage, and branches terminated by small heads of inconspicuous flowers; the lack of show in these latter is fully made up for by the large, beautifully-coloured involucre which surrounds them.

Among hardy flowers one of the most desirable is *Milla Leichtlini*, a pretty little Liliaceae, bulbous plant with shortly stalked heads of white flowers just above the ground. The individual flowers are similar in form and to about as large as those of *Triteleia uniflora*. When it is stated that this blooms in company with the Snowdrop and the Winter Aconite, enough has been said to prove its importance as a hardy, herbaceous, spring-flowering plant.

This week we note several Orchids that have not been mentioned before in connection with Kew. *Lycaste macrophylla*, from Peru and Venezuela, is a sturdy-growing, free-flowering species; the strongly ribbed, broad leaves are shortly stalked; the sepals are brownish, the petals white, the lower portion of the lip tinged with red and the upper suffused with yellow. *L. Reichenbachiana* is a handsome plant with a considerable resemblance in habit, size, and structure of flower to *L. gigantea*, noted in THE GARDEN for January 19, 1878; the sepals are green, the petals and the beautifully ciliated lip being pure white. A broad-leaved form of the tropical American *Epidendrum ciliare*, bearing the varietal name *latifolium*, is very well worth growing; the middle lobe of the lip is almost thread-like, the lateral lobes beautifully cut up into fine fringes. When the flowers first open they are somewhat greenish, but soon become white. *Dendrobium Freemani* is a very showy species, much in the style of the old *D. nobile*; the sepals are narrow, white suffused with rose; the petals are much broader, and deeper in colour; the throat of the somewhat trumpet-shaped lip is deep purple-red, the spreading portion pure white, with the exception of a narrow border of rose colour at the recurved apex. *Odontoglossum cordatum*, from Central America, is a distinct and beautiful species; the sepals and petals are a rich cinnamon-brown, barred with yellowish towards their bases; the lateral lobes of the cordate lip are whitish, the remaining portion being of the same colour as the petals. *O. crocidipterum* is a very pretty plant, totally different from any *O. ontoglot* hitherto noted; the ground colour of the sepals and petals is very light, almost approaching white, and is blotched with chocolate; the lip, which is yellow at the base, bears one chocolate blotch, and is prolonged into a tail-like process at the apex. *O. constrictum* is a narrow-leaved species from Venezuela with narrow sepals and petals of a yellowish-green colour, dotted with brown; the white base and crest of the lip are followed by reddish-brown bars, and then by a whitish-yellow border at the apex. *Antis latifolia* is a terrestrial Orchid from tropical Asia, having in habit much in common with some of the *Bletias*, the tall, erect scape for the upper third of its length bearing numerous flowers of a uniform brown, with the exception of the

white column and lip. This species, however, is more fit for the botanical garden than for general collections. *Oncidium cucullatum* var. *grandiflora* is a very charming little plant from Peru and New Granada; the lip is very large in proportion to the other parts of the flower, and its whitish ground is thickly spotted with rich purple. The very variable *Cattleya labiata* is represented by several varieties, the best of which is one called *purpurea*.

*Calliandra bromatocarpa*, a most lovely stove shrub, the native country of which appears to be unknown, is in flower in one of the warm compartments of the New Range; it has pinnate leaves with from seven to ten pairs of opposite pinnules about 1 in. long, and heads of small flowers, of which the calyx and corolla are almost concealed by the large number of long, brilliantly-coloured filaments which radiate from a centre, and form a ball of scarlet threads. A Gesneraceous plant (*Tydeea Mille. Hefne*) is also very striking; the tube of the flower is red, and the limb and throat are thickly spotted and barred with rich claret colour on a greenish-yellow ground.

In the Palm house several specimens of *Brunselia latifolia* enliven the tropical American shelf. This is a neat growing shrub with entire, alternate, green leaves, and flowers of all shades from blue to white. When first opened, these are deep slate-blue with a white eye, they then turn lavender-blue, and end by becoming white, with only a trace of colour. *B. eximia* is similar to *B. latifolia*, but is larger in all its parts.—†.

**Gentiana Andrews.**—This Gentian, as it grows in my woods behaves differently from what it does as described by your correspondents. The flowers do not last a long while, if by flowers are meant individual flowers, or the corolla. There is a long succession of flowers, but in my locality the individual corolla soon begins to fade. The ovary, however, continues to grow, and soon pushes itself through the mouth of the corolla, exposing the stigmatic surfaces, which remain in a receptive condition for some time after exposure. An insect could cross-fertilise it, when in this condition, wholly from the outside. The only difficulty with me is, that I do not see where the pollen to cross-fertilise is to come from. Mr. Darwin teaches that pollen from the same plant, or from plants growing under similar conditions, is practically no cross-fertilisation; but with them, bees or other insects do not go into one flower or one plant, and then away to another many yards away, then returning, and again going back, continuously going and coming, as a zealous cross-fertiliser, so beautifully arranged by Nature, should do, but they go from flower to flower on the same plant, or on plants in the vicinity, till all are done; at least this is the case with me, whatever they may do elsewhere. However, it is well to recognise the fact, that plants and, no doubt, insects behave differently in different places. For instance, Mr. Darwin, from English experiments, utterly denies that *Linum perenne* can fertilise itself by its own pollen. He says we may as well "sprinkle over it so much inorganic dust." But a single plant, which I brought with me from Colorado in 1873, bears fruit freely in my garden every year. It shows that how a plant may behave in one place is no rule as to how it will elsewhere.—THOMAS MEHAN, in "Bulletin Torrey Club."

**Hardy Plants for Pot-culture under Glass.**—I am pleased to see "A. D." (see p. 106) direct attention to this subject. Any one who has but a garden of a few yards can do something in this way; for nothing can be easier than the transference of a few patches of Primulas, Polyanthus, Daisies, Pansies, Hepaticas, Auriculas, Forget-me-nots, Violets, &c., from the open bed or border to pots. Common bulbs, such as Snowdrops, Crocuses, Scillas, Anemones, Tulips, Daffodils, Crown Imperials, Lilies, are equally amenable to removal and acceleration in this easy way. This plan possesses many obvious advantages. Many of the earliest spring flowers are much improved by the shelter of glass, as shown recently in the case of the Christmas Rose. Double hardy Primroses and the earliest Forget-me-nots and Anemones are additional examples of greater purity and delicacy, or a larger development of beauty under glass. Again, this mode of forwarding or protecting hardy spring flowers under glass anticipates and intensifies the pleasures of the spring-tide, the most enjoyable season of the year. It is something, much indeed, to snatch a week, it may be a month, from the hard, cold embrace of flowerless winter, and add so much to genial, cheerful spring. Not only does this simple mode of potting up hardy plants prolong the spring, but it gives us two, as it were, instead of one. We have the same flowers at this season as we shall have by-and-by. We thus, in a sense, double the pleasures of our spring; perhaps more than double them to many, for spring flowers in the window are brought nearer, and are, consequently dearer to many than the same flower in bed or border. Besides, how much better and how much newer they all seem. We have to go to see the flowers in most gardens. The flowers in the window come to see us. They also stay.

The spring flowers thus protected from climatal accidents in the window abide with us; they are not flying visitors, but abiding ones; and when at last their beauty fades, all they need to enable them to resume their places of vantage and of favour another season is, that they be carefully returned to the places from whence they came. What could equal a box, vase, pan, or pot of *Myosotis dissitiflora* fringed or studded with golden Aconites in January? Even this is within reach of most readers, and is only a trifling sample of the wealth of beauty that hardy flowers place within reach of all.—D. T. FISH.

**Early Flowers in Ireland.**—Some of those who read THE GARDEN may be interested in the following list of plants which blossomed here since the first of the year. I give the date of the opening of the first flower of each species:—January 22, *Galanthus Imperati*; 3, *Helleborus niger*; 5, *Helleborus purpurascens* and *H. atro rubens*; 10, *Tussilago fragrans*, *T. alba*, and *Jasminum nudiflorum*; 12, *Vinca minor*; 15, *Daphne* (Dauphine); 17, *Pyrus japonica* and *Prunella vulgaris*; 20, *Galanthus nivalis* and *Primula elatior*; 22, *Hepatica triloba* and *Mahonia glauca*; 24, *Scilla sibirica* and *Anemone coronaria*; 26, *Crocus vernus*, *C. luteus*, and *Rhododendron hybridum* var.—F. W. MOORE, Curator, College Botanic Gardens, Dublin.

**Gaultheria Shallon at Balmoral.**—During August, 1861, I paid a visit to Balmoral, and was surprised to find plants of the *Gaultheria Shallon* growing on the moorland ground on the summit of the hills above the Castle. During autumn of the same year the Queen and the late Prince Consort paid us a visit, and while passing a clump of the *Gaultheria Shallon* in the garden, the Prince remarked that he grew it extensively in the woods at Balmoral, and that the fruit was readily eaten by game. I stated that I had recently seen plants of it growing on the places alluded to, the berries having evidently been eaten and the seeds passed by birds on the situations where they were found. They were generally in seed masses, a few inches square and 2 in. in height. A circumstance which I was not aware of till recently, is the process now adopted by nurserymen of moistening trees and other seeds with water, and then sprinkling them over with red lead before sowing. The birds seem to have an aversion to the foreign colour thus given to such seeds, and therefore they are rarely meddled with.—JAMES McNAB, Botanic Gardens, Edinburgh.

**Adiantum Farleyense in Loam.**—This Fern is seldom seen in a luxuriant condition, and I believe that the failure arises from the mistaken notion that it should be grown in peat and sand. The best soil for it, in my opinion, is a mixture of good turfy loam, leaf-mould, and silver sand, to which may be added a liberal quantity of crushed bones. The plants should not be too densely shaded, as when that is the case, one loose the fine rose-coloured tints that appear on the young fronds. Last autumn I put one in a hanging basket, and it promises to be an attractive feature this season.—A. HOSSACK, Ragley.

—Most Ferns can be raised from seed, but, as far as is known, *A. Farleyense* has not seeded in this country; therefore, it can only be propagated by division of the roots, and as a cultivator once remarked in reference to it, "it does not mind being cut up." The best time to divide for propagating purposes is in spring, when the pieces divided root quickly, and get rapidly into growth. Between large and small pieces, the grower for market is enabled to have plants for sale almost all the year round. Just now, and during early spring, beautiful plants of this Fern are being sent into market. Enormous numbers of plants are grown only for their fronds, which are laid on the cloth in the case of dinner tables, and choice Orchids, like *Odontoglossum Alexandræ*, &c., are placed on them.—D.

**Buttercups and Daisies** may sometimes be found in the Nottingham meadows beautifully variegated with cream colour, white, and yellow. *Cherophyllum sylvaticum variegatum* may also be found sparingly in the ditches hereabouts; it is one of our most cheerful winter and spring fine-foliated plants.—W. ELLIOTT, Stapleford Hill, Notts.

**Leucojum æstivum Forcé.**—A correspondent has sent me some forced flowers of *Leucojum æstivum*, and informs me that annually this Snowflake is one of his winter-flowering plants. To a house of *Ginerarias* and *Cyclamens* at this season of the year this plant must be a charming addition.—P. B.

**The Winter Heliotrope** (*Fussliago fragrans*).—I should be greatly obliged if any of your correspondents who are endeavouring to extirpate this *Tu-lu-gio* would send me a few roots to the undermentioned address.—J. STEWART HARR, Camden Hill, Staplehurst.

Old Woman (peeling Potatoes)—"What a lot o' eyes these 'taters have got!" Old Man—"I specs they's extra, so as to look arter the Colorado beetle."

## THE SIZE OF GARDENS.

Most gardens are too large. This may seem a strange assertion; but it is nevertheless true. No one has ever attempted to measure out pleasure from paintings by the foot or yard square of canvas. Nine out of ten gardens are too large to be enjoyable. Size is the smallest factor in artistic pleasure—if, indeed, it be one at all; good keeping, appropriate furnishing, are of far more moment. Now both of these, however essential to an extreme degree, hence either or both are often seriously neglected to the loss of all true pleasure. And if not so bad as this, the struggle of keeping up the garden is such a strain upon our means that the exertion often exceeds the pleasure, and there is not the slightest need for these serious drawbacks. There is no more necessity that the art of horticulture should be dragged out over a great extent of land than the art of painting over so many square yards of canvas. Large pictures are, indeed, held by some to be vulgar on account of their mere size. This may be carrying art criticism to extreme lengths, but assuredly the canon holds good in regard to many gardens. Let those who are fond of horticulture boldly face facts, and cut their gardens down to their means if they would thoroughly enjoy them. Gardening may be either made a pleasing recreation—a delightful pastime for spare hours—or it may become a burdensome, oppressive, enervating luxury, and eat out a good many of the higher pleasures and nobler enjoyments of life. The springs of the pleasure which it yields lie hidden not in the width of its walks, the number and height of its walls, the grandeur of its slopes or terraces, the size of its beds or borders, the broad expanse of its velvety lawns, nor the perfection of its specimens or mass of trees, shrubs, flowers, or plants, but in the spirit in which it is prosecuted, and the pure delight which its pursuits inspire. Horticulturists must be humble, gentle, reverent, earnest, grateful, if they would be happy in their pursuit. And all these qualities may be as fully developed in small gardens as in large ones. Only disappointment can come of disguising the fact that high keeping is costly. It is not the mere matter of one digging and one hoeing or planting and filling, but many. The farmer may reap profitable crops with a minimum amount of labour; the gardener cannot, for his best crop of pleasure is really reaped every day, from having his garden kept in a perfect state. Bad workmanship, or weeds, or a look out of place, may mar a whole day's pleasure, just as the most exquisite picture begets a sense of pain when seen in a bad light, or through a blinding screen of dust. It should never be forgotten that a garden is, or should be, a charming picture, not stored in a lumber room, but displayed for exhibition all the year round; hence the importance of high and perfect keeping at all times. Then, again, a garden is a finished picture. A great many seem to forget this. Some people's gardens are ever being painted in or done up in new frames. It is impossible to enjoy any sense of repose owing to the bustle of busy workmen—to see the effects of light, shade, or play of colours, of fountains and bushes. The fussy activities and unfinishedness of gardens are fatal to all artistic pleasure. They are easily avoided, if one would only exercise forethought. The rule in some of the finest gardens is, no workmen visible after certain hours. All the work on prominent points is done early in the morning, and repose and finish reign over the garden undisturbed throughout the remainder of the day. So possible is all this, that the questions have often been asked, when is the work done? where are the workmen? or have you any? Gardens should show results, not processes. One plant grown well, suited for its place, may give tenfold the pleasure a thousand large specimens would do, packed into, rather than well arranged in, the most magnificent conservatory. And it is exactly the same in all other branches of horticulture. A patch of the vernal Forget-me-Not, so artistically posted as to form the eye of the drawing-room window, may confer more real pleasure than the thousand spring bulbs piled up in gay magnificence in beds or borders. But enough has been advanced to show that size is of far less moment in gardens than either good keeping or skilful arrangement. Fortunately, too, these latter are within reach of all, while the former, and the means and ability to do justice to large gardens, must ever remain the heritage of but very few indeed.—“Country.”

**Garden Fences.**—The English and Americans seem to have an insane love for fences. We fence the roads from the farms, and then divide the farms into little apartments, like enlarged checker-boards. We fence our village and city lots, and even disfigure our cemeteries by costly and unsightly fences. Every owner of a little lot in the City of the Dead must fence his 20 square ft. of property, but whether for the benefit of the living or the dead is not clear. The English carry this folly to a still greater extreme, and most of the costly mansions with their elegant grounds, in the vicinity of London, and, in fact, everywhere, are surrounded by brick or stone walls, from 6 ft. or 8 ft. in height, and even these are sometimes surmounted by broken bottles, or something of the kind, to make a passage over them dangerous, if not impossible. The front gates, too, are solid and massive, and anyone desiring admission must ring the bell or go “tapping at the garden gate.” The English law maxim, that “Every man's house is his castle,” seems to be fully believed by the people, and many residences look as though they might endure a formidable siege. The people of this country have begun at last to realise the folly of spending such vast amounts of money, not only uselessly, but to the actual injury of their property, both in appearance and productiveness. Farmers are using fewer fences, while n

many of the finest places in the neighbourhood of our large cities front fences, and even division fences, have been mainly discarded. An objection is that the destruction of fences destroys all privacy. This is in a measure true, but we have not yet seen the person who considered this a serious objection, or who would be willing to restore the fences when once removed. Some are apt to think that passers-by will take unwarranted liberties, pick flowers, &c., but this is not so. Remove your fences, place confidence in the people, and you put them on their good behaviour. Nothing will be harmed. We have in our mind a place near this city, planted with shade trees. Three years ago it was divided into three lots with hedges and fences, now all are removed, and we know of no prettier piece of lawn in the world.—“Vick's Magazine.”

**Experiments with Potato Sets.**—A French journal describes the results of some experiments in Potato growing recently conducted by scientific men in Germany. The principal conclusions arrived at seem to be two in number. The first of them is that the vigour of the Potato plant is always in direct proportion to the weight of the tuber used for sets—a theory which certainly finds some support in common sense, considering that the young shoots for some time draw their sole nourishment from the seed Potato. The second conclusion is that there is a great variety in the productive power, not only of different tubers, but also of different eyes in the same Potato. It is found that the eyes at the top of the Potato produce a much more vigorous offspring than those in the lower part, and the consequence is, that those who cut their Potatoes in half before planting them are not well advised in cutting vertically, but should always divide them horizontally, planting the upper half and using the other as food. But the best plan of all is to plant the tuber whole, cutting out, nevertheless, all the eyes except those in the top part. The experiments were conducted in a garden soil by Prof. Gantz, the amount of crop produced by several different settings being accurately estimated in statistical tables. It appeared that from tubers divided vertically only 5 tons were produced per acre, and from whole Potatoes  $7\frac{1}{2}$  tons. The third sort were Potatoes horizontally divided, which are set down as having produced 9 $\frac{1}{2}$  tons. In this particular, however, some of the other professors do not agree with Herr Gantz, but maintain that, other things being equal, the whole Potatoes will always produce more than halves, however cut. On the fourth result, however, all agree, and that is, that the whole Potatoes from which the lower eyes have been cut out produce 11 $\frac{1}{2}$  tons per acre, or more than double the result shown by the sets first mentioned.

**Opening Kew Gardens in the Forenoon.**—The following are Mr. Gerard Noel's reasons, given in the House of Commons, for not opening Kew Gardens in the forenoon.—“What is asked could not be conceded without a large increase of expenditure, and without materially interfering with the daily work in the gardens. In fact, I may say, the change demanded would involve the consideration whether Kew could continue what it originally was intended to be—a scientific utilitarian institution—or merely a resort for pleasure-seekers. [Why does not the Dublin or Edinburgh or Paris gardens suffer from opening them in the forenoon?] The present arrangements, I really believe, satisfy everyone but those who live in the immediate neighbourhood. [Not so. London people, and these at greater distances from the gardens, are practically debarred from visiting them in the winter time.] The visitors from the metropolis and elsewhere, as a rule, never arrive till long after the gardens are opened, and sometimes days and weeks pass without any visitors. [People do not go to stand outside locked gates.] What a waste of public money would be incurred, therefore, were the gardens always opened at ten in the morning, and we consequently had to maintain an additional staff of men all the year round. [The gardens lose half their value if they are shut more than half the time people might visit them.] Kew is open every day gratis to all, Sundays as well as week days. Christmas Day is the only holiday, the only closed day in the year. No institution in the country, I may say in Europe, is so freely open to the public every day from 1 p.m. till dark. Notwithstanding this, the authorities are so anxious to meet the reasonable demands of the public, that for the future we are prepared to open the gardens at ten in the morning on Bank holidays. I trust this will be satisfactory to my hon. friend. He will see from what I have stated that more could not be conceded without altogether altering the character of the gardens, without doing away with the original intention for which the gardens were from the first established, and without largely increasing the annual expenditure. [As to the statement about no institution in Europe being so freely open to the public, we propose collecting a few facts, of which one is given here. Until the present year, the Botanic Garden at Glasnevin has been open to the public from noon to 6 o'clock p.m. on week-days;

conservatories from 1 p.m. to 6 o'clock p.m. on week-days during summer; during winter, from noon till 3 o'clock p.m. On Sundays the gardens are open at 2 o'clock p.m.; the conservatories at 2½ p.m., then remains open until sunset, summer and winter. At the beginning of this year the hours have been altered. The gardens are now opened at 10 o'clock a.m. on week-days, and remain open until 6 o'clock p.m. The conservatories are opened at noon, and remain open until 6 o'clock in summer, and sunset in summer. Sundays the same as previous years. It should be noted that the Royal Botanic Gardens at Dublin are within a mile of crowded parts of that city.]

**Ivy Edgings in Shady Places.**—We have a walk here running through one of the shrubberies which is very much shaded by large Beech and other trees. On each side of this walk, and separating it from the shrubby borders, were Grass verges some 18 in. wide. I, however, always found it impossible to keep those verges in good condition, owing to the dense shade in the summer, and the almost continual drip in winter. At last, after having put down fresh turf six times in as many years, it occurred to me to give Ivy a trial instead; and I am happy to say that the result has been highly satisfactory. The formation of these Ivy edgings was a very simple affair indeed, and occupied but a short time. I allowed the Grass verge—or rather the sod on which the Grass had grown—to remain, and along the centre of it I opened a cut some 2 in. deep, and in this I placed quite close together well-rooted plants of Ivy, covering the roots with a little fine soil, and returned the portion of turf which was removed in making the cut, pressing it down firmly. It is now just two years since this edging was put down, and it has formed a complete carpet the full width of the original verges, and I need scarcely say that its appearance is in every respect contrast to that presented by the original verge, even when at its best. There was no difficulty whatever in obtaining an abundance of plants, as there are acres of wood here in which Ivy forms a thick carpet all over the ground. Indeed, there is no place in which there are woods where this plant may not be found, and in a suitable form for turning to account in the way just alluded to.—“Gardeners' Record.”

**Tall Trees.**—It appears that there were some very remarkable sections of North American timber trees shown at the great International Exhibition at Philadelphia in 1876. The dimensions of some of them come near that of the “Big trees” (*Wellingtonia gigantea*) of California. A section from an Oregon Red Cedar (*Thuja gigantea*) measured 23 ft. in diameter, the tree from which it was cut being 325 ft. high. A section of *Abies Menziesii*, taken 98 ft. from the ground, was 6 ft. 10 in. in diameter, and the tree was stated to be 318 ft. high and 16 ft. in diameter at the base. Two sections of the Yellow Pine (*Abies grandis*), from Oregon, measured, one 6 ft. 10 in. in diameter, exclusive of bark, taken 130 ft. from the ground, and the other 5 ft. 10 in., taken 200 ft. from the ground. Both these sections were cut from one tree, which gave a diameter of 15 ft. 9 in. at the base, and a height of 321 ft.

**Public Parks.**—Two national parks only have been made in North America by authority of the Government. These are the Yosemite Valley and the Yellowstone National Park. The former was granted by Congress to the State of California, June 30, 1864. This tract is in the county of Mariposa, at the head waters of the Merced River, and is about 15 miles long and a mile in width from the main edge of the precipice on both sides. At the same time the Mariposa Big Tree Grove was set apart under like legislation. This comprises an area of about four sections. The Yellowstone National Park is located in the extreme north-west corner of the territory of Wyoming. It is 65 miles in length from north to south, and 55 in breadth from east to west. The Act of Congress setting it apart as a public park was approved by the President March 1, 1872. Probably no area of equal dimensions on the globe contains so many objects of wonder as hot-springs, geysers, waterfalls, and canyons. Professor T. V. Hayden is the authority quoted in this paragraph.

### GLASS COPINGS FOR WALLS.

HAVING devoted many years to the cultivation of Peaches and Nectarines in low-lying situations, liable to be affected by early autumn and late spring frosts, I have found that the use of glass copings, combined with the Trentham system of frequent lifting, and re-planting in pure loam, furnish the most successful means of ensuring satisfactory results. Where glass copings have been tried during the season of 1877 for the first time, their condemnation would be unfair, as half-ripened wood never produces good crops of fruit. Some years ago I placed glass copings over four Peach trees on a wall 80 ft. in length; and although I have lost crops of fruit and the trees also on other walls protected by boards and fishing-nets, I have never missed gathering a crop from the glass-coped trees. Last year, so fatal in many places, their foliage was quite clean and free from curl. The fruit set well, and required frequent thinnings, and the trees are again furnished with promising wood. The other set of trees to which I have referred, on a higher level, consequently a better wall for resisting the effect of cold, was so much injured by blight and curl, that the crop so failed, and many of the trees have had to be removed. Glass copings should be light, portable, and inexpensive. Mine are 12 ft. long, of plain deal, grooved and painted, the glass (21 oz.) being slipped into the grooves, and the last square fastened by a small screw. They are placed over the trees before the blossoms open, and remain on until all danger from spring

frost is over. They are then taken away to the store-house, and the trees are well syringed, mulched, and watered. In elevated gardens enclosed with high walls, slight protection is all that is required for securing crops of fruit. At Madresfield Court, the magnificent set of Peaches and Nectarines was last year laden with fruit, and the only protection Mr. Cox uses is two or three folds of fishing-net; but then his walls are high and well coped, and he has wisely selected an open, elevated position for his new kitchen garden. In making a selection of trees for low, damp situations, I have discovered that short or half-standards on the Muesel stock are hardier and last much longer than the ordinary dwarf tree, which is worked a few inches above the level of the ground.—W. COLEMAN, in “Florist.”

**Scottish Horticultural Association.**—The usual monthly meeting of this association was held at 5, St. Andrew's Square, Edinburgh, on Tuesday, the 5th inst. There were over 100 members present. The President occupied the chair. Thirteen new members, proposed at the last meeting, were duly admitted, and fifteen new names were announced. The subject for discussion was “Vine borders,” opened by Mr. William Priest, Newbattle, who read a short paper, in which he set forth in a plain and practical manner his experience in their construction. He laid great stress upon having a good depth of border, say 2 ft. 6 in. to 3 ft. 6 in., and sloping from back to front, and that the soil should consist of a good loam, lime-rubbish, crushed bones, and charcoal. The paper gave rise to an animated discussion, in which many members took part, the general feeling being that the principles advocated by the essayist were sound and thoroughly practical, but that cultivators would require to be guided by the circumstances of their individual cases. During the discussion the experiments of Mr. Hunter, Lambton Castle, were adverted to. The proceedings terminated with a vote of thanks to Mr. Priest for his paper.

### NOTES AND QUESTIONS—VARIOUS.

**Roberts' Gros Guillaume Grape.**—It is more than probable that Ireland will continue to retain the credit for years of having produced the heaviest bunch of black Grapes on record, as we have not as yet heard of any to equal the large bunch produced last autumn of Roberts' Gros Guillaume, grown by the raiser of that variety, Mr. Roberts, of Charleville Forest, Tullamore, which weighed 23 lb. 5 oz. The more we see of this Grape the more we are convinced of its distinctive character and genuine worth.—“Gardeners' Record.” [We understand this Grape will be sent out by Messrs. Tait, of Dublin.]

**A New Apple.**—The editor of the Germantown “Telegraph” remarks that the Albemarle Pippin looks very much like his progenitor, the Newtown Pippin, and is about the same size, but in point of excellence it far exceeds it, in his estimation, as it does every other Apple he has ever tasted—a pretty good compliment, we should say, for the Albemarle Pippin.

**Abies Patoniana.**—Allow me to direct the attention of planters of Coniferous trees to this, which is one of the finest of all of them, and yet one of the least planted, i.e., so far as my own observations have gone. It has beautiful light green foliage, which contrasts admirably with such sombre kinds as *Picea cephalonica* and *P. Nordmanniana*. It seems nearer allied to the Larch than to any other Conifer, but it is evergreen. It is perfectly hardy, and of free yet compact growth. I have been told on good authority that its timber is of more value than that of many Conifers which are more largely grown.—W. W. H.

**Self-watering Flower Pot.**—Mr. Matthews (see p. 62) is in error in stating that the above was described in *The Gardener* of December 19 as a new invention. The writer merely alluded to it as patented by Mr. Levetsov; as since, as manufactured by the latter—it meets with a good sale, whilst Mr. Matthews' pot finds few purchasers, some improvement in construction or material has probably been introduced.—T. S.

**Gas Tar on Trees.**—A writer in the *London Gardener* says he has used gas tar on his Oak, Ash, Larch, and other trees for twenty-five years without injury. His object was to exclude rabbits. As we have repeated instances reported in this country where it very promptly killed every tree to which it was applied, we conclude that in the instances where this result was not produced, the trees were large enough to have produced dry and hard bark through which the tar did not penetrate. Something is obviously due to the time of year when the application is made, as green bark during the growing season is more sensitive than in the dormancy of winter, the tar gradually drying and hardening in the course of months.—“Albany Country Gentleman.”

**The Late Mr. Rivers.**—At a meeting of the Massachusetts Horticultural Society, on the 24th ult., action was taken, with reference to the recent death of Mr. Thomas Rivers, of Southwicksworth. The venerable Col. Wilder offered appropriate resolutions, prefaced by an adequate tribute to the memory and services of Mr. Rivers.

**Testimonial to Mr. James Drummond.**—Mr. Drummond, over 35 years gardener at Blair Drummond, was presented the other day with a testimonial of his subscribers connected with the Stirling and Kilmacdock Horticultural Societies on the occasion of his retirement. The testimonial consisted of a handsome timepiece, a beautiful silver bread or cake basket, a solid silver snuff-box, and a splendid parlour copy of Burns' Poems, very elegantly bound in Bannockburn wood.

"This is an art  
Which does mend Nature: change it rather: but  
THE ART ITSELF IS NATURE."—*Shakespeare.*

### OAK STUBBS IN GARDENS.

Few are aware of the great value and importance of old timber and other stubbs in picturesque gardening. Of these there are several kinds. Those most readily obtained, especially by people who possess woods, are such, which, after the trees have been felled for "flawing," are immediately and carefully grubbed, with sufficient fibrous roots to ensure their existing in a living state, when all round the margin, under the bark of the stubb, multitudes of fresh, vigorous shoots spring forth, bearing immense leaves, often 1 ft. in length, and forming as handsome a dwarf shrub as one could desire, especially in autumn, their golden and russet leaves remaining far into the winter. Another kind of stubb is that of an Oak or Holly which has been exposed for years to the drip of a damp wood; it becomes well rounded, and densely clad with the liveliest-green velvety Moss, Lichens, minute fungi, and drooping polypody, a perfect picture of beauty. This being a dead stubb, it is too beautiful to last, and can only be depended upon for a very few years, decaying very rapidly. Most difficult to obtain, and the most desirable for durability, but for another purpose, viz., for forming a rootery, is the ancient Bog Oak root, which we exhume from beneath the surface, where it may have been buried for many centuries; all the outer sappy portions have been decayed, leaving only the angular stellate centres, hard as iron, often of a deep reddish-black, and when built up on the surface of a mound or bank reminding one of mountain peaks very similar to the Aiguilles of Mont Blanc. In forming a rootery, it is necessary that the foundation should be composed of a large quantity of stones, clinkers, or brick-burrs, to ensure perfect drainage; commencing with the base, which should be made as irregular as possible, the stubbs must be jammed down firmly upon each other on a surface of rooty-peat and loam, small broken stones and sand, leaving valleys and bays and pockets or open places in which almost any plant will thrive, as, for instance, Alpine and rock plants, Ferns, small Vines and Ivy, and delicate Grasses, such as Briza, and many of the Orchises. It need scarcely be named that such a stubbery should not be isolated like a tumulus on a plain, but must grow out of some natural hollow or nook in a cliff of rock or high background of old stems of trees, or Ivy-clad wall in a somewhat retired spot, and not to form part of a scene from the windows of a house. Ants are, however, great enemies of these places, the dryer portions of the wood internally becoming rapidly converted into a kind of sawdust, in which their countless eggs are hatched, the pungent odour of the formic acid being most disagreeable. Here Sir John Lubbock might with advantage study in a natural way the habits of these interesting creatures. It would be desirable to observe what wood might best resist their attacks. Doubtless an ancient Yew or Holly stubb would prove more efficacious and durable than even Bog Oak. Oak grown in poor sandy soils, though not attaining large dimensions, is very close-grained, hard, and sound, and for "postes," as my carpenter assures me, is better than all other timber, for though Elm underground resists dampness, it much sooner perishes where exposed to the vicissitudes of wet and dry air than heart of Oak. And of hearts of Oak, are we not as islanders and mariners justly proud and nationally enthusiastic? E. W. COOKE.

*Glen Andrea, Sussex.*

during the Saturday evenings of June, July, and August till 8 p.m. (for the benefit of the working classes). During the winter months it is open from daylight till dusk. The hothouses are open every Wednesday and Saturday from 12 till 4, but during the long days till 5 p.m. Strangers not resident in Edinburgh can get admission to the houses on other days of the week by satisfying the porter that they are strangers. On open days men are stationed in the houses, but on other days (when not open) a man is sent round with visitors. Besides the ordinary open days, the garden and houses are open during all holidays and to people coming by excursion trains to Edinburgh, although not on an open day."

### ARTIFICIAL TREE FERNS.

I FIND these very useful as ornaments for the dinner-table, especially at times when one is puzzled to devise a change. The following are a few details of what I mean by "artificial" Tree Ferns, together with the names of a few Ferns which are suitable for such purposes. These consist of *Lomaria gibba*, *Blechnum brasiliense*, *Dioikonia antarctica*, *Alsophila australis*, and *Pteris tremula*. As regards the mode of procedure, I get a healthy young plant of *Lomaria gibba* in a 4-in. pot, take it out, and shake off as much of the soil as I can without breaking the roots; what remains can be got rid of by washing the roots under a tap or pump. The next thing to decide is the height of the stem, which I usually make about 1½ ft. high. I get four straight stakes, place them at equal distances round the base of the plant, and secure them with small copper wire; then I get some pieces of rough peat and loam, and begin forming the stem from the plant downwards, taking care not to destroy the roots, and as I proceed I bind the whole with fine wire. I then cover the whole over with Moss, obtained from the roof of an old shed. This is preferable to what is found growing under trees, because it is not so liable to break, and, having no soil adhering to it, it looks much neater. I then place the stem in a 4-in. pot, filling the same pretty well with potsherds, merely putting a few pieces of loam on the surface. I then cover with Moss, similar to that with which the stem was clothed. I then have a hand-light in readiness to put them in, and attend well to the watering and shading for a few weeks, when, if all have gone on well, young roots will be emitted through the Moss. They may then be gradually exposed to the ordinary temperature of a Fernery, but avoid putting them in a draughty position. They will now require an abundant supply of water, and the best way to apply it is to put the hand round the stem and pour it from a watering-pot without a rose. It is always well to make these artificial Ferns in pairs, and to avoid making the stem too bulky. Some of the coarser-growing Ferns are not so tedious to deal with—*Alsophila*, for instance; these ought to have the stems made proportionately stout to their growth and longer—say 3 ft. the first season. Some may object to this mode of making one's own tree Ferns as an innovation on Nature; granted. But are we not placed in a position to assist Nature? And I do not find that these artificial Ferns look unnatural, but quite the natural brown one. Plants of the description just indicated may be used on the dinner-table in a variety of ways, but I much prefer them set on a flat plate, and the pot mounded with some healthy plants of *Lycopodium denticulatum*. A few flowers may then be inserted among the Lycopod. One colour is preferable; say out blooms of *Abutilon Boule de Neige*, scarlet *Pelargonium*, &c.

*Razley.*

A. HOSSACK.

**Hyacinthus candicans in Holland.**—This very ornamental plant has been cultivated by us for several years, and has invariably proved to be quite hardy. We have several times left large flowering bulbs of it in the ground during winter, planting them in autumn, and they never sustained any injury from frost. We, however, prefer taking the bulbs up in autumn and replanting them in spring, keeping them dry and out of the reach of frost during winter, like the Gladioli. Those in our seed beds are not taken up in autumn until the bulbs are two years old. We do not doubt that this *Hyacinth* will soon become as popular as it deserves to be.—J. H. KRELAG, Haarlem.

**Snowdrops on Stoncrop Turf.**—I wished to have a small strip of ground covered with verdure, and yet I did not want to have it frequently mown. Early in autumn it was broken up, levelled, and made smooth on the surface, and into it were dibbled a quantity of bulbs of the double Snowdrop; the entire surface was then covered with small patches of the creeping green *Sedum Lydium*. This latter now forms a carpet of rich green foliage, through which are peeping the lily-white blooms of the Snowdrop, and the effect will soon be most charming. The leaves of the Snowdrop will look unsightly for a short time, but as soon as they are ripe, they can be

**The Opening of Kew Gardens.**—In reference to Mr. Gerard Noel's statement (see p. 133) that "no institution in the country is so freely open to the public as Kew," we last week gave the hours of opening of the Dublin Botanic Garden; this week we publish those for the Royal Botanic Garden at Edinburgh. "It is open to the public every lawful day—in summer from 6 a.m. to 6 p.m., also

cut away, and the Sedum will remain green and neat until next spring. This arrangement, if occasionally treated to a top-dressing of finely-sifted soil, will remain good for several years.—A. D.

**Newtown Pippins.**—The past has been a very bad season for this popular Apple, the fruit being as a rule scarce, poor in quality, and worm eaten.

**Rose Cornelia Cooke.**—Mr. George Paul informs us that this Rose, so popular in America, owing to its firm buds, has been tried in this country in the open air, and proved to possess no qualities that would recommend it for cultivation.

**Nephrolepis Duffi.**—This new and distinct Fern, which may be seen in Mr. Bull's nursery, has long, slender fronds, closely beset with small and elegant pinnae. When well established, it will doubtless be found very useful and ornamental for placing in vases and in similar positions.—S.

**The Creeping Forget-me-Not** (*Omphalodas verna*).—Permit me to direct attention to this as a winter-flowering plant. I potted several young plants of it in November from the open ground, and they have been in beautiful flower in my rather cold greenhouse ever since the beginning of the year. Nothing can exceed the beauty of the shade of blue which distinguishes this little plant, so often overlooked.—H. B.

**A Winter Carnation.**—A new winter-flowering Carnation named *Alegatere* is now making a fine display in Mr. Turner's nursery at Slough. The plant possesses a free-branched habit, and produces a profusion of bright scarlet blossoms during the winter months. It is of French origin, and must ultimately be grown in preference to any other kind of the same colour for market.

**Hardy Flowers at Tooting.**—Mr. Barr has sent us, from under glass, specimens of *Allium neapolitanum*, bearing umbels of pure white flowers, and of *Senecio pulcher*, with rich magenta-coloured blossoms. Both are well-suited for culture in pots for blooming during the earlier months of the year.

**Snowdrops in Covent Garden.**—The beautiful white flowers of the early Snowdrops play an important part in even the choicest of bouquets in Covent Garden. They are also employed with good effect fastened to sprays of common Box. The drooping white blossoms are placed in such a manner as to allow the green, stiff leaves of the Box to peep between them. In bunches of Violets, too, a few Snowdrops are introduced, and, being allowed to droop over the Violets, form a pretty combination.

**Andromeda floribunda for Forcing.**—Boshy plants of this *Andromeda*, potted and forced into flower in Messrs. Osborn's nursery at Fulham, are now furnished with a profusion of clusters of Lily of the Valley-like blossoms, which are much whiter on forced plants than on those in the open ground. Associated with scarlet *Cydonia*, Ghent Azaleas, &c., the value of such shrubs, in an ornamental point of view, at this season of the year cannot scarcely be overestimated.

**Hemerocallis Kwano variegata.**—Allow me to recommend this as a most desirable plant for many purposes at the present time. Clumps of it potted in autumn, and introduced into a house of only moderate warmth, are now very beautiful, and much more graceful and superior in every way to either of the variegated *Pandanus* so frequently used for table and other decorative purposes. It is quite hardy, and, after doing duty now, it can be planted out by-and-bye in the border, where it will take care of itself.—T. SMITH.

**The Great Brownsea** (*B. macrophylla*) at Lakeland was in gorgeous beauty when I paid it a visit the other day, having three of its brilliant fiery orange Rhododendron-like bloom trusses open, all coming out of the hard wood of the trunk at distances varying from a few inches to 1 ft. from the ground. It has been now blooming almost continuously for over two months, having already produced over 100 of its gorgeous bloom-heads, and having several more still to expand.—W. E. G.

**Rosa polyantha.**—Mr. George Paul has just told us of the beauty of this Rose as a vigorous climber in Mr. J. Sibley's garden at Lyons, we, in reply to an inquiry, received the following note from that veteran amateur, who has enriched our gardens with so many good varieties of plants:—"As to the principal object of your letter, I can say but very little. I have possessed *Rosa polyantha* since it has been introduced from Japan. It is a very hardy shrub, having stood with me the severe winter of 1870, when we had, in December, 21° Centigrade below freezing point. The flowers are white, small, and single, but they are borne in clusters, like the Lilac. It seeds freely. It needs no pruning; quite the contrary. I have obtained from its seeds several varieties with double flowers, which are about the form and size of those of *R. multiflora*. They are generally white, but some are tainted yellowish or pink. I must suppose that the mother

plant has been fertilised, through insect agency, with the pollen of other *Roses*, because my son, who is an engineer in Japan, wrote to me that in the neighbourhood where he resides, where the *Rosa polyantha* grows wild on the hills, it always comes true from seed, but that may happen because there are no other *Roses* in the neighbourhood."

**Chinese Primroses.**—A coloured figure of *Primula sinensis fimbriata coccinea* has been sent to us by Mr. B. S. Williams, of Holloway. It represents a beautiful, deep crimson form of these Primroses, various improved varieties of which have been introduced by Mr. Williams.

**The Fulham Nurseries and New Lines of Railway.**—In consequence of a railway being about to be formed through Messrs. Osborn's nurseries, at Fulham, active preparations for the moving of trees and shrubs in its way are being made. These are not confined to the moving of ordinary nursery stock, but to that of full-grown Magnolias, Azaleas, and similar hardy trees and shrubs for which this nursery has long been celebrated. The roots of the largest of the trees to be moved have been cut ready for transplantation next year.

**The White Lycaste.**—One of the best examples of the beautiful white variety of *Lycaste Skinneri* which we have seen is now in bloom in Mr. Williams' nursery at Holloway. Its blooms are very large, and quite as chaste and pure as those of the well-known *Cymbidium eburneum*, which is, even at the present day, somewhat rare. Flowers of the white *Lycaste* are as freely produced as those of the rose-coloured varieties, and for cutting they are invaluable.

**Orchids at Messrs. Veitch's.**—Among rare *Orchids* now in flower in Messrs. Veitch's nursery are mentioned *Ocidium Orestodi*, which produces small pure white flowers, with a yellow throat, set on short stalks; the brilliant orange-coloured *Lælia harpophylla*, with several spikes of blossom; the white-flowered *Cattleya Trianae*, and a variety of *C. Trianae* called *Penelope*, the latter bearing a magnificent flower with petals 2 in. broad, of a delicate transparent violet colour, and a claret-coloured lip with rich golden throat. To these may be added *Epidendrum Wallisi*, *Odontoglossum Chestertonii* and *protonites*, the latter being furnished with upright spikes of flowers having chocolate sepals and prettily-marked petals. Several new *Lælia*'s *Slippers* are also in bloom, and the large-flowered variety of *Angreum sesquipedale* is still in good condition.

**Closed Gates at Kew.**—We understand that the Kew Gardens Public Rights Defence Association have determined to make an application to Parliament, and to persevere until the object desired is achieved. An appeal is made to the public for the necessary funds. The secretary is Mr. Charles Colman, jun., and his address is Cumberland House, Kew.

**Ghent Horticultural Exhibition.**—We have received the programme of the Ghent exhibition, to be opened on the 31st of the coming month. It promises to be a most important horticultural meeting. Copies of the programme may be obtained from M. Ed. Claus, 20, Rue digne de Brabant, Ghent.

**The Orchid House at Glasnevin** is at present quite a treat to look at, and even to a person unacquainted with the value of the plants it would amply repay a visit. The following is a list of such as are in flower, viz., *Cypripedium barbatum*, *C. Dominianum*, *C. hirsutissimum*, *C. Harrisianum*, *C. Lowii*, *C. longifolium*, *C. Roezli*, and *C. villosum*. *C. Harrisianum* is very fine; *C. Lowii* is also in excellent condition. Associated with these are *Odontoglossum grande* and *O. cariniferum*, *Lælia anceps* and *L. superbiens*, the latter very fine, the blooms being large and well-coloured; *Calanthe Dominiana*, *Neottia maculata*, *Dendrobium nobile*, *D. densiflorum*, and *D. Wardii*. *Cattleya Trianae* is also finely in flower, as are also *Angreum virens*, *Ocidium spheacelatum*, and *Aerides giganteum*. The two gems of the collection are, however, a noble plant of *Phalaenopsis Schilleriana*, with over fifty beautiful blooms on it fully expanded; and a very fine specimen of the very rare and beautiful *Vanda Cathcartii*, the flowers of which measure over 2 in. across; the lip is white, with a rich cream-coloured edging, with two somewhat inconspicuous chocolate stripes down the middle; the petals are large and fleshy, and are barred irregularly all over with stripes of a light chocolate colour.—F. W. MOORE, *College Botanic Garden, Dublin*.

**Kentipossia Lindeni**—It is stated (see p. 114) that this Palm has massive, fan-shaped leaves. Is that really the case? If so, it can hardly be a *Kentipossia*. The fronds of Palms are generally considered under two terms as to shape, the one fan-shaped, the other feather-shaped, which, as a loose general rule, holds good through the whole family. The *Kentias* and *Kentipossias* should belong to the latter group, hence the reason of this query. If *Kentipossia Lindeni* belongs to the former group, it is a very distinct plant from what it is generally supposed to be.—M. D. [*Kentipossia Lindeni* belongs to the feather category.]

## VASE OF ROSES BY REGNIER.

It has been truly said that the highest art is that which renders most correctly the spirit of the subject without condescending to photographic detail, since we never can attain to both at once. When gazing on the charming group, the subject of the accompanying engraving, we cannot but observe how fully this remark has been fulfilled, for while recognising the graceful shape of the Cabbage or Provins Rose, still dear to many a Rosarian, it is obvious that the closely-packed petals are indicated rather than minutely copied; but as the likeness is not lost thereby, the gain in lightness and grace much more than compensates for the absence of detail. Our modern cultivators, in their endeavours to improve (from a gardening point of view) the queen of flowers, have almost succeeded in banishing the light and but semi-double Damask Roses forming the top of the group from our gardens; but to a painter's eye they will always furnish a spray of bloom, such as he delights in. This is not even in these days forgotten by modern French artists, who tread worthily in the "spirit" rather than the footsteps of Regnier, the light and delicate sprays of Tea and Noisette Roses being very favourite subjects with them, while the massive blooms of a Pierre Notting and Maréchal Niel are sparingly used, and only as a counterfoil to some rich drapery, such as that before us.

E. H. W.



Vase of Roses by Regnier.

## CLIMBING ROSES.

THE desire for the varieties of Roses that produce the finest formed individual flowers is so contagious, that in far the greater number of gardens many of the Roses best adapted for particular purposes are completely lost sight of. Even where lists are given of what may be termed garden Roses, it rarely happens that there is anything to be found in them but a selection of the freest-growing Hybrid Perpetuals, with a few Noisettes, Bourbons, &c., a whole host of distinct kinds being left out much more appropriate for planting in many positions in any garden—large or small—than those recom-

mended. Take, for instance, the Banksians, both white and yellow. What can be more beautiful than the innumerable bunches of full, yet not formal, flowers that these produce when well established in a warm situation? but how comparatively rarely are they seen. All they require is either a naturally dry bed, or one that is sufficiently drained to make it so, with plenty of rich soil, and in other respects they should be left undisturbed, except to shorten any over-strong shoots, and to nail or tie others, so as to regularly cover the space which they are required to fill. A good washing two or

three times in the spring with weak Gishurst water, allowed to dry on the leaves, is a great assistance in keeping down red spider and green fly. By the sides of shrubby walks, away from the more dressed part of the garden, where any particular object has to be covered, the Ayrshire and Boursault Roses are generally very much more in keeping with the surroundings than the kinds that produce finely-shaped flowers. One of the most effective objects imaginable in such a situation is the trunk of a dead tree with its upper branches partly shortened and covered with Ivy, from amongst which hang pendent, long, untrained shoots of these Roses in flower, with no further tying in than just sufficient to disperse them irregularly over the upper portion of the stump. Such a combination is easily obtained where the soil is suitable and plenty of manure is

dug in; the Roses must also be well supplied with it afterwards, or the Ivy, being a gross feeder, will impoverish the soil to an extent that will prevent them getting sufficient sustenance. Where this combination is attempted, the Ivy should have two or three years' start, otherwise the Roses are such free growers that they will monopolise the whole space. The same arrangement on a wall looks equally well; but, if a successful effect be expected, the Ivy and the Roses must not be left to fight out a war of extermination; on the contrary, whichever is found to be unduly taking the lead must be kept within bounds, and the Roses must be annually manured, for

if this be not done, while the Ivy would grow on without any assistance, the Roses would die of starvation. Even under such conditions, the evergreen Roses (*R. sempervirens*) alone are often much more suitable than those with finer shaped flowers; they are also well adapted for covering arched trellises over walks, or for divisional screens to shut out anything which it is desirable to hide, or for overrunning wooden fences anywhere not overhanging with trees, and where the soil is not only in the first instance made sufficiently rich to promote free growth, but is continuously kept in that condition afterwards. The Noisettes are equally useful for intermixing in the way above recommended; their great advantage is their disposition to flower profusely late in the autumn. The Teas, *Gloire de Dijon*, and climbing *Devoniensis*, are unsurpassed for use in this manner; where they have plenty of head-room, the long, unformal branches of the last, with its great clusters of flowers hanging from the points, and the ever-blooming disposition of the former, are not equalled by anything in their way. In the case of these, again, the principal matter is to see that the roots are well sustained and to use the knife as little as possible. Where a single object, like a very large-headed drooping standard Rose, is required in such a position as a distant corner of a lawn, nothing answers the purpose better than the old variety *Blairi*; where soil and situation suit it, and a strong support is used, it will grow to a very large size. In its case, again, the knife must be sparingly employed, or the result will be sure to be a large crop of shoots, but few flowers.

Nothing is more common than planting rows of standard Roses along the sides of walks, a practice by no means conducive to an improved appearance in gardens; but where there is a determination to plant them in that way, much might often be done to render them more interesting than they usually are—here and there a plant doing well, and the rest mere starvelings. For such situations nothing but the freest growers should be chosen, and the soil ought to be such as is naturally suited to the growth of Roses. The small pieces of unfurfed space immediately round their stems, left for the purpose of supplying manure, are simply eyesores, for if the Roses make their wonted progress, in a year or two their feeding roots would be far beyond the parts left unfurfed. Where Roses are grown in such a position, it is best to lay turf right up to their stems; and when assistance is required in the way of manure or new soil, strip off the turf during the winter, or, if more convenient, at the present time, remove some of the old earth and add new soil. Then make all firm and replace the turf.

T. BAINES.

**A Rose for the Wild Garden.**—Few plants make more beautiful objects in the wild garden than many of our British Roses. Their graceful and wild luxuriance of growth and native vigour enable them to hold their own with most hardy plants. We now recommend to our readers one which has all the beauty of our own combined with a strength of constitution which equals, if it does not surpass, that of many of the species of our English hedges and commons. It is from Nepal and Kamoon, and bears the name of *Rosa Brunoniiana*. Its large, stout branches, which are beset with rather strong, hooked prickles, often attain a height of 12 ft. or 15 ft., and are tolerably thickly clothed with pretty bright green leaves; the pure white, fragrant flowers have five roundish petals, and are borne in large corymbs. When in flower nothing can well exceed the charming appearance presented by this Himalayan Rose. Where its bare stems might be an eyesore during the winter months, plant it behind not very tall evergreens, &c., and allow its long branches to droop naturally from among the twigs of low trees, such as the *Laburnum*, &c. Being perfectly hardy in this country, it ought to be much more generally grown.

**Rose Gardens of the Future.**—Mr. George Paul suggests that the plan adopted of growing *Lilacs* in *Rhododendron* beds might with advantage be extended to the Rose. In that way the early bloom of shrubs and *Lilacs* would be succeeded by the still more precious summer and autumn Roses. Apart from this advantage, however, the plan and similar ones are desirable, if only to save, or partially save, the Rose from the dismal and stiff Rose gardens that are seen in many places.

### CHRYSANTHEMUMS IN TRENCHES.

In the *Chrysanthemum* we have a plant of such a hardy, enduring nature, that it not only grows, but may be said to flourish amid soot and smut, if now and then they are washed from its leaves, as there it is they do the mischief by stopping the breathing pores. If those who live in and around towns and cultivate *Chrysanthemums*, as nearly all do if they have the least bit of ground, only knew how important it is that they should be kept free from dusty deposits, their success would be much greater than it now is, as when the respiration of any plant is impeded, its whole system becomes disorganised, as would be the case with ourselves did we suffer in the same way. The leaves are to them what lungs are to us, and it is therefore obvious that if they become clogged in any way, it is at the expense of their health. This being the case, those who would have them thrive should not fail to give them a good drenching overhead at least once or twice a week during the summer and early in autumn; if they do this, the return will be a much finer display of bloom and plants in such a condition of health as to be a real pleasure to look on. This watering overhead is almost of as much importance as a supply of moisture at the roots, especially if the plants are growing near dusty roads or where the atmosphere is not clear and pure, as it seldom is in the vicinity of large towns and cities, where *Chrysanthemums* are perhaps more appreciated than anywhere else. In applying water to cleanse the foliage it is best done through a good syringe, as then it can be used with some considerable force. Failing this, a good shower from the rose of a water-pot will answer the purpose; but, however carried out, the washing should be thorough, as a slight sprinkling would only aggravate the evil by moistening the dusty deposit, and making it stick all the tighter. One of the reasons why we so frequently see *Chrysanthemums* in the naked, shabby condition they are at the time they should be looking their best, is from lack of water at the root, a state that generally brings on mildew, and if not this noxious parasite, the leaves become so starved that they die from inanition. This will be apparent to anyone, as it is always those low down the stems which get the least sap that go first; but if the plants are well fed, they will retain these till they become exhausted by flowering, when they die away naturally. When in active growth, it is surprising the quantity of water or liquid-manure *Chrysanthemums* will take, and to ensure thorough soakings, it is a good plan to have the crowns of the plants slightly lower than the soil, that a small basin-like receptacle may be formed round them, that each may get its due share without any loss. Where large specimens are required for pots, or for transferring to positions in open borders, to take the place of summer-flowering plants, a purpose for which they are well adapted, the best way is to grow them in shallow trenches, for the same reason as that explained above, and if, in addition, they receive a slight mulching, there will not be the least difficulty in keeping them in the most perfect health. Plants treated in this way do well for lifting and transplanting under sunny walls of dwellings where it would be much too hot to grow them successfully during the summer, but where in autumn when in bloom the shelter is just what they require. With a very little trouble, therefore, the beauty of a garden may be considerably prolonged, as all that is necessary when the summer occupants are over is to lift the *Chrysanthemums* with good balls just after they have formed their buds, and if this is done during a dull, showery time, they will scarcely feel the removal. The finest and best plants I have ever seen in pots were managed in this way, and it is a plan of growing them I can strongly recommend, saving, as it does, a vast amount of labour and time in watering, besides yielding better results. Before taking them up, the thing is to see that they are thoroughly soaked a day or so previous, which will cause the soil to adhere to the roots better than it otherwise would. In potting, well-enriched loam should be used for the purpose, and the plants afterwards set for a few days on the north side of a wall, where they can be frequently syringed or watered overhead to prevent flagging. The rapid way they form roots, and their naturally great recuperative powers, soon enable them to set to work and get re-established, after which they bear the air and sun in a greenhouse or conservatory just as well as if they had been grown in pots all the season.

### Propagating Chrysanthemums.

Much has been said and written on this subject, but there can be no question that if large plants are required, it must be done early; and the practice of all the best growers of these popular flowers is to begin at the latest by the turn of the year, and those, therefore, who are ambitious to excel next autumn should at once set about getting a first batch in. The best cuttings are those that are stout and short-jointed, plenty of which may generally be obtained now if a plant of each kind from the old stock has been kept in cold frames for the purpose. It is the custom with many to shake these out and take off the rooted suckers; but, except for planting in borders, cuttings are much the best, and as these strike readily at any time after this, they should have the preference for pot culture. The most suitable place to propagate them is a Vinery or any forcing house at work where they can get a gentle heat, but in order to keep them from flagging, the aid of a hand-glass is necessary, under which they can be kept close and moist till rooted. A situation of this kind will be found to agree with them far better than a hotbed, where they get a much higher temperature, as there they are more apt to become drawn and damp off, and if weakened at this stage of their existence, they are never so satisfactory afterwards. In whichever position placed, they should be well up to the light, and not allowed to remain longer without fresh air than is absolutely necessary, as, from their hardy nature, they are very impatient of close confinement, which is a frequent cause of mildew, to which some of the sorts are particularly liable. Where only a limited number of plants is required, and space can be afforded, it is much the best way to put each cutting separately in small pots, as then there is no further check or disturbance of the roots in the way there is when numbers are put in together; but if this has to be done, the thing is to pot early before the roots become interlaced and liable to injury in effecting a separation. If afforded a very gentle heat for a week or so after being potted off, to give them a start, they will be ready for removal to a cold frame, in which they should be placed on a solid bed of coal-ashes within a few inches of the glass, so as to enjoy all the benefit of the sun, light, and air that can be afforded them at this dull season. There they will come slowly on, making short-jointed, stubby growth—just what is required for a good foundation, which with these, as with most plants, is the stepping-stone to success. Towards the end of March, if all goes well, they will be ready for a shift into 6-in. pots, which should be done, using only one crock at the bottom, and on this a pinch of soot, which not only acts as a fertiliser, but keeps out worms that otherwise are often most troublesome. The most suitable soil for Chrysanthemums is good, sound, fibry loam, rather inclined to adhesiveness than otherwise, and if this can be had tolerably fresh, they will succeed best without any admixture whatever, except a little thoroughly decomposed manure; but even this should not be strong, as it is always more satisfactory to give most of what stimulates they require in a liquid form, the advantage of which is, that it can be applied when the plants most need it, instead of being unduly forced in their infant state, as many are by having too rich a soil to start with. By the end of May they will be ready for their final shift into 10-in. or 12-in. pots, and should after that be plunged on a firm bottom in loose littersy material in an open, sunny spot, where, if well attended to with liquid manure and clear water, they will make grand plants by the autumn.

The most suitable sizes, however, for amateurs and others who only require them for greenhouse decoration may be had from cuttings struck later, say towards the end of March; this affords ample time to grow fine little specimens in 8-in. pots, and such as these are generally the handiest for most purposes. Beautiful little plants may be had by propagating as late as May or June, and these come in capitally for window decoration indoors, or for the fronts of stages among others to fill in vacant spaces and afford more variety. In all cases the treatment and culture they require is much the same, as, unless planted out, they all do best plunged in sunny spots, well sheltered from the wind, which otherwise is sure to break them down. To prevent any risk of that kind, they should be staked and tied early, but not in such a manner as to give them a stiff, formal appearance, which spoils half their beauty.

If the main branches are firmly supported, that is all they require, and every stick used should be out of sight, as at best they are necessary evils and never any ornament, although, by the way they are frequently employed, many would appear to think otherwise. It should be borne in mind that to have the flowers of Chrysanthemums perfect, they need early protection from frost, as they are very liable to injury in the bud state; and if allowed to stand out exposed then, a whole season's care and attention may be lost in one night. If housed, they should have an abundance of air during the day, and be kept as cool as possible.

S. D.

### WINTER-FLOWERING PLANTS.

It is generally taken for granted that flowers must necessarily be scarce during the dark and sunless months of winter. This is, however, only partially the case, as when the matter is duly considered it is found that there are many species of plants in cultivation whose natural period of flowering is during the depth of winter. In enumerating a few of the more common, although most useful, species, let us begin with the Christmas Rose (*Helleborus niger*), a native of Austria, but long cultivated in this country, and perfectly hardy. After mild autumns this frequently commences to bloom in the open air early in December, and continues to do so until the end of January. During unfavourable weather, however, the pearly whiteness of its fine large flowers is apt to get more or less tarnished, and to obviate this drawback, plants of it are frequently taken up and potted during the autumn; and when placed in a greenhouse, or any other light, cool structure, they continue to bloom from the middle or third week of December until the end of the following month. The stalks of blooms produced under glass are of increased length, a circumstance which renders them better suited for the purpose of cutting; and the colour of the blooms is at the same time increased in purity. All these advantages, however, can also be secured by leaving the plants in the soil, and placing a light frame or hand-glass over them early in December. The Christmas Rose is readily increased by division, and this should, when necessary, be done early in spring. There are several other species of the genus *Helleborus* that are very ornamental and only a little less early in their time of flowering, and to all of which similar treatment is in all respects applicable. Among these may be named *H. niger grandiflorus* or *maximus*, a fine variety with large greenish-white flowers, and *H. atrorubens* with dark red blooms.

The Winter Aconite (*Eranthis hymalis*) is a lovely little yellow winter-flowering plant, belonging to the same Natural Order, viz. Crowfoots. It is a native of Italy, and is quite hardy. It commences to flower about the end of December, and continues to do so until at least the end of January. Patches of it taken up and potted about the beginning of December and placed under glass soon become exceedingly effective, as will likewise patches of the yellow-flowering *Sternbergia lutea*, sometimes called the "Lily of the Field." The well-known Snowdrop (*Galanthus nivalis*), a native of Britain; *G. plicatus*, or the Crimean Snowdrop; together with the beautiful Snowflake (*Leucojum vernum*), are all impatient of heat, and only require the aid of a glass roof to induce them to come into bloom at or soon after the commencement of the year. Potted plants, too, of some of the *Aubrietias* and *Forget-me-Nots*, hardy Primroses, &c., will follow very close upon them. The white Roman Hyacinth is also exceedingly useful as a winter-flowering plant, producing, as it does, an abundant supply of pearly-white, sweet-scented blossoms at a season when such flowers are generally much in request. The bulbs of this Hyacinth should be potted early in September, three bulbs being placed in a pot of 5 in. or 6 in. in diameter, or five bulbs in pots of larger size. After being potted, the pots may with advantage be covered with finely-sifted cinder-ashes to a depth of 6 in. or 8 in. In about three weeks they will be found to have started into growth, and should then be placed under glass, say in the front of a greenhouse, or in a light pit, where, without the application of artificial heat, they will come into bloom about the beginning of January, and, if desired, at an earlier period. A very slight amount of forcing will accomplish this desideratum.

Conspicuous among hardy or nearly hardy evergreen shrubs that flower in winter stands the *Laurustinus*, a native of Southern Europe, which, although generally considered and treated as a hardy plant, is, nevertheless, not unfrequently more or less injured during hard weather; and as the flowers are naturally produced during the depth of winter, they very often become tarnished and disfigured by the inclemency of the weather, even during seasons when the depression of temperature may not be remarkable. Consequently, in large establishments, where a supply of flowers during winter is a *sine quâ non*, it becomes expedient to have a portion of these plants in pots, and on the approach of wintery weather to give them a place in the greenhouse or the conservatory, where they will soon be found to be well worthy of this distinction. Under such conditions their flowers will generally be produced in profusion, as well as greatly improved in character, almost rivalling in purity of colour the blooms of a white *Camellia*. Plants well set with bloom buds should be selected early in October, potted and placed under glass in any convenient structure, and they will mostly be in flower by Christmas. Suitable plants may also be retained in large pots or tubs, and trained into any desired form, such as that of a pyramid or standard with clear stems. Such plants should be grown in the open air during summer, while in the winter they form very effective objects in the conservatory. *Chimonanthus fragrans* and *C. grandiflorus* are both well worthy of a place in every garden, for they are remarkably useful, sweet-scented, winter-flowering plants. The first-named was introduced from Japan about the year 1776, and the latter is probably a seminal variety from the first, both being perfectly hardy, and closely allied to the sweet-scented *Calycanthus*, or *Carolina Allspice*. To secure in perfection, however, their delightfully-fragrant flowers, which are produced long before the foliage appears, and which are of a pale yellow or straw colour—the large-flowered variety being the most showy in appearance, but possibly less fragrant than the other—it is necessary to select for them a somewhat sheltered situation if they are intended to be grown as standards. They will, however, generally succeed best when trained to a wall. At some places I have seen each of the varieties trained to walls some 12 ft. high, under a wide glass coping, facing the south, and sheltered also at each end by a glass structure; thus circumstanced, they succeed admirably, producing annually an immense amount of bloom from about the middle of December until the beginning of February, and such blooms are always in great demand, as their fragrance is considered equal to that of the *Violet*. If a few of them be merely dropped into a vase and placed in an apartment, they will continue their perfume for several days. Each variety, treated as just described, not only flowers profusely, but will also produce thoroughly ripened seed in abundance; and this, when sown in heat as soon as it is gathered, vegetates quickly, and soon forms plants suitable either for pot-culture or for planting out. These two kinds of *Chimonanthus* can also be increased by layers, but they do not strike readily from cuttings. When trained to a wall they are treated very much like trained *Pear trees*, *i.e.*, all the young shoots which have borne bloom are cut in as closely as possible, with the exception of such as may be required as leaders, which are of course nailed, or in some way

secured to the wall. This pruning is generally done about the middle of February, or when the plants have ceased to flower. And as the season advances, young shoots are developed in abundance; these produce flowers the following winter. It will thus be seen that all that is required in the way of summer management are the nailing in of leading shoots, and the rubbing off or stopping any gross or over-strong ones which are occasionally produced. *Jasminum nudiflorum*, like the *Chimonanthus*, produces its bright yellow blooms during the depth of winter in great profusion upon the young shoots while they are yet destitute of leaves; hence its appropriate specific name. It is indigenous to the north of China, and was introduced to this country by Mr. Robert Fortune about the year 1845 or 1846, and has proved to be not the least worthy of his many valuable introductions. It is perfectly hardy, but severe frost, or rather inclement weather, has not unfrequently the effect of bleaching the colour out of its clear, yellow blooms, so that the most suitable situation for this plant is a south wall, under a somewhat wide coping, in order, if possible, to keep the flowers dry, as, if this condition be secured, no amount of cold will injure them. This *Jasmine* succeeds well when grown in pots, and only requires the protection of a glass roof during the months of December and January, when it will be in full bloom. Its habit of growth, however, is somewhat too straggling for pot-culture, and it appears nowhere more at home than when allowed to ramble at will over a block or stone in some rough part of the garden. It can, however, be made to submit to any system of training, and where the flower for the purpose of cutting is an object of importance, it is advisable to subject the plants to a certain amount of training or restriction, in order that they may more easily be protected from the effects of the weather. It looks well trained horizontally to a wall facing the south, the principal shoots being kept at a distance of 6 in. from each other. These shoots during summer produce a vast number of small sprays, which should be allowed to droop or fall over the surface of the plant. During the summer care should be taken to twist off any gross or over-luxuriant shoot, and to nail in the leaders



A Contrast—Clipped Trees in Little Trianon.

where they may be required. The drooping spray will seldom fail to clothe the surface of the wall with a profusion of flowers, and that during the most wintery months of the year; but, unlike most of the family to which it belongs, it is entirely destitute of fragrance. As soon as its flowering season is over the spray should be cut in as closely as possible. This *Jasmine* is very easily increased by cuttings or otherwise, the young shoots seldom failing to emit roots into the soil whenever they chance to come in contact with it.

Among other winter-flowering shrubs, possibly less extensively grown than the above, is the sweet-smelling *Honeysuckle* (*Lonicera fragrantissima*). This is also an introduction from China by Mr. Fortune, and is worthy of more extensive culture than it appears to have yet obtained. In a favourable situation the blooms, which are of a pale straw colour, and which precede the foliage, begin to unfold during the month of January, and although somewhat small and not remarkably ornamental, are nevertheless so exceedingly fragrant, as to render them extremely useful for the purpose of cutting for bouquet making. Although the plant is of a somewhat stiff habit of growth, it nevertheless readily submits to training

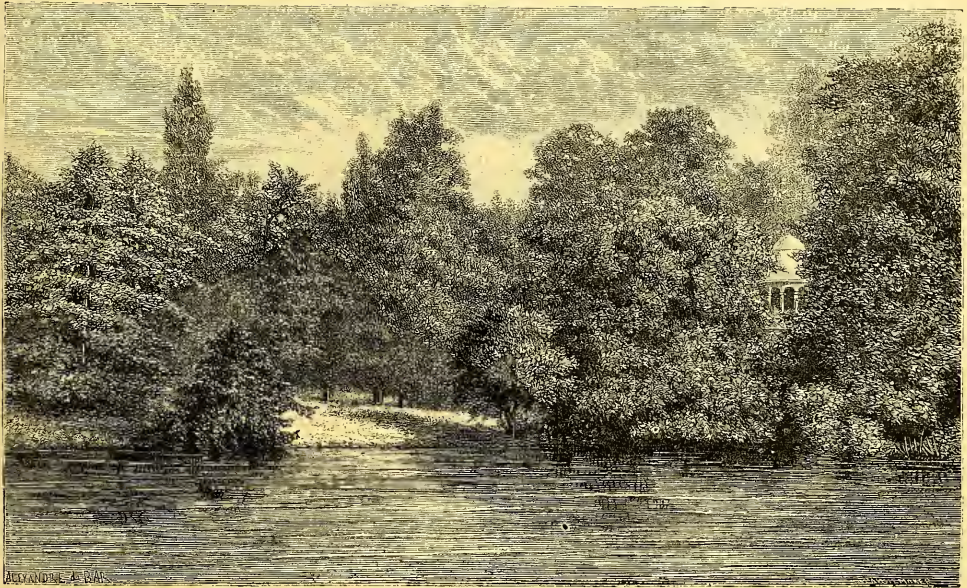
upon a wall. It is also easily induced to form a bush, and in the latter form it is very suitable for pot-culture, and the delightful fragrance of its flowers fully entitles it to this consideration. It may be increased by layers or by cuttings of the young shoots, inserted in a mixture of sand and finely-sifted leaf-soil, plunging the pots containing them in a slight bottom-heat, in a close frame or cutting case. *Lonicera Standishi*, also an introduction from China, bears considerable resemblance to the above, and similar treatment may in all respects be applied to it.

Many other early-flowering, or what, during mild seasons such as we are at present experiencing, may be considered winter-flowering plants, are to be found among such genera as *Berberis*, *Daphne*, *Coronilla*, *Forsythia*, *Magnolia*, *Rhododendron*, *Andromeda*, *Kalmia*, &c. The *Mahonia Aquifolium* is now—end of January—in full flower, and *Erica mediterranea* and other hardy *Heaths* and *Menziesias* have been so for some time. Even the common *Laurel* is already putting forth its racemes

## THE FLOWER GARDEN.

### IMPORTED LILLY BULBS.

THANKING Mr. Stewart Hardy very much for his courteous reply (see p. 49) to my queries, and waiting for his further report, which I trust he may be able to give without much inconvenience, I shall now proceed with what I had in view when I took the liberty of putting my questions to him. As a heading to his catalogue of Lilies, Mr. Ware says:—"This is the grandest and most gorgeous group of bulbous plants in cultivation. There is no class of plants so stately in their habit, so profuse in flowering, possessing such lovely and delicate colours, and so much fragrance. They stand pre-eminently far before any other hardy border plants. There is hardly a situation in which more or less of them will not thrive, and yet how rarely do we see them grown." Another writer says:—"By this time no moderate-sized garden ought to be without them. But what is the fact? They have been bought by thousands upon thousands and planted, but where are they now? Except in the gardens of com-



A Contrast—Untortured Trees in Little Trianon.

of bloom-buds. I have also seen a plant of the *Coronilla glauca*, in full flower, trained to a wall—in a somewhat sheltered situation, it is true, although facing the east. But this *Coronilla* is, properly speaking, a greenhouse plant, and an exceedingly useful winter-flowering one it is,

*Culford.*

P. GRIEVE.

**A Contrast.**—The small cut on the opposite page shows the trained and clipped trees on the French garden-side of the Little Trianon; the larger illustration the untortured trees in the English garden there. Comment on either is needless.

**The Garden the Nation's Safety.**—Twelve years' experience in the occupation of a farm have satisfied me that Great Britain and Ireland might be turned into gardens, and that work might be found therein for every able-bodied man in the country. . . . Nothing but a reform of our whole social system, commencing with the land system, can save this country from ruin.

. . . Nothing can save us, as said the late noble teacher, Frederic Robertson, but a return to simpler habits and purer lives.—HARRY ATKINSON, in the "Industrial Review."

paratively a few, they are all dead and gone!" A writer in a contemporary says:—"In the autumn of 1874 I bought two dozen of the finest-imported aratum bulbs, and planted them out. In 1875 thirteen turned purple just before flowering, and then died; the remainder grew up, and bloomed very fairly. In 1876 these grew up again, but, after showing flower, all died but one. Last summer this one also died." Many similar reports could be quoted, but they would only add to the same complaint. Dr. Wallace, however, who has had considerable experience in connection with imported Lilies, contributes some extra and valuable information on the subject. Alluding to a disease among the aratum group, which has been closely observed by him during three years, he says, "The signs are as follows:—When the Lily stem is from 1 ft. to 2 ft. high, and the flower-buds are just perceptible to the touch or sight, after a hot day in June some of the lower leaves turn brown, then other leaves higher up, and so on, till all are browned; then the stem browns also, the leaves wither, and the buds drop off or dry up. If the bulb be taken up the roots are found to be unhealthy, few in number, and discoloured, the bulb sometimes unscathed, but if apparently sound, it often happens that it becomes subsequently unhealthy, and breaks up or rots. Thousands of bulbs have in this way died annually, and

not only freshly-imparted bulbs, but those that have stood two or three years undisturbed." We may well ask, "What is the cause of such wholesale falling off?" Before attempting to answer the question, let us first endeavour to ascertain what a Lily bulb really is. Drs. Hooper and Klein Grant, writers on the animal and vegetable kingdoms, both say:—"The term bulbous is, in botany, applied to roots, but improperly, for a bulb is not a root." So far as the Lily is concerned, I entirely agree that the bulb is not the root of the plant. If we lift a Lily bulb in the autumn and cut it in two, right down from the apex to the base, it will be observed that it is composed of a core or fleshy part, more or less conical in the upper portion, and truncated below. This core gives rise, at its upper face, to fleshy scales pressing one against the other, and to a central short stem formed of leaves and rudimentary flowers, whilst from its lower face spring the root-fibres. These root-fibres, if closely examined, will be seen to emanate from the base of the stem itself, and pass down through the core or fleshy part, thus preserving a distinct connection between the stem and the roots without interfering with the scales of the bulb, for these scales, if carefully picked off, will be seen to have no connection whatever with the root-fibres. The bulb itself, composed of the scales, is, in fact, nothing more or less than the cradle, or nursery, of the legitimate seed-bud, which inhibits its nourishment from the scales through the core, until it has grown and become a fully-developed bulb, capable of flowering the next year.

#### Lily Bulb Disease.

We now come to the most important part of the subject, namely, the disease alluded to by Dr. Wallace; and about the cause of which he seems to be somewhat doubtful. I may, therefore, say at once that, in my opinion, the cause of so much loss in imported Lily bulbs is a parasitic fungus constituting a kind of mould of foreign origin, of a most destructive character, and, as in the case of the infected bulbs, causing the disease to become hereditary, descending from parents to their offspring. Before, however, entering into particulars, I think it desirable to quote the opinions of some others with reference to the evils attendant on the exposure of the bulbs when lifting and transplanting them. The late manager of the Herbaceous Department at Kew says:—"When lifting and transplanting Lilies, the roots should not be allowed to lie about exposed to the weather, but kept as short a time as possible before being re-planted, as they suffer very much indeed by continued exposure, and hence the frequent failures in bought bulbs, which may have been long and badly stored. If they are not allowed to lie too long out of the ground, they may be lifted every year." Another writer, who is even more particular, says:—"Generally speaking, the months of August, September, and October constitute the season for planting Lilies, and the longer they are kept out of the ground (no matter how carefully they may be packed), the worse will be their condition when planted. When they are transplanted, the site they are to occupy should be prepared for them before they are lifted, if possible; but if they are to be planted again in the same spot, the work should be done quickly, and the bulbs be in the meanwhile covered with moist soil to protect them from the destructive influence of the atmosphere." Dr. Wallace says:—"Some of our friends would have wintered their Lilies in pots in a dry corner without moisture, had we not remonstrated; others were even drying off their Lilies for the winter, as they would Hyacinths in July. We believe this to be a common custom, but against such treatment we protest most strongly. A Lily ought never to be dry. Never let it be out of the ground longer than necessary. Never let it be dry." These writers all agree—and to what they say I most heartily subscribe—that Lily bulbs should never be kept out of the ground a moment longer than is absolutely necessary. It will be seen, however, that there are some who thoughtlessly advocate a season of rest, overlooking the fact that bulbs exposed to the atmosphere, even for a day or two, will become discoloured, and that this discolouration is undeniable evidence that disease is just beginning to perform a part that would, in no very long time, ruin the plant. Dr. Hooper has illustrated such a case by saying, "That if an arm or a leg were to become so discoloured, it would be high time to apply to a physician, plants, like animals, being organised and living beings." Those who recommend a period of rest out of the ground must certainly imagine that the bulbs they would thus treat are those which bloomed last summer; whereas the bulbs that bloomed last summer are by this time dead and already at rest. The bulbs they would thus mistakenly lift as the old bulbs are in reality the new bulbs, which should be encouraged by every possible means to go on with their growth, instead of having it certainly checked and possibly ruined. Those who advocate such ruinous experiments cannot be aware that the whole existence of a Lily bulb is comprised within two years, and may be divided into two distinct parts. From the period of its germination

until it has become a fully-developed bulb, that is, until it has become a parent bulb, is just twelve months. From this time until it has bloomed and decayed, is just twelve months more. During the first six months, its growth is very slow and gradual compared with the second six months. During the second six months its growth is no less than 5000 times greater than during the first six months. This may surprise many, but it is a carefully calculated experimental fact. During the second year its growth is more apparent than real, for it has within itself a growing young bulb that enlarges the bulk of the parent bulb. Facts like these should teach Lily growers to look to Nature as their guide, and not to tamper with her dictates; to transplant soon after the flowers have faded, when growth is slow and gradual, and not to wait until every part of the bulb is increasing with so rapidly an accelerating growth, as consequently subjects the numerous and healthy roots to a most pernicious check if moved late in the season.

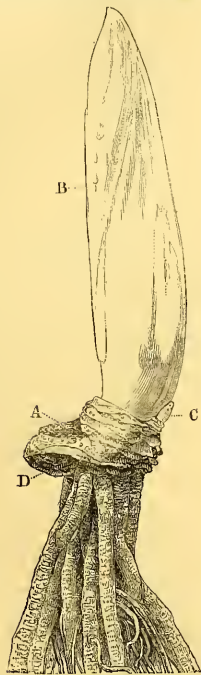
#### Lily Bulb Collectors' Instructions.

Let us now turn to the instructions that are given to the agents abroad who collect Lilies for transmission to this country. They are as follows:—"The time to collect Lilies is after the flowering season is over, when the leaves turn yellow and fall off, and the stems die down. Bulbs that are to be sent a month's journey or upwards must be taken up when ripe, as aforesaid, thoroughly dried, but not to such an extent as to become flabby. It is well, also, to expose the bulbs to the sun for a few days thoroughly to ripen and dry them; they then acquire a tinted colour, varying from yellow to purple. The roots and stems should be cut off close to the bulb, and a dry material prepared for packing. For a month's journey, sawdust, Moss, Coconut fibre, or other dry material will answer well, but for a two months' journey or upwards this mode of packing is not safe, the object being to exclude light and air, and thus prevent, so to speak, the bulb and deprive it of all vital action." When I read these instructions, my surprise was, not that so many thousands upon thousands had perished, but that a single bulb had continued to struggle for existence even for one year. That many have done so, can only be accounted for by the supposition that some collectors do not carry out these instructions in their entirety. I shall now endeavour to account for the disease in imported bulbs, to which Dr. Wallace alludes. The minute microscopic root-like filaments of the mould-like fungus that I have mentioned insinuate themselves into the epidermis of the bulb, and, acting as parasites, draw nourishment from the tissues, and ultimately poison the plants. The minute germs of this fungus are dispersed everywhere throughout the atmosphere, and are ready to alight on any substance in which they can find a nidus. The tender scarf-skin of the Lily bulb, freshly lifted out of the soil, is particularly favourable to their growth. In one day thousands upon thousands of Lily bulbs, in fact, any number that can be mentioned, if exposed to the sun, will be covered with myriads of this minute fungus; so that, from a fresh clean colour, the bulbs will be changed to a dirty yellow, a purple, and then to a dirty brown; and, as the parasites increase in number and destructiveness, they penetrate into the interior of the bulb, as may be seen by the sapless, gaping scales of those imported, more like withered Pine-cones than living, healthy bulbs. And yet the collectors, or many of them, are actually directed to subject the bulbs, before they are packed, to all this ruinous treatment.

#### How Lily Bulbs become Affected by Disease.

In order to illustrate the peculiar aptitude in the organisation of Lily bulbs for transmitting disease to the second, third, or even to the fourth generations, I have sent a photograph (from a drawing) of one of six skeletons, the bulbs for which purpose I had lifted on the 1st of January, and dissected in the presence of a Lily grower; so that there cannot be a doubt of its being a genuine representation of the underground interior parts of a Lily, exhibiting plainly the phenomenon, or mystery, of "three generations in one," to which I have formerly alluded. By looking at the annexed woodcut, it will be seen that the seat of the stem that bloomed last summer is on the left, at A. The mark underneath this part, at D, will show where the roots of last summer have been, but now both stem and roots are entirely gone. In the middle, at B, is the new flower-stem that was destined to bloom next summer; and on the right, at C, is the young seed-bud that was destined to grow up and flower the following year, that is, in 1879. The healthy, strong, and numerous roots which spring from the new bulb, and are here truly represented as those of the 1st of January, ought to convince anyone that it would be ruinous to their growth and harmful to the plant itself if disturbed and checked late in the season by lifting and transplanting them. As regards the disease, it is acknowledged by botanists that "seed from diseased plants will produce a diseased offspring," that "fungi new to this country have been introduced by

means of the parent plant," and that "fungi are capable, when once established, of spreading to other plants which are perfectly sound." All this is admitted, and to this may be added the more than ordinary aptitude of the offspring of the Lily to be infected, and the fact that it has been infected, even to the second, third, and fourth generations, at any one of which periods the plants may be seen to decline and die off entirely without any apparent cause. By looking at the woodcut, it will easily be seen that if the parent bulb had been infected, it would have been next to a miracle if the new stem and the young seed-bud could have escaped, so closely do they stand in connection with one another; springing, too, as they do, from the same core or fleshy part. We cannot help observing, in the columns of THE GARDEN, the unanimity that appears to exist among Rose growers in reference to their knowledge of all that pertains to the plant they patronise. On the other hand, opinions differ so widely among Lily growers, that we seldom meet with two who agree to take their stand entirely on the same ground. There are certainly exceptions here and there; but among the many hundreds who call



Lily Bulb from a Photograph.—A, the leaf of the stem that bloomed last summer; B, the new flower stem; C, the young seed-bud; D, the mark where old roots have been. Want of space prevented the roots being shown in their length and abundance, as in the photograph.

themselves Lily growers there are comparatively few who have any correct knowledge of the underground action of the plants they profess to cultivate. How is this? In April last, on the occasion of my sending in a specimen seed-bud, the readers of THE GARDEN were told by a correspondent that "it could be seen at a glance that it was nothing more than one of the axillary buds which exist at the base of each scale in nearly all Lily bulbs." Had the writer supported this statement with any evidence, even the slightest, that he had ever seen an axillary bud in the inside of a Lily bulb, he would have added some weight to what he then said. I knew that he was wrong, that it was a groundless assertion, likely to do harm, coming, as it did, from one who professed to know all about it. I felt that it was a duty incumbent on me, and I now embrace the opportunity to state distinctly that the seed-bud has no connection whatever with any scale, as it rises alone and independently from the core or fleshy part of the bulb. This is easily proved; first, by picking off the scales from the outside of it, as in the woodcut, and then by

breaking off the young flower-stem at its base. By this means the seed-bud will be seen to stand alone, adhering to the fleshy core. I admit that if the scales were picked off separately, and properly cultivated, some of them may be made to germinate, to grow, and, in course of time, to bloom; but I venture to deny that any man has ever seen such a thing as an axillary bud in the inside of a healthy-growing Lily bulb. As regards the legitimate seed-bud, it is altogether different. The man who has made himself acquainted with the underground action can point to the very spot, before the bulb is dissected, where the seed-bud can be found. And I may now add, for the information of inquiring readers, that it will always be found opposite to the old flower-stem, the young flower-stem standing between them, as in the annexed illustration.

[This paper was closed before I had an opportunity of seeing the remarks of Mr. Groom, "T. D.," and "H.," so that they must stand over for my next paper. With respect to Mr. George F. Wilson, my best thanks are due to him for the very kind invitation he has been pleased to convey to me. I have never seen him, that I know of, but fame has told me a great deal about his doings in the Lily world.]

### CLEMATIS PITCHERI.

This species, which has been recently introduced from North-Western America, has not only the attraction of novelty, but it is also a very ornamental plant, which is sure to be much sought after on account of the brilliant hue of its flowers. These form a somewhat rare exception to the rule which governs the colour of the flowers of the genus Clematis, which pass generally from white to dark violet, but rarely approach even a pink hue. It is, however, especially distinguished by the beautiful deep vermilion hue of its flowers, as well as by its thickish, rounded, drooping leaflets, of a pale bluish, sea-green tint. The petals of the flowers, of which there are four, are very thick and fleshy, and are carried on a long, coloured stalk. The flowers themselves are wide at the base, but narrow suddenly near the top, where the petals bend backwards to form the opening of the flower. Being a native of North-Western America, the Clematis Pitcheri, being hardy, will be a valuable addition to the ornamental plants of our gardens. It is also probable that it will thrive in pots, which would lead one to suppose that its growth is rather weak than strong. With regard to this possible defect, we ought to state that the plants grown from seed are not all that can be desired, being somewhat weedy. It is, however, most probable that this defect will disappear under cultivation, and that, grafted on a vigorous subject, its own vigour would be increased. It commences to bloom about the end of spring, and lasts in flower for a long time. Besides being valuable for the beauty of its flowers, this Clematis will be of great service for producing new varieties; in fact, we cannot help thinking that its true worth will be found in this direction. This part of the subject is deserving of the earnest attention of all growers. It cannot be doubted that, by means of judicious artificial fecundation, we shall succeed in growing varieties with large flowers, and capable of being almost continually in bloom, or something near it; or, in other words, to transmit to the varieties we now possess the brilliant colouring of the petals of Clematis Pitcheri. In any case, we repeat that it is already a plant of great merit, which ought to be in the possession of all those who like beauty coupled with originality. The Clematis Pitcheri may be procured at the nurseries of Persan-Beaumont (Oise).—E. A. CARRIERE, in "Revue Horticole."

*Centaurea rutafolia*.—This interesting plant appears to have been discovered by a Russian botanist, in the neighbourhood of the Balkans. It is a hardy perennial, growing to the height of 2 ft., with branching stems amply clothed with deeply pinnatifid foliage, the entire plant being covered with a dense white tomentum, as in *C. ragusina*. It is, however, of freer growth than that popular species, increasing in size throughout the summer till checked by the cold of autumn. The flower-heads are pure white, about one-half the size of those of *C. ragusina*, but much more abundant. The plant derives its ornamental value from the persistent whiteness of its foliage, which suffers less from rain than that of the species previously named. It succeeds in any soil, but its growth is more compact in rather dry soils, or on rock-work, where it will probably be quite at home. It is a sterling addition to the class of white-foliage plants.—W. THOMPSON, Ipswich.

*Saxifraga Burseriana*.—This is now flowering beautifully, and is, without doubt, one of the most charming of Saxifrages. Like many other plants, it varies considerably both in size and in the number of flowers which it produces, some of the blossoms being at least double the size of others. In some cases they are produced

very sparingly, while in others one can scarcely put a pin's point between the blossoms. None of these differences can be attributed to cultivation, for the same occurs in a wild state. It is not a plant at all difficult to grow in warm, dry spots on the rocky; with plenty of grit and stones mixed with the loam, and a good-sized stone or two resting on the surface to keep the soil cool, it is less liable to suffer from drought than when planted on a plain surface.—A. F.

**Dividing Anemone fulgens.**—In reply to Mr. Smith, of Newry (see p. 113), in reference to this matter, permit me to say that I allow my roots to remain in the ground all through the summer, and lift and divide them when the earlier leaves are well through the ground. This is comparatively easy work, and is productive of no harm whatever to the plants; it also facilitates the finding of the roots, as not one is either damaged or overlooked. My plants, so treated, are now throwing up flowers, but the season is cold and unseasonable, and for this reason the flowers are quite a month later than last year. Mr. Smith lifts his ripened roots in the summer, and divides before planting. I do not see any reason for lifting them or keeping them out of the ground, but it is quite a matter of opinion; as, however he lifts his roots in the summer, of course his mode of propagation under the circumstances is correct.—A. D.

**Fancy Pansies.**—It is impossible to withhold one's meed of praise for the beautiful plate of fancy Pansies issued last week in THE GARDEN. In all respect they are exact reproductions of these richly coloured flowers as they grow in the open ground, and anyone who may be able to secure seed of a good fancy strain will be in possession of just such flowers as those represented. There is not a rigid florist's flower amongst them; the true florist's Pansy, if shown as such, is generally the produce of pot culture or frame growth; further, when exhibited on the painted stands they are usually flattened out either by means of gum or pressure, and thus the peculiar irregular formation of the flower is often lost. My experience of these Pansies so far has been that the flowers of the finest qualities are generally produced on plants that have constitutions not too robust, whilst others equally rich in colouring, but not quite so large or round, are produced plentifully on strong growing plants. In the remarks which accompany the plate it is recommended to winter the plants in frames, but that is doubtless written from a northern point of view. Here in the south the Pansy will stand our worst winters, and thrive far better through the summer, and bloom much earlier if planted out in the autumn. Seed might be sown at any time under glass as soon as obtained, but to secure extra strong plants to stand the winter and flower early I prefer sowing in pans under glass early in July. Seedlings thus raised should be pricked out into a frame or into boxes until well rooted, and then they can be planted out in a strong condition, and with good hills of roots either into beds or borders, as may be desired. The timely publication of this beautiful plate ought to attract special attention again to this once highly esteemed border flower.—A. D.

## NOTES AND QUESTIONS ON THE FLOWER GARDEN.

**Hamamelis Zuccheriniana.**—This is now in full flower here, and is a desirable species to cultivate as a companion to *H. arborea*. The flowers, which are pure yellow, are destitute of the bright red-brown sepals seen in the *arborea*, and I think that the plant now under notice is a little more robust in habit than the last named kind. We have had very sharp frosts here for the last few days, which have failed to injure the flowers of either.—T. Sarrin, Newry.

**Spring Flowers.**—Notwithstanding the mild weather which we have had, spring flowers are scarce; many are opening, but not with freedom—similar, in fact, to what they would do after a severe winter followed by mild weather. Saxifraga Barseana, Narcissus Otusii, Sisyrinchium grandiflorum, various kinds of Christmas Roses, Galanthus plicatus, Crocus Sieberi, Anemone Pulsatilla, Anemone Robinsoniana, and Cyclamen Atkinsi, embrace the best of them. Of course Primroses, Hepaticas, and many others are out, but these are well-known spring favourites.—Amos Psaar, Tottenham.

**Clematis Otto Fröbel.**—One of the finest of the pale-coloured hardy varieties of Clematis is Otto Fröbel, which last season bloomed splendidly with Mr. G. Jackman, in his nursery at Woking. The plant appears to be remarkable for vigor, and the flowers are of immense size and perfect in form, the sepals being sufficiently broad to be well imbricated. The colour is a French white, and therefore somewhat wanting in purity, but the fine qualities of the flower in other respects amply stone for this deficiency, and no one who plants it could possibly be disappointed if the plant thrives. It is by no means a novelty, being a Continental variety sent out some years since.—"Florist."

THE Schedules for the National Anticilia Show, Southern Section, are now ready, and may be obtained of Mr. E. S. Dodwell, Chatham Terrace, Clapham, S.W.

## PLATE CXV.

### THE LARGE WHITE JAPAN QUINCE.

ONE of the many merits of the Japan Quince is its variability. A shrub most precious in its ordinary form, it becomes doubly valuable from its enabling us to make it produce good effects from new forms with certainty, the character of the shrub being so well proved. Among the various forms seen in our gardens a large white one is the most promising. This was raised in France, and from the "Revue Horticole" our figure is taken. Messrs. Veitch also have a stock of a new and handsome white kind. Where a shrub is of such thoroughly proved merit as this, the gain of new varieties distinct in colour is more than usually valuable. It frequently happens that varieties of fine hardy shrubs are much more abundant on the Continent than with us—the Weigelas, the Lilacs, and this also, for example. M. Charles Baltet, of Troyes, sends us the following list of the kinds he knows to be in cultivation in France, marking the most important thus\*. We can fancy nothing more promising than these for forming groups wherever bright flowers are desired in the open air in spring, the Cydonia being without doubt the most valuable of all early spring-flowering shrubs:—

C. alba	gandavensis	*princeps
* „ semiplena	*Ganjardi	*rosea plena
* „ grandiflora plena	inermis	rosea semiplena
*atrosanguinea plena	*Mallardi	*rubra aurantiaca
*aurora	macrocarpa	* „ grandiflora
*cardinalis	*Moerloosi	*sulphurea perfecta
carnea	*nivea coccinea	*sanguinea multiflora
coccinea	Papeleui	plena
chrysea	*Princesse	*umbilicata
*eximia	Soutzo	versicolor plena

**The Chicago Botanic Garden.**—We learn from the "Bulletin of the Torrey Club" that this promising enterprise has come to an untimely end. The managers solicited contributions from the principal gardens of the world, promising to make suitable returns as early as possible. The total number of packets of seeds and living plants received up to July 1, 1877, was nearly 15,000; the number of similar packets returned about 5000; the number of species under cultivation in the garden over 6000. Nevertheless, the board of commissioners voted in July, on account of the expense, to terminate the operations of the garden, and place all its plants, seeds, &c., under the charge of the general superintendent of the park. The managers, supported by many citizens, sought in vain to have the matter reconsidered. They are, therefore, rendered powerless to fulfil the promises made with the sanction of the commission.

**Rotten Row.**—I have been at some trouble to learn authoritatively something about Rotten Row. Last year a portion of it was renovated, under a contract, with one of the principal firms of road-makers. This year the other portion has been renovated. The system has been to make a hard, impermeable bottom, with a slight curve, so that the water drains off to each side. On this, a thick layer of sand is laid. In the sand laid last year a vein of clay existed, but pure sand is now used. From all that I can make out, it is impossible that Rotten Row can ever be in a better condition than it is now. If the bottom were not impermeable, the rains composing it would churn up under the feet of the horses. If the sand were not so thickly laid, the Row would not be so soft enough, whilst, after heavy rain, with an impermeable bottom, and a thick layer of sand over it, there must be mud. A Rotten Row, in fact, fit to ride in when the weather is dry, involves a Rotten Row, unfit to ride in when the weather is wet. Official ingenuity has failed to get over this difficulty. If you, my friend Edmund, can solve the problem, let us have your solution by all means. Otherwise, I am greatly afraid that, when you ride in Rotten Row on wet days, you are likely to find it somewhat muddy.—"Truth."

**The Willow-pattern Plate.**—A contemporary gives this description of the Willow-pattern plate. To the right is a mandarin's country seat; in the foreground is the pavilion; in the background an Orange tree; and to the right a Peach tree in full bearing. The estate is enclosed by a fence. At one end of the bridge is the famous Willow tree, and at the other a gardener's cottage. At the top of the plate, left-hand side, is an island with a cottage on it. The birds are doves. The three figures are the mandarin's daughter, with a distaff in her hand, the lover, and the mandarin. The story is as follows:—The mandarin had an only daughter, Li-Chi, who fell in love with Chang, her father's secretary, and he lived in the island cottage at the top of the plate. The mandarin forbade the match, and the lovers eloped, and lay concealed for a time in the gardener's cottage, and from there made their escape to the island home of the lover. The father pursued them with a whip, and would have beaten them to death had not the gods changed them into turtle-doves. It is called the Willow pattern because at the time of the elopement the Willow began to shed its leaves.



THE LARGE WHITE JAPAN QUINCE. *CYDONIA JAPONICA* (PERS.) VAR. *ALBA GRANDIFLORA*.



GARDEN BOTANY.

(Continued from page 129.)

The Spore and Seed.

INTRODUCTORY REMARKS.—The unusual course of describing the seed first is adopted, because the seed seems to be the beginning or phase of plant life most likely to interest those engaged in practical cultivation of plants, inasmuch as the rearing of plants from seeds is one of the most important operations coming within the gardener's wide field of labours. Furthermore, this particular branch of botany is rather superficially treated in most text books, and it will, therefore, receive more attention from us. Spores and seeds are of the same nature, in so far as both contain a germ or the vital principle of a future plant, which lies dormant until exposed to certain external conditions that cause it to start into active life; or it loses its vitality or power of germinating by being subjected to other unfavourable influences.

THE SPORE.—For the sake of brevity, the spore (of Ferns) will be treated of under the same head. It has already been stated that the spore or reproductive body of a Fern, &c., differs materially in its nature from the seed of a flowering

small Liver-wort. On the under surface of the prothallium a number of filiform, one-celled rootlets, or root-hairs, appear, and interspersed amongst them one or two kinds of microscopic organs are produced. These organs contain the male and female elements, the conjunction or fusion of which results in the fertilization of an embryo, which, under favourable conditions, develops into a young Fern (figs. 17 and 18), like

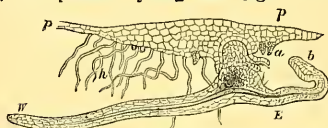


Fig. 17.—*Adiantum Capillus-Veneris*. A vertical longitudinal section through the prothallium *p*, and the young Fern *E*; *r*, root-hairs; *a*, archegonia of the prothallium; *b*, beginning of the first frond; *w*, of the first root of the young plant. (Enlarged about ten times. After Sachs.)

the plant that bore the spore from which the prothallium was produced. Until the act of impregnation is consummated, there is no development beyond the prothallium stage. As it sometimes happens that a prothallium bears only the organs of one sex, and that the male, its existence ends as a prothal-

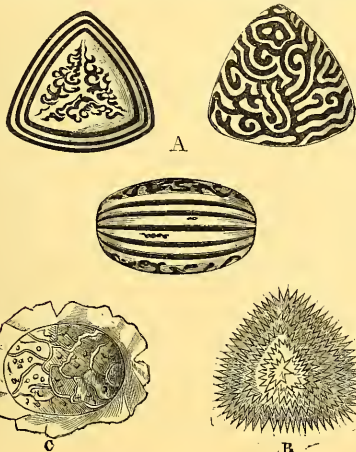


Fig. 16.—Various Fern spores, very highly magnified to show the ornamental surface. *A*, *Gymnogramma calamelancas* in different positions; *B*, *Allorsora*; *C*, *Aspidium*.

plant, though its ultimate result is the same. A spore being lower in the scale of organisation than a seed, and the history of its structure and development being essentially the history of the Fern itself, it may be considered first. A spore differs from a seed in the simplicity of its structure, and in the circumstance that it does not directly give birth, or grow into a plant like that which bore it, but, in the course of its development, passes through two distinct phases. These phases are not exactly analogous to the transformations insects undergo, though it is not easy to find a better comparison. Ferns, it has already been stated in the general consideration of a plant, do not bear flowers; but on some of the fronds, usually on the under surface, there are clusters (sori) of capsules containing a snuff-like powder. The anatomical development of this a powder cannot be described here beyond stating that it is by process of cell division and separation that the individual grains or spores originate. They are one-celled, extremely minute bodies, consisting of a nucleus, or vital germ, and a wall, which is differentiated into two distinct layers, an inner (endospore) and an outer (exospore), the outer surface of the latter often being embellished with most delicate and elegant markings or appendages (fig. 16).

GERMINATION OF SPORES.—In germinating, the spores develop into a flat, cellular plate (prothallium, fig. 17), resembling

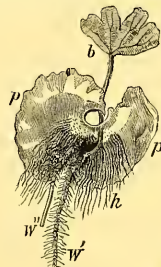


Fig. 18.—The same in a more advanced stage; the prothallium seen from below with the young Fern attached to it; *b*, its first frond; *w*, *w'*, its first and second roots. (After Sachs.)

lium; or should it produce the female only, and there be no male near at hand to effect fertilization, the result is the same. The development of these two kinds of organs, and the process of fertilization, can only be seen by the aid of a good microscope, and that in the hands of an expert manipulator; there-

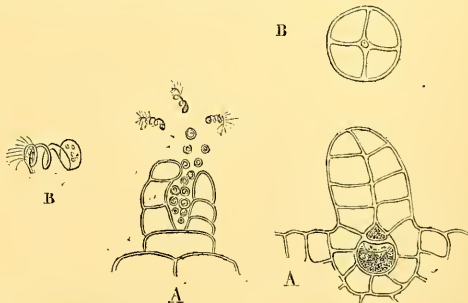


Fig. 19.—Antheridium of a Fern. *A*, Antheridium open, allowing the antherozoid to escape. *B*, Antherozoid dragging its vesicle on the last coil of its spire. (Magnified 300 diameters.)

Fig. 20.—Archegonium of Fern. *A*, archegonium, showing the oosphere and canal-cell. *B*, section of the neck.

fore, a brief description will not be out of place. Figs. 19 and 20 represent the male (antheridia) and female (archegonia) organs respectively. They both arise from the superficial cells of the prothallium, and are of very simple structure.

SEXUAL REPRODUCTION OF FERNS.—An antheridium (fig. 19)

is a cellular outgrowth consisting usually of a single layer of cells enclosing a central cell in which a number of exceedingly minute bodies are generated. When the antheridium opens these bodies escape as tiny one-celled spheres, which at once burst, releasing the antherozoids. The antherozoids are spirally coiled and furnished with a tuft of motile hairs (cilia) at the thinnest end; and attached to the other end there is usually a small vesicle. The latter is supposed to have nothing to do with fecundation, and soon falls off. Thus freed, the antherozoid swims about in the water, turning upon its axis, and violently agitating its cilia until it finds the entrance to an archegonium, or loses its power of motion. The structure of an archegonium (fig. 20) is not unlike that of an antheridium. It is a cellular nipple-like projection of four rows of cells, with a basal portion in which a central cell appears. The contents of this cell soon divides into two portions, the lower eventually forming the cavity (oosphere) in which the germ or embryo-sac appears. The upper portion grows out between the four rows of cells, thus forcing them apart, and forming a mucilaginous canal; a part of its substance escaping at the apex of the nipple and remaining collected around the aperture it has effected in making its exit. The antherozoids coming in contact with this mucilage are detained. A number of them force themselves into the neck or nipple, and some of them reach the oosphere, where they disappear in and fecundate its contents, which now gets the name of oospore. This fertilized body develops into a Fern; an early stage of this phase is shown in fig. 17, and fig. 18 represents the same in a more advanced condition. This Fern in its turn produces spores, completing the cycle of changes which the plant undergoes. It will be seen that Ferns present two distinct generations in the course of their development, namely, a sexual (the prothallium state) and an asexual, or the perfect Fern to which the fertilized oospore gives birth. This kind of reproduction, in which the generations which succeed each other and proceed from each other are unlike, is called alternation of generations. Some of the fungi and algae are produced in three or four dissimilar generations; and these different generations were formerly supposed to be distinct plants belonging to different genera. Thus the yellow fungus often found in the leaves of the Barberry in the spring, and the rust of Wheat, are now known to be different generations in the cycle of development of the same organism.

**THE SEED.**—The structure and properties of a true seed are very different from those of a spore, and, being in all cases much larger, and, in many instances, very large, there is little difficulty in following their external development. The anatomical development of seeds will not be touched upon here, and their origin will be considered in another section. The composition and external forms of seeds, their various modes of germination, and other noteworthy features, will form the subject of these paragraphs. Taking the mature seed fit for sowing for examination, and subsequently watching its development into a plant, we shall then be in a position to follow the development of each successive organ plants produce, and their various modifications in different plants.

**GENERAL DESCRIPTION.**—A seed of a plant is the counterpart of an egg of an animal, inasmuch as it usually leaves the parent in an inactive though living state. Its vitality is latent or dormant, and this vitality is retained for a longer or shorter period, according to the external conditions to which the seed is exposed, and according to the nature of the seed itself, for different seeds vary very much in this respect. A special paragraph on this part of the subject follows. A seed differs from a Fern spore, in the first place, in always giving direct birth to a plant in the likeness of its parent, providing, of course, that cross-fertilization with another plant has not taken place; but, even in this case, the progeny is essentially the same, there being no alternation of sexual and asexual generations in flowering plants. Something similar, however, occurs in flowering plants, many of which present a barren and a fertile state. The Ivy, for instance, when trailing on the ground, never (?) produces flowers, and rarely when climbing until it reaches the summit of the object on which it is climbing, or meets with some other obstacle to its further progress. With some important exceptions, seeds are enclosed in a

covering in addition to their proper coats. The general term fruit is applied to this case and its contents, whether it hold one or more seeds.

**DISTINCTION BETWEEN SEED AND FRUIT.**—Many one-seeded fruits especially bear a strong likeness to a seed, and in popular language are designated as such. A little practice and a knowledge of the general plan of the production of seeds will enable anyone to distinguish between fruit and seed, no matter how strong the resemblance may be. Little will be said on this point here, because it would involve much explanation, or assume an amount of previous knowledge that the reader might not possess. Under other sections, especially that treating of the fruit and its modifications, more precise



Fig. 21.—Fruit of Salsify crowned with a feathery calyx-limb (pappus), resembling seed of Epilobium (Fig. 22).

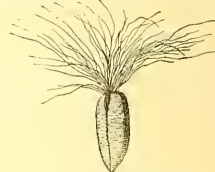


Fig. 22.—Seed of Epilobium, crowned with a tuft of hairs. (Magnified.)

definitions will be found. Here some general indications may be useful. For example, the one-seeded fruits of most of the plants of the large family to which the Dandelion and Lettuce belong are commonly called seeds. This has arisen from the fact that the seed, as it approaches maturity, adheres closely to the fruit covering (pericarp), and thus it is the fruit we sow. Often, too, the resemblance to the seeds of other families is very striking (see figs. 21 and 22). The so-called seeds of the Parsley, Celery, Parsnip, &c., are simply parts of fruit, each containing a solitary seed more or less confluent with the pericarp. In a young state the seeds are easily separated from the fruit, as may be seen in the section of a flower of Parsnip (fig. 23). A fruit of the Sweet Chestnut, again, is so much like a seed of the Horse Chestnut, as to deceive almost anybody seeing them only in the state in which they are committed to the ground, and knowing nothing of their development on the tree. The Acorn, or fruit of the Oak, is another instance in which a novice may easily be mistaken. The nature of the Acorn may be proved by making a transverse section of a quite young example, when it will be found to contain three



Fig. 23.—Vertical section of a flower of Parsnip, showing the young seeds (ovules) free from the pericarp.

cavities, with the rudiments of two seeds in each cavity. Only one of these comes to maturity, as a rule, and that fills the whole interior of the fruit. Further particulars on this subject are given under the heads *Involucres* and *Fruit*. The winged seeds of Pine and Fir trees are not unlike the half of a fruit of Maple or Sycamore (figs. 24 and 25). It should be mentioned that the seeds of the Pine family are exceptional in being destitute of a pericarp. They are borne on the upper side of the scales of the cones, as may be seen on breaking a young cone across, and examining it with a magnifying glass. With the exception of the Coniferæ (Pine family) and two other small families, the seeds are protected by a covering or pericarp, in which there may be one or more compartments, and one or more seeds; sometimes an exceedingly large

number (see figs. 26 and 27). A seed may be sessile or borne on a stalk (funicle), which in the Ash is very long.

**PARTS OF A SEED.**—A perfect seed consists of two parts, an

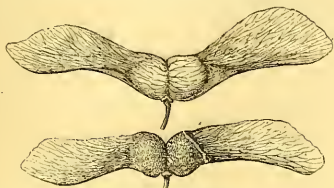


Fig. 24.—Fruit of Maple.

integument or shell and a nucleus, and varies in size from 5 in. or 6 in. in diameter, as the Cocoa-nut, to the almost invisible



Fig. 25.—Winged seed of a Pine, resembling one half of the fruit of a Maple.

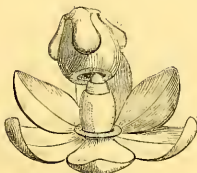


Fig. 26.—Flower of Rhubarb, the pericarp removed to show the single seed. (Enlarged.)

seed of Musk. The integument usually consists of two layers, which are not always easily separable or distinguishable; and it is



Fig. 27.—Fruit of Pansy burst open, showing the numerous seeds.



Fig. 28.—Exalbuminous seed of Almond.

only the outer coat (testa) that is of importance in descriptive botany. The substance, surface, colour, appendages, &c., of



Fig. 29.—Embryo of Almond as it is found in the seed. c, cotyledons; r, radicle.



Fig. 30.—Embryo of Almond from which one cotyledon has been removed to show the plumule.

the testa present a great variety of characters useful in distinguishing the seeds of different plants. The inner membranous coat is the tegmen, which is rarely mentioned. Coming

to the nucleus itself, this will be found to present two principal modifications. It may consist wholly of a plant-germ (embryo), or the embryo may occupy only a part of the interior of the seed, the other part being filled with a substance, varying in its nature in different plants, but always called albumen. Seeds are, therefore, albuminous or ex-albuminous. The embryo also, independently of size, exhibits two distinct types, often, however, indistinguishable until germination takes place.

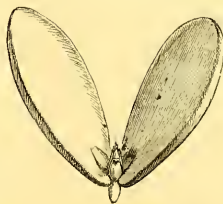


Fig. 31.—Embryo of Almond, with the cotyledons spread open to show the plumule.

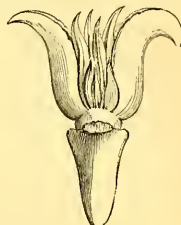


Fig. 32.—Embryo of Almond from which the cotyledons have been removed. (Enlarged.)

It consists of a short stem bearing two lobes or seed leaves (cotyledons), usually face to face, and enclosing a little bud



Fig. 33.—Seed of Kidney Bean.



Fig. 34.—The same with the testa removed, showing the embryo which occupies the whole cavity; r, radicle; c, cotyledons.

(plumule) at the apex; at the other end is the rootlet (radicle) from which the main root proceeds; or, instead of two oppo-



Fig. 35.—Embryo of Kidney Bean with one cotyledon removed, revealing the plumule and radicle.



Fig. 36.—Section of the seed of Euonymus, showing the embryo with leafy cotyledons in the centre of the albumen.



Fig. 37.—Longitudinal section of an achene and seed of Thalictrum, showing the minute embryo embedded in the albumen. (Enlarged.)

site cotyledons, there may be only one, but this usually has a broad base encircling the stem, and often enclosing the plumule like an extinguisher. The number of cotyledons is one of the important characters by which flowering plants are divided into two great classes, monocotyledons and dicotyledons, according as their embryos have one or two seed leaves. The Almond (figs. 28 to 32) and the Kidney Bean (figs. 33 to 35) are examples of dicotyledons having exalbuminous seeds and large embryos, the parts of which are easily distinguished. The indigenous *Euonymus europæus* has a relatively large

dicotyledonous embryo in the centre of albumen (fig. 36), and the Meadow Rue has a minute embryo embedded in the copious albumen at one end of the seed (fig. 37). The cuts illustrating germination show many other modifications of the embryo, &c. The Cocoa-nut is an example of an albuminous monocotyledonous seed. As in some other Palms, there is a central cavity in the seed containing a quantity of milky fluid. The

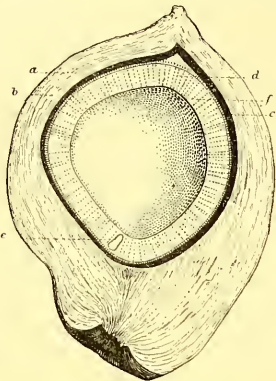


Fig. 38.—Vertical section of a fruit of the Cocoa-nut Palm, showing the solitary seed with a large central cavity, and a minute embryo at the base; a, b, pericarp; c, testa; d, albumen; e, embryo; f, milk cavity. (Reduced.)

embryo is very small, and seated opposite one of the three round holes at the base of the fruit. Exalbuminous seeds in the monocotyledonous class are somewhat rare and usually so small, that it is not easy to separate them into their constituent parts. The seeds of all Orchids are, however, destitute of



Fig. 39.—Seed of *Euonymus europæus* partially covered with an arillode.

albumen, and some particulars of their structure will be found under germination. We will next proceed to the examination of some of the modifications of the different parts of seeds.

W. B. HEMSLEY.

**Lime Juice Biscuits.**—An important contribution to the art of food-preserving has recently been made by Dr. Campbell Morfit, who in the first instance applied his invention to Lime-fruit juice. Dr. Morfit's preservation is gelatine. The manufacture of biscuits under Dr. Morfit's patent has been undertaken by Messrs. Carr & Co., of Carlisle, and they will presently appear in the shops as a regular article of commerce. What has been found practicable with Lime-juice is obviously equally practicable with the juices of other fruits, such as Lemons, Currants, and Plums; and soon we may have a series of biscuits in which fruit juices are conserved in their natural delicacy.—“Sanitary Inspector.”

**The London Cemeteries.**—The principal Metropolitan Cemetery Companies have recently entered upon a dispute with the monumental masons, in which the public are very largely interested. A few months ago they gave notice by circular, that in future a scale of fees should be charged on all work executed by the masons in the various cemeteries belonging to the various companies. The fees were to range from 5 to 20 per cent. on ordinary monument work, whilst on that of a superior class the mason was either to name the price he received for his order, or submit to have its value estimated by the superintendent, the fees to be assessed accordingly. I note also that the London Cemetery Company is seeking to impose a fee of 2s. 6d. in all cases where a gardener is sent to the Highgate Cemetery to attend to the flowers on the graves. This grasping policy is unwise, because it is certain to turn out unsuccessful.—“Truth.”

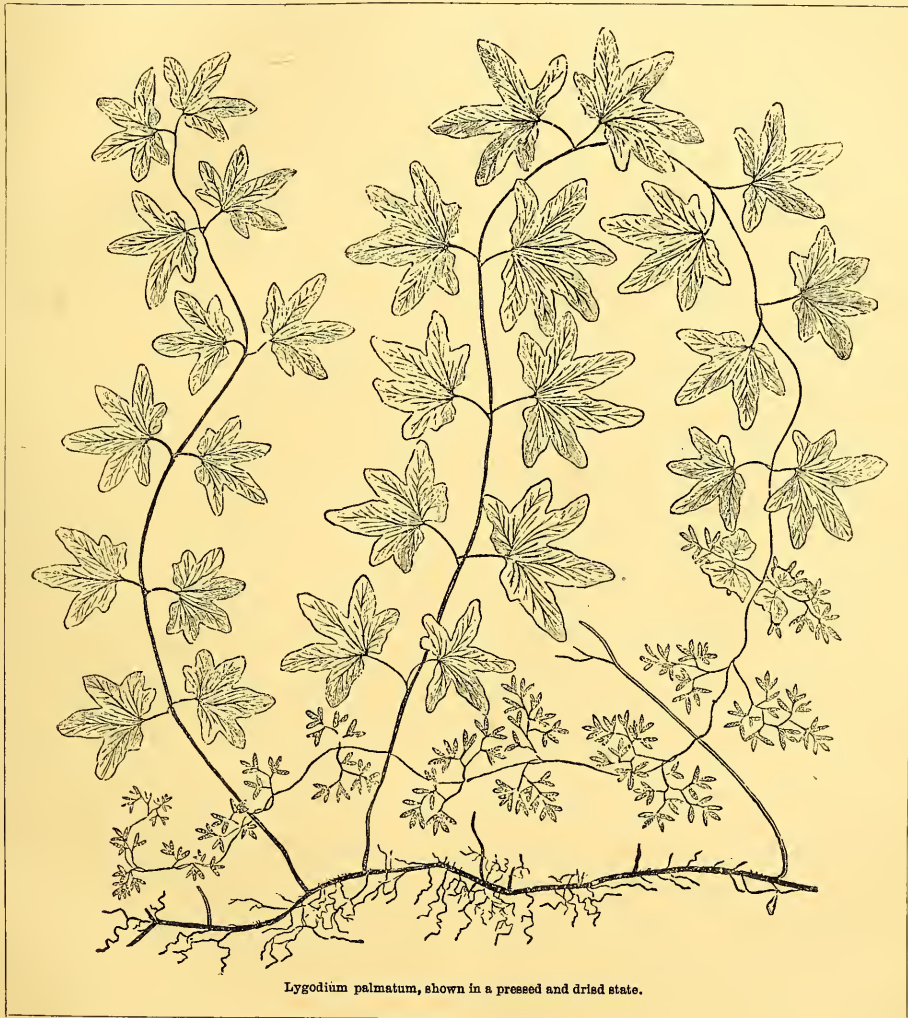
### LYGODIUM PALMATUM IN A DRIED STATE.

WHENEVER pressed Ferns are used for decorative purposes, the *Lygodium palmatum*, more commonly known as the climbing, or New England Fern, takes precedence, commanding a high price, with a constant demand. To the name “climbing” we protest; we have carefully examined the manner of growth, and find it to be rather a creeper, if not upon the ground, from shrub to shrub, weaving them together over yards of space. The genus *Lygodium*, however, includes many climbers, but all are of semi-tropical growth and habit. *L. flexuosum*, *L. scandens*, and *L. polystichum* come from the East Indies, *L. japonicum* from Japan, and *L. monophyllum* from the Philippine Islands. These are rarely sold pressed, as they are easily grown in pots, and, as living specimens, are scarcely to be equalled for beauty. The annexed illustration of *L. palmatum* is that of a pressed specimen, selected to show in full every stage of growth, and the irregularities that characterize the species. It is rare, indeed, as our search for this specimen proved to us, to find in a single plant an illustration that shall show the whole. At the base we have the wiry root, turning neither to the right nor left, but continuing one steady, straight course. It is this peculiar growth of root, we think, that prevents success when the attempt is made to grow the Fern in pots. The root meeting the side of the pot, unable to turn either to the right or to the left, at first languishes and then dies; other reasons, however, may be adduced, such as the plant being taken when partially matured, the disturbance and cutting of the root, the attempt to make climb that which was designed to creep, as the *L. scandens* does not thrive when permitted to droop or lie upon a flat surface. Since last summer we have cherished a *L. palmatum* in a 4-in. pot among house plants. Through the autumn and winter it existed, neither losing nor gaining. In February a new frond started, having two pinnae; a month later a second frond appeared, having seven pinnae; and then a third made its appearance, 1-in. from the side of the pot. Near the base are new fronds starting from the root, the involucre being so slight as to be scarcely distinguishable by the unassisted eye. There is also rachis from which the pinnae have been broken, and a barren frond, bearing but one perfect pinna; while some are in perfection. In examining the perfect frond it will be noticed that the pinnae are irregularly lobed. Six-lobed being the greatest number in natural growth, we conclude that to be of the perfect specimen. In our house-grown plant, however, though the original pinnae were five-lobed, the new pinnae number seven lobes, while they are larger and more regular in outline than any we have found growing under natural conditions. Not only do the lobes differ in number and size, but in shape; the colour and texture alone being uniform. The fertile pinnae are narrow, finger-like spikes (under a magnifying glass resembling bits of braid-work), composed of little pockets, each containing a seed vessel. Rich, heavy, and a beautiful brown, they contrast finely with the broad, green, barren pinnae, and form one of the chief beauties of this Fern. Professor Gray locates the Fern from Massachusetts, through Virginia and Kentucky, and sparingly southward. We have heard of it in Florida, Maine, near Philadelphia, and other parts of Pennsylvania. Connecticut may, however, be considered the richest field. American wit, that Midas-like, must turn what it touches into gold, took this in hand. Forthwith people became *Lygodium*-seekers, and the Fern's very existence was threatened. Like a horde of Vandals, they poured upon every locality where trace of it could be found, and by their injudicious and wasteful spilling, would soon have compassed its extermination, had not a few “selfish owners” called the aid of the Legislature for its protection.

American enterprise has made of the pressing of this single Fern a business, employing many hundreds of hands, commanding a sale of many thousands of dollars' worth annually, and with a market extending from California east to St. Petersburg. Mr. E. W. Clark, of Springfield, Mass., one of the largest dealers, writes to us:—“This Fern, found over all of the New England States, is most abundant in cold and moist localities in the Connecticut River Valley. In gathering, care must be taken in removing it from the shrubs and other Ferns to which it clings. The time of gathering begins about the middle of August, and continues until the last of Novem-

ber. They are tied in bunches, thirty strings in a bunch. Fruited specimens are always preferred, and bring the highest price. In pressing, the Ferns are put between the leaves of large books, where they remain for about two days. They are then transferred to sheets of paper, to be changed again and again until all the moisture is absorbed. During the season we

Their cultivation, if specimens indigenous to the climate be secured, is the simplest imaginable; and the interest, once excited, is unquenchable. In-doors, no costly Fernery is necessary, unless the more delicate kinds are sought, and even then extemporised arrangements may be successful. The delicate filmy Fern we have grown under an inverted tumbler.



*Lygodium palmatum*, shown in a pressed and dried state.

employ several hundred hands at this work. Several attempts have been made to cultivate and grow the *Lygodium* in pots, but so far all have proved unsuccessful."

We would recommend Fern culture to the notice of our readers. There are few places that have a damp corner, or secluded shady spot, in which Ferns will not thrive. Some are hardy, others delicate. Their beauty is beyond question.

The *Trichomanes* have thriven upon a bit of limestone inserted in a flower-pot, the earth filling the pot being kept constantly moist, with none reaching the plant. The character of the situations in which the specimens are found is only needed to be observed, and as far as possible supplemented, in order to make the artificial growth perfectly successful.—"Fanciers' Journal."

## GARDENING FOR THE WEEK.

## Orchids.

Where a large collection of Orchids exists a good deal of discrimination is needed to keep them sufficiently but not too dry. According to the requirements of particular species. In order for the majority of Dendrobies well, it is necessary to be very careful as regards giving water when the bloom-buds begin to swell. For instance, the beautiful little *D. pulchellum*, if watered more than very slightly at the roots, and that not above once or twice when in the state just alluded to, the flower-buds are almost certain to run off into growth. If the atmosphere of the house be moderately moist, that will be sufficient until the individual flowers are clearly visible. The *D. nobile* section are also subject to run off into growth in the same way, and also the tall-growing species, such as *D. Dalkhoasianum*, *D. Calceolaria*, *D. fimbriatum oculatum*, &c. *D. Devonianum*, than which there are few more lovely Orchids, is often kept too warm during both winter and summer. I have found it to succeed much the best by not encouraging growth in the spring nearly so soon as the plant evinces a disposition to start. The best plan is to keep it through the winter and spring from 45° to 48°, with a little water once a fortnight or so after the young shoots have begun to push, but it must not have either moisture or sufficient heat to induce a pushing more than a very slight extension of the young growth until the end of April. This Dendrobe should always be grown in baskets suspended near the light, and the same remark also applies to *D. Warlianum*. These, being strictly drooping plants, are completely out of character when grown in pots with the shoots tied upright, as one sometimes sees. *D. Pierardi* will now be pushing up its flowers, and should be kept in a fairly moist condition at the roots. *D. densiflorum* and *D. Parnaci*, where wanted to flower late, should be kept dry at the roots, and in a night temperature a few degrees under 50°.

**Winter-blooming Plants.**—One of the best white-flowered winter Orchids is *Cologyne cristata*, but this, again, is a plant that does not succeed well in a very high temperature, but, being a native of the moist hill regions of Nepal, it cannot bear much drought. When in a strong, healthy condition its leading bulbs soon get beyond the limits of the pot or basket in which it is grown, and in this case there is nothing for the roots to lay hold of, the result of which is that the bulbs formed under such conditions are deficient in size and ability to produce strong spikes. In order to remedy this it is necessary to reduce the plants I have found this best accomplished by cutting the leading piece with about three bulbs attached to each, leaving the remaining roots to break back. The severed pieces are best arranged in pots or baskets, in sufficient numbers to make an effective display. In no way does this *Cologyne* grow better than fixed on a large piece of cork, on which is placed 2 in. of good, fibrous peat, covered with a little Sphagnum. In this its roots will luxuriate, and when suspended near the glass it makes the strongest possible growth. Now, or immediately after flowering, is the best time for performing this operation. The different varieties of *Cypripedium* habitans, *C. ensatum*, *C. Patricium*, *C. villosum*, *C. leucodatum*, *C. Lowi*, *C. Dayanum*, *C. hirsutissimum*, and *C. Stonei* must not be kept too dry at the roots, as the flowers will shortly begin to show themselves; the four latter kinds being natives of hot countries, require more warmth in winter than the first-named sorts, as where the temperature is not sufficient their roots generally decay. *Chysis bracteosa* and *Limninghea*, where required to flower later on, should be kept at the coolest end of the Mexican house, and a little water should be given them as soon as the young shoots commence to grow. Thus treated, they will make little progress until more warmth and moisture is applied. In this way a good display of flowers is distributed over a longer time than under ordinary treatment, and I have never found the plants suffer by it in the least where no extremes were attempted.—T. BAINES.

## Indoor Plant Department.

**Conservatories.**—In addition to Hyacinths and other bulbous plants, these also contain blooming plants of Camellias, Azaleas, Chinese Primulas, Cinerarias, Solms, some small Pelargoniums, Dalrymples of different kinds, Cytisus, Zieria Smithi, several Acaecias, Heaths, Epimediums, Libanths floribunda, Tremandra verticillata, Correa cardinalis and Brilliant, Monochetum sericeum, multiflorum and ensiferum, Lachenalia, Roella collata, Oldenburgia Deppiana, Pyrethrum uliginosum, Leucopogon lanceolatus, and Luculia gratissima. Amongst climbing plants, Hibbertias, Kennedys, Hardenbergias, Brachysemas, &c., are now coming beautifully into flower. Amongst dwarf climbers nothing is prettier at present than good plants of *Mysyrhyllum*, Verbenagoldes, loaded as they are with a profusion of little, reflexed white flowers, being of a very orange-coloured conspicuous tawny. This is a plant that may be readily raised from seeds sown in a hotbed, pricked or potted off singly when up, and kept growing in moderate heat or in a cool house; either will do, only when a little warmth is employed good plants are sooner obtained than by cool treatment. Pot such roots as remain of *Primula cortusoides* in a compost of good loam two parts and leaf-mould one part, with a little sand. Those previously potted and beginning to grow, keep on a shelf as near the glass as possible. Give a final shift to the *Calceolarias*, and also to some of the bushy ones intended for conservatory decoration. Cinerarias required for late blooming should have plenty of water, and be kept in a cool, airy house. A few Balsams and Cockscombs for early flowering should be sown in a hotbed, and pricked off before they become spindly. Of *Amarantus saffordiana* a few seeds should likewise be sown for conservatory ornamentation, as well as for flower garden decoration. To succulents starting into growth water should occasionally be given.

**Specimen Plants.**—Large Heathbs, *Chorozemas*, *Boromias*, *Apheleandras*, and similar plants should now be staked and tied into such shapes as it may be desired they should assume. A position near the glass is best, and especially one in which all sides of the plants may be subjected to an equal degree of light. In training plants of *Draacophyllum*, unless the long shoots are twined round the base of the plant, and only the points of last year's shoots allowed to grow upwards, a symmetrical or handsome specimen cannot be obtained. Many train the old wood of this plant over a trellis and allow the blooming points to project outwards a little, but the result of such a method is not satisfactory. Show and fancy *Pelargoniums* keep in a cool well-aired house and in close proximity to the glass. If the stages do not permit of them being near enough to the glass, raise them upon inverted pots, blocks of wood, bricks, &c. Although wirework for training purposes was refixed when the plants were cut back, no attempt should be made to tie down any of the shoots yet; on the contrary, a slow and stocky growth should be encouraged, which is the most productive of flowers; no fire-heat should therefore be employed for these plants in winter beyond what is necessary to expel frost. If required for early shows a little fire-heat may be applied after February.

*Allamandas* may be re-potted, cut well back, and allowed to break freely, keeping them moderately dry. *Dipladenias* will now be producing their young wood, which should be trained to fine string run across the rafters inside the stove. If the pots in which they grow are plumped, or partially so, in a moderate bottom-heat, it greatly assists their growth; and if the wood is produced early without check, and by free exposure to light made firm, abundance of flowers will doubtless be the result. If not already done, bring down the shoots of *Clerodendron Balfouri* and splendens, and train them around the trellises fixed on the pots. As *Clerodendrons* produce their flowers from the old wood, none of it should be removed at present; but after they have done blooming they may be pruned, re-potted, and encouraged by bottom-heat and a high temperature to produce their young growths, which should be trained along the sides of the stove, in the same manner as recommended for *Dipladenias*, with the exception of the difference of season, viz., *Dipladenias* from the middle of January until they begin to come into bloom, and *Clerodendrons* from the time they have done blooming until they form and thoroughly mature their young shoots, which will be the blooming ones of next season. *Stephanotis* may now be unfastened from the cords on which they have been supported and trained around their trellises; if required early, raise the temperature of the house or transfer the specimens to a warm, moist stove. To high temperature in winter, however, more caution should be taken. It deprives them of their proper rest; but it must not be allowed to fall under 55°.

**Stoves.**—Where there is the convenience of stove-heat, there are many things that will shortly require attention. If it is now time to start growth in a moderate bottom-heat, and it is better to excite the roots into growth at once, for although the plants will keep throwing up flowers more or less through the summer, still the heads of bloom produced after the first and principal flowering are much fewer in number, and not so effective. If a portion be at once potted and placed in heat, they will soon begin to push. Do not overpot them; an 8-in. pot will grow a large bulb, especially if it be assisted with manure water; good sandy loam is the best material for them, with one-fifth of rotten leaf-mould. Use 1 in. of crocks in the bottom of the pots, and do not, as is so common, ball, but allow its surface to rest to appear above the soil. Pot moderately firm, and place in heat at once. Some Achimenes should be started at the same time; these are better placed thickly in shallow pans, covering the bulbs with  $\frac{1}{2}$  in. of soil. When they have pushed shoots 1 in. or 2 in. long, they can be transferred to the pots or baskets in which they are to be grown. They are fine decorative plants grown in this way, either for a large or small house; use baskets proportionate in size to the house they are intended to grow in.

**Bedding Plants.**—Hotbeds should now be put up for the propagation of these where hot-water heated structures are not available for that purpose. A little extra warmth may be communicated to ordinary frames by means of a Glazebank, and the contents may be covered with straw; this additional heat will induce the plants to start into growth and to soon begin to yield material for cuttings. Where two, three, or more *Pelargoniums* were placed together in one pot in the lifting season for convenience of storage, they may now be separated, potted singly, according to size, and kept without water for some days after the operation. Keep the house or frame rather close for some little time after potting. Lose no time in obtaining and striking as many cuttings of all plants as possible, for the stronger they are, and the earlier propagated, the harder and the more vigorous will they be when turned out in the latter end of May. *Calceolaria* cuttings seldom root well in spring; nevertheless, the tops of autumn-saved plants may be economised for that purpose in the event of an otherwise deficient supply. If struck in a cold frame early this month, in the same manner as autumn cuttings are, they sometimes root very satisfactorily. *Verbenas*, *Heliotropes*, *Ageratums*, *Tropaeolums*, *Petunias*, *Lobelias*, *Colsenes*, *Alternantheras*, *Iresines*, &c., when rooted, should be potted singly or transferred to boxes, and still be kept in a hotbed, and they may be taken off for the same purpose, and also their side shoots, so that, with plenty of heat and convenience, a large supply may be obtained before the end of the next two months. Sub-tropical plants must also be increased as expeditiously as possible. Side shoots taken off for cuttings soon make good plants. Seeds of the various kinds commonly raised by that means should now be sown in a brisk hotbed or warm pit. *Acacia lophantha*, *Wigandias*, *Cannas*, *Ferdinandias*, *Richnuses*, *Zeas*, and many others can be readily raised from

seeds. Canna roots saved from last year should now be divided and started in heat. Dahlia roots may also be started. If beds be dug out about 18 in. or 2 ft. deep, and filled with leaves trodden firmly, so as to be covered by a frame, and some light rich soil be placed therein, they will form excellent positions in which to plant *Calceolarias*, *Verbenas*, or *Heliotropes*, so as to have good plants before they have to be set out in beds.

#### Flower Garden.

Where hardy material can be spared for replenishing flower-beds and borders, planting may be proceeded with. Pansies, Daisies, Arabis, Alyssums, and similar early-blooming plants transplant as well now as later in the season; indeed, if carefully removed, they suffer little or no check in the operation. Ground for the reception of hardy herbaceous plants should be trenched and heavily manured, but the subsoil, unless good, must not be incorporated with the surface soil. Where *Lythrum roseum* is used in ribbon-border making, it should now be lifted, cut up into good crowns, and replanted in a line about 15 in. or 18 in. apart. Sweet Peas should now be sown where they are to bloom, and some should be put in beds from which to make up deficiencies in case of failure; sow a few in a box decomposed manure to beds where late plants, such as those of *Ricinus*, *Perdanidia*, *Wigandia*, and other gross feeders, are to be grown, *i.e.*, if the beds are now empty. If this soil last year was found to be too moist, turn it out, and place a layer of stones, broken bricks, &c., in the bottoms of the beds. Mulch all newly-planted shrubs or trees, and affix strong, but neat, stakes to such as require support. Prunae bark pretty hard some *Clematites* for early-flowering; some of the hardier *Rose* plants may also be pruned for the same purpose. Tree *Peanies*, *Myrtles*, the Japanese *Quince*, and several other tender plants should have a little protection now next; for, although their roots and principal stems might escape unharmed, their young shoots might be considerably injured.

#### Indoor Fruit Department.

**Pines.**—The end of this, and the whole of next month, is the recognised period for the general spring potting of Pines. Have, therefore, a good stock of material at hand, including turfy loam, charcoal, and 3-in. bones. Pot suckers at once, if necessary, but if they be weak allow them to remain for a time on the plants, even after the fruit is removed. Increase the temperature a little, and apply water more plentifully.

**Cherries.**—For these a high temperature is ruinous, especially before the fruit has set well. A night temperature of 45° is sufficient, and water should be given only moderately.

**Vines.**—Thin Grapes as soon as they are large enough to admit of the performance of that operation; thin and stop shoots also, and regulate growth generally. Tie up to the wires such Vines as are intended soon to be started, but leave undisturbed such as are to be permitted to come naturally into growth. Sprinkle plenty of water on the paths and on other bare surfaces, in order to maintain a moist atmosphere.

**Strawberries** colouring should be kept near the glass, in a moderately dry house, at a temperature of 60° or 65°. Water carefully, for too much would impair the flavour of the fruit. Bring in or shift from a cool house to one that is warmer plants for succession. Cucumbers and Melons sown last month will now be sufficiently strong for planting out. Keep up for them a steady bottom-heat, either by means of hot water or fermenting material, and water them with tepid water. Sow a few more seeds for a later crop.

**The Early Peach House.**—The fruit will now be set in the earliest house, and syringings morning and evening will be required in favourable weather. Attention should likewise be paid to the thinning of the fruits where they are set thickly, but this rarely happens when forcing commences so early. The disbudbing of the shoots is a process best performed by taking off only a few of the strongest at different times, so as not to give a check to the roots. The temperature at night may be maintained at about 60°, with a rise to 70° by day, and by sunbeats 6° or 8° higher. Green-fly will begin to make its appearance, and the infested shoots must be picked off; but fumigation with *Tobacco* will have to be resorted to at the last. Some of the new patented fumigators are very efficient for the purpose, for by making a hole in each door of the house for introducing the nozzles from the outside, the house can be soon quite filled with smoke, and kept so for any length of time required.

#### Kitchen Garden.

**Early Radishes.**—If the weather keeps mild, Radishes sown in the open ground, and covered with litter, will very soon vegetate. See that they are not kept covered in the day as soon as up, or they will be drawn and weakly. The litter should be carefully taken off in the morning, and again shaken over the bed in the evening, until the plants have got sufficient strength to bear full exposure. As soon as the first sowing is up, a second bed should be sown to give a succession, to ensure which, during the spring, great care should be taken, as this crop is generally held in very high estimation in the early season, and, without the closest attention, Radishes cannot be had crisp and uninterruptedly.

**Birds and Seeds.**—The seeds of Radishes, Turnips, and all the Cabbage family are particularly subject to the attacks of birds, more particularly in small gardens. In the market gardens, where Radishes are sown by the acre, a boy is regularly employed to keep off these marauders. In the small breadth required in a private garden it would not pay to employ labour in that way, yet, if nothing be done, a very few

finches would, in a single day, destroy a crop. For many years I have, previous to sowing, dressed all seeds of the above description with red lead, and I have never found any bird touch them—except the greenfinch, from which nothing will preserve the seeds but covering them with mats. This dressing, to be effectual, must be done thoroughly. The best method is to place, in a large tea-saucer, as much seed as fits the intention to sow, on which sprinkle a very few drops of water, for, if they be made too wet, the seed and the lead will all stick together in a mass; then take a tea-spoonful of dry powdered red lead, and stir the whole thoroughly until all the seed is well coated with the lead; let it stand for a couple of hours to dry before sowing—this is necessary, or the lead will wash off with the rain; whilst, if laid on with the right amount of moisture, and well dried, it will adhere to the outer covering of the seed, even when it appears above ground. With a little practice in the preparation of the various seeds that thus fall a prey to birds, the operator will soon be able to judge when he has hit upon the right degree of moisture required before applying the lead, and upon which depends the thorough preparation. Half a pound of lead will last a season, and the trouble is nothing when compared with blank crops.

**Seakale.**—Put in more Seakale roots for successional supply, treating them as advised for the earliest forced. If there be at command more of this vegetable than is required for forcing, it will, if the crowns be covered with 8 in. of fine ashes or sand, blanch well when it grows naturally with the warmth of the spring. To be managed in this way it should be planted in rows, so that the covering material can be placed over it in the shape of a continuous ridge, removable as the crop is gathered. In taking up this vegetable for forcing, the whole of the long roots, from the thickness of a finger to that of an ordinary pencil, should be forked out of the ground, and laid in soil until the time comes for planting. This is better and more certain than raising the plants from seed.

**Rhubarb.**—If some more roots of this be now put in any building where the external air in a great measure can be excluded, it will spring fast, and come in before the outside crop, and be better in quality than that which has been forced. If a few inches of stable litter be placed over the crown of the roots outside, it will act as a protection from spring frosts, and induce them to push a fortnight earlier than such as are fully exposed.

**Potatoes.**—Late Potatoes, required for use from the present time through the spring, should be gone over as soon as they commence to sprout. Rub the sprouts off before they have attained any considerable length, for if allowed to remain on, they spoil the quality of the tubers for cooking. Keep them in as cool a place as possible, so that they are not exposed to frost, but quite in the dark.

**Carrots, Beet, and Turnips** should be gone over in like manner, rubbing the young growth off them. The sand, soil, or ashes in which they are stored should be as dry as is consistent with not absorbing the natural moisture from the roots, for if at all wet, growth is promoted, which it is the object to discourage as much as possible.

#### Diary.

**February 18.**—Sowing Red Cabbage and early Savoy in boxes, and putting in the gentle heat. Potting Black Jamaica Pines, and rearranging the pit in which they are growing. Giving first crop of Broad Beans a little earthing. Forking over the surface of the ground amongst Cabbage plants. Planting a four-light pit with Telegraph Cucumbers, and another with green-fleshed Melons.

**Feb. 19.**—Sowing Marrow Peas in boxes for making Green Pea soup. Potting Cucumbers and Melons. Looking over early Vineries, thinning out the berries, and tying down the shoots where required. Thinning out Radishes and Carrots in frames. Clearing out early forced Asparagus, and re-filling the frame with another lot. Sticking early Peas with short sticks, and earthing them up a little. Covering up Endive to blanch.

**Feb. 20.**—Potting off Chrysanthemums and Lobelias. Pricking off Celery plants in boxes. Disbudbing Peaches and Nectarines, and thinning out the fruit where set too thickly. Stirring the soil amongst Lettuces and Endive in frames. Looking over Cucumbers, picking out all false blossoms, and stopping the shoots where required.

**Feb. 21.**—Sowing Cucumbers and Melons. Putting in cuttings of *Pelargoniums* of different kinds; also those of scented *Verbenas*. Potting *Adiantum Farleyense* and other Ferns; also a few *Caladiums*. Emptying another Melon pit and refilling it with fermenting material for bottom-heat. Looking over Cauliflower plants in frames, picking out all dead leaves and button-headed plants, and stirring the soil amongst them.

**Feb. 22.**—Potting Tomatoes, and putting in cuttings of *Gesneras* and *Salvias*. Getting another box of Mint into gentle heat. Renovating the linings round manure frames. Clearing litter used for covering off Celery ground. Getting guards put over Peas just coming up. Looking over Grapes in bottles, removing any bad berries, and filling up the bottles where required.

**Feb. 23.**—Putting in cuttings of *Coleus*, *Iresine*, and *Mesembryanthemum*. Looking over *Pelargoniums*, picking off dead leaves, and stopping the shoots where requisite; also *Calceolarias*. Weeding all Box edgings and kitchen garden walks. Clearing out all decayed leaves amongst Brussels Sprouts and other Greens. Looking over the fruit room. Fruit in use for dessert—Pines, Grapes, Pears, and Apples.—*W. G. P., Dorset.*

## THE FRUIT GARDEN.

### HOW FAR APART SHALL WE PLANT APPLE TREES?

There is a great difference of opinion on this subject. When the land is poor and thin the roots will be less numerous, and must spread for long distances in every direction to get the nourishment needed. Our poor soil it is very necessary to give the trees plenty of room. Our densest forests and thickest turf grow on soil which is very rich. In planting an Apple orchard, as in most other operations, it generally pays to do the work well. When properly taken care of, after, say a lapse of twenty years or so, many varieties of Apple trees will spread 20 ft. in each direction, and some spread further. The rapidity of growth and the longevity of the trees depend much upon the soil and climate, as well as on the variety of fruits that happen to be planted. I have several orchards in mind in which the trees were planted closely together within 15 ft. or 20 ft. of each other. Some of these were so planted because the owners had a theory that the trees would the better stand the rigours of severe cold winters and hot summers. One

of the orchards was set twenty years ago on sandy land. The trees grew well for a few years, till they shaded all the ground. They were well cultivated, but never bore very well. After shading the ground they began to run up for more air and more light. At present the orchard is of no value, and never will be, except for fire-wood. It was a poor investment, chiefly because the trees were planted too near each other. One of the other orchards was planted on good, rich land. The trees behaved much as in the previous case, though they bore good fruit in considerable quantities for some years, when they crowded, died, or split down, and to-day, when only about twenty-eight years old, the orchard is of little value. On a neighbouring estate with similar soil, another orchard was set at the same time. The latter has borne the most fruit, and is still apparently good for many more years of profit to the owner. In ordinary

good loamy soil, or in poor light soil, the roots of an Apple tree, when fifteen years old, extend at least 25 ft. or 28 ft. in all directions. This is not mere fancy, but a fact, as I have repeatedly seen the roots as described while putting in tile or while digging for the purpose of examining the roots. The feeders of the roots—the root-hairs—are renewed every few weeks during the growing season. The small roots from which the root-hairs grow are also often renewed. I mean these die, and others take their places, or other places not far away. In this manner roots are all the time feeding on new ground. Doubtless, after a time, much ground is fed over again and again. Roots do not search for food as animals search for it; but they grow where they find the best soil, and they will there multiply in the greatest abundance. For long-lived trees and the best results, I am satisfied that large varieties of Apple trees should not be planted nearer than 40 ft., if they are set in squares. This gives not a whit too much air and light for the tops, and, as has been shown, the roots will soon occupy all the ground and make good use of it. While the Apple trees are young, if desired, other crops may occupy the intervening spaces. I prefer to set trees in squares, because it is the simplest plan, and because it is easier for the cultivation. As mentioned, the roots will run all through the soil, even

crossing one another at long distances between two trees. If the trees are of varieties which do not grow fast or become large, they may be planted nearer together than 40 ft. If, like the Wagener, they begin to bear young, and are allowed to bear and get ready to die by the time they are fifteen years old, they may be planted only 20 ft. or 25 ft. apart. Trees are often injured by planting too closely, seldom by having too much room. One tree does not protect another by growing very near it; on the contrary, one robs the other. Our strongest, finest ornamental and forest trees grow in open spaces where there is plenty of room, and where the soil and climate are suited to their natures.—*Rural New Yorker.*"

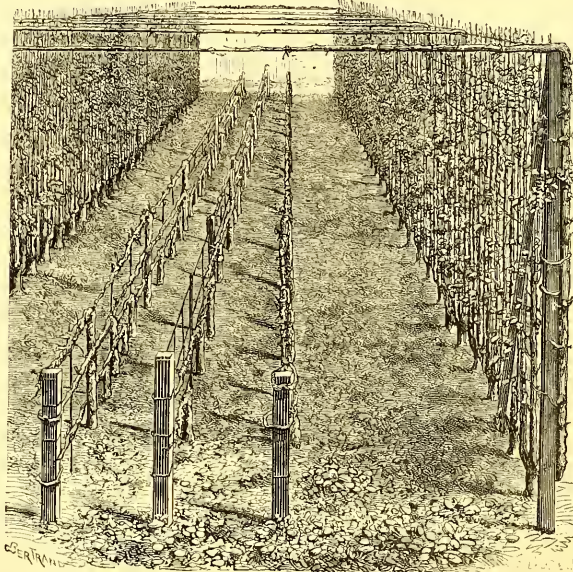
**Tall Trellises for Espaliers.**—Having before spoken of the well-trained and in all ways well-managed espalier trees in the School of Horticulture at Versailles, we now give an engraving, showing the general effect of a portion of the square in winter. The trees are all trained vertically, and the tall trellises mutually support each other by rods running across them. Cordun Apples are grown between the lines, and sometimes, on the ground, Strawberries.

The effect of a large square completely furnished with these handsome and well-formed espaliers is very good, particularly when the high trellises are from top to bottom a sheet of level bloom in April, or when well hung with handsome fruit, in no danger of being blown off these firm trellises by autumnal gales. The espalier trellises are formed of thin galvanised wire, supported by T iron, the vertical lines on which the shoots are trained being Pine wood rods  $\frac{1}{2}$  in. square.

**Retarding Peach Blossoms.**—This, no doubt, is entirely a question of temperature; therefore, leaving the trees untrained, with their branches as far as possible from the wall, till the last moment offers the easiest and best means of retarding the flowers. Moreover, under this treatment the buds are stronger and hardier than when trained earlier, and shading resorted to to keep back the blossoms. The trees should be loosened from the walls

early in autumn, the sooner after the leaves fall the better, as this thorough exposure, accompanied by the gentle motion of the branches by the movement of the air, is beneficial in many ways. It is unnatural to keep trees of any kind always tightly braced up to the wall, and certainly shortens their lives. Of course the main branches must be sufficiently secured to prevent high winds injuring the trees in exposed situations. As soon as the blossoms begin to show colour the trees should be trained as carefully as possible, but if they are healthy, Peaches will always set a much larger number of fruits than can possibly be allowed to remain on, so that if a bud or two should be displaced it will not be of any serious moment. The chief thing is to delay the opening of the flowers, as the longer this can be put off—nine seasons out of ten—the greater will be the chances of securing a crop of fruit.—*E. HOBDAV.*

**Fruit Prospects for 1878.**—As the critical season for fruit crops is rapidly approaching, it is satisfactory to observe that at present the condition of the trees is highly favourable; not only are the flower-buds abundant and strong, but, what is of greater importance, they are not unusually advanced, for, although the winter has been an open one, without much frost or snow, we have hitherto had but little unseasonable elevations of temperature to excite growth.



Tall Espalier Fruit Garden.

All kinds of fruit trees, both on walls and in open quarters, promise to yield good crops; and should the coming spring prove propitious, fruit returns will compare favourably with those of previous years.—*J. Groom, Henham.*

### FRUIT TREE PROTECTION.

It is somewhat early to write about fruit prospects, and perhaps, instead of fruit, it would be wiser to write about buds, which are plentiful and of average quality. Bullfinches, I find, are already attacking the buds of Plums—a sure sign that growth has commenced; for I have noticed for years that these pretty songsters, but most reckless bud destroyers, never touch them till growth begins. Probably the starting of buds, like the sprouting of Barley in malting, develops sugar, and the birds wait for the buds to be thus sweetened. If this be so, it seems that buds vary in sweetness, which they assuredly do, and that the order of merit in bird estimation is about as follows, viz., Plums, Gooseberries, Apples, Apricots, Peaches, and Pears. This order, however, may vary in other places. Here the birds evidently think there is nothing like Plums, and hence they are at them already, though the Gooseberries, which are more forward, are not touched. Pears and Apples seem to be rather later than usual, and Peaches and Apricots are moving but little. The wood of these is greener than is customary, and not in the best form for encountering a severe spring, which it is more than likely we may have after so much wet. It will therefore be wise to see to all protective expedients early. With a glass coping, or a movable wooden one, on the top of the walls, the trees may generally be left to shift for themselves. Still, it will be wise to take extra precautions this year. We cannot yet afford to have another fruit failure; therefore woollen nets, mats, old fishing-nets, thin canvas, frigi-domo, &c., should be had in readiness with which to fight the frost when it comes. The old-fashioned plan, too, of drawing a few Fern fronds or old Asparagus tops—harvested and kept dry for this purpose—or small Spruce, Yew, or other boughs under the branches, affords one of the most effective of protections against frost and cold winds. They are fixed over and amongst the flowers, and are sure to protect a few just where they are wanted. The gradual process of defoliation is also one of the chief merits of these simple and homely protectors. They likewise shade out the sun as well as conserve heat. Some of these rough modes of protection, like the old-fashioned one of loose straw bands run along the wall horizontally, a foot or so apart and a yard from it, are rather unsightly; but that matters little should they prove effective. We can afford to lose sight of our trees for a month or six weeks if they will only come forth by-and-by laden with fruit. The most sightly, and at the same time one of the most efficient means of protection, is a glass coping, 18 in. wide, on the top of the wall, and a woollen net stretched down from within 6 in. of its lower edge to nearly the bottom of the wall. The netting, being thus overhung by the glass, will be kept dry, and the two together will preserve the blossoms of Peaches, Nectarines, Apricots, and Plums against 10° or 12° of frost.

D. T. FISK.

**Two Orchards—A Contrast.**—We have seen two orchards in Western New York, standing within half a mile of each other, which very nearly corresponded with the following description of two orchards at South Haven, Michigan, given by Prof. Beal. One of these orchards he pronounces as bearing the best crop the past season which he had seen in the State. The ground has a perfectly natural drainage, but has not a strong soil; hence the necessity of the triennial manuring and cultivation given it. With this treatment the annual shoots are not over 1 ft. long. The owner raises fine fruit, and makes it a rule to send to market only the very finest in quality. It is no wonder, then, that he cannot fill all the orders he receives. His neighbour set his orchard the same year (seventeen years ago), and allows his trees to stand in Grass. He had no fruit of any value the past season. The two orchards are separated only by a line fence. The last-mentioned trees are mossy, with yellow leaves, and out by the borer, and make little growth. A specimen tree in this orchard measured 14 ft. through the top, that is, the limbs were 7 ft. long with seventeen years' growth. The tops of the trees in the good orchard were 22 ft. through.—“Country Gentleman.”

**Fruits at High Elevations.**—What fruits can be grown on a brick wall, looking south and south-west, at an elevation of say 930 ft. above the sea? Will some of your correspondents favour me with an answer to this question?—*D. J. M.*

**The Vine Pest in Australia.**—The discovery of the *Phylloxera* in the Vineyards of Victoria, for the “*Mark-lane Express*,” is a sad blow to the hopes of the colonists, for a successful development of their wine-growing industry. The pest has been rapidly increasing in Geelong for two years without attracting any general attention, although the insect was found to be infesting a few small patches of Vines as long ago as 1872.

## THE KITCHEN GARDEN.

### WHERE TO PLANT THE POTATO CROP.

At p. 46 will be found some excellent advice on this important subject, and as I have had abundant opportunities of confirming the writer's views, I venture to offer a few supplementary remarks on the subject, not with the idea of furnishing a cure for a malady that has hitherto defied all our efforts, but with a decided impression that by judicious culture, and, above all, by selecting favourable situations as regards elevation, and studying the character of the soil where into plant our main crops, we may at least get sounder tubers, if we should miss sensational results. During the last ten years I have had the opportunity of inspecting a great number of cottage gardens and allotments; also of attending the annual autumn exhibitions of roots in connection with several local societies for promoting cottage gardening, where Potatoes form the most important crop; and such a marked advantage have the cultivators of light or mixed soil lands over those who have heavy, retentive, rich soils, that separate classes are provided, otherwise the light sandy lands would invariably claim every prize offered, the quality and clean even sample of Potatoes raised on them being so much superior to that off heavy soils. Fancy varieties are not much sought after for main winter crops, but the old Rough Reds, Flukes, and Regents are as much grown as they were twenty years ago; and as regards quality, it is difficult to say where in newer sorts the improvement is to be found. In this neighbourhood every cottager has a large allotment in addition to a good-sized garden, and, destructive as the disease was last year, they unanimously aver that no crop pays so well as Potatoes; and when fine crops in gardens and highly-manured land have been a mass of rotteness, the allotments almost invariably produce good, sound Potatoes, with little loss from disease. This is certainly not attributable either to richness of soil naturally or artificially, or to any skillful routine cultivation. Indeed, the fields selected for allotments are such as farmers would not offer much competition for, being mostly light land, with plenty of stones and sand, on which the water drains away as rapidly as it falls; yet from the depth of loose, friable soil, such land does not suffer so quickly from drought as might be expected. The manure employed is very limited in quantity, but most of the land intended for Potatoes is well broken up before winter, so as to get the full benefit of rains and frosts. I may also remark that the most successful exhibitors of Potatoes which we have ever had occupy land reclaimed from adjoining barren wastes, that being situated close to Oak woods have been annually dressed with great quantities of Oak leaves, until a deep light soil has been obtained, and fine Potatoes, without spot or blemish, have been the result. The sandy soils here are mostly liberally mixed with a white sand, almost equal to silver sand. But perhaps the most striking instance of freedom from disease was afforded by our field crops, which escaped with scarcely any loss in that way. The situation was an old wood of Fir trees that was felled the year previous, and the land was deeply trenched, and no manure of any kind has ever been applied to it, and the soil, which is of the lightest description, is also undulating. No matter how much rain may fall, it is always in good working order. The sets we dropped in after the plough and earthed up in the ordinary way, and, as before remarked, there was scarcely a diseased tuber in a hundred. The crop was not a sensational one, but it consisted of more sound Potatoes than if it had been planted on richly-manured level land. People cannot, I know, always select so favourable a site, but last year was an exceptionally destructive season, and the attack was as sudden and rapid as it was destructive; it is, therefore, but reasonable to suppose that medium crops might be obtained in all seasons if strong retentive soils and highly-fertilising and moisture-retaining manures were avoided; for instance, salt is frequently recommended for insuring good results as regards Potatoes. It is, however, the very last ingredient one would think of for promoting dryness of the soil, and, with regard to Potato crops, nine out of ten seasons are too wet for them. In order to produce good crops of medium-sized tubers fit for table use,

no fresh manure is necessary if the land has been manured for a preceding crop, and well broken up before the winter's frosts, so that rain can pass readily through it. This is one of the secrets of successful cultivation. It is useless reducing the labour bill one-half if the productive power of the land be reduced in an equal ratio. It has, I think, been pretty clearly shown that there are no "disease-proof" Potatoes; but as regards combating the evil with anything like success, I believe, if we could compare notes from different districts, we might at least clear up one important point, viz., "Where to plant." The after culture is simple enough; and although I have not tried Peas as a means of drawing off the superabundant moisture, I have frequently observed that the soundest tubers were found where strong-growing weeds had acted in that capacity.

JAMES GROOM.

Henham.

#### WHITE WORMS IN CELERY PLANTS.

In last week's GARDEN some sound advice is given (see p. 121) as to the mixing of soot, salt, and lime with the manure used for Celery, alike as a means of reducing the pest of worms, and of increasing the value of the manure as a suitable stimulant for that crop. This is well as far as it goes, but other means may also be adopted with the view of reducing the numbers or wholly extirpating worms in Celery. The abolition of the progressive system of earthing up is one of those means. Worms seldom enter Celery until it is covered with soil and blanched. Hence it follows that, if grown to full size first and blanched afterwards, the worms will at least have much less time in which to ply their vocation, for Celery can generally be thoroughly blanched in six weeks or less. Another means of reducing the number of worms is to either tie, or compress the Celery together as tightly as possible during the process of earthing up. It may seem absurd to suppose that the plants or the soil around can be made so firm as to exclude worms by sheer mechanical force; but, be that as it may, the closer the leaves of the Celery are forced together, and the firmer in reason the earth can be packed round them, the fewer will be the worms in the sticks, as a rule. Worms, indeed, seem to favour a confused or disorderly arrangement of leaves and stems. In most cases of careless earthing up in which the earth may have got into the hearts of the plants, or some of the leaves have been broken, there are more worms than in the perfect sticks. Before earthing up it is a good practice to remove all suckers and dead leaves from the stems, and to apply a slight dressing of equal parts of soot and lime, with a small quantity of fine salt to the plants overhead, and a heavier dressing to the soil in the trenches. Unless rain should follow in a few days, water this dressing in with a thorough flooding; when this has subsided, and the plants have become quite dry, earth up, say the second day after the watering. This dressing generally prevents the worms ascending from below. Of course they may exist in the side soil and be brought into contact with the plants in the process of moulding up; and this brings us to another, and perhaps the most radical cure of any for worms in Celery—that is, thorough cultivation during the previous winter, accompanied with liberal dressings of lime, burnt earth or marl, and charred refuse. These render the mass of earth distasteful to worms, and insure a sweet and mellow tilth, which is most favourable to the growth of clean, sweet, crisp Celery. On wet soils thorough drainage must be the first step to high cultivation, and the removal of stagnant water is often associated with the diminution of the number and almost practical extinction of worms in rich kitchen garden soils. What may be called specific local remedies consist in the use of spent tan, saw-dust, Cocoa-nut fibre refuse, and coal-ashes for blanching instead of earth. Of course, these are somewhat costly and troublesome remedies, but they are effective, and such materials, after blanching a fine crop of Celery and preserving it free from worms, can be mixed and incorporated with the mass of earth, adding to its bulk and improving its quality.

D. T. FISK.

#### POTATOES FOR POTS AND FRAMES.

It is singular to note the hesitation that cultivators display as regards the utilisation of the newer and better kinds of Potatoes for frame and pot culture, whilst they grow all sorts of garden kinds by the acre without much special regard to their respective table qualities. Perhaps this hesitation may be owing to the undoubted fact that a forced frame or pot crop of Potatoes must of necessity be a limited one, and that, therefore, it is doubly dangerous to run the risk of failure by growing sorts that have not been thoroughly tested. Frame and pot Potatoes, however, enjoy one advantage over crops grown outside; they are not affected with disease, and in

that respect, at least, there is less risk of loss of crop. The disease exercises none of its destructive influences on Potatoes grown under glass, because the foliage is not exposed to rain and to the mists and dews that fall during summer; indeed, so far as experience has gone, it has shown that the only absolute safeguard against disease is to grow the Potato under glass, but then that is an impossibility where thousands of acres are concerned. The Ashleaf family of the Potato still remains the most favoured section for early culture and for general purposes yet; probably it is the best. It is, however, unfortunate that any attempt to set up sections in this family should be made, as it is apt to mislead growers. The Potato trials made at Chiswick a few years since proved that there is no difference between one Ashleaf and another, except distinctions in name. Myatt's, Rivers', Veitch's, Gloucester Kidney, and a host of others are all the old Ashleaf, nothing more or less, and any distinction in reality is to be found only when the Ashleaf and Walnut-leaf sections are mentioned; but the latter kinds have never been greatly favoured, and enjoy but a moderate amount of popularity. The Walnut-leaf has for aliases Moua's Pride, Prince Teck, Melbourne Hero, and a few others. There is yet plenty of room to find improved kinds of frame Kidney Potatoes, as we want sorts with dwarfier haulm and whiter and more fleshy flesh than characterises the Ashleaf sorts. That such will presently be forthcoming there can be little doubt. Our labours in the work of raising seed Potatoes of late have been generally directed to the procuring of kinds that should be disease proof, an *ignis fatuus*. Now some attention is being paid to the raising of sorts that shall be productive of crops of good tubers within the shortest possible space of time, and I am hopeful that some unusual crosses with a new early white Kidney and the American Extra Early Vermont, undoubtedly the earliest Kidney in general cultivation, will presently produce what is so much wanted. A few years since Mr. Robert Penn endeavoured to distribute a white Kidney, having very short haulm, named Little Gem, which he specially commended for pot and frame culture. This kind produces tubers having the whitest flesh and of the finest quality. Grown both in a frame in rows 1 ft. apart and in 9-in pots in a Vinery, it produced crops of the most delicious quality, and gave the grower the most entire satisfaction; but somehow it was not inquired for, and it has been withdrawn from commerce. Alpha, one of the white American section, is also a most valuable kind for this mode of culture, and is an undoubted boon to those who have to provide first early Potato crops. The tubers are white and of excellent quality; but that, too, is hardly grown. The very best round kind for general frame cultivation is Early Market, as it has a dwarf top, and produces an abundance of good-sized, handsome tubers of the finest quality. This kind ought to be universally grown, both for frame-work and as a first early in the open garden, where, planted upon a south border in rows 1 ft. 5 in. apart, it produces an excellent crop.

A. D.

**Storing Roots.**—For many years the plan of keeping Carrots here was taking them to a cellar or outhouse, and building them up; with every layer of Carrots was put a layer of sand which kept them fairly well until about Christmas; but after that date they were always far from being satisfactory. My practice now is never to put more than two ordinary barrow-loads together, building them outside, head upwards, and covering them with straw and soil. We are now using Carrots taken up in October just as fresh and good as when taken up, and they will keep so until the end of May. These Carrots are used before the growing ones, which we always sow in July, and pull from the beds all the winter. The latter are much sought after, being mild, tender, and delicious. In order to keep Onions sound and free from growing, we tie them up in small hand bunches, and hang them in a draughty passage, where they are always cold. In this way we find them to keep perfectly sound and good. Parsnips we leave in the land until they begin to grow, when we lift and store them as we do Carrots for late spring use. Beet-roots should be lifted before the frost touches them, and stored precisely in the same way. An advantage belonging to this plan is, that it takes up no shed-room, which at all times is needful, particularly in winter, for storing Lettuces, Broccoli, and many other things.—R. GILBERT, *Burghley*.

**Scarcity of Vegetables.**—"Truth" does not speak truly when it says (see p. 111) that vegetables are scarce. For my own part, I never knew them so plentiful in any season of the year as they are at present. From open quarters we are eating young spring Cabbages, Purple and Snow's Broccoli, Brussels Sprouts, Savoys, Cotagers' and Curled Kale, Spinach, Lettuce and Celery for salads, while indoors we have Mushrooms, Seakale, Asparagus, French Beans, Cucumbers, and Rhubarb, &c. In fact, this is a good year for cooks, who have merely to ask and have.—R. GILBERT, *Burghley*.

## THE JUDAS TREE (CERCIS SILLIQUASTRUM).

I was glad to observe the favourable notice of this tree which appeared in your last issue (see p. 131). Permit me to state some particulars of the oldest and largest Judas tree with which I am acquainted—probably the largest in England. It is growing at Bath, on the premises of an ancient chapel, called St. Mary Magdalene. This remarkable tree I should guess to be not less than 300 years old (the chapel dates several centuries back). It was probably planted in the first place as a wall plant against the gable end of the chapel, for the base of its trunk is close to the wall; the stem and head have been gradually drawn away from the building, and are now in a leaning position, being supported by one of the arms resting on the boundary wall adjoining the street. The stem girths 6 ft. 1 in. at half-way up to the crown; at 10 ft. up its head has evidently been cut off some years ago, in a rough and unworkmanlike fashion. Notwithstanding the mutilation, however, three or four upright branches have shot out of the crown, and are now from 12 ft. to 15 ft. high. This specimen, although so old, still forms an attractive object every spring, when covered with its little clusters of Pea-shaped, gay-coloured flowers. The origin of the name Judas, applied to this tree, is, so far as I am aware, unknown. It is said to have been given it by Gerard, who stated that "this is the tree whereon Judas did hange himself." It is indigenous to Turkey, Greece, and Judea, where its flowers, owing to their agreeable acidulous flavour, are highly esteemed for mixing in salads, and they are also frequently pickled for use in the same way when fresh flowers cannot be had. Its foliage is very distinct from that of most other trees in shape and colour, the latter being bluish-green on the upper surface and Grass-green underneath. When old, the Judas tree forms a broad, round, flattish head, somewhat similar to that of an Apple tree. The wood is not considered valuable, although it is hard and capable of taking on a good polish. As an ornamental tree in spring, it ranks as one of the most attractive, owing to the singular and beautiful appearance which it presents when its old, as well as young, wood is literally covered with its purplish-pink blossoms clustered together in small bunches before a leaf is visible; and when associated with Laburnums, Lilaos, Flowering Currants, Azaleas, and other spring-blooming subjects, it forms a charming contrast in colour, blooming, as they all do, at the same time. The Judas tree is also well suited for planting on a lawn, either to form a standard bush as an isolated specimen.

Longleaf.

GEORGE BERRY.

*Retinospora ericoides* a Misnomer.—I am sorry that I wrote the note on this subject which has so interested Mr. Syme (see p. 533). It was simply written because I thought that the information on the subject which seemed to abound here might possibly prove acceptable to him. I only write now to say that *R. ericoides* is very common here, as is *Thuja ericoides*, T. Tom Thumb (*Ellwangeriana* of some), and many other similar forms, and that I may be pardoned for supposing that Mr. Syme meant *R. ericoides*, as the beautiful engraving is of the form *ericoides*, and not of the *juniperoides*, whatever Mr. Syme may have meant in the text. *R. ericoides* has been in the trade for nearly fifty years, and it was pardonable in old times to regard it as a *Retinospora*, because the polymorphic conditions of *Arbor-vitae* and *Junipers* were not understood. These polymorphic *Junipers*, however, are easily known when carrying on through life their juvenescent form, by having their leaves in whorls of three, which Mr. Syme's engraving has not; while the *Arbor-vitae* have their leaves in pairs, as Mr. Syme's drawing has. In short, the *R. juniperoides* of the trade is a *Juniper* which has simply retained its juvenescent character, while *R. ericoides* is simply *Thuja occidentalis* under the same abnormal conditions. If Mr. Syme is really not ironical in his being "so grateful to any 'intelligent American' for an explanation of the 'biological law which induces dimorphism,' and yet does 'not require to consult' the American works to which I have referred him, he may read with profit the article "Conifers" in Sach's "Text Book of Botany," though, with all due respect to that remarkable work, I think the references I first gave make the matter clearer morphologically, though not equal to Sach's, of course, in the minuteness of detail in the structural work.—THOMAS MEEHAN, *Germanstown, U.S.*

A Grand Myrtaceous Tree.—In the director's recently issued report of the Botanic and Domain Gardens, Melbourne, we find the following allusion to *Syzygium Moorei*:—"Lot no.," he writes, "I firstly describe one or two species of this Order (Myrtaceae) as an indication of the effects to be produced with such materials at command. First is the *Syzygium Moorei* (of which I have seen whole forests in Northern New South Wales and Queensland), attaining a height of 70 ft., or 80 ft., and affording when in full bloom one of the most gorgeous spectacles imaginable; its every branch and even a part of the stem being clothed with one mass of royal purple blossoms, having the appearance of rich pile velvet."

## NOTES FROM KEW.

*VELTHEIMIA VIRIDIFOLIA*, a Liliaceous plant, introduced from the Cape of Good Hope more than a century ago, is well worth growing. It succeeds under very diverse conditions, doing equally well in either a warm or a cool house, and requiring very little care. The broad, arching, wavy, bright green leaves form a kind of rosette, from the centre of which springs the rather tall, stout scape, surmounted by a raceme of long, rosy-pink flowers, green tipped when in bud. When planted out in a cool house *Datura sanguinea* forms a most beautiful object, the light green foliage setting off to great advantage the numerous, large, tubular, red flowers. Seemann says that this is one of the most dreaded of the poison plants of the Isthmus of Panama, and that it appears to have played, and still continues to play, a prominent part in the superstitions of tropical America. The Indians of Darien, as well as those of Chocó, prepare from its seeds a decoction which is given to their children to produce a state of excitement, in which they are supposed to possess the power of discovering gold. In any place where the unhappy patient happens to fall down digging is commenced, and, as the soil nearly everywhere contains gold dust, an amount of more or less value is obtained. In order to counteract the bad effect of the poison, some sour *chica de maiz*, a beer made from Indian Corn, is administered. *Prunus sinensis* fl.-pl. is one of the most valuable of all white-flowered plants for forcing purposes. *Hebeclinium ianthinum*, a Mexican Composite, is very useful and attractive for decorative purposes; the long-stalked, opposite leaves are coarsely serrated, and the flowers, which are produced in large corymbs, are remarkable for their very long, purple styles. *Acacia longifolia* var. *micronata* has narrow, almost linear phyllodia, about 2 in. long, and catkin-like spikes of clear lemon-coloured flowers; it is a very pretty plant. Another variety of *A. longifolia* (not named) has orange-yellow flowers and phyllodia about the same length as, but fully double the breadth of those of the last named.

In the Palm house may be seen in flower *Rondeletia cordata* from Guatemala. It is a neat, close-growing shrub, with leathery leaves and dense panicles of flowers about the size of those of *B. speciosa*; the colour is a warm flesh, the throat of the tube being entirely closed by numberless primrose-yellow hairs. *Strobilanthes Sabiniana* is a very pretty Acanthoid from the East Indies, every shoot being terminated by a tall, leafless spike of blue, Gloxinia-like flowers. The only drawback is the short time which each individual flower lasts. *Toxicopilea Thunbergii*, though not so handsome as *T. spectabilis*, is still worthy of notice from a gardening point of view. It has opposite, dark green, leathery leaves, and axillary bunches of a very fragrant white flowers. *T. spectabilis*, the Winter Sweet, a specimen of which is in the stove, is a very handsome Cape plant, with clusters of pure white, deliciously-scented flowers. A coloured plate of this desirable shrub was issued with THE GARDEN for July 7 of last year.

The most noteworthy Orchids in flower are those mentioned below. *Cypripedium Boxalli*, one of Mr. Low's recent introductions, is evidently closely allied to, although quite distinct from the well-known *C. villosum*; the leaves and flower-stalks are clothed with hairs; the upper sepal and petal are greenish white, spotted and blotched with dark purple. *Trihopilia sanguinolenta*, from Central America, has one-flowered scapes; the sepals and petals are greenish with light brown marks and blotches; the ground colour of the crisped and waved lip is pure white, the base bearing a line of a bright vinous-red colour. The East Indian *Ocleya cristata*, with its large flowers, snow-white, with the exception of the beautiful yellow crests on the lip, is and always will be a great favourite with Orchid growers. *Epidendrum cochleatum*, from tropical America, is a small-growing species of very easy cultivation; its compressed pseudo-bulbs bear two or three leathery leaves, and a raceme of rather large green and purple flowers, the narrow sepals and petals being of the former colour, and the large shell-shaped lip of the latter. *Ornithidium coccoineum* is a West Indian species with small pseudo-bulbs, and leaves from 1 ft. to 1½ ft. long and ½ in. to 1 in. broad. From the sheathing bases of these leaves spring clusters of scarlet flowers, the small size of which, in comparison with the leaves, causes the plant to be less generally cultivated than it otherwise would be. *Maxillaria punctata* is a very charming species with narrow, curved leaves and short roundish pseudo-bulbs. The leaves taper off towards the base, so the one-flowered scapes, though considerably shorter than the foliage are not at all hidden; the flowers are large for a *Maxillaria*, the sepals and petals are citron-yellow, the column red-brown, and the base of the lip striped and suffused with the same colour. *Leelia cinnabarinia* has petals and sepals nearly uniform in size, and of a reddish-orange colour. Dr. Lindley remarks of this plant that what the flowers want in size is amply compensated by their peculiar colour and the graceful manner of growth. The clustered pseudo-bulbs are clothed with acute striated scales, and bear at their extremities one or two linear-

oblong, reflexed, leathery leaves. *Rodriguezia crispa*, a Brazilian epiphyte, has a drooping spike of waved flowers of an uniform greenish colour; the species is more of botanical than of horticultural interest. Two very fine *Dendrobiums* conclude our list, *D. fimbriatum* and *D. densiflorum*; the former has upright stems and long drooping racemes of extremely handsome flowers of a bright golden-yellow colour, with the exception of a blotch of deep maroon at the base of the beautifully fringed lip. *D. densiflorum* is a small-growing species from Nepal with light yellow sepals and petals and an orange-coloured lip.—†.

#### AURICULAS AND POLYANTHUSES IN POTS IN FEBRUARY.

A DECIDED movement towards active growth is just now taking place in Auriculas; and even in Manchester, where the weather is pretty generally made up of snow, sleet, rain, fog, smokes, and a consequent continual darkness, the Auriculas are stirring. With this movement comes the necessity for top-dressing. Young roots are put forth near the surface of the soil, and it is necessary to give these something good to feed upon and assist the formation of the trass of flowers. The best top-dressing is made up of cow manure that has been laid aside and becomes dry, some good leaf-mould, and a little ordinary Auricula soil. But as it is certain that grubs and other enemies to plants will have taken up their abode in the manure, it is best to put it into an oven and subject it to a high temperature after being broken to pieces, or to pour boiling water on it, taking care to put it into some vessel, so that the water, which will carry down with it some of the goodness from the manure, may be saved. This is useful for the purpose of giving the plants a good watering before top-dressing is done. In top-dressing, the surface soil should be carefully removed, being particular not to injure—and, indeed, as little as possible, disturb—the root-fibres near the surface. Then add the dressing, leaving space for water to be given when required. At the time of top-dressing, it is well to wash the outsides of the pots, and clean them of dirt and stains; also to brush the foliage with a camel's-hair brush to rid the leaves of green fly, which at this time of year is apt to gather thickly about the young leaves.

Polyanthuses should be similarly top-dressed. They are more advanced than Auriculas, for it can scarcely be said they have rested at all during the winter; *Cheshire Favourite*, *William the Fourth*, and *Exile* are already showing flower. In the open ground, gold-laced Polyanthuses have been blooming all the winter. The plants in pots should have an abundance of air while the mild weather lasts, but cover them up securely in time of frost. Some plants in pots that have stood out of doors on an ash bottom all the winter, are forming very strong crowns, and they are decidedly backward as compared with those plants that have had the protection of a frame. On no account should the plants in frames be kept so close as to allow them to become drawn. D.

#### ROYAL HORTICULTURAL SOCIETY.

The annual general meeting of this Society was held on Tuesday last in the Council-room at South Kensington, the President, Lord Aberdare, in the chair. His lordship pointed out to the Society had improved during the past year, and remarked that the forthcoming four days' exhibition in May next would probably surpass any show yet held at South Kensington. The business of the meeting included the election of members of council, officers, committeemen, and auditors. The report of the Council referred to the temporary suspension of the Society's journal, owing to the death of its editor, Mr. Andrew Murray. It is expected, however, shortly to re-appear. Mr. Samuel Jennings having been appointed editor, as well as assistant-secretary to the Society. The state of the Chiswick Garden is reported to be most satisfactory. This year collections of Peas, Lettuces, Beets, and Leeks will be subjected to critical examination in it, and experiments will be made on the comparative value of artificial manures. The collection of herbaceous plants has been rearranged and largely added to. The Council have also procured collections of some of the more ornamental kinds of these plants and flowers; including *Delphiniums*, *Pononias*, *Pyrethrums*, *Iris*, *Ranunculus*, *Crocus*, &c., which have been separately planted. A rockery, for the stones of which the Council are indebted to their treasurer, Mr. Henry Webb, has been formed opposite the entrance to the Great Vinery, and planted with rock plants, many of which of great interest were presented by the Royal Gardens, Kew; the Royal Botanic Gardens, Edinburgh; Mr. G. F. Wilson, Mr. George Maw, and others. Trials have been made of various kinds of Zonal *Pelargoniums* (which were successfully grown both in pots and planted out in the open border), also of various varieties of *Canna*, *Hegonia*, *Euphorbia*, *China Aster*, *Stocks*, and various sorts of hardy annuals, of which full reports are being prepared. During the past year 255 new Fellows and 231 Guinea Members had been elected, as against a loss of 79 Fellows by resignation and 69 by death. The revenue from all sources for the year was £4886, and, deducting the expenditure, there was a balance in hand of £747, but of this amount life compositions figure for £737. The income from subscriptions was in-

creasing, as well as that from garden produce. The Great Vinery, probably the finest of its kind in the world, the Vines in which are twenty years old, produced an abundant crop, which, at the reduced prices at which the Grapes were sold to Fellows, realised £320. The report was unanimously adopted, and 25 new Fellows were then elected.

#### THE SCHEDULE OF THE SOCIETY'S MAY SHOW.

WHEN this schedule was in preparation it was currently reported that its arrangement was placed in the hands of a few of the principal London nurserymen. That the Council should deliberately ignore its own professional advisers, and almost its own existence, certainly seemed at the time incredible, but it is only necessary to cast one's eyes over the schedule as placed before us to see that its concoction not only has a strong smack of the trade about it, but further, that it is almost exclusively made in the interests of just a few notorious plantmen who keep on hand a regular stock of prize-winners that are as well known to the London sightseers as the Horse Guards are to the frequenters of Whitehall. The Council offer a grand total in prizes of £693 7s.—a fine lot of money, that ought to produce a truly noble exhibition. That it will bring fine examples of the few kinds of plants invited there can be no doubt, but it seems to have been overlooked that there are a few other things that bloom in the month of May that are quite as worthy of cultivation and as attractive for exhibition as the few plants invited by the schedule. Out of a total of thirty plant classes Orchids get four, with prizes amounting to £114; stove and greenhouse and fine-foliage plants get six classes and £154; Azaleas three classes and £67; Roses three classes and £64; *Pelargoniums* four classes and £68; *Ericas* two classes and £44; *Ferus* four classes and £43; new plants (stove and greenhouse, of course) two classes and £30; *Palms* one class and £23; and for a miscellaneous group of plants occupying a space of not exceeding 300 square feet—that is to say, 10 ft. wide and 30 ft. long, a total of £23. Thus, we have only ten distinct sections of plants of the regular show order invited, whilst the group which is not of the nurseryman's order, but is rather intended as a sop to the market grower, and would take about 300 market plants to make it effective, gets just the same amount offered for it as is given for— heaven save the mark!—nine fine-foliage plants. What extraordinary liberality! Collections and dishes of fruit get the small crumb of £53 7s. allotted to it, and quite enough too for a lot of gardeners who are already as rich as Jews, and know nothing of the hard times to which the poor London nurserymen are subjected; whilst vegetables—oh, tell it not in Gath!—get £12 in all for one collection, and precious lucky must vegetable growers think themselves when they hear that the Royal Horticultural Society deigns to notice them to such an extent. There are some other things that could be shown that do not require stoves and greenhouses to bring them to perfection—plants that the million, from the Queen downwards, love to admire and linger over, but which it would, of course, be invidious to name, that are both beautiful to look upon, and the cultivation of which is worthy of encouragement; but these are not of the select order—they are not kept on hand ready made for show, and fit to be trotted out for the gaze of an admiring public at a moment's notice. Perhaps they are reckoned of the vulgar herd, good enough for Lambeth or Whitechapel, but not fit to be seen in Royal Kensington; and yet I remember it was told me that when Her Majesty visited South Kensington last May, both herself and Princess Beatrice expressed high admiration for these simple hardy plants. I may be told that since the Queen has forsaken the Palace of Buckingham and the society of the fashionable world for the wilds of Balmoral, that her taste has become vulgarised. Perhaps so; in any case there will be little danger of such a disaster happening to the visitors to South Kensington next May the 28th.—“Gardeners' Chronicle.”

**Apparent Sterility of *Cochlostemma's* Jacobianum.**—Having seen a fine specimen of this curious and beautiful Bromeliad, with three fine bunches of its ornamental bluish blossoms, growing in an intermediate stove in the rich collection of Mr. Crawford, at Lakeland, near Cork, when visiting it a few days since, I was informed by the gardener that, being very anxious to increase and propagate this still somewhat rare plant, he had done everything in his power to get it to produce seed, but hitherto unsuccessfully; and though all the parts and organs of the flower seemed perfect and fully developed, and though pollen was to be found in abundance concealed in a kind of small pouch in the centre of the flower, yet though carefully taken out and placed upon the style with the point of a camel's-hair brush, there had never been any sign whatever of fertilization or setting of seed. Perhaps some of the readers of THE GARDEN who have been successful in getting this plant to seed, or in propagating it by any other means, will give me the benefit of their experience in the matter.—W. E. G.

**Cucumber Duke of Connaught.**—This is one of the best of Cucumbers either for exhibition or for general use. It is indeed most prolific, producing frequently three fruits a joint, very asymmetrical in shape, and averaging 24 in. in length.—F. Donne, *Middlesexhill, Suffolk*.

A finely-flowered *Oenothera glauca*.—At p. 102 an *O. Alexandræ* in a villa garden at Clapton is said to have borne a spike 4 ft. long, furnished with eight flowers; it should have been eighteen.

To Correspondents.—“T. S.,” Highgate, “A. R. C.,” Grantham, Mr. Larcombe, Lea Hurst, and other correspondents will oblige by sending their addresses, which should always accompany enquiries.

No. 327.] SATURDAY, FEBRUARY 23, 1878. [Vol. XIII.

"This is an art  
Which does mend Nature: change it rather: but  
THE ART ITSELF IS NATURE."—*Shakespeare.*

**Loranths from Australia.**—A gentleman from Australia has recently arrived in England, bringing with him to Kew living plants of some of the Australian Loranthaceæ growing on the common Oleander. As many of the species of the large genus *Loranthus* are exceedingly handsome, and would be great favourites with everyone, it is to be hoped that this venture may be followed by many equally successful ones. So far as can be ascertained from the notes of collectors, there seems no evidence that particular species affect particular trees; they are found almost indiscriminately on the *Eucalyptus*, *Casuarina*, *Acacia*, *Banksia*, *Melaleuca*, and many other trees. Representatives of all these genera are to be met with in our conservatories, so that we may expect one day to see them act as host plants to some of those gorgeously-flowered parasites which take the place in Australia of the *Mistletoe* of England. The tubular flowers of some of these are about 2 in. long and splendidly coloured, crimson, yellow, and bright green being sometimes most attractively combined in a single species. In the West Indies and throughout the Tropics generally there are numerous species which would be heartily welcomed in any collection of decorative plants. Some commentators, who take no heed of the miraculous side of the question, but attempt to find a natural explanation for everything mentioned in Holy Writ, have suggested that the burning bush seen by Moses was the *Acacia Farnesiana*, thickly covered with a scarlet-flowered *Loranthus*. Although there is no record of this growing on the *Acacia* trees in the desert of Midian, it is so abundant in some parts of Syria, as to give the trees on which it grows the appearance of being on fire.

**Fruit Prospects for 1878.**—In this locality (North Notts) there is at present a very favourable prospect of good fruit crops should the spring frosts not be too severe. Although the weather all through January and up to this date in February has been open, there have been at times some sharp snaps of frost, especially in the last week in January and beginning of February, which have prevented unduly excited growth in fruit trees. Last year the months of January and February were excessively open and rainy, so that the buds of fruit trees began to be so forward that the severe check given to them by the ungenial spring months caused a general failure all over the kingdom. The summer of 1877 had a temperature below the average, but the autumn months were favourable for ripening the wood of fruit trees, and from their bearing thin crops of fruit, there is an abundance of blossom buds formed for this year's crop. Both on walls and on standards in open quarters this is now apparent on all kinds of fruit trees. Mr. Fish, on fruit tree protection (p. 153), gives the soundest possible advice to be prepared with all kinds of protecting materials for covering the walls where the most valuable kinds of fruits are grown, such as Peaches, Nectarines, and Apricots. Where the retarding process can be carried out, the blossoms are often safer from spring frosts if only rendered a week or two later in their expansion.—WILLIAM TILLEY.

**Lectures at South Kensington.**—With a view to render the meetings of the Royal Horticultural Society more interesting, the secretary (Mr. S. Jennings) has decided to deliver a lecture in the afternoons of the days on which they are held on the history, classification, and culture of different kinds of plants in season. The first of these lectures was given on Tuesday last, the subject being the *Cyclamen*. The lecturer, beginning with the hardy kinds, remarked that, as a genus, the *Cyclamen* is confined to the borders of the Mediterranean—South Europe, West Asia, and North Africa; and it could therefore scarcely be considered an English plant; but it could be found in a perfectly naturalised state in some Kentish woods. Two of the hardy species, *C. coum* and *C. hederifolium*, were cultivated in Gerard's garden as long ago as 1596, and *C. persicum* was introduced by Sibthorp from the Isle of Cyprus in 1731. The original *C. persicum*, although very beautiful, was far eclipsed by the magnificent examples shown at this meeting. After alluding to the confusion existing in the nomenclature of the species, Mr. Jennings remarked that for all practical purposes their number might be reduced to six, namely, *C. coum*, *C. ibericum*, including *C. Aikinsii*; *C. vernum*, including *C. repandum*; *C. europæum*; *C. hederifolium*, with its geographical forms of *C. africanum* or *macrophyllum*, *C. græcum* or *latifolium*; and *C. persicum*. After explaining how each kind might be distinguished, he made allusion to the most important of all, *Cyclamen persicum*; observing that a few years ago,

when the drying system of *Cyclamen* culture was carried on, we never obtained anything like the results either in the quantity or quality of flowers as were to be seen exhibited in the Council room that day. Instead of drying off the bulbs, it was found that by growing the plants steadily and naturally on, giving them at all times, even during their season of rest, sufficient water to keep the roots and leaves in a fresh and healthy state, that grand flowering plants could be obtained in a very short period. The improvement of the *Cyclamen* had been very great in every way during the past few years. Whilst some cultivators had striven to obtain quality of bloom, others had endeavoured to secure quantity and size. Some growers had confined their operations to the improvement of the habit of the plant, others to the colour of the flowers; and although each one had in his own way made great strides, yet what was really wanted was all these improved qualities combined, and the lecturer had no doubt that some day these results would be attained. At present, however, it was found that if we improved the size of the flower we destroyed the scent, and we did not get such a profusion of blossom; it was remarked, too, that often seed saved from a given plant would produce plants, some of which would possess a beautiful perfume, whilst others would be completely scentless. Altogether, the lecture was an instructive one, and was evidently so considered by most people present.

**Lapagerias in the Isle of Wight.**—Both the white and red varieties of *Lapageria* grow freely here on a wall in the open air. For the red kind a site was selected on the west side of an ornamental wall, adjacent to the back wall of the conservatory, on which it was planted about five years ago. The wall in question is about 9 ft. 6 in. high, 3 ft. 6 in. of which form the basement, the upper 6 ft. consisting of pillars and arches. The red *Lapageria* covers this wall thickly from bottom to top for a length of 23 ft. The white kind is much younger, but it is succeeding equally well, completely covering a portion of wall about 3 ft. by 4 ft. In autumn both plants are covered with their beautiful waxy flowers. *L. rosea* has been producing blooms in succession for these last five months. A shoot of it made since last May measures 18 ft. in length, young and succulent, but as yet uninjured by frost, which has this winter been sharp enough here to freeze the soil in our cold houses quite hard. On the same wall on which the *Lapagerias* are growing is a large plant of *Rhynchospermum jasmynoides*, which grows and blooms freely.—Wm. STANBURY, *Appby Towers, Ryde, Isle of Wight.*

**Scilla sibirica in the Greenhouse.**—I am so fond of the glorious blue of *Scilla sibirica*, that I every year grow a number of bulbs in a box for the sake of the flowers they supply. Last autumn I was desirous of saving a few store plants of *Mesembryanthemum cordifolium variegatum*, and, being short of pots, planted them in the soil of the box containing the *Scillas*. The box was then put on the top shelf of the greenhouse near the glass, that being one of the warmest and driest spots in the house. The *Mesembryanthemum* has grown and covered the surface of the box, and now the blue blossoms of the *Scilla* are just emerging from the green sheath of leaves which appear above the charming variegation of the *Mesembryanthemum*. It is a mistake to keep the *Mesembryanthemum* too dry during the winter if you can maintain a sufficient warmth to keep frost at bay. I watered the *Scillas* somewhat freely all the winter to get them into growth as early as possible, and the *Mesembryanthemum* has thriven on the moisture so supplied.—D.

**Horticulture at the Coming Paris Exhibition.**—An enterprising firm at Marseilles has offered to place at the disposal of the Exhibition authorities a garden of Bamboos planted in the form of an alley or avenue of some hundred yards in length. It is feared that this offer cannot be accepted, as such a share can hardly be devoted to the purpose without taking from the general effect of the Trocadero. But it is hoped that the administration will be able to utilise the plants by furling them in groups, which cannot fail to produce the finest effect, if properly arranged, which they are sure to be. Another offer, coming from Belgium, proposes to place an immense parterre of rare-flowering plants beneath the central dome of the grand vestibule of the *Champs de Mars*, on the side of the *Pont d'Iéna*. This spontaneous offer has been unconditionally accepted. The requirements of the exhibitors for plants in the parks and gardens of the Exhibition are so numerous, that the Minister of Agriculture contemplates being obliged to rent large spaces in the immediate vicinity of the building, where these floral collections can be carefully stored in reserve, under careful cultivation, until such time as they may be required for display in more prominent positions. One of the greatest floral attractions is expected to be the grand bed of Tulips planted out in November by the Haarlem Florists' Club. Upon this space of ground, some 15 by 17 metres in extent, about 40,000 Tulip bulbs are set, to represent when in bloom the arms of the City of Haarlem, with the word "Haarlem,"

"Holland," underneath. The Tulips used for this purpose are the Rex rubrum and La Candeur, surrounded by a broad border of the double brown flower known as Princess Alexandra.

#### NOTES FROM KEW.

AMONGST cool greenhouse plants the following—all found in the House No. 4—are the most striking:—*Acacia Sophora* is a handsome species with leathery phyllodia, about 2 in. long, and from  $\frac{1}{2}$  in. to 1 in. broad; the bright yellow flowers are borne in spikes about  $1\frac{1}{2}$  in. long. *A. leprosa* has drooping branchlets and narrow, almost linear, phyllodia; the peduncles are short, generally in pairs or clusters, and bear each a globular head of numerous showy flowers. For the decoration of the cool conservatory, these two *Acacias* can be strongly recommended; they are extremely dissimilar in appearance, the one being a stiff, erect grower, the other a light, airy, graceful bush. Both should be allowed to attain a height of 5 ft. or 6 ft. *Correa Harrisii* is a neat-growing species bearing an abundance of very pretty, large-sized flowers of a uniform red colour. *Diosma capitata* is a Heath-like shrub with heads of pinkish flowers. The leaves, when steeped in vinegar or brandy, are—in Cape Colony—universally used in domestic practice, and held to be a certain remedy for most of the ills that flesh is heir to. *Hardenbergia Comptoniana* is a charming West Australian bright purple-flowered climber. *Kennedya rubicunda* has leaves somewhat similar in form to those of the last-named plant, but of a dull, not shining, green and short racemes of large flowers, the standards of which are ruby red, with a paler blotch at their bases, and the keels blood red. *Zieria Smithii* var. *macrophylla* is a pretty Ratæaceous white-flowered shrub; this plant does well in sheltered positions in the open air in the south and west of England. *Clematis indivisa*, from New Zealand, is one of the most beautiful of woody, greenhouse climbers, and, on account of its flowering so freely and so early in the year, it is invaluable for the decoration of the cool conservatory; a coloured plate of it was issued with THE GARDEN for October 27 of last year. *Akaha quinata*, from the Chacana Archipelago, has pretty leaves and dull purplish-brown flowers, the delicious fragrance of which, combined with the graceful festoons formed by the freely-running stems makes up for their lack of brightness.

In the Kew Orchid collection this week there are very few species to note when we except those that have already been recorded in these columns. There are two very beautiful *Dendrobiums*, *D. aggregatum majus* and *D. Hillii* in flower; the former, an elegant and graceful species, is a small one with one-leaved, elongated, channelled pseudo-bulbs and pendulous racemes of flowers of a pale yellow colour, with the exception of the central portion of the large lip, which is a shade or two deeper than the other parts of the flower; the latter—a noble species from Australia—has long stems and thick, leathery leaves of considerable size; the many-flowered raceme, about  $1\frac{1}{2}$  ft. long, springs from the top of the stem, and the great number of yellow flowers more than makes up for deficiency in individual size and beauty. *Epidendrum nutans*, from tropical America, has tall, stout stems, bearing large, coriaceous leaves and dense panicles of rather large, whitish-green flowers; this plant, however, will hardly be found outside a botanic garden.

In the Winter Garden are two plants which deserve mention; they are *Trymalium Billardieri* var. *biratum* and *Anopterus glandulosus*, both natives of Australia. The first is a Rhamnceaceous shrub with roundish, hairy leaves and much branched, terminal panicles of small white flowers. The second is a handsome evergreen shrub with shortly-staked, coarsely-serrated, oval, leathery, shining leaves and upright racemes of white flowers about  $\frac{3}{4}$  in. in diameter, pink-tipped when in bud; this member of the Saxifrage Family attains in some of its native localities a height of 30 ft. or 40 ft.

A fine specimen of *Crimum asiaticum* may be seen in the Palm House. This handsome East Indian *Amaryllid* is a tall-growing species with long strap-shaped leaves and tall, stout scapes surmounted by umbels of pure white flowers.—†

**Apples in Covent Garden.**—The best-looking Apples in Covent Garden just now consist of a kind named *Dieu Donne*, middle-sized fruits, very plump, and well coloured. They realise from 2s. to 3s. per basket of eight or nine fruit. There is still abundance of the American Lady Apple, White Calville, and Reinette du Canada in the market, but Newtown Pippins are nearly over for this season.

**Hardy Flowers in Bloom.**—The beautiful *Irises reticulata* and its variety, *Krelagei*, are now finely in bloom in some of the nurseries about London. *Sisyrinchium grandiflorum album* and the White Hoop-petioled *Narcissus* (*Corburnii* monophylla) are also in flower, together with *Scilla precox*, *Primula denticulata*, and the

pretty white *Saxifraga Burseriana*. Large beds of *Bulbocodium vernum* are now very attractive; as are also those of *Galanthus plicatus* and other Snowdrops.—S.

**Crocus minimus.**—A bed of this rare *Crocus* was in bloom on the 17th inst. in the York Nurseries. Its colour is pleasing and rather novel, being pale purple, inclining to cobaltum pink internally, with sepals brightly veined externally with deep purple. The blossoms are in form much like those of *C. Sieberi*. It is earlier than most species of *Crocus*, a circumstance which gives it additional value.—B.

**Golden Juniper.**—One of the best coniferous plants which we possess is *Juniperus chinensis aurea*, which, unlike most of its class, retains its true character throughout the winter. Good specimens of it may be seen in Mr. Turner's nursery at Slough.

**Sechium edule.**—Messrs. Gair's, of Covent Garden, have favoured us with specimens of this curious Cucurbitaceous fruit, which, as tested here appears to have no merit or distinction beyond that of any tasteless half-succulent vegetable substance.

**Japanese Chrysanthemums.**—In order to encourage the culture of this most beautiful section of this popular winter-flowering plant, Messrs. Dixon & Co., Amhurst Nurseries, Hackney, provide in the schedule of the show to be held in the Royal Aquarium, Westminster, in November next, special classes for them, in which valuable prizes are offered.

**A Finely-flowered Dendrochilum.**—A large plant of *Dendrochilum filiforme*, growing in a pan in one of the Orchid houses in Messrs. Veitch's nursery, at Chelsea, is now furnished with no fewer than seventy strong flower-spikes. Though not one of the showiest of Orchids, yet, when so well grown and flowered as this is, it is both graceful and effective.

**A Good Azalea.**—One of the most showy and useful of early-flowering Indian Azaleas is *S. Ruoker*. Its blossoms, which are very large and waxy, are of a violet-pink colour edged with white, the upper petals being blotched with deep crimson. Plants of it in bloom in the nurseries round London are just now very attractive.

**Two Spring Flowers** are now in great beauty at Glasnevin, viz., *Iris reticulata* and *Rhododendron præcox*. The former is on a south border, and is producing an abundance of blooms, which, as regards colour and beauty, might favourably compare with many Orchids. As to the *Rhododendron*, even at this season of the year, when good flowers are scarce, it is one sheet of bloom. It is, however, rather delicate, and is liable to be spoiled by spring frosts.—F. W. MOORE, *College Botanic Garden, Dublin*.

**New Crocuses.**—We have received from the Colchester Bulb Company a novelty in the shape of a crimson and white *Crocus*, colours which we do not remember to have met with together in the same flower before. It ought, therefore, to be the forerunner of a new race of *Crocus*. It was discovered in an importation of *C. alatavicus*, and the name of *C. alatavicus porphyreus* has been suggested for it. *C. alatavicus ochroleucus* is another new form which was also found in the same importation. It is, as the name implies, pale yellowish-white.

**Narcissus minor.**—About London none of the *Daffodils* in the open air, except this little early kind, has as yet flowered. It is, as it was in Shakespeare's time, one of the most beautiful and interesting of our early spring flowers. Mr. Parker, of Tooting, showed some healthy little tufts of it the other day at Kensington.

**Garden Depredations in Kent.**—Attention is being called to garden robberies in various districts. A correspondent of a metropolitan contemporary states, that on Monday night his garden at East Peckham, Tunbridge, was stripped of its Snowdrops and Hepaticas, which were taken up by the roots. Within a few days many of his neighbours' gardens have shared the same fate. He attributes his loss to the itinerant sellers of flowering plants, and says those who buy from this class of men are encouraging a system of robbery which is extremely annoying to their country brethren.

**Begonia ornata.**—For clothing pillars or bare walls in greenhouses and similar places, where *Cissus discolor* will not succeed this *Begonia* forms an excellent substitute. It grows freely in any cool house either in a shady or sunny position, and its large stiff green leaves, marbled with white veins, are very ornamental. It is easily kept free from insects, and, being a plant of rapid growth, bare walls can be hid by it in a very short time.—C. S.

**Niphobolas Heteractis.**—For rockwork in greenhouses, or for growing on dead trees, Fern stumps, this is one of the best Ferns which can be employed. It is a rapid grower, and having creeping rhizomes and long, smooth, strap-like leaves, it soon covers whatever it is required to conceal. Cones or pyramids of it might also be introduced into rooms with good effect.—S.

## THE FLOWER GARDEN.

### MOLOSPERMUM CICUTARIUM.

THERE is a deep green and Fern-like beauty displayed profusely by some of the Umbelliferous family, but I have rarely met with one so remarkably attractive as this species. It is a very ornamental plant, with large, deeply-divided leaves of a lively green colour, forming a dense irregular bush. The flowers, which are insignificant and of a yellowish-white colour, are borne in small roundish umbels. Many of the class, while very elegant, perish quickly, get shabby indeed by the end of June, and are therefore out of place in the tasteful flower garden; but this is firm in character, of a fine rich green, stout yet spreading in habit, growing more than 3 ft. high, and making altogether a most pleasing bush. It is



*Molospermum cicutarium.*

perfectly hardy, and easily increased by seed or division, but rare as yet. It loves a deep moist soil, but will thrive in any good garden soil. It is a fine subject for isolation or grouping with other hardy and graceful-leaved Umbelliferous plants.

R.

### HARDY FERNS IN PLEASURE GROUNDS.

IN most gardens there are situations which, owing to perpetual shade through buildings or trees, are found extremely difficult to embellish satisfactorily. Places of this description occur frequently in the neighbourhood of the dwelling-house, and are often a source of vexation, as the majority of flowering and fine-foliaged plants will not thrive therein. For such localities hardy Ferns are the most suitable occupants, inasmuch as the self-same conditions which prove so fatal to the well-being of the majority of ornamental plants are just those which enable them to maintain themselves in health and luxuriance. The construction of a Fernery is often supposed to entail a considerable amount of labour and expense, and it is this consideration which deters many from undertaking the culture of hardy Ferns. The Fern tribe is a large and varied one, and if it is desired to cultivate a large variety, then, undoubtedly, a good amount of forethought and care will be necessary to ensure success. There is, however, a considerably large class which is really hardy in every sense of the word, inasmuch as they will thrive in almost any situation, and require but an ordinary amount of care to be taken in planting. And amongst these are fortunately to be found great variety and exquisite beauty; they are, therefore, all that can be desired for our purpose. Many varieties of *Lastres*, *Asplenium*, *Scolopendrium*, and *Polypodium* will flourish in the most ordinary garden soil, and can hardly be excelled in elegance of form and diversity of growth by the more tender kinds. They may be easily procured at a cheap rate of

any nurseryman, and some of them, such as the common *Poly-pody*, the male and Lady Fern, are to be found plentifully in moist hedgerows, from whence they may be safely removed in early spring before growth commences. These varieties are mostly strong growers; they should, therefore, be so planted that they are not stinted in the way of nourishment. Ferneries upon a small scale are apt to dry up in hot weather, and the occupants fail to obtain that luxuriance which constitutes one of the greatest charms of the Fern tribe. Although something in the way of burrs, stumps, or sandstone is necessary to keep the soil open, yet this kind of material should be introduced in the present instance merely to effect that purpose, leaving as great a bulk of mould as is consistent with good drainage. The cheapest material that can be employed is the root stumps of trees. In country districts hedges are being grubbed up occasionally, and a good cardoam may be purchased for a few shillings. Those living in the neighbourhood of populous towns could arrange with some friend in a rural district to consign a load to them as an opportunity might occur of procuring them. They are admirably adapted for the purpose, and not only serve to efficiently drain the soil in which they are placed, but appear to retain in themselves a certain amount of moisture, even in very dry weather. Root stumps are often objected to on the ground that they ultimately rot away. That is, however, no detriment in the present case, as by the time they do so, the plants are well established, will have filled the soil full of fibre, and eager to feed upon the decaying matter which is thus presented to them. As to soil, there is no necessity to be at all particular. If some turfy loam or rough peat can be easily procured, they will be benefited by an admixture of it. Ordinary garden soil, with some of the roughly-sifted portion of the refuse heap will meet their requirements. No garden can be considered properly furnished without Ferns of some sort, and many a dark, dingy corner may be simply and almost inexpensively beautified by them. Where winter verdure is desired, the evergreen kinds need only be employed. In a general way, however, they should be used with the deciduous ones, as they contrast so beautifully when bursting into growth in spring.

JOHN CORNHILL.

*Byfleet.*

### FANCY PANSIES.

THE coloured illustration in THE GARDEN of Fancy Pansies, done with so much fidelity to Nature by Miss Duffield, carries me back to a time when they were quite new to English florists. That was about the year 1859. For many years past raisers of English Show Pansies from seed have been familiar with the fact that, along with these seedlings, there were constantly occurring Pansies of such eccentric colouring and curious markings as to deserve the title of Fancy Pansies. But they were invariably rejected, because it was felt that such forms would render impure the fine varieties then being raised for show purposes. Mr. John Downie, of Edinburgh, however, did take a few of these in hand with a view to their improvement, but it was left to a Continental florist, the late M. Miellez, of Lille, to take the first decided step forward in the march of their improvement. The Continental seedlings were named, and some of the London nurserymen—notably Messrs. E. G. Henderson & Son, then of the Wellington Road—imported a quantity of them and offered them in their catalogues.—The earlier varieties were named Bobo, Eva, Eckard, Carberus, floribunda, &c. Then followed something decidedly superior, such as Prince Imperial, Ali Bey, Parpailot, Miracle, Agnes Sorrel, Napoleon III., Masaniello, &c. These came to England about 1858 or 1859. In 1860 still finer kinds made their appearance; amongst them were Belle Equermeuse, Louis Miellez, Distinction, Levathan, Princess Mathilde, Michael Ange, Dandie Dinmont, and Belle Lilloise. I well remember the sensation which these produced, and there was this advantage about them, that they were of a decidedly vigorous constitution, and stood better than the more delicate high-bred English Pansies. In 1861 two other varieties came over from France, from M. Miellez, viz., Noemé Demay and Octavie Demay, and these were the last of his productions, for he died soon after. By some means, the two last-named proved of more delicate constitution than any that preceded them. Meanwhile, English-raised seedlings were raised, and soon distanced those received from the Continent. The cultivation of Fancy Pansies was then generally taken up, and up to this time they have remained highly popular and attractive border flowers.

D.

*Mirabilis multiflora*.—Botanical tourists and collectors in Colorado narrate that among the more remarkable features of the Flora of Canon City, the abundance of the *Nyctaginaceæ* or *Marvel* of Peru Family is specially noteworthy. Of these probably the most remarkable are the *Mirabilis multiflora* and the *Abronia fragrans*.

*M. multiflora* differs somewhat in habit from the common Marvel of Fern, being a diffuse trailer, with much branched glabrous stems, thickened joints, and heart-shaped, rather pointed foliage. The flowers are produced both from the extremities of the branches and from their upper axils, and arise from a cup-shaped involucre about 1 in. long, from four to six blossoms being produced from each. The funnel-shaped calyx, for such is the coloured perianth in this genus, and not a true corolla, is about 2 in. long, of a pleasing mauve-purple colour, with an Ipomœa-like aspect, which doubtless suggested Torrey's name of *Qumœlidion* formerly given to this and the allied *M. oxybaphoides*. It produces a tuberous root, which is perennial and quite hardy in dry soils, though, like that of the *Mitribilla jalapa*, it may be taken up in autumn and preserved in a pot of dry soil. In favourable seasons it blooms the first summer, when raised early in a frame. A coloured illustration of this plant appeared in the "Botanical Magazine" for 1876.—W. THOMPSON, Ipswich.

### SEED BUDS OF LILIES.

MAY I ask "Dunedin" if he experiments and writes on *Lilium auratum* and supposes that his observations apply to all Lilies? *L. auratum* and all the varieties of *L. speciosum* form at the base of the flower-stem, in the heart of the bulb, two Lily buds, one on either side of the stem. This is readily proved by carefully removing the surface earth, when the flowers fall, and cutting the stem close to the bulb without disturbing the large roots that fill the pot, when the following year two strong shoots will push up, and the original single bulb be split into two large bulbs; but there is no such thing as any part dying away or decaying but the flower-stem. That the bulb is forced open by two Lily buds springing from a common centre is evidenced by the two shoots or stems coming up the following spring divaricating, and not vertical, to one another. If but one Lily bud comes up, it is certain proof of the plant not having sufficient of the requisite elements in the soil for its full development; and the roots decaying and the leaves turning yellow and dropping off are certain indications that sufficient vitality cannot be maintained to resist chemical action. The disease, mould, or fungus he talks of is the result, not the cause, of the decay of the plant, and any dead vegetable matter in the same earth would be doubtless found covered with the same species of mould. The bulbs of *L. longiorum*, again, are very different. They come up (with me) in a cold house, much earlier—six weeks at least—and as soon as the flower-buds show early in spring, I cut the stems down to the surface of the earth; four or five shoots will then come up and bloom with far finer flowers in September and October than would otherwise be the case, and continue in perfection very much longer. The Lily buds from which these sprang I consider to have had their origin at the base, but outside of the original single bulb, as I find on turning out the pot in December as many bulbs as shoots, all of the same size. And I suspect this is the case with *L. Humboldtii*, *Washingtonianum*, *negligerense*, *Brownii*, *Kramerii*, *superbum*, &c., as I find small plants come up in a slanting direction some inches from the large bulb which sends up the flower-stem. But that the large bulb annually decays, I know is not the case from personal observation. I am inclined to think that we shall never grow Lilies to their full perfection until a very careful chemical analysis has been made of their seeds, especially as regards *L. auratum*; and as yet I have never been able to procure sufficient for the purpose. We must therefore trust to experience till this is done; but if any of your readers who grow *L. auratum* very strongly (that is 7 ft. to 8 ft. in height, with enormous heads of bloom) would state the nature of the soil and where it came from, it might be the means of detecting the elements requisite for its full development; and that there is some special requisite for this Lily is certain, for whereas we see it so often stunted and sickly, it may be found thriving vigorously in the lightest peat and the stiffest loam. I find I must add *L. tigrinum splendens* to the bulbs of *L. speciosum* with two internal buds, for in the autumn I cut down a large one in a pot close to the bulb as an experiment, and now there are two shoots considerably thicker than my thumb pushing up with extraordinary vigour, which has very much surprised me. I do not know that it is anything new, but I got some of my best bulbs of *L. auratum* from cuttings. The small shoots which frequently come up round the bulb, if off a little below the surface of the earth, readily strike and form a bulb, and, as more shoots come up, I continue the operation during the summer. I have got some of these to bloom the following year.

ANATEUR.

"Dunedin" says, "While one bulb is flourishing (p. 27) in its first and only bloom, another bulb within it—mark these words, 'within it'—not outside, as offsets of any description whatever, another

bulb, a new bulb within it, is progressing in its growth so as to be enabled to bloom next year in place of the one now blooming, which will then be dead, thus keeping up a yearly bloom from successional bulbs *ad infinitum* if properly cultivated. . . . Every year witnesses a birth and a death, that is, the birth of the seed-bud and the death of the flowering bulb, being the youngest and oldest of the 'three generations in one,' the new bulb being always an intermediate between these two." Now "H." at p. 86, seems to think he invalidates this theory by taking the case of a bulb grown from seed. He says, "I hold in my hand a Lily bulb grown from seed sown last year. If this Lily were an annual, this little bulb, which is about the size of a Pea, would surely flower. But, no; it will continue to grow for a few years to come, and then flower." But if "H." keeps his small bulb growing, he will find it will throw up a stalk next year, not strong enough, it is true, to bear flowers, but yet partaking of the nature of a flower-stem; the old bulb will pass into that stem, and the new successional bulb will be fed by that stem, by the scales that form it, and by the new roots, and so on year by year till the successional bulb is large enough to bear a flower on its stalk and strong enough to be parent and foster-nurse to a still greater bulb. The small bulb, no bigger than a Pea, doubtless contains within itself a tiny seed-bud for the future successional bulb. I hope I agree with "Dunedin" about Lily bulbs from seed, as no doubt their mode of reproduction is not so clear when the bulbs are only a year old in the seed-bed. I could wish "Dunedin" had not implied that there is no certainty about imported Lilies flowering the first season, as out of a hundred or more planted in the open border in March, I have found every one produce flowers. Of course, they were all fine bulbs; but most imported bulbs are rather large and pretty sure to flower. I do not think that imported Lilies are thoroughly established till the third season, as the first season they flower well from the strength of the bulb, which is exhausted thereby and by the long voyage, and so the successional bulb for the next summer's flower is not properly fed; the third year they may be considered thoroughly established and proved.—FRANK MILES, Bingham, Notts.

### CHRISTMAS ROSES.

I HAVE frequently wondered why the *Helleborus* is not oftener made a subject of special culture in gardens than it is, considering its value as a winter flower, and its easy management. We have a pretty extensive and well-selected stock of herbaceous plants here, but amongst them nothing is thought more of than the Christmas Rose, which produces its pure white flowers in the depth of winter, and without forcing or attention. A good deal has lately been said about the white *Abutilon*, *Boule de Neige*, as a handsome white flowering plant; but we have had both it and the Christmas Rose in flower here at the same time, and we certainly give the preference to the latter. Though they resemble each other a good deal, the *Abutilon* is poor and frail compared with the Rose, the waxy and pure white flowers of which are far better adapted for decorative purposes than those of the other. Indeed, the flower-buds, just before they fully expand, are quite equal to those of the white Rose as far as appearance goes, or a *Camellia* bud, and they are often used instead of them for button-holes, set up in a Fern frond or green leaf. I notice that they are extensively used for such purposes in towns about Christmas time; but the supply is by no means abundant seemingly. I would strongly recommend every possessor of a garden to plant Christmas Roses extensively; but they must be careful to get the pure white kind, for there are numbers of species and varieties. *Helleborus niger* is the best kind, and the Scotch variety of this, which is semi-double, is said to be much the finest; but I doubt if it surpasses the single one, which is so particularly attractive in the bud state. *Helleborus atro-rubens*, which has red flowers, is also described as a handsome kind, but I do not think that it is worth growing; and the same applies to *H. orientalis*, which has flowers of a dirty greenish hue, altogether inferior to those of the pure white kind. The latter is extremely hardy, and will grow in almost any soil and in any situation, but it deserves a good position in order to have it in flower early, for its blooming at Christmas depends a good deal upon the weather. This winter, owing to the long continuance of soft, mild weather, the flowers were well up by the new year, but in some seasons they do not expand till the month of March. A good sunny position on a south border, however, hastens their progress; a hand-light placed over each plant helps also to push them on, and at the same time keeps the flowers clean—an important matter, for they get so bespattered with mud when exposed to heavy showers as to be almost unfit for use, and attempting to clean them only makes matters worse. For this reason it is best to grow the plants in isolated patches, about 2 ft. across or less, for the sake of protecting them conveniently, and the lights or cloches should be put on them in November. The

Christmas Rose is propagated by means of seed and by division, but the latter plan is the best and most expeditious. Single crowns detached and planted in good soil will make large plants in a short time. It is an excellent plant for shrubberies, and should be planted freely in all warm and sheltered corners. In such situations it should be planted as extensively as Daffodils, Crocuses, Snowdrops, &c., which it just precedes in flowering, and, being an evergreen with handsome foliage, it is interesting at all seasons of the year. CHEE.

### LIFTING ANEMONE FULGENS.

I CANNOT agree with Mr. T. Smith, Newry (see p. 113), as to the advisability of taking up the roots of this Windflower after the tops have died away, as these, like all plants of a similar nature, do best when left in the ground undisturbed. At least, this is the case where the soil is anything approaching a friable nature with free drainage, so that they may be moderately dry during the winter, as then there is no shrinking or loss of weight through escape of sap stored up to enable them to start away vigorously again when the proper season arrives for their doing so. It is a well-known fact by those who have anything to do with hardy bulbous or tuberous-rooted plants that taking them up annually tends much to weaken them, as it is impossible to keep them in that plump, healthy condition they always remain when allowed to stand where they grow. Nothing shows this in a more striking manner than *Gleditsia*, which, if dug up and wintered in the way they generally are, lose at least half their weight, and are weakened in a corresponding degree. Of course, it would not be safe to leave these out in some places, but if the soil were properly prepared at planting time and a good sprinkling of sharp sand placed around the crowns, it would be so in the majority of cases, and I am convinced that those who once try them in this way will never again resort to the practice of taking them up. For the purpose of getting a succession of bloom it is all very well, as different plantings may be made, but if really fine spikes are desired, the best plan is to leave them alone, as there is no loss in size, health, or vigour. It is the same with Anemones and all other plants of a kindred character, and the closer Nature is followed with these, as with anything else, the more satisfactory will be the results. In the case of those of doubtful hardiness, it is a good plan to lay a shovelful of coarse coal-ashes over the top, as these ward off sharp frost, and at the same time admit plenty of air, while, being absorbent and porous, they drink up moisture and part with it quickly, thus rendering plants under them in a snug, comfortable condition. As to the proper time of increasing *Anemone fulgens*, I agree with Mr. Smith's remarks, for to take the roots up after the leaves have made their appearance above ground would be a most improper proceeding, and cause such a check, that the plants would be some time in recovering. The best time for dividing all roots of this kind with a view to increase is just as they are breaking, as then they start away quickly, and the injured parts heal rapidly over, in which process they are greatly assisted by the foliage and young feeders then forming. The modern system of bedding has had much to do with the proofting and storing such plants as the above, as, unfortunately, they are torn out to make room for the summer display; but if small tubs were made of heart of Oak, they would last many years, and might be used to mark the sites of each patch, so that there need be no risk of disturbance; or better still, perhaps, would be some pegs made of stout galvanised iron wire turned at the top so as to form a loop or ring large enough to put the finger through. These would then have an exceedingly neat appearance, and be less conspicuous than anything else, in addition to which they would last a lifetime. If bulbous and tuberous-rooted plants were cared for in this way, they need not be so frequently disturbed, and there would not be the annoyance there now is by such continual losses arising either through repeated lifting and bad storing, or from injuries resulting through workmen digging and cleaning the borders. S. D.

### NOTES ON VEGETATION TO JANUARY 31, 1878.\*

It has been observed by many that the year 1877 has been remarkable for the untimely flowering of many vegetable productions, a circumstance probably arising from different causes. In the case of shrubby plants, the unripened state of the wood at the proper time, occasioned by the recent sunless summers, might induce such a result; and in the case of herbaceous and bulbous plants, the undeveloped state of their roots, caused in most cases by excessive moisture, might bring about the abnormal conditions just referred to. The comparatively mild state of the weather during autumn and early

winter has been the means of inducing many plants to produce blossoms at later periods than usual; even bouquets of hardy flowers have been sent to us from various quarters to show what has been produced in many gardens different from former years. At the present time (31st January) the leaf-buds of Lilacs, Scarlet Ribes, *Cydonia japonica*, and Roses are all far advanced, the latter still flowering in the open air, and in some places near the sea particularly fine. This unnatural state of matters will be much against the reports on open-air vegetation which I am annually in the habit of drawing up. During most seasons, a period of rest between autumn and the spring months takes place, sometimes owing to long and severe frost and snow, or continued drought, all of which are essential to vegetation, particularly after a good and productive summer. If all is favourable, spring plants advance regularly and successively, and their dates of flowering can be recorded. This winter many plants have been flowering more or less continuously since autumn, but particularly during December and January, as, for instance, *Veronica rupestris*, *Lithospermum fruticosum*, *Pentstemon alba*, *Gentiana acaulis*, *Helleborus* of different sorts, *Heptacodium triloba*, *Aubrietia grandiflora*, *Primula vulgaris*, *Polyanthuses*, Stocks and Wallflowers, *Arbutus Unedo*, *Erica carnea alba*, also *Senecio pulcher*, which has been particularly fine this winter, and is still flowering on the rock garden. During 1877 the Hazel was in full flower all through January; no fruit, however, was produced, in consequence of the male catkins being destroyed while in perfection. This year, although the Hazels are covered with catkins, not one flower expanded during January; the *Garrya elliptica* (male) has been in flower since the 25th of December, while last year few flowers were produced, and none before the middle of January. The *Jasminum nudiflorum* is also in flower, and has been so during most of the winter months. Several herbaceous plants, which are usually noted as being in bloom during January, are not yet out, such as *Tussilago fragrans*, *Sternbergia lutea*, *Lencojum verum*, *Crocus Imperati*, *C. susianus*, also the common Snowdrop, *Galanthus nivalis*, except a few on the lawn close to the Palm house, where no frost ever reaches them. Many thousands of this plant exist in the garden, both in beds and on Grass lawns, but not one is yet to be seen in bloom (Jan. 31). This is rarely the case with Snowdrops during January, except where their roots have been long covered with snow or frozen in, and they may not be able to flower before February, but which was not the case this year. Several shrubby plants are also late—kinds which are usually seen in flower about the middle of January—such as *Laurustinus*, *Daphne Mezereum*, *Rhododendron atrovirens*, *R. Nobileanum*, and *Cornus mas*. At the present time it is difficult to say, with any degree of certainty, what the fruit crop may be for the present year. Fruit-buds on many trees seem to be well formed, and, in all likelihood, the smaller kinds will ripen freely, but the prospect is more doubtful in the case of the larger fruits, such as Apple, Pear, and Plum, although blossom-buds have the appearance of being copiously produced, probably in consequence of having little or no fruit to mature last year. The seeming immature state of the wood, however, from the recent sunless summer, followed by recent frosts, may operate against the proper ripening of the fruit, as has been the case in many places for the last two years, and may be so this, unless the season should prove to be exceptionally fine. It has often occurred to me that when a large amount of blossom is produced, and all allowed to open, this excess of bloom generally assists to deteriorate the strength of the wood, independent of the weakness engendered by recent sunless summers. In several instances I have recommended parties to have a quantity of the blossoms cut off while in the bud state, leaving only what may be considered sufficient for the trees to mature. When all the buds produced are left to open, much of the bloom falls off from weakness or gets ruined by caterpillars; whereas, if fewer blossoms be left on a tree, the blossoms are more likely to open and ultimately come to maturity, besides saving the wood, which a crop of immature fruit from unripened shoots must necessarily damage.

To continue the meteorological tables carried on by me during the last twenty-three years, showing the amount of frost each month from October to April, I have to add the following observations:—In October, 1877, the thermometer was six times at or below the freezing point, amounting collectively to 15°. The lowest markings were on the mornings of the 3rd, 9th, 12th, 17th, 18th, and 19th, 31°, 31°, 32°, 27°, 24°, and 32° being respectively indicated; while the six highest morning temperatures were on the 7th, 14th, 15th, 22nd, 30th, and 31st, when 50°, 53°, 55°, 49°, 45°, and 45° were indicated. During November, 1877, the thermometer was six times at or below the freezing point, amounting collectively to 32°. In 1863 110° were registered, the lowest during 1877 being on the 21st, 24th, 25th, 26th, 28th, and 30th, when 23°, 24°, 25°, 28°, 31°, and 29° were respectively indicated. The six highest morning temperatures were on the 1st, 2nd, 4th, 5th, 6th, and 15th, when 44°, 44°, 41°, 44°, 45,

\* Read the other evening by Mr. James McNab before the Botanical Society of Edinburgh.

and 41° were indicated. During December, 1877, the thermometer was fourteen times at or below the freezing point, making in all 63°. In December, 1876, 43° were registered; in 1875, 81°; in 1874, 277°; and in 1859, 337°. The lowest temperatures in December last were on the mornings of the 3rd, 14th, 25th, 26th, 27th, and 28th, when 28°, 28°, 21°, 17°, 26°, and 23° were indicated; while the six highest morning temperatures were on the 10th, 16th, 17th, 19th, 21st, and 22nd, when 43°, 40°, 44°, 40°, 44°, and 46° were indicated. In January the thermometer was seventeen times at or below the freezing point, indicating collectively 101°, 73° being registered during 1877, and 103° during 1876, while in January, 1864, no fewer, than 39½° were registered. The lowest markings during January, 1878, were on the mornings of the 10th, 11th, 22nd, 25th, 30th, and 31st, when 22°, 23°, 22°, 14°, 21°, and 23° were indicated; while the highest morning temperatures were on the 4th, 6th, 14th, 15th, 16th, and 20th, when 40°, 40°, 41°, 41°, 41°, and 40° were indicated.

#### HARDY PLANTS FOR POT CULTURE UNDER GLASS.

In addition to the plants named for this purpose by Mr. Fish (see p. 132), I would strongly recommend *Lonicera fragrantissima*, which is one of the best hardy winter-flowering plants in existence; not that its blooms are particularly striking or showy, but they are so deliciously fragrant that one or two sprays added to a glass or spyglass are sufficient to perfume a large room. Grown in pots and plunged in a sunny situation, so as to get it well ripened, and kept in a somewhat stunted condition, it is of an exceedingly floriferous habit, so much so that every joint is crowded with buds that keep on expanding for many weeks in succession. The first blossoms make their appearance towards the end of the year, a season when they are doubly valuable, as it is admittedly a dull time in gardens, even in large establishments, for just then *Chrysanthemum* are over and forced things are not in. A half-dozen or so of *Lonicera fragrantissima* dotted about in a greenhouse would do much to give it a cheerful aspect, while they would render it most enjoyable by the sweet odours exhaled. Even those who have not the convenience of such a structure may have a plant on the walls of their dwelling, or in some sheltered sunny nook, as a shrub, or in pots in their windows, for the latter of which purposes it will eventually be highly prized in towns and cities, as it is not of that fleeting nature peculiar to many plants, the beauty of which is over almost as soon as purchased. Honeysuckles, too, have a charm of their own, carrying one in imagination to woody scenes and hedges where its native congener climbs, clothing bare stems and twigs with such perfect grace and beauty. Although introduced by Mr. Fortune many years ago, *Lonicera fragrantissima* appears as yet to be little known, which, considering its time of flowering and its usefulness for working into bouquets, is a matter of surprise, seeing the great demand there is for blooms of the choice sweet character this is, and so well adapted for mounting. Those who are not so fortunate as to have the above-named Honeysuckle will find the present the best time to get plants of it, as, being deciduous, it will not transplant well later in the season. Where desired, an increase may be readily effected by taking off the young shoots with a heel when they have attained a length of 3 in. or 4 in. These, if inserted in sandy soil and placed in close moist heat, will soon root and form good plants by the autumn, if stopped once or twice meantime so as to induce them to break and grow bushy. On walls, the thing is to coax up the main shoots so as to get them to the required height as speedily as possible, and then encourage plenty of small breast wood on which most of the flowers are borne. As these suffer from the inclemency of the weather, a south aspect, where they can have the friendly shelter of a coping or overhanging eaves, should be chosen. S. D.

**Gymnoloma Porteri.**—This genus will probably be new to most people. It belongs to that apparently inexhaustible Natural Family, the Compositae, and is limited to the North American Continent. One species, *G. multiflora*, is a native of Colorado, and is not without some claims to notice, but has the serious defect of flowering too late to mature seed in this climate. *G. Porteri*, now first introduced, is an exceedingly rare plant, occurring only on Stone Mountain, Upper Georgia. It grows from 2 ft. to 3 ft. high with a very bushy habit, neat lanceolate to linear, alternate, entire foliage, and a profusion of bright yellow Coreopsis-like flower-heads nearly 1 in. broad. It is in perfection about the middle of September, at which time the flowers completely cover the plant. The disk of the flower is conical, as in the *Rudbeckias*, and it was in that genus that the plant was first placed by Prof. Gray. Both species also share the questionable advantage of a synonymous designation, that of *Heliomeris*, under which name the *G. multiflora* occurs in Porter and Conlter's Synopsis

of the Flora of Colorado. Of the ornamental value of this plant there is little doubt, and although it may not mature seed in this country, France and Italy are close at hand, and will lend us their sunny skies. It will need the treatment of half-hardy annuals, and should be sown early.—W. THOMPSON, Ipswich.

**Seeding Plants of *Lilium auratum.***—Anyone growing this Lily from seed must be prepared to exercise patience, if my experience of its reluctant powers of germination be general. Some good seed was taken when fully ripe from the pods and sown in a pan, and placed in a cool house last April. During the summer and autumn no signs of growth appeared, but as I found the seeds to be still firm and sound I allowed it to remain undisturbed through the winter. My reward is at length assured; the seed has germinated, and the minute green spears are piercing the soil. Perhaps in a gentle heat they would have shown sooner, but they were in a cool house. I would have liked them to have remained dormant for another month, but in the hope of preventing the damping-off of the young plants, I kept them rather dry, and have covered the surface of the pan with dry silver sand.—A. D.

***Gillenia stipulacea.***—Most cultivators of the choicer hardy perennials are more or less familiar with the *Gillenia trifoliata*, a plant figured by Curtis in the 14th volume of the "Botanical Magazine" under the name of *Spiraea trifoliata* and justly termed by him, as being, when in perfection, a most delectable plant; *G. stipulacea* differs but slightly from it, chiefly in having leafy, ovate, serrate stipules, those of *G. trifoliata* being small, linear-pointed and entire. Like its congener, it grows from 1½ ft. to 2½ ft. high, with sparingly branched, slender stems, bearing trifoliate leaves above, the lower ones being almost pinnatifid, all lanceolate and nearly stalkless. The flowers are borne in loose panicles on long foot-stalks, each flower having five very long narrowly-lanceolate petals arising from the mouth of a tubular-campanulate calyx. In the bud the petals are deep rose, and they retain a tinge of rose after expansion. It loves a north or north-east exposure, and succeeds best in peaty soil with a small admixture of loam. The seeds are best left to spontaneous growth in a cold frame. It is a native of the States bordering on the Mississippi; *G. trifoliata* being found chiefly in the Eastern States.—W. THOMPSON, Ipswich.

**Keeping Down *Lilium.***—There are few who have gardens and I plants in pots who do not require at some time or other to place them out on the ground—perhaps in the shade during summer, or plunged in ashes or in a frame in winter. Worms in such cases are often troublesome, and to keep them from entering the pots is a desideratum. Having, during the past winter, to set a large quantity of plants in small pots in a frame placed on the ground, I first levelled and flattened down the soil, and then strewed all over it fine slaked lime to the thickness of about ½ in.; over this again was placed ½ in. of fine ashes, and on this bed the pots were placed. As a result, although three months have elapsed, not a worm has given sign of its presence in any of the pots, and I feel that the plan has proved entirely successful.—A. D.

#### NOTES AND QUESTIONS ON THE FLOWER GARDEN.

**Propagating Violas.**—I find all kinds of Violas to strike by far the best in the form of short, stubby cuttings put in in September. Cliveden Yellow, a great favourite here, we struck by the thousand in an east border, and just now (Feb. 15) they are all fairly started and beginning to grow and flower.—R. GILBERT, *Burghley*.

**Gladioli in Rose Beds.**—Allow me to supplement the suggestion of Mr. George Paul (see p. 138) by adding the Gladioli as desirable to plant among Roses. They come into bloom when the first Roses are over, and help to prolong the gaiety of the beds. I may add that I left my Gladioli in the Rose beds all through last winter, and they turned out much better than I expected. As it will soon be the season for planting out Gladioli, may I suggest that some of the readers of THE GARDEN will try the above, and the result I am certain will prove satisfactory.—J. T., *Elghaston*.

**Double Pelargoniums.**—Many of the double-flowered Pelargoniums of recent introduction possess the compact habit and free-flowering qualities of the best of the single varieties. One of the most free-blooming is the semi-double Wunderful, which is of the same habit and colour as *Vesuvius*, from which it is a sport; and one of the most useful is Madame Thibaut, a grand rose-pink. *Député Anelou*, deep rose-purple, *Litré*, another rose-purple, and *Le Nord-Est*, bright scarlet, are also fine. *Candidissimum* is said to be the best white.—"Florist."

**Hardy Flowers at Tooting.**—*Allium neapolitanum* and *Senecio pulcher*, stated (see p. 136) to have been grown at Tooting, were grown here in a greenhouse, and I doubt if either of them will stand out-of-doors. I took Mr. Barr a much more uncommon thing, a blooming bulb of *Aclis trichophylla*, which might be worth mention. It is figured as *Lencium trichophyllum* in Bot. Reg. vii., 544, and is more curious than pretty.—A. R., *Bromley Common*.

GARDEN BOTANY.

(Continued from page 148.)

THE TESTA.—Disregarding size, the seeds of all plants present some external differences by which they may be determined either in the appendages, colour, surface, density, or other characters of the testa. Whole families are characterised by certain peculiarities, and, on the other hand, in some families the seeds are very various. Some of the outgrowths or appendages of the testa are exceedingly beautiful, and some of them are amongst the most valuable of vegetable productions.

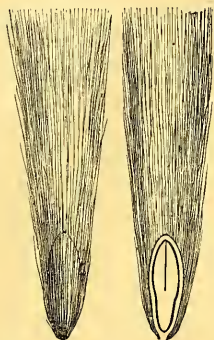


Fig. 40.—Enlarged bearded seed of Willow.

Fig. 41.—Section of the same, showing the straight embryo filling the whole cavity.

Botanists have given distinctive names to some of these outgrowths according to their origin. Thus an outgrowth of the funicle or point of attachment (hilum) of the seed, as the fleshy covering of the seeds of Passion-flower, is termed an aril. In *Strelitzia* and other members of the Banana family, the aril is of a most brilliant colour as, orange, blue, &c. An outgrowth from or near the micropyle is termed an arillode or false aril. The Mace of commerce is an arillode which invests the Nutmeg seed, and the orange-coloured fleshy outgrowth on the seed of *Euonymus europæus* is of the same origin, but there are numerous outgrowths for which no special names have been arrived at; in fact, they are so numerous, that it is more con-



Fig. 42.—Seed of *Hibiscus syriacus* with the hairs in one line.

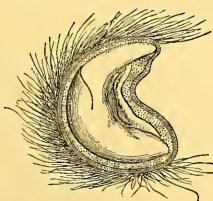


Fig. 43.—Section of the same, showing the large embryo surrounded by a thin layer of albumen.

venient to describe them than to invent names to designate them. Thus many seeds have hairy appendages. Cotton is obtained from the seeds of various kinds of *Gossypium*. In this case the woolly hairs proceed from the whole surface of the testa. The seeds of *Epilobium* have a plume of hairs at one end, and in Willows (fig. 40) the hairs spring from the base, and eventually completely invest the seed. In *Hibiscus syriacus* (fig. 42) the hairs are in one line around the outer part of a crescent-shaped seed, and the seeds of nearly all the *Asclepiadææ* (ex. *Stephanotis*) are plumose from the hilum. The seeds of the *Oleander* are densely woolly, and in some other *Apocynææ* they are plumose at both ends. An almost constant character of the *Bignoniaceæ* (ex. *Ecceprocarpus* and

*Tecoma*) is found in the seeds, the testa of which expands into a membranous "wing," often of a very delicate and beautiful texture. Nearly all the *Caryophyllaceæ* (ex. *Silene*, *Saponaria*) have elegantly pitted or tubercled seeds (see fig. 44, seed of Corn Cockle), and the seeds of different *Solanaceæ* are marked and sculptured in a great variety of patterns. Colour, as in flowers, is a less constant character of the testa than some others noted, and may be said to characterise varieties rather than species. Thus, of the *Kidney Bean*, for example, there are white, cream, yellow, red, brown, black, and almost blue-seeded and an indefinite number of variously spotted and streaked varieties. In density and texture the testa is leathery in the *Horse Chestnut*, bony in *Nelumbium* and some *Acaciæ*, crustaceous in the *Brazil Nut*, and membranous in the *Cocanut*: the outer hard shell of the latter, as it is usually seen, being one of the layers of the pericarp, called the endocarp, in contradistinction to the fibrous exocarp or outside coat. In rare instances the testa is obliterated or absorbed as the seed advances towards maturity, and the embryo is found naked in



Fig. 44.—Seed of *Agrostemma Githago*, enlarged, showing the tubercled testa.



Fig. 45.—Seed of *Nyctipha alba*.



Fig. 46.—The same, in section, as in Fig. 45, showing the minute embryo enclosed in an amniotic sac or fleshy albumen at the apex of the seed.

the ripe fruit. This is the case in *Pelliciera Rhizophoræ*, a curious Mangrove, native of the muddy seashore of Central America, which has large exalbuminous seeds.

THE ALBUMEN.—It occupies nearly the whole of the interior of the seed (figs. 46 and 47), or forms only a very small portion of the contents, as in *Hibiscus* (fig. 44). Between these two extremes there is every intermediate gradation. In the seeds



Fig. 47.—Section of the albuminous seed of *Carex maxima*, showing the minute embryo at the base.

of *Nymphææ* (fig. 46) there is a kind of double albumen. In consistence and composition the albumen is starchy or farinaceous in *Wheat* and other cereals, horny or ivory-like in the *Vegetable Ivory* (*Phytelephas macrocarpa*), fatty in *Castor Oil* (*Ricinus communis*), fleshy in *Euonymus*, and partly liquescent in the *Cocoa-nut*. Sometimes it contains a poisonous principle, as in the *Nux Vomica* (*Strychnos*); in the *Nutmeg* it is pleasantly aromatic; in *Coffee* stimulating; and in *Pepper* highly pungent. The albumen of the *Nutmeg* and *Ivy* is partially traversed by darker plates proceeding from the tegmen, and is said to be ruminated. In *Coffee* seeds the albumen is convolute, and many other curious modifications of it occur in various parts of the vegetable kingdom. The use of the albumen is to nourish the nascent embryo, and the only essential difference between albuminous and exalbuminous seeds is, that in the one case the embryo remains relatively small until germination takes place, whilst in the other it absorbs the albumen, or what would go to form albumen, into its own body before commencing active life; and the embryo is often large, especially the cotyledons, and contains a store of nourishment for the germinating plant.

THE EMBRYO.—It has already been explained that the embryo consists of radicle, plumule, and one or two cotyledons. The relative size of these parts, the form of embryo, its position in relation to the albumen in albuminous seeds, &c., are

characters of importance in systematic botany, and interesting to the cultivator. In some cases the parts are not easily distinguished until germination begins, on account of the small size of the entire seed; and in others there is not so perfect a differentiation of the parts as in the examples given in illustration. The position of the embryo in the seed, both in

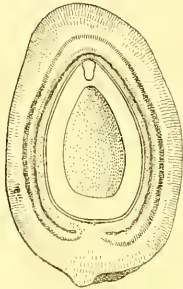


Fig. 43.—Fruit of the Date Palm (*Hyphæne thebaica*), cut longitudinally, showing the solitary seed resembling a miniature Cocoa-nut, but the embryo is at the summit. (Slightly reduced.)

relation to the hilum or point of attachment of the seed and the base of the seed-vessel, is, to all intents and purposes, constant in the same species, but very varied in different species. In the Cocoa-nut (fig. 38) the minute embryo is near the base of the fruit, and in the Date Palm it is at the apex (fig. 43); in the Pine (fig. 49) the embryo is in the axis or



Fig. 49.—Seed of a Pine cut vertically, showing the embryo in the axis of the albumen.



Fig. 50.—Seed of *Mirabilis jalapa* (Marvel of Peru).

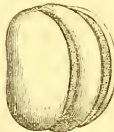


Fig. 51.—The same denuded of its testa, showing the embryo which almost encloses the albumen.

centre of the albumen. The embryo of the Marvel of Peru (figs. 51 and 52) encircles the albumen, which its broad, flat cotyledons almost enclose; in the Corn Cockle (fig. 53) the nearly cylindrical embryo is curved around the outside of the

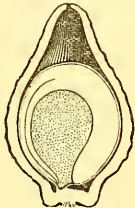


Fig. 52.—Section of the ovary and seed of the Marvel of Peru, showing the position of the embryo with regard to the albumen and the base of the seed-vessel.

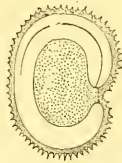


Fig. 53.—Section of the seed of the Corn Cockle, showing the embryo surrounding the albumen.

albumen. The reverse of this obtains in *Hibiscus syriacus* (fig. 42), where the embryo is enclosed within a thin layer of albumen. In the Onion (fig. 55) and the Ribgrass (fig. 55) the embryo is wholly embedded in the albumen, that of the Onion being curved, and of the Ribgrass straight. The embryo of the latter is parallel to the hilum, as shown in figs. 57 and 58;

whereas in *Chamærops* (fig. 59) and *Asparagus* (fig. 60) it is oblique. In *Bellevalia*, a Liliaceous plant near *Muscari*, it is spirally rolled (fig. 61). The embryo of the Coffee is a good illustration of another variety of position; in this the embryo,

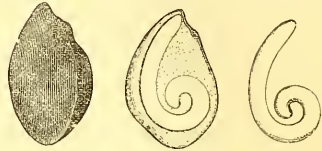


Fig. 54.—Enlarged seed of Onion. Fig. 55.—Section of same exhibiting the curved embryo. Fig. 56.—Embryo of the same detached.

though small, is easily seen on the outside of the albumen near the base on the anterior side of the seed when in the fruit. Usually the embryo lies free, unattached, in the seed, but in

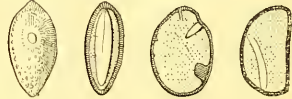


Fig. 57.—Seed of Ribgrass showing the hilum. Fig. 58.—The same in section, the embryo parallel to the hilum. (All enlarged.) Fig. 59.—Section of a seed of *Chamærops*, the embryo oblique to the hilum. Fig. 60.—Section of seed of *Asparagus* with oblique embryo.

the Cycadæe (fig. 61) and the Coniferæ it is attached at the radicular end by a long folded cord or suspensor to the albumen. Particulars respecting this and the origin of the embryo



Fig. 61.—Spirally rolled embryo of *Bellevalia*.

generally are given under the section devoted to the ovule or young seed. The position of the embryo can rarely be determined without making a section of the seed, but in many

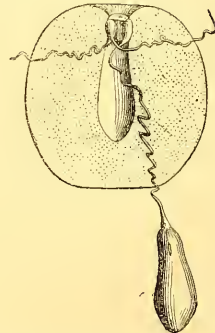


Fig. 62.—Albumen and embryo of *Cycas*. The embryo removed from the cavity and hanging by its long suspensor. (Magnified.)

Palms, even those with a very dense albumen or hard endocarp, it is indicated by a small depression or projection on the outside of the testa or endocarp where the wall is very thin, thus facilitating germination. Homogeneous or undifferen-

tiated embryos are common among true parasites—Loranthaceæ (Mistletoe) and Orobanchaceæ (Broom-ropes); also in the Orchidaceæ.

**NUMBER OF EMBRYOS IN A SEED.**—With few exceptions, there is normally only one embryo in each seed, but in the seeds of the Mistletoe there is usually more than one, and in the Orange there are often as many as six in the same seed (figs. 63 to 66). In many other seeds two embryos are occasionally found; and this occurrence has been recorded for *Allium fragrans*, *Asclepias nigra*, *Carex maxima*, &c.

**COLOUR OF THE EMBRYO.**—The embryo is almost invariably white or pale yellow, but in *Lathyrus Nissolia* it is a golden-yellow, in Mistletoe green, violet in *Theobroma Cacao* (Cocoa),



Fig. 63.—Seed of Orange denuded of the testa. (Enlarged.)

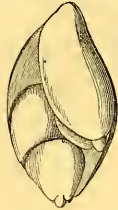


Fig. 64.—The same divided into two parts to show that it contains several embryos. (Enlarged.)



Fig. 65.—Portion of the seed represented in fig. 64 with one detached embryo to the left.

that some botanists distinguish the part found in the seed as the tigellus, and the root developed from it when germination begins as the primary root, and in seedling plants the space between the cotyledons and the beginning of the root is sometimes called the tigellus, or caulicle. The reasons for this distinction will be better appreciated after studying the germination of various seeds. In some families the position of the radicle with regard to the cotyledons furnishes important characters. Thus in the Cruciferae (Cabbage tribe) the flowers are so much alike in all members of the family, that few generic distinctions can be drawn from them. The radicle of the embryo of *Isatis* and many other genera is turned up and closely applied to the back of the cotyledons (fig. 68), whilst in others it is folded upwards against the edges of the

cotyledons; in the former case the cotyledons are said to be incumbent, and in the latter accumbent. There is one other particular respecting the radicle that should not be omitted, because it is constant and almost without exception. All seeds have on some part of their surface a minute aperture, which

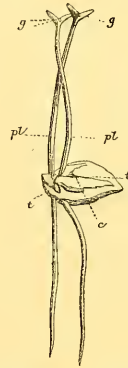


Fig. 66.—Germinating seed of Orange, from which two plantlets are issuing. *g*, first leaves; *pl*, plumule; *c*, one of the cotyledons of each embryo, the others remaining enclosed; *t*, the testa.

may be more easily found after the seeds have been soaked in water for some hours, though a lens of considerable power would be necessary to enable one to detect it in most cases. This aperture is termed the micropyle, and the radicle almost invariably points in the direction of the micropyle, through which it pushes itself in germination. It should be added that all roots which are not produced from the direct prolongation of



Fig. 67.—Section of seed of *Coussarea multiflora*, showing the embryo surrounded by albumen. Detached embryo of the same with relatively large club-shaped radicle. (Magnified.)



Fig. 68.—Enlarged embryo of *Isatis tinctoria* in which the radicle is closely applied to the back or under surface of one of the cotyledons; the latter are termed incumbent.

the lower extremity of the embryo are termed adventitious, because they appear at no fixed or determinate points; not because their production is altogether accidental.

W. B. HEMSLEY.

**Azalea narcissiflora.**—I am pleased to endorse "C. S.'s" high estimate (see p. 94) of this useful *Azalea*. It is one of the very best for early forcing, and may easily be had in bloom at or before Christmas. The flowers are also admirable for bouquet work, and when tastefully mounted might readily be mistaken for a somewhat ragged flower of the lovely double white *Narcissus*. The lasting properties of cut blooms of this *Azalea* are wonderful. I have known the self-same flowers made up in several bouquets in succession, and still appear quite fresh, without speck or flaw.—D. T. F.

**A Vegetable Disinfectant.**—Mr. E. Rimmel has introduced what is called an "Aromatic Ozonizer, or Natural Air Purifier." It is a fragrant powder composed in great part of the concentrated active principles of the Pine and Eucalyptus, and by simple slow evaporation in dwellings or places of public resort, it generates a healthy and healthy atmosphere somewhat like that produced by Pine and Fever Gum trees. It is stated to be the first agreeable disinfectant ever produced.

## GRAPES AND ROSES:

GRAPES are valuable when they can be got good and free from all the ills to which the Vine is heir; but when mildew becomes an overpowering nuisance, and the crop, if ever so good, will not pay to market, then Grapes result in a loss instead of a gain. If good Grapes be required, a crop of those only must be expected from the same house, for when it is attempted to associate the growth of hardy plants with them, the Grapes will soon come badly off. I have a large span-roofed house in which it has for several years been attempted to combine these two things, but only to result in failure; the hardy plants would do very well, but the Vines would not, and I came to the determination to let the Vines "go to the wall." In the same house, however, a strong plant of *Maréchal Niel* Rose has long been growing, and this has borne so many flowers, been free of blight, and, in spite of the regular appearance of mildew on the Vines, still keeps free from that fungus, that I determined to root out the Vines, that were planted in outside borders on either side, and to replace them with Roses. This was done early in the winter; the borders were well trenched and manured, and recently the Roses were planted. These latter are all 30-in. standards, to admit of their being easily introduced through the brickwork to the inside wire trellis. The plants were carried through from the inside, roots foremost, and planted, care being taken to so arrange as that those of robust habit and those having a more compact growth should alternate. The old plant of *Maréchal Niel* is just covering all the centre of the house, and the newly-planted Roses will be, as they grow, brought up to meet it, and in a year or two I look to have a perfect bowyer of Roses. The sorts planted were a selection by an experienced grower, and consist of *Maréchal Niel*, *Safrano*, *Niphetos*, *Catherine Mermet*, *Madame Berard*, *Lamarque*, *Homer*, *Marie Guillot*, *Madame Margottin*, *Anna Oliver*, and *Paul Nerou*—all kinds well adapted for house culture, and likely to produce flowers that will be acceptable in the market. Whilst the weather remains so mild as at present, extra protection outside is not required; but, should severe weather ensue, I shall afford such to both roots and stems. With these Roses kept properly thinned and comparatively leafless during the winter months, hardy plants will not suffer, and as the sunny days come on, an agreeable amount of shade will be afforded. Roses so planted in an old lean-to Vinery are a great success at Syon Gardens; but in this case the outside border is up to the level of the brickwork, and thus none of the stems are exposed outside. Mr. Woodbridge has his plants on the seedling Brier, and during the year or so in which they have been planted, they have made a wonderful growth, some of the more robust kinds having already gone to the top of the house. *Maréchal Niel* has made a marvellous growth, the main stem having swelled to the girth of a man's wrist. In this house a gentle heat is given, and no doubt by this time flowers are being out. The Rose likes a rich deep soil, plenty of moisture, and I expect will, under outside planting, produce a more permanent and robust growth than when existing on an inside border, where all watering is artificial. Perhaps even a more rash experiment has been to pull away a number of old Peach trees from a south wall, trench the ground, and plant it with Tea Roses. Peaches have of late become such an uncertain crop, and, when a good one, fetches such comparatively poor prices, that I have thought Roses may prove more remunerative. In any case it is worth trying. I think that Roses are not subject to so many ills and diseases as are Vines and Peaches.

A. D.

**Fungus in Cocoa-nut Fibre.**—I have sent you a small quantity of Cocoa-nut fibre that is completely over-run with some kind of fungus. The fibre in question is in a propagating frame at one end of a stove. Can you kindly inform me what the fungus is, and how to destroy it, as it works up the pots and damps all off with which it comes in contact, even old roots of *Clorodendron* and *Dipladenia*?—M. C. [The fungus on the Cocoa-nut fibre is the mere mycelium, and no one can tell to what it belongs without seeing the perfect fungus itself. It is probably the spawa of some mould, but it may be something quite different. We cannot give a certain remedy. Mycelia flourish in moist warm air, and often perish when the conditions are reversed.—G. W. S.]

**Spot on Pelargonium Leaves.**—Will you kindly say what is the cause of spot on Show Pelargonium leaves?—A. D. [It is supposed to be caused by damp and insufficient ventilation.]

## PLATE CXVI.

## DENDROBIUM SUAVISSIMUM.

Drawn by F. W. BURBRIDGE.

For the opportunity of figuring this handsome Dendrobe we are indebted to Messrs. Low, of Clapton, in whose nursery it flowered last summer. In habit it resembles a strong-growing form of *D. chrysotoxum*, from which, however, it is entirely distinct, not only as regards the pseudo-bulbs, but also the flowers, the lip of which is much rounder than that of *D. chrysotoxum*. Its blossoms are borne eight or ten together on a gracefully-drooping spike, of which two or more are borne at the apex of the spindle-shaped last year's bulbs. Mr. Boxall, who collected it, states that he has seen a plant of it bearing 10 spikes and as many as 160 blossoms. As regards size and colour, the flowers come nearest to those of *D. Cambridgeanum*. They measure 2 in. or more in diameter, the petals being broad and having a glossy, waxy-like appearance. The lip, which is crispulate, is fringed, and has a bold, crimson-black spot in the centre. In every respect it is a desirable addition to the fine genus to which it belongs, and one of the best Orchids which has been imported of late years. Its culture is identical with that of *D. chrysotoxum*. It grows well in either baskets or pots in peat crocks and Sphagnum. A temperature of from 60° to 65° suits it perfectly during winter, and being evergreen, it requires a good supply of water at all times. As a basket plant it will, no doubt, be greatly appreciated, as when grown in that way its rich pendent blossoms can be seen to the best advantage. It comes from Upper Burmah.

C. W. S.

**Our English Orchids.**—Why should these not be more grown than they are? One now and then meets with a few solitary specimens in a rock garden, but their beauty is entirely lost, as they are so far removed from the eye. I once came across a large mass of *Orchis maclata* near Basingstoke; there was a space of at least an acre completely covered with these plants growing as thickly together as Buttercups, and in full flower. The effect was astounding, and it struck me at once that this was the way it should be grown—in large masses. This plant, too, is very accommodating as to soil, as I have seen it growing in almost pure chalk, and also in the wettest bog on a gravelly subsoil, along with that exquisite plant, *Equisetum sylvaticum*, of which, to my great surprise, I saw a quantity for sale at Stevens's some time ago. The colour of the flowers of *O. maclata* varies a great deal, some being a dark lilac spotted with purple, and some pure white, though the latter is very rare; the purple markings on the leaves also vary with the flowers. Another pretty plant is *Orchis* or *Anacamptis pyramidalis*, whichever you may like to call it. In some parts of Kent during the month of August the chalky hillsides are quite gorgeous with the magenta-coloured spikes of this pretty flower, and it grows in such quantities that it may be mown down like Grass. Unlike *Orchis maclata*, this seems to flourish nowhere but on the chalk. Then there are the marvellous insect Orchids, *Ophrys apifera*, *muscifera*, and *arnifera*, in which nature imitates nature. These are certainly quite as wonderful in their mimicry as the well-known butterfly Orchids, *Oncidium Papilio* and *Kramerii*. There are several other species besides these, but those I have mentioned are the best.—C.

**Lopezia coronata in Winter.**—This old Mexican annual is now seldom heard of, and yet it makes a capital plant for blooming in the greenhouse at mid-winter. The small reddish flowers are not much individually; but, as they are freely produced, this deficiency is counteracted. I have recently seen some examples of this plant 3 ft. in height, and as far through, literally loaded with blossoms from head to foot. The plants were raised from cuttings struck in March last, and, when rooted, potted on, and transplanted in the open ground in June for the summer, and lifted and repotted in September, treating them, in fact, as one would berry-bearing Solanums, there would be no difficulty in this way in getting plants 4 ft. or so through. The more liberally the plants are treated during summer, the larger will be their size in September. When repotted, they should be put into a gentle heat, to assist in developing the flowers; and then they may be taken to a greenhouse for the winter, where they come in and prove most useful for cutting from. There are many fine things that want bringing forward once more; among them *Linum trigynum*, *Canarina campanulata*, &c. They are occasionally met with well grown, thereby adding intensity to the feeling of regret that they are so little regarded generally by plant cultivators.—D.



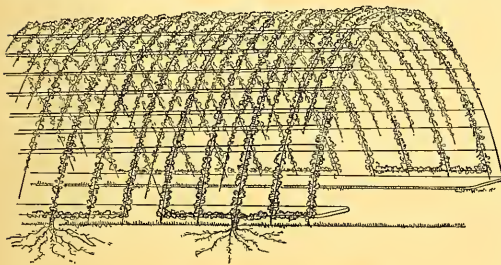
DENDROBIUM SUAVIS



## THE FRUIT GARDEN.

### ARCHED FRUIT TRELLISES OVER WALKS.

I MUST congratulate Mr. Hobday (see p. 11) on his remarks upon this subject. Arched fruit trellises over garden walks have been a subject of interest to me for years. Espalier fruit trees are rarely seen managed in a truly satisfactory way. In the generality of cases the energy of the trees seems expended in attempts at extension (notwithstanding all the thumb and finger work that can be allowed them); the result, as too often seen, is fruit tree hedges that bear no fruit. I am not finding fault with espalier trees, when the espaliers are properly made and the trees are properly managed; in every large, well managed, and well supported garden every kind of fruit would be benefited by being trellised. Imagine a low trellis 120 ft. to 180 ft. or so, covered with White or Red Currants, or dessert Gooseberries—how simply these could be netted over, shaded by matting or bunting, and retarded! and what a breadth of wall this would give for more important fruit! I would even have a slight wire trellis for Raspberries. But to return to the point. There is something grand in utilising the space occupied by garden walks for fruit culture. It would, in fact, be converting the space occupied by the walks into a kind of orchard house. Let us suppose the garden to have a main central and two side walks, and these walks arched over with a well-made trellis, the central one somewhat higher than the side ones—what a sustaining, balancing kind of effect these arches would give to a contiguous range of glass! what a delightful, cool



Arched Fruit Trellis over walk.

promenade these covered walks would be in summer. In the last place in which I lived as gardener a new kitchen garden was contemplated, and one walk (the central one) was intended to be trellised, as just described, for Pears alone, and those only of a free and vigorous growth, as the more delicate kinds of Pears, especially in these northern parts, require a wall. The accompanying sketch will give some idea of this walk. It will be seen that each tree has five branches (including the central one), each trained 2 ft. apart upwards, over, and downwards to the bottom on the opposite side, and that the trees on this side are so planted that the branches alternate, or are trained over between the others, just as if the rod of a Vine, when reaching the top of a rafter, were trained downwards between two others on the back wall—giving, in fact, the trees on the trellis the benefit of the extension system, as a branch trained over a trellis 7 ft. or 8 ft. high would, as an arch, give a length of branch from 16 ft. to 18 ft., just what a vigorous-growing tree wants—room for extension. I would not, as Mr. Hobday recommends, plant flush with the walk; on the contrary, I would have a narrow border, 1 ft. wide, on each side. These borders would be eminently useful for such things as required coolness in summer and slight protection in winter—say Parsley or Lettuce—and no places would equal them in which to strike cuttings. No objection can be made to the above plan as regards shading. What will give shade will give shelter; and there are always crops in a large garden that require both. I have given the height of the trellis as 7 ft. or 8 ft. This is optional; the larger a garden is the higher should be the trellis—nothing under 7 ft., however, should be attempted. I have,

so far, had only a trellis for Pears in view, but many kinds of fruit would do equally well—Plums, Cherries, Apples, and even the Vine in very warm localities; nor would it be necessary in the case of dwarf free-bearing trees, such as the Hawthorned Apple, to adopt the above interlacing method. And one thing must not be forgotten—these trellises, in whatever direction they may run, will always give two aspects, nearly equivalent to both sides of a wall. I have been speaking of these arched trellises as adapted for large gardens, but there is no reason why any place worth calling a garden should not have one, and for all I know they may be common in many places. There is scarcely a vicarage or parsonage or villa in the kingdom but has its wire arches striding unmeaningly over walks in many parts of the grounds; but if this matter be taken up in earnest, every kitchen garden will have its arched fruit trellis as well as every flower garden its arches for Clematises and Roses.

THOS. WILLIAMS.

Ormskirk.

### MOVABLE SHELTERS FOR FRUIT TREES.

M. TOURASSE, of Pan, who has lately been rendering himself famous by exhibiting Apples and other fruit from seedlings of three years old and upwards, has devised a movable shelter for fruit trees, which ought to receive extensive application. M. Courcier, a member of the Société Centrale d'Horticulture, has visited M. Tourasse's establishment at Pan, and read the following account of these appliances before a recent meeting of the Society. After giving a description of M. Tourasse's method of inducing seedlings to bear by systematic root-pruning, M. Courcier goes on to describe these appliances. It seems that, although the climate of Pan is very hot, it is subject to extreme and unexpected variations. Rain is frequent and sometimes abnormally heavy, and is often succeeded by a burning sun. To remedy these inconveniences, M. Tourasse has had constructed an immense movable shed, so that his trees may be sheltered from the sun, rain, or cold at any given moment without work being interrupted. This movable shed is 85 ft. wide and 35 ft. deep; it consequently covers about 3000 square ft. of ground. It is high enough to allow a man to walk about under the tie-beams of iron, which keep the uprights in their proper positions. It is supported in front by three posts, terminated at their lower extremities by rollers, which run in grooved iron rails. In consequence of its great breadth, the roof is formed of two gables supported by three rows of cross pieces, which rest on nine posts provided with rollers at their lower extremities. These rollers run in grooved rails, which lie on sleepers resting on the ground, with pegs driven in here and there to keep them in their proper position. The rails are fastened to the sleepers by chairs bolted to them on each side by strong screw bolts. The shed is moved backwards and forwards by a fixed windlass, but three men can move it one way or the other by levers. This shelter allows the labourers to work during any weather, and to keep the soil in a good condition during the heavy rains. It also serves to shade any seedlings that have been recently planted out. The architect under whose direction this shed was constructed gave M. Courcier the following particulars respecting its various parts: The cross pieces, pegs, and uprights are all of Oak, all the rest being of deal, with the exception of the tie-beams, rods, and bolts which unite the posts of each row, which are made of iron rods. The rollers, with their bearings, are in cast iron. To make the shed as light as possible, everything that could possibly add to its weight has been dispensed with. An intermediate set of uprights has been placed between the principal supports. To these thin boards have been nailed, the whole being covered with tarred felt. With these improvements it may be very easily moved. This shelter stretches across a space of ground 330 ft. wide; it consequently covers an extent of about 25,000 square ft. It is moved by a fixed windlass, the outside and middle uprights of each row being held firmly together and the whole perfectly rigid, the pull being equally felt by the outside and the middle uprights. The girder in question is formed of a flat piece of wrought iron, about  $\frac{1}{2}$  in. in thickness, to which is rivetted another similar piece, the whole giving a T section. This shelter has now been in constant use for five years, and has been found fully to answer the purposes for which it was intended. The total cost was about 6000 francs (£240)—a comparatively small sum for such a valuable appliance.

C. W. Q.

**Fruit Trees for High Elevations.**—My experience in this matter may, perhaps, be of service to "D. J. M.," as I have for twenty years past been seeking, practically, a solution of this very question. My garden lies 880 ft. above the sea on the edge of moor-

land, exposed to south-westerly winds, on a hillside with a southern slope. To begin with Apples, and first as standards, I find that few table sorts are to be depended on for regular bearing, but I can recommend as trustworthy—Irish Peach, King of Pippins, Northern Spy, Court of Wick, Kerry Pippin, and Margil. Kitchen sorts, for standards, are more numerous; here are twelve regular bearers, and thoroughly good—Lord Suffield, Cellini, London Pippin, Small's Admirable, Norfolk Bearor, Cockpit, Greenup's Pippin, Normanton Wonder, Jolly Beggar, Tower of Glamis, Forge, and Yorkshire Greening. For a south wall I would recommend Red Astrachan, Golden ReINETTE, ReINETTE du Canada, Court Penda Plat, Melon, Pineapple Russet, Dutch Mignonne, Ribston Pippin, Hereford Pearmain, and Sturmer Pippin. Of Plums, few will bear as standards, except such as River's Early Prolific, Doney's Victoria, Diamond, and Damon. For a wall also—July Green Gage, Transparent Gage, Denniston's Superb, and Kirke's. The list of Pears is smaller still, Hazel and Crawford being the only standards for a wall—Jargonelle, Williams' Bon Chrétien, and Darondeau. If an exceptionally good wall—Bourré d'Amanlis, Bourré Hardy, and Bourré Diel. These fruits I have proved, and only these, to be depended on at this elevation; others are good, but I am not sufficiently certain of them.—W. FEATHERSTONHAUGH, *Edmundsbury Rectory, Blackliff, Durham.*

—“D. J. M.” does not state whether his garden is in the north or the south, but the following information as to what can be done here, in South Yorkshire, from 700 ft. to 900 ft. above the sea, may be useful to him:—On a south wall, 700 ft. above the sea, early Peaches, like the Royal George, and Nectarine, like the Elcuge, ripen in October. Forty years ago or more this garden was celebrated for its Peach crops ripened on heated walls, and an account of the same was published in the “Transactions of the Horticultural Society” at the time; now all our Peaches are under glass, except a tree or two, but the above date refers to fruits ripened without artificial aid; on the heated walls they ripened much earlier. On the same aspect (south) Apricots ripen about the end of August, and Plums, like the Green Gage, in September, and the later kinds, like Jefferson's, Coe's Golden Drop, &c., towards the end of the same month, but the time varies according to the season. Pears like the Marie Louise and Louise Bonne come to first-class perfection on a south wall, and they also ripen on espaliers, but not so well. Later varieties are seldom good, but the earliest kinds, like Williams' Bon Chrétien, ripen well in open quarters on standards. Many of the better sorts of Apples succeed on west and south walls, and so do Cherries, but the earliest sorts are seldom ripe before the middle of July on a west wall. On an east wall the best dessert Plums are seldom ripe till late in October, and last season they did not ripen at all. Higher up on the hillside, 900 ft. above the sea, my neighbour trusts to a good, well-glazed orchard house for his Pears; and, unless it be Apricots, I am not aware that he has ever had crops worth speaking of from his outside walls, which are, however, not extensive. I do not suppose, indeed, that he tries much, knowing the climate with which he has to deal, but he has good fruit from his orchard-house trees. I should say, however, that Pears (that ripen as early as Marie Louise and Louise Bonne, which are unsurpassed for excellence, and which keep till January in late situations), Cherries, Apricots, Plums, and some of the better and hardier dessert Apples might be grown with tolerable success on south and south-west walls 900 ft. above the level of the sea.—J. SIMPSON, *Wortley Hall Gardens.*

## GARDENING FOR THE WEEK.

### Orchids.

Vandas of the suavis and tricolor section must not be kept too dry at the roots, as their lower leaves are almost certain to suffer to an extent that causes their premature falling off if they shrivel much, but their ability to bear dry treatment will always be found commensurate with the stout leathery state of the leaves, or the thinner, less substantial character consequent upon the different conditions under which they have been grown. Their flower-stems will now be about ready to appear down in the axils of the leaves. Care must be taken that the plants are not placed in a position where they will receive drip from the roof, or it will accumulate at the bottom of the leaves and rot the advancing flower-stems. Any plants concerning which it is necessary to renew the potting material should have the old Sphagnum worked out from amongst their roots without detaching them from the pots, or the check they will receive is almost certain to stop the further development of the advancing flowers. The beautiful and distinct Vanda téves needs exceptional treatment to flower it well. After being grown as near the light as possible, and somewhat cooler than most of the other species, it requires a long season of rest in a temperature not more than from 50° to 55° in the night, with the atmosphere comparatively dry, and no water at the roots for three months, otherwise it never ceases growing, in which case it is useless to expect flowers. Managed in this way through the winter until the middle or end of March, with at that time 5° more warmth, it will then show a few, and water may be given to the roots, but the plants should not be submitted to a high temperature until the flower-stems are a little further advanced, or they frequently go blind.

*Trichopilia suavis* will now be fast pushing its flower-spikes, which come from the base of the lower side of the bulb, often in contact with the potting material. Care is necessary that in giving water it does not reach the advancing flower-stems, or they are very liable to rot; the same holds good with *T. coccinea* and *T. crispata*, although these are not quite so impatient as the first-named sort. The varieties of *T. tortilis* are later in flowering, and must be kept dry for some time yet. The beautiful *Thunia Bensoniae* should be kept moderately warm and moist, so that the growth in process of formation may receive no check. Stanhopeas at the present day are held in little estimation by the generality of Orchid growers, yet in the whole family of Orchids there are none that bear flowers more gorgeous in colour or singular in formation. *S. tigrina*, *S. eburnea*, and *S. usneigis* deserve a place in any collection, for although the individual flowers are of short duration, still, where they are well managed and have attained a large size, they will produce sufficient spikes in succession to keep up a display for a month. They require a considerable period of rest, and should be kept all but dry at the roots for some time yet. *Sophronitis*, and some small growing plants, with comparatively large, intensely-colored flowers, are amongst the most attractive winter bloomers. Where subjected to somewhat cool treatment the flowers will yet keep fresh, for some time, but as soon as the blooming is over any that require placing on fresh blocks—virgin Cork and a little Sphagnum suits them as well as anything—should be attended to directly; after which, place them in a night temperature of 55° or 60°, with a moderate amount of moisture. T. B.

### Roses.

Where a house or pit exists for forcing Roses proportionate in size to the quantity required some Hybrid Perpetuals should be brought in from the positions in cold pits or frames that they have occupied, the protection of which, when they are intended to be forced, is much preferable to their being left out in the open air, as, in common with all other plants the roots of which are confined in pots, even when the drainage is as perfect as it is possible to make it, and when the pots are all plunged in some material sufficient to protect the balls from being frozen, still they are always liable to suffer when outside from getting too wet. A temporary covering of a few loose lights placed over them is sufficient to throw off rain. It is well to observe that the slower they are brought on by not using too much heat, the finer they may be expected to flower; and with most of the Hybrid Perpetual section it is well not to submit them to so much warmth as the Chinese varieties, that have been forced earlier through the winter. To have prepared these pots and to have a way to give the best results, they should have been grown in pots for at least twelve months preceding, as when not forced too hard, and their requirements are properly attended to, pot Roses when used in this manner will not only continue for a long time fit for the purpose, but will go on improving. If room can be found to accommodate some plants in a house or pit where no more heat is employed than is sufficient to keep out the sharp night frosts that may be still looked forward to, they will supply a quantity of the finest flowers before outdoor Roses come into perfection. The most satisfactory results, these should have been grown for at least a season in the pots which they occupy, although if potted early last autumn, with as little mutilation of their roots as possible, they will bloom fairly when not subjected to any forcing more than being gradually brought on in an ordinary greenhouse temperature. Before starting all such Roses as the above, whether green fly can be detected upon them or not, I have always found it good practice to syringe the plants with Tobacco water or Fishurex; the latter mixture I prefer for this purpose, as the sulphur it contains will be found beneficial in destroying any trace of red spider or mildew that may be about them.

Pot Roses now flowering, and particularly such as were started early and making growth after the production of their first blooms, will be much benefited by a liberal use of manure water. One of the greatest

## NOTES AND QUESTIONS ON THE FRUIT GARDEN.

**Glass Coping for Fig Trees.**—There are two large Fig trees here growing against a west wall. Last spring we had a glass coping erected over one of them, and the result was decidedly successful, for we gathered at least six fruit from the tree beneath the glass for the results of this experiment. My employers are so thoroughly satisfied with the results of this experiment, that they propose having the other tree done in a similar manner. The shoots were neither thinned nor stopped the whole year in either tree, and I do not intend to do either this year. As far as I can judge by appearances at present, there will be a good crop this season.—T. LLOYD, in “Gardeners' Chronicle.”

**A New Mode of Getting Rid of Phylloxera.**—Madama Amélie de Bompar, a lady residing in the Canton of Pesse, makes known, in a pamphlet just issued, her discovery of a simple method of getting rid of the Phylloxera. To ensure this happy result it is only necessary to set Strawberries at the foot of the Vine-stocks. These plants are infested by the Phylloxera and its eggs, who makes it his business and pleasure to sip out of the genus Trombidion, so greedily that the reproduction of the pest is scarcely possible. Unfortunately, practical experts appear to receive the announcement of this discovery with some degree of incredulity, and the Phylloxera commission is not likely just at present to discontinue its labours.

essentials in the cultivation of pot Roses is to regularly supply them with sufficient nutriment to enable the young wood that is being formed to grow stout and strong. Weak wood will never produce anything but comparatively small flowers, whereas when the successional shoots that are being made contain plenty of substance, they do not fail to produce not only flowers in greater numbers, but larger and fuller also; and size, with the Chinese varieties particularly, is a matter of the first consideration. If not already done, I should recommend without any delay a sufficient number of plants being potted to grow on out-of-doors through the summer, with the view of preparing them for next year's blooming; and I would urge upon those who have not had much experience in this department of flower-growing the desirability of securing a sufficient supply of the small varieties. To the list given a short time ago, I would add the fresh-coloured Mr. Bosanquet ought to have been included as a fine kind for forcing; it does not possess the long, Cahagne-like buds of many of the Chinese varieties now held in so much estimation, but the individual blooms are sufficiently full, and produced in large quantities.

**Marechal Niel** is now so generally known as to need nothing more said in its favour, but though of the most vigorous possible habit, in some soils it appears very liable to go off at the collar, just on a level with the soil, forming large protuberances, which show a disposition to omit roots in quantity, as if they were deficient in these below, but which ultimately do not go on, the plants usually cankering right off. This often occurs when the plant is on its own roots, and yet there is no stock on which I have seen it worked that appears sufficiently strong to support it, as is evident by the stem above that buds generally attaining a much greater thickness than the stock. To meet the loss occasioned when it goes off in this way, successional plants should be from time to time introduced to take the place of those that die. This variety may, with the best results, be grown thinly on the roof of a Camellia house, either planted out or with its roots in a large tub. Where convenient the former is the best. In such a position the shade it affords through the spring, at the time it is making its growth and flowering, will be more beneficial than otherwise to the Camellias that at the same time will be making their growth underneath it. The necessary free use of the syringe or garden engine to keep down red spider and green fly on the Rose will do no injury to the Camellias, a circumstance that often occurs when plants of a less water requiring nature than Camellias are grown under Roses. Another advantage is that the Camellias are less likely to suffer through the above insects being communicated to them from the Roses grown overhead than most other plants.—T. B.

### Stoves.

There are many plants in stoves that will now want re-potting, and amongst others it will be well to give the majority of the ornamental-leaved varieties a shift. Crotons need more drainage than most hard-wooded plants; they should also have a good layer of fibrous material put over the crocks. If the drainage be not very good the soil soon gets too wet, as these plants want a good deal of syringing to keep down yellow thrips where they exist. *Bertolonia* and *Flemingia* are small plants well worth cultivation; the *Flemingia*, especially, will succeed in places where few plants will prosper. It is time now to start *Caladiums*; they should be taken out of the old soil and re-potted in fresh material, consisting of good loam, to which has been added a little sand and some leaf-mould. Where desirable, they can be increased by dividing the bulbs, leaving to each piece part of the crown with buds. For all decorative purposes, plants of a comparatively small size will be found most useful; put them in heat as soon as they are potted. Where sufficient space can be afforded for its full development, *Medinilla magnifica* is a fine plant for decoration; the temperature of an intermediate-house, say 50° by night, will be the best for it at the present time; if it be kept too hot it will be likely to cause numbers of the flowers to drop, neither should it have as much moisture in the atmosphere as many stove subjects require. Plants that were well ripened in the autumn will break out and bloom from the back wood as well as from the points of the shoots. Those who are fond of strange-looking flowers will do well to give *Aristolochias* a place; they grow rapidly, and can be had in a blooming state in two months from the time of the cutting being struck, and they do not need much care. Plants that are in little pots ought to have a shift; they may have 6 in. or 8 in. more room; pot in good loam, to which add some leaf-mould and sand; they need a liberal supply of water; syringe every day, as they are liable to the attacks of red spider if allowed to become too dry overhead. Their flowers show to advantage trained over a path, in which way they can be grown; or the shoots may be trained round a trellis, taking care to keep the points higher than the other parts; if they do not do this they will stop and break out into fresh growth, which generally is not desirable if the plants be not weak and so need strengthening.

### Ferns.

A commencement should be made in potting Ferns, for if this operation be deferred too long, the young growth gets checked and becomes deformed. Whether we take into account their beauty, or their value for mixing with cut flowers, *Gleichenias* have few equals. Fully-matured ferns, when well supplied with water, will last in a cut state for an almost incredible time, but, of course, the young immature fronds will, as in the case of other Ferns, shrivel very soon. It is not advisable to cut plants that are small, but they are not very difficult to grow, and when they attain a good size they will in a comparatively short time, there need be no fear of cutting to a reasonable extent. In getting in

young plants it is necessary to be extremely careful that they are perfectly free from both scale and mealy bug, for if either of these pests exist on them, they cannot be grown in a way to show their true character. Whilst the plants are small, the insects may, by uncaring attention, be kept down, but as they get larger, the sponge and brush, however carefully applied, prevents their progress satisfactorily. If healthy plants be treated as hereafter recommended, they will grow quickly. The soil in which they are grown ought to consist of five parts of the best fibrous peat, broken into pieces about the size of hens' eggs, one part clean sand, and one part coal-cinders about the size of Acorns. As they have creeping rhizomes that will extend a long way in all directions, broad and somewhat shallow pans are better than deep ones in which to grow them. 6 in. to 10 in. of the rim with drainage, pressing the soil moderately firm. They must not be syringed overhead, but the roots need a good supply of water; they succeed best in a drier atmosphere than that usually allotted to many Ferns. Let them be placed where there is plenty of light and not far from the glass. They do not want to be kept very hot—from 45° to 50° night temperature in the winter, and 5° higher by day, will do, with 10° or 15° more in the summer, admitting a moderate amount of air and slightly shading them.

### Greenhouse Plants.

A general potting of these should now take place. Some of the *Fuchsias* from under the stages should be turned out of their pots, have the old soil shaken from their roots, and then re-potted in fresh soil in the same sized pots. Do not water them for a time nor prune them closely until they begin to break. Of *Lilium auratum*, a few of the most forward should be placed in the stove, and on a shelf near the glass, for flowering in May. Be careful in applying water at first; it is the safest to pour it gently round the inside of the pot, not over the whole surface of the soil. No water should be given to such as are still in the greenhouse until their shoots appear. *Tritonia aurea* is now beginning to grow; therefore, such as require shifting should be re-potted in a compost of two parts good loam, one of leaf-mould or rotten manure, and some sand. The coolest part of the greenhouse is sufficiently warm for them. Plants of *Nerine* should now be re-potted and placed in rather a warm, moist temperature, to encourage growth. A compost like that for *Tritonias* suits them perfectly. Of *Convolvulus mauritanicus*, the old plants may now be divided, potted in small pots, and kept in the warmest corner of the greenhouse. These plants are particularly suited for suspended baskets, but when grown in pots and then transferred to the baskets, they form better flowering plants than such as are wholly kept in baskets. A few of the finest *Cyclamen* blooms should now be fertilised, and the plants should be placed on a side shelf. Only a few, say six flowers, should be fertilised on one plant, from which all other flowers must be removed as they appear, otherwise the seed will not be so satisfactory. Some of the finest *Zonal Pelargoniums* ought to be re-potted and placed in gentle heat, to encourage them to form fine specimens for the conservatory.

### Frame Ground.

Heaths and other greenhouse plants in frames should be well ventilated on every favourable opportunity, but protected from frost when it occurs by having mats spread over the glass. The sides of the frames should be protected by means of a lining of straw. *Ivies*, *Rhododendrons*, *Jasmines*, *Clematisses*, *Skimias*, *Magnolias*, and other plants in pots, but not in frames, should be protected from frost by means of a framework of hoops covered over with mats. Everything at all tender out-of-doors in pots should be plunged in coal-ashes, Cocoa-nut fibre, or other material, even although unprotected in other respects. Any somewhat tender small *Coffeers* or other evergreen or deciduous plants grown out-of-doors and likely to be injured by frost should have some straw strewed over them at night, and if the frost abates in the morning it should be removed and again applied at night.

### Sub-tropical Plants.

Sow seeds of *Acacia lophantha* on a brisk hot-bed, and prick off and pot singly the young seedlings as soon as fit to handle. Prune back old plants, and permit them to start slowly in a pit or greenhouse. These have a fine effect in the sub-tropical or flower garden, mixed with flowering plants, or used in clumps in the centres of beds. Sow *Solanums*, *Wiganthias*, *Fernandas*, *Abutilons*, &c. in pots of sandy soil in brisk hotbeds, afterwards to be pricked off and potted as they require it. Old plants of the same that were sved from last year's collection should be forced in a pit or hotbed, in order to induce young growths for cuttings. Sow *Castor-oil plants*, *Tobacco plants*, *Hemp*, *Udeas*, *Chilian Beet*, *Amarantuses*, variegated *Maize*, and a few others in brisk heat, and attend to them as regards timely thinning, pricking off, potting, and watering; grow them on in a warm temperature for a time, and, towards the end of April in May, gradually harden them off prior to planting, which should be done in June. *Erythrinus* may now be started gentle, and, if required, the young shoots may be used as cuttings; these will make nice little plants by May or June, and next year they will bloom well. Propagate *Aralia papyrifera* by means of root cuttings, but do not start the old plants into growth until next month. Plants of *Aralia japonica* raised from seeds last year will make fine plants for bedding-out next summer, provided they are grown on slowly, as, for instance, in an intermediate house. Sow a few more seeds of *Abutilons* in pots, in glass pans, inasmuch as a stock of this sort cannot be obtained from roots, as in the case of *A. papyrifera*. *A. spinosa*, a showy and pretty plant, is

hardy, and only requires pruning back to a plump eye in March or April. In the case of frosty weather, however, the ground containing the roots should be mulched, and the stems encircled with straw or hay-bands. Cannas may be started into growth like Dahlias; and, when they begin to grow, they may be divided into as many pieces as there are shoots, on each of which a piece of the old root should be retained. Canna seeds may be sown in a hotbed or pit; and, if they are steeped for a night in tepid water they will germinate sooner than they otherwise would do. If the stock of *Caladium esculentum* is short, start some roots, and propagate every offset as a cutting. Propagate *Ficus elastica* by means of cuttings or eyes, with a leaf attached to each, and held upright by means of a wooden peg. Cuttings of *Meliantbus major*, struck now, make fine plants for next summer's use. New Zealand Flax, both green and variegated, may be divided, and each division potted separately in a loamy soil, and placed in a hotbed or frame. Plunged or planted in flower-beds, they are very effective, and old specimens are most in vogue. In lawns, or as centres to beds. The general stock of Cycads, Palms, Musas, Bamboos, Ficuses, Dracenas, and other perennial tender sub-tropical plants will now be starting into fresh growth; therefore, such as require fresh potting should be attended to in that respect, so that the plants may form a good supply of fresh roots before summer sets in. Hard forcing should not be practised in the case of those not potted, a slow and hardy growth being best.

### Plants for Carpet-bedding.

As carpet-bedding continues to be so fashionable, some forethought must be exercised as to the quantity of plants of the various kinds that are likely to be wanted. The foremost among these will be *Alternantheras*, which will be required to be now subjected to a temperate heat, in order to cause them to grow, when abundance of cuttings that strike freely may be obtained; highly-coloured shoots do not strike so freely as green ones, which, afterwards, become coloured. Seeds of Golden Feverfew should now be sown in a hot-bed; last year's saved plants are sure to "run" during the summer, therefore, this plant is always best treated as an annual. Sow seeds of *Lobelia pumila*, and also propagate it by means of cuttings; its compact habit and bright blue flowers make it very valuable for carpet-bedding. The variegated *Mesembryanthemum* should be increased by means of cuttings; this plant, although harder than most greenhouse plants, thrives well, and does not lose its compact character in a stove. *Ajuga reptans sanguinea*, a good dwarf plant, furnishes a dark bronzy colour, and may be propagated in cold frames or out-of-doors by means of offsets, but more readily in heat. All dwarf *Echeverias* are useful for this purpose, and may be kept in boxes in a cool house or frame, and, when the light, rather dry at present, and perfectly free from all decaying matter. The young plants raised from seeds, offsets, or leaves are best grown in a gentle heat, in order that they may be strong by bedding-out time. Various kinds of *Sempervivums* and *Sedums*, both tender and hardy, may be treated in the same way as the *Echeverias*, but in the case of the hardy ones, unless increase of stock is necessary, they are best wintered out-of-doors. *Coleuses* and *Fresnes* are also useful for forming central masses to the beds, and if a few old plants were saved to produce cuttings, these should be started into growth at once, and their propagation proceeded with, because well-hardened-off young plants are much more desirable than old ones. *Centaureas* have a fine effect used with dark-leaved plants, therefore have a stock of them for that purpose, either raised from cuttings in the autumn, or from seeds or cuttings now. Keep old plants pretty dry, and in cool airy pits. The variegated *Thymes* make fine edgings or carpets, and can now be raised freely from cuttings, or by means of division. The *Santolinas*, too, may be readily propagated by the same means, and as they submit to severe clipping in summer, they are very useful for this kind of work. They may also be increased freely by means of division in the open border. An old white variegated *Pelargonium*, called *Dandy*, is of such dwarf habit as to be very suitable for this purpose; but although it strikes freely from cuttings, these are twelve months old before they make much show. There are many hardy plants that can be used for this purpose, such as the Mossy *Saxifrages*, the creeping *Veronics*, *Pyrethrum Tobiatchewi*, the variegated *Arabis alba*, and several others, besides a few such as *Polemonium aceruleum variegatum*, that form nice specimens when studded here and there in the carpet.

### Hardy Fruit Garden.

All fruit trees should be pruned before this time, and their trunks and main branches cleared of Moss and Lichens. Young trees may yet be planted. Prune back to 15 in. above ground stocks on which grafts are to be put. Mulch the roots of lately-planted trees, and affix strong stakes to all that require support; see also that espaliers are sufficiently staked and tied. Have all trees on walls properly pruned and nailed. A good syringing with sulphur and water will mix the soil and be found beneficial to wall trees. Collect all prunings and other rubbish, and burn them, saving the ashes resulting from the operation for manurial purposes. Hoe over the Raspberry beds, and remove any weeds, after which give the surface a good mulching with manure. From the nature of this fruit in completely renewing its wood yearly, it takes a great deal to support it, and requires, to grow it well, a greater amount of manure than any other fruit will grow. Have all the inches of good solid manure, placed on the surface every year, is not too much, and will be well in repay for extra outlay. When the plants are strong, half the bread often devoted to this fruit will suffice, and they rarely fail in yielding if grown in suitable soil, that is, of medium strength, neither too heavy nor too light. The young shoots must be thinned out in the spring to some-

thing like the number required for fruiting the following season, so that all the strength of the roots is concentrated in producing the canes only that are required and no more. If kept clear from weeds the plants will last for a lifetime, instead of requiring re-planting, as is often the case. Gnano is an excellent manure for Raspberries, applied to the surface with a little vegetable soil, or as an assistant to a light dressing of stable manure, and if there is a deficiency of the latter, a few cwt. of good guano will be an excellent substitute; but in the purchase of this it is necessary to be careful, remembering that there is no such thing as a cheap article under the same. When it is offered below the ordinary price, either wholesale or retail, the chances are that it is not worth as many pieces as you are charged shillings. There is one thing to be observed respecting this manure. If, after trying a sample, it is found good, there need be no hesitation in purchasing a supply that will last for years, for, if kept in a moderately dry shed, it will be just as good in every way at the end of a dozen years as on the day it was imported. We have had it much longer than this, and could not detect the slightest diminution in its strength.

### Kitchen Garden.

Where advantage has been taken of the open weather which we have had for trenching and ridging every available piece of ground, satisfactory results may now be realised. Quarters not so treated are often so cold and damp, that seeds sown in them perish, whereas well-trenched ground in almost all cases will be found in good condition. Draw earth to rows of Peas, and at the same time stake them. Sow a succession of Marrow kinds, with one or two rows of Round Spinach between the rows. A plantation of early Potatoes should now be made in some warm quarter and in rather light soil; those in pits should be examined, rotten or diseased ones removed, and all sprouts rubbed off. Of Jerusalem Artichokes, a plantation may be made in any odd corner, and all tubers of last year's crop yet in the ground should be lifted and housed. Any other roots of Parsnips, Beet, and Carrots may be lifted and housed, but should be lifted, for although their flavour is maintained if kept in the ground during winter, unless they are lifted now they begin to grow, and their quality is consequently greatly reduced, for they become stringy. Some of the finest roots of Parsnips, Beet, and Carrots may be transplanted to a favourable position for seed. Sow some early Turnips in a light, warm soil. Of Cabbages, sow some of the early sorts for summer produce; also some Red Cabbage, some Walcheren Broccoli, and Savoy seeds. Savoys sown early grow much larger than late-sown ones. A sowing of Onions should be made as soon as the ground is ready. Onions are sometimes grown year after year on the same piece of ground, but that is a practice which cannot be recommended, better results being obtained from rotation with other crops on deeply-trenched and well-manured ground. Make a good sowing of Marshall's Dwarf Beans, some Leeks, Chervil, Fennel, Dill, Parsley, &c.

### Extracts from my Diary.

**February 25.**—Sowing Mignonette in pots; also Walcheren Broccoli in boxes for early autumn use. Potting off Sweet Basil. Putting Dahlias into gentle heat to start them. Planting early Ashleaf Kidney Potatoes in cold pits. Cutting out William I. Peas sown in turf and brought forward in heat. Cutting down overgrown Lantanas, and layering some of the lower branches to make a good thick bottom. Giving the Onion ground a top-dressing of soot, and forking it over ready for sowing.

**Feb. 26.**—Sowing 100 pots of Osborn's Early Forcing French Beans. Digging out new Asparagus beds, and refilling them with good manure, burnt vegetable refuse, and a liberal supply of leather shavings and soot. Looking over early Strawberries, and picking off all the late and useless flowers. Getting into the early Peach house all plants infested with green fly, and fumigating them.

**Feb. 27.**—Sowing Cucumbers, Melons, and Vegetable Marrows; also a row of Sweet Peas. Putting in cuttings of *Verbenas*, *Heliotropes*, *Iresine*, and *Coleus*. Potting off autumn-struck *Pelargoniums*. Putting a mixture of loam, manure, and soot into the Melon pits ready for planting. Looking over Grapes in bottles, cutting out all bad berries, and filling up the bottles where required.

**Feb. 28.**—Sowing Early Snowball and Early White Stone Turnips. Putting in cuttings of *Dracenas*, *Pelargoniums*, and *Alternantheras*. Potting off *Fuchsias* and *Ageratums*. Getting into gentle bottom-heat another batch of Strawberries. Preparing a rough frame into which to transplant *Calceolarias*. Covering up Seakale. Earthing up French Beans in pots, and covering up Endive to blanch.

**March 1.**—Sowing the following sorts of Peas in the open ground, viz., William the First, Dr. Hogg, G. F. Wilson, James's Prolific Marrow, Dr. Maclean, Commander-in-Chief, Giant Emerald Marrow, and Duke and Duchess of Edinburgh. Planting early border with Ashleaf Kidney Potatoes. Getting into the Mushroom house a few more roots of Rhubarb, and a little more Chicory and Dandelion to blanch. Giving Mushroom beds a little warm manure water.

**March 2.**—Potting off Cucumbers and Melons; also cuttings of Hathaway's Excelsior Tomatoes. Pricking out all the Year Round Lettuce and Celery in boxes. Trenching Grapes in early Vinery, and tying down the shoots where required. Disbanding Peaches and Nectarines, and thinning the fruit where too thickly set. Cleaning up the pleasure ground and kitchen garden walks. Watering the Pines all through. Fruit in use for dessert:—Pines, Grapes, Peas, and Apples.—W. G. P., Dorset.

TREES AND SHRUBS.

PINUS EXCELSA (WALLICH).

THE merits of this Pine consist in its hardiness, beauty, and free growth when placed in suitable soils and positions. In its native state, in the uplands of India, it is said to be highly valuable as a timber tree, as well as for the amount of limpid fragrant turpentine which it produces. It is to be hoped that it may prove to be proportionately valuable here. As yet, however, we can only speak from young and adolescent plants, which are peculiarly beautiful from the way in which the long, narrow, shimmering, silver-grey leaves depend from the up-turned extremities of the branches. In summer there are the leaves of three seasons' growth, in winter only two; but the extended, almost nude, branches are nearly hidden by the veil of leaves which hang from the edges of the gradually-narrowing tiers of branches as they bend gracefully over one another, forming a broad-based, airy, silver-grey cone of beauty. Such plants are most frequently seen on the wooded



Cone and Leaves of Pinus Peuce.

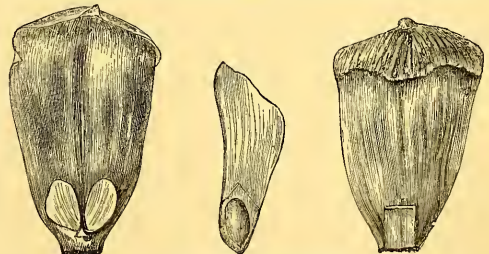
slopes of hills where the soil is of a light, open texture, and otherwise naturally drained, and where ample room and sufficient shelter are furnished by their equally fast-growing nurses. Planters will save themselves money and much disappointment by not planting it in heavy, low-lying, even though pretty well sheltered ground. The opinions of others compel me to consider here the *P. Peuce* of Griesbeck. Sir Joseph Hooker and the late Professor Parlatore have treated it as a synonym of *P. excelsa* (see *Proceed. Linn. Soc.*, vol. viii., p. 145, for 1864, and "*Prodromus*," vol. xvi., pp. 404 and 405). After careful comparison of the different parts of many plants of different ages of both forms, I am enabled to substantiate the following botanical differences:—The leaves of *P. excelsa* have generally three resin canals, are finely and closely toothed on all three angles their whole length. The leaves of *P. Peuce* have generally two resin canals, are distinctly toothed on their edges—as one to three on a given space as compared with *P. excelsa*—and the upper or inner angle is entire nearly its whole length, there being only from four to six teeth near the point. The male catkins of *P. excelsa* are greenish-yellow, those of *P. Peuce* pale pink. The accompanying illustration correctly

represents a cone of *P. Peuce* which grew here last year. The difference between this and the cone of *excelsa* is, I confess, very little, except in point of size, the latter being from 6 in. to 10 in. long, with a foot-stalk from 1½ in. to 2½ in. long; but allow me to call the attention of botanists to the scales and seeds of both forms as here represented. The point or



Scales and Seed of Pinus Peuce.

angular process on the edge of the scale of *P. Peuce* seems to be unnatural; but if so, it is the fault of the cone, for all its scales are so formed, a circumstance possibly owing to imperfect development. The seed leaves of *P. excelsa* are from nine to thirteen in number; those of *P. Peuce* from seven to ten. To those who care to distinguish between growing plants of *P. Peuce* and *P. excelsa*, or, indeed, any other known five-leaved Pine, the bright glossy green of its bark will be sufficient. The young bark of *P. excelsa* is a dull glaucous grey. Practically considered, the two trees differ greatly. *P. Peuce* is at all stages of much slower growth than *P. excelsa*—so slow, indeed, that planters ordering *P. excelsa* with a view to plant for timber would not thank nurserymen for substituting for it the comparatively slow-growing *P. Peuce*. As an ornamental tree it is probably not less effective than the other, but it has a slightly different habit. It is of a narrow, conical outline, with the branches denser and less spreading than those of *P. excelsa*, and its leaves, which are of a dull green, are but little expanded. It reminds one more of *P. monticola* than of any other Pine. It is perfectly hardy in England, but not at all hardy in the warmer parts of Germany, where *P. excelsa* luxuriates. It inhabits the mountains



Scales and Seed of Pinus Excelsa.

of Roumelia and Macedonia, where it forms an erect tree, never exceeding 50 ft in height. Everything considered, it is probably only a variety of *P. excelsa*, but sufficiently well marked to deserve a name to distinguish it from the *P. excelsa* of Wallich, as, for instance, *P. excelsa* Peuce.

GEORGE SYME.

TRANSPLANTING LARGE TREES AND SHRUBS.

THIS requires forethought and preparation, but when alterations and improvements are decided on, they are, as a rule, so speedily commenced that there is little or no time for preparation; therefore the best must be done by means of careful transplanting with large balls. The system generally adopted is to dig a trench all round at an equal distance from the butt of the tree, cutting all the roots clean through. This seems right, but when we reflect that it is the minute extremities of the roots that absorb and manipulate the nourishment, we

are led to the conclusion that if a few roots of good length with their numerous rootlets could be taken up entire, they would support the tree while new roots were put forth from those cut closer in. A few years ago a difficult operation brought these things to my mind, and led to my adopting the novel plan of cutting out with the tree a block or parallelogram of earth three times the width of the stem on each side as far as the branches reached. In this way we get two lots of long roots, one on each side, with numerous undamaged rootlets; while the shape enabled us to grasp the projections with a home-made rough-and-ready pair of timber tongs with half-box ends, not less than the block in length, nor more than half its width, binding the mass of earth and root together, and keeping all safe from being shaken asunder *in transitu*. During the month of February I moved great numbers of standard Portugal Laurels, Evergreen Oaks, Hollies, and Deodars, from fifteen to twenty years old, from a sheltered situation into one much exposed. Several, in my absence, were moved during frost, yet, to my surprise, they did not subsequently show any ill-effects therefrom; nor a tree entered more than it would have done from preparation for future transplanting. Directly they were placed in position, a little manure and leaf-mould were mixed with the earth and placed all round, care being taken not to plant so deeply as they were before. They were then thickly mulched with leaf-mould and manure, and the second season they were all in robust growth, and many bearing abundance of flowers and fruit. The length of the parallelograms should run from the light to the heavy side of the tree, and when placed in its new position the heavy side should be set to the stormy aspect; this induces the tree to grow symmetrical in shape.—P. Love, in "Field."

#### ROOTS OF TREES ATTACKED BY FUNGI.

Most cultivators have, doubtless, occasionally had to deal with or prescribe for trees (both fruit-bearing and ornamental), the roots of which are so infested with the spores or long, thread-like filaments of some species of fungi as to endanger their lives. They are insidious pests that slowly but surely poison their victims. Being of so dangerous a character, every precaution should, therefore, be taken when planting rare or valuable trees that fungus germs are not introduced by using any half-decayed vegetable substance, such as leaf-mould or the sweepings from old faggot heaps. Planting a young tree in the site just previously occupied by an old one without thoroughly trenched and intermixing the soil, at the same time picking out every bit of soot, no matter how small it may be, is a dangerous proceeding. The best plan to adopt, when it is necessary to plant a young tree where an old one previously stood, is to open out a good hole, say 6 ft. square and 2 ft. deep, and cart the soil away bodily, and bring back fresh material from a position where no trees are growing. Many a young and valuable tree has been lost from want of this care, and if many a tree that has an unhealthy tinge were examined, fungi would be found on its roots. Trees infested with fungus will in nearly all cases be found dry at the root; it cannot exist in a damp soil. I have known trees planted on a heap of stones, with a view of securing a well-drained site, so subject to it, that it was necessary to lift and replant. The best and surest remedy is water strongly impregnated with soot; the latter acts as a check upon the growth of fungi, and is beneficial and strengthening to the tree. Trees of only moderate size could be taken out and have their roots carefully washed in a pond or large tub, and then be carefully replanted in fresh soil. Those too large to be lifted should have a trench opened at a suitable distance from the trunk, so as not unnecessarily to mutilate the roots, and the trench to be kept full of water until every particle of soil is thoroughly moistened; in fact, it is impossible to overdo it, as it must be drowned out, and the soaking with water ought to be repeated two or three times. If the soil be poor or exhausted, some of it should be removed and replaced with fresh material, at any rate, the trench should be filled with fresh earth, and some fresh loam should be used as a mulching or top-dressing. Just before growth begins will be a suitable time for ascertaining the condition of evergreen trees. Deciduous trees should be seen to at once if there be any suspicion of fungi being among their roots.

E. HOBDAY.

#### RE-PLANTING SACKVILLE STREET, DUBLIN.

SOME time towards the close of last year Mr. Niven generously offered to supply trees gratuitously for re-planting this street in the autumn of the current year, the trees being in the meantime selected by him and properly prepared for their transfer from Garden Farm to their urban homes. This offer was made subject to certain conditions, some of which, as to transport, providing fresh soil and labour, were fair enough; but there were others calculated to nullify Mr. Niven's good intentions. One of

these was that the flagway on both sides of the street should be widened, in order that the trees, when in position, would stand well inside instead of, as now, outside the kerbstones. Another condition was that neatly-fitting, open gratings should be provided for covering a certain portion of space left undrained round each tree for the purpose of aeration and watering. There could be no question (says the "Irish Farmers' Gazette") that if financially feasible these things would be highly advantageous; but then the expense would be very heavy, and in the present state of the municipal exchequer the Corporation could scarcely be expected to go in for it. Weighed against this cost, the free gift of the trees would be only as dust in the balance. As a consequence, we at the time suspected Mr. Niven's offer would fall through, and Sackville Street for another spell present the most unhappy example of municipal horticulture to be found in Europe. We are glad to perceive, however, from a report brought up at the Corporation meeting the other day that Mr. Niven's offer, renewed, but unhampered by the conditions mentioned above, has been thankfully accepted. The only conditions now imposed by Mr. Niven is that the trees be planted in October and be removed from his entrance-gate to their destination at the cost of the Corporation, that body also undertaking to procure suitable soil and pay all expenses incurred in planting. So far so good, and there is now hope that the second planting will not be like the first—a wretched failure. Our grounds for this hope are, that there will this time be carefully-selected and prepared trees, young, tidy, well-rooted, and planted at the right time: not ancient rumples, all but destitute of feeders, and planted at a season when the chances of success were all against them. As regards the mere planting of the present trees, it was well and carefully done, and had nothing whatever to say to their subsequent sorry figure. Besides the quality and condition of the trees, the advanced period of the spring in which they were planted, the wholesome influences to which town life is subjected there, and which will, we apprehend, be always a difficulty in the way of success, and also a want of due care and attention after they were planted, helped towards failure, while later on a ruthless and grossly-ignorant mutilation gave the coup de grace to such of the poor *miserables* as were making a struggle for life.

**Abies Regiæ Amaliæ.**—Most species of *Abies* and *Pinus* when cut down to the ground are virtually killed, and never recover themselves, as some other trees do, by throwing up fresh shoots. On Mount Malevo, however, a mountain belonging to the Arcadian range, there is found a species of *Abies* which must be taken out of the above-mentioned category, for, no matter how closely it may be cut down, it will throw up a shoot which will ultimately form a fine tree. This species of Pine was named after the late ex-Queen Amalia, the wife of the unfortunate King Otho, who was an ardent patroness of horticulture during her residence in Athens. Many thousands of these trees, which were formerly cut down and have since sprung up again, are to be found on the slopes of Arcadian and Peloponnesian ranges.—X. LANDEKER, Athens.

**How the Trees Suffer—White Mites.**—During the month of June, 1877, while driving in the country, I observed a Black Poplar tree evidently suffering from the ravages of insects; I therefore stopped the vehicle, and got out to examine. I found the tree bored in many places by the larvae of the goat moth (*Cossus ligniperda*), three of which I secured. A considerable portion of the bark was loose, and the sap kept this quite wet, the peculiar smell produced by the larvae being very evident. On removing a portion of the bark where it was moist with sap, I found it covered with a moving mass, consisting of myriads of very peculiar white mites. About the middle of August I again visited this tree, and found upon and with the white mites a number of hypopi, but whether these were parasitic on the white mites, or merely residing with them, I was not able to determine. I passed this tree on several occasions during the summer, and frequently saw wasps and red admiral butterflies enjoying the sap, which kept some parts of the tree continually moist.—C. F. GEORGE, Kirton Lindsey, in "Science Gossip."

#### NOTES AND QUESTIONS ON TREES AND SHRUBS.

**Leptospermum bullatum.**—This is a rapid-growing, tree-flowering wall shrub, the blossoms of which are produced on the old wood only. Its singular little seed vessels also render it interesting.—T. SMITH, Newry.

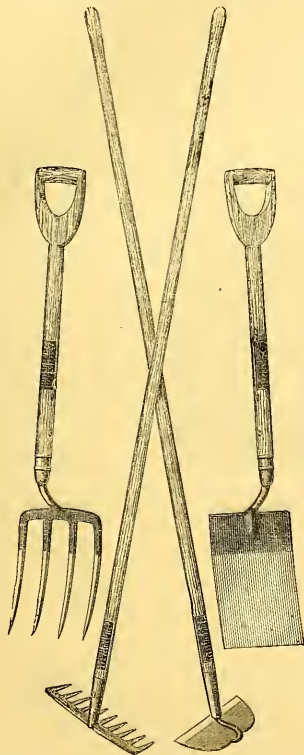
**Large Trees.**—The following is the circumference of trees at Mamhead, the seat of Sir Lydstone Newman, Bart., the measurements taken at 3 ft. from the ground: Oak tree, 14 ft. 6 in.; Yew, nearly 40 ft.; Oak, 18 ft.; Ash, 21 ft. 10 in.; Elm, 18 ft., and 23 ft. 6 in. at its largest girth.—F. D.

**Senecio elaeagnifolius.**—This is a very distinct and handsome shrub quite hardy here at Newry, where it grows rapidly. Its foliage, which measures 2 in. one way and 1½ in. the other, is glossy green above and silvery beneath.—T. SMITH. [Some very beautiful foliage was sent us with this notice—light glossy green above and silvery beneath.]

## THE KITCHEN GARDEN.

### GARDEN TOOLS.

A set of garden tools, consisting of a spade, a four-tined digging-fork, a rake, and a draw-hoe, called Andrew's patent "Paxton" gardening implements, of which the annexed is an illustration, has been manufactured by Messrs. Spear & Jackson, of Sheffield. The following advantages are claimed for them:—The iron straps with which the hand in ordinary tools continually comes in contact is abolished in these implements, and a smooth handle, better adapted and more suitable and agreeable to the hand while in use, is substituted; the cofer and rivets on the face of the spade is also dispensed with, thus securing a smooth level surface, which prevents all accumulation of earth, and allows the spade to work easier and to keep more cleanly. Being divested of the iron straps and shaft at the



neck, the earth is penetrated deeper and with greater ease, and there being no clogging, the work is accomplished with greater facility and less labour than would otherwise be the case. Altogether they are improvements on anything of the kind which we have hitherto seen. They are made of solid cast steel, are convenient to use, and have the appearance of being excellent tools.

**The Witloof or Flemish Endive.**—At a recent meeting of the French Société Centrale d'Horticulture several members exhibited specimens of the Witloof or Flemish Endive, a new variety of salad plant lately introduced into France. M. Poinet-Delau, gardener to M. Ledue, of Puteaux, showed a dozen fine heads, the leaves of which had grown in a fortnight under a layer of dead leaves. M. Poinet-Delau gives the following account of the method of cultivating this plant which he has adopted, and found to succeed admirably: From

May 15 to June 15 he sows the seed in lines 8 in. apart in good garden soil, previously well manured, for it is necessary that the roots should be well developed in order to obtain a good result. When sufficiently grown the rows are thinned out, leaving spaces of about 4 in. between each plant, taking care to leave only those which are of a globular habit. Hoeing and watering should be performed when necessary. In the course of the month of August M. Poinet-Delau cuts off the outer leaves. When wanted for use the plants are taken up, the roots trimmed down to about 8 in. in length, and the leaves to within from 2 in. to 4 in. of the collar, according to the growth of the plant. They are then planted upright in a frame in a bed of dead leaves, covering them over with a layer of rotten manure to the depth of 8 in. The frame is then shut, and covered up with straw-mats should the weather be cold. In a fortnight the plants will be ready for gathering, the transplanting being kept up every fortnight throughout the season. The waste leaves and roots may be given to rabbits. These little animals are excessively fond of all parts of the Witloof, and thrive well on this kind of food, so that every part of this plant may be utilised. M. Poinet-Delau was awarded a second-class prize by the Society for the excellent specimens which he exhibited. M. Sirry also showed some fine heads of Witloof which had simply been placed in sand in a cellar for six weeks, in which time they had produced an excellent ball of succulent leaves. The ease with which an abundant supply of good salad material may be obtained at any time, almost without expense or trouble, ought to make the Witloof one of our most popular and widely grown salad plants.

### SPRING-SOWN ONIONS.

THE most favourable season for sowing main crops of Onions being now at hand, and as much of their future success depends on the previous preparation of the soil, a few remarks on the routine which I have found to be successful may be serviceable. Although, as a rule, I find hard and fast methods, as regards rotation of crops, neither profitable nor practicable, we make an exception in the case of Onions; we invariably follow the main crop of Celery with them, as the preparation necessary for that crop leaves the ground in good condition and vacant at the proper season for sowing. The ground, after a crop of Celery, owing to the deep cultivation and exposure to atmospheric influences which it received during the winter, is in the very best condition for being levelled down by the end of February, when a dressing of pigeon's manure or other thoroughly rotted manure is applied and forked in, the surface being left rough, until the first or second week in March, when, choosing a fine dry day, a good dressing of soot is spread on the ground and raked in; the ground is then trodden firmly all over and raked level, the rows are marked off 1 ft. apart, and very shallow drills are drawn with a triangular hoe. If the seed be good, it can scarcely be sown too thinly, for all superfluous growth that has to be removed at thinning time is so much loss to the main crop. After sowing, the drills are trodden in and the beds lightly raked over. As soon as the seedlings show themselves, a Dutch hoe is run between the rows, and repeated at intervals, to keep down weeds; the rows are hand-weeded, and the plants thinned to their proper distance apart, which must be regulated according to whether large specimens are required or only a full crop of medium-sized bulbs for ordinary use; the latter is preferable, and in that case the plants may be left from 3 in. to 6 in. apart in the row. When in full growth, a top-dressing of soot is highly beneficial, and by adopting the above routine we seldom have any loss from the Onion fly, although it has of late years been exceptionally destructive in the neighbourhood. We have grown the following sorts with good results, viz., James's Keeping, one of the very best, Nuneham Park, Reading, Deptford, Bedfordshire Champion, and Dauver's Yellow. As soon as growth is quite completed, the whole crop is pulled up and thrown into beds, keeping them stirred with a wooden rake on fine dry days until the outer skin is thoroughly crisp and dry, when, a favourable period being selected, they are stored in cool, airy lofts or sheds, and cleared and sorted as required. If well ripened, the late sorts will keep until the autumn-sown crops are fit for use. After the crop is cleared off the ground a good dressing of manure is applied and dug in deeply, and the main crop of Cabbages is planted on it about the first week in October.

JAMES GROOM.

Henham.

## SEED BEDS AND SEED SOWING.

The majority of kitchen gardens, owing to the wetness and mildness of the season, are already so fully stocked with slugs, that there is little chance for the growth of seeds. It is astonishing how intensely conservative most cultivators are in all matters relating to sowing and planting. Seeds are not seldom sown on the same day and in the same place, be the weather or the conditions and circumstances what they may. This is altogether wrong. All such matters should be more determined by conditions than times. The more haste the less speed is often verified in the sowing of seeds in the open air, and for this obvious reason—that the loss of a crop is always a loss of time as well as of seed. Every day that seed lies longer in the ground than is necessary for its germination, through being sown under unfavourable circumstances, increases the risks of its injury and final loss. The greatest seed-killer in the world is a cold, ungenial, wet seed bed, filled full of black slugs and other seed-eating pests. But what easier or wiser than to at once baulk the slugs and forward such plants as Cauliflowers, Cabbages, Brussels Sprouts, Lettuces, Peas, Broad Beans, Potatoes, &c., by sowing them in pots, pans, boxes, or in the soil itself in pits, frames, the floors of orchard houses, or other places? Whilst such seeds are vegetating in safety under these favourable conditions, the seed beds and their living occupants should be treated to a few dressings of hot lime, bitter soot, or sharp coal-ashes or burnt marl. These will help to clear the soil of pests and improve its condition, so that by the time the plants are sufficiently advanced to be planted out, the ground will be fit to receive them. Fortunately, such main crops as Onions seldom suffer much or at all from slugs. On some wet soils they are, however, injured by worms, which drag them underground in a young state in great numbers. In such localities Onions may be treated in the same way as other seeds specified, and planted out when well up. Parsnips, Carrots, Turnips, and Radishes do not transplant well, and fortunately the first does not dislike the wet, and slugs are not so fond of Carrots as of Peas, Brassicas, Lettuces, &c.; besides, April is time enough for the main crop of Carrots. Peas have suffered exceedingly this winter; so much so, in fact, that those sown in November have disappeared almost wholly in some gardens. This is really of little moment, except as regards the loss of the seed. Peas sown now, and planted out when a few inches high early in March, will generally be fit to gather quite as early as those sown in November. The crop, too, will, as a rule, be more regular and equally prolific. The soil is much fresher, sweeter, drier, and in all respects more favourable to vegetation than such as has been under crop all winter. Of course such seeds as the first crop of Celery, Tomatoes, &c., are always raised in heat. The object of these remarks is not to suggest what to sow, but to urge a departure from the usual mode and place of sowing hardy vegetables at this season. Time, strength, money, and health are gained by sowing in artificial seed beds when the earth is stocked with slugs, chilled by cold, and soaked with water. Seed beds in open quarters for such main crops as Carrots, Onions, Parsnips, Early Turnips, Spinach, Radishes, Potatoes, &c., may also be vastly improved by careful earth culture. Early autumnal cultivation and thorough drainage are the best preparations for a good spring or summer seed bed. Ground laid up rough in autumn forms a distasteful lair for slugs and worms, and becomes warm, dry, and mellow, in a word, a model seed bed under the first breath of spring. Even this favourable state may be heightened by the addition of a few loads of burnt earth or charred refuse. Bottoming the seed drills or seed beds with such matters, and also applying a heavy sprinkling of similar substances over the seeds, is the best antidote for insect pests, as well as the most kindly and genial help to the germination and early growth of seeds. No doubt all this is more trouble than the mere casting of seeds from the bags

into the ground, whether it be sour or sweet, wet or dry, warm or cold, clean or foul. But in the matter of seed-sowing it is emphatically true that what is worth doing at all is worth doing well. Success in furnishing a continuous supply of vegetables rests upon the proper rearing of seeds, and this can hardly be achieved in seasons like the present without the adoption of some such conserving and stimulating expedients as those here noted. D. T. FISH.

**Vegetable Plants of Greece.**—Besides the ordinary vegetables grown in gardens, amongst which the Artichoke holds the first place, in company with ordinary Potatoes, Sweet Potatoes (*Convolvulus Batatas*), Tomatoes, Aubergines, &c., a large number of vegetable plants growing in the fields and on the hills round Athens are collected by poor women and children and sold in the streets and markets as Chickweed and Groundsel are in London and Paris. They are bought largely by the common people, and either stewed with meat in the national *pot-au-feu*, or eaten as salads. Amongst them are several plants used medicinally. The most common of them are Chicory (called "Radikia" by the modern Athenians), Common Mallow, *Raphanus sylvestris* (a kind of Radish), Spinach, Caulis, Sorrel, Fennel, Water Mint, Asparagus, Cress, and Portulaca oleracea, the latter being a favourite escul with all classes of the community. It sometimes happens that, through the ignorance or carelessness of the gatherers, poisonous and wholesome plants are plucked together. Some time since, in one of the small islands off the coast of Greece, four children were poisoned through eating a quantity of *Hyocyamus* which had been gathered in mistake for a salad plant. *Conium maculatum* does not seem to be as poisonous in the East as it is in the West. The porters of Constantinople eat it in large quantities as a salad with oil and vinegar without feeling any bad effects.—X. LANDERER, Athens.



Nook in Pleasure Ground with Weeping Spiphora, Dracæna, and Day Lilies around Tree.

on the produce of their own country, and when there comes a scarcity prices range higher. It is from Bedfordshire, and especially the districts of Sandy and Bedford, that the chief supplies of Onion seed are drawn. There are some growers on a large extent, and many cottagers and others grow their piece of Onions for seed. When there happens a good season, and the sample is of the best quality, a bushel of Onion seed will weigh from 37 lb. to 39 lb., inferior samples 35 lb. to 36 lb. To show the large amount of seed required to meet the demands of the trade, it may be mentioned that twenty years ago one of the wholesale seed houses, and that not the largest, used to put together 250 bushels of seed as the first bulk. This would be done early in December, and be quite exhausted by the end of February.—D.

**How Celery is Blanched.**—Those who follow the advice given by Mr. Fish at p. 154, to grow their Celery to full size first and blanch it afterwards, will think, in the end, that it had been better if they had put up with the worms than attempted to combat them by such means. Mr. Fish does not seem to be aware that Celery cannot be blanched, or made fit to eat as a salad if the plants are allowed to grow to their full size first. To recommend the abolition of the progressive system of earthing up simply means no crop. It is not the leaves that are covered at the time of earthing up that are blanched fit for use, but those that push afterwards, and which never see the light, and this, I thought, every practical gardener was well aware of. I would not recommend earthing up too soon, but it should be commenced long before the plants have grown to full

size. If better authority than mine be needed on this point, I refer your readers to Mr. Robert Thompson in the "Gardeners' Assistant," where, in speaking on this very subject, he says, "So it is with Celery. The part of it which we do not grow in the dark cannot be blanched, as it should be, white, crisp, and tender, by any subsequent exclusion from the light. This, we think, is sufficient proof against the practice of allowing Celery to grow nearly to its full, and then earthing it up at once." I fail also wholly to see how the late earthing up of the plants can in any way prevent the white worms he speaks of, and by which I apprehend he means the maggot of the Celery fly or those of some of the other enemies of the Celery, leaving out snails and slugs. The first begins its ravages almost as soon as the plants are put out or as soon as the eggs of the fly are hatched, and which are deposited upon the leaves in the first instance; hence it follows that the longer the plants are left unearthed the greater the destruction is likely to be from the worms.—*CHER.*

### STORING ROOTS.

MR. GILBERT'S remarks (see p. 154) on this subject are quite right. To maintain roots sound in quality and sweet in flavour, store them in moderate quantities in the open air. On the other hand, mass storing in dry earth or sand is the surest means of drawing out quality and ruining flavour. Roots stored in masses frequently undergo a species of decomposition, while dry earth or sand extracts no small part of their sweetest juices. This applies to Potatoes as much, or more, than to Carrots, Parsnips, Turnips, or other roots; in fact, many of the marvellous differences in quality observed among Potatoes of the same varieties in different localities originate as much, or more, in modes of storing as in varieties of soil or diversities of culture. The nutty flavour so much prized in Potatoes cannot be long preserved unless they are stored in the earth. The old-fashioned mode of storing in narrow pits was far preferable to the modern ones of cellar, loft, or bin storing. The only mistake about the pit was the covering with straw immediately over the Potatoes, which often imparted a musty flavour. Of course the straw covering was convenient as regards facilitating the removal of the Potatoes from the pit. But better far spend a little more time in removing the Potatoes than ruin their flavour. If straw be used at all, it should be over a layer of earth, to exclude wet and frost; not under the soil, next the Potatoes. As to the earth running through and among the tubers, the more in reason that occurs the better. It separates the Potatoes, and thus conserves their flavour, and also, perhaps, preserves them from disease. It may also be added that it is a great mistake to air-dry Potatoes when lifted. The Potato rind is sensitive to the touch and largely porous to atmospheric air when first turned out of the ground; the air thus sweeps quality out, and is often loaded with fungus spores and other germs of disease, which could hardly find a more favourable seed-bed than the moist surface of a newly-raised Potato rind. To prevent such seeds from being sown, and also the flavour of the tubers from being dissipated, cover them with earth the moment they are lifted, and keep them covered till eaten. D. T. FISHER.

### NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

**Early Sown Brussels Sprouts.**—We do not find that Brussels Sprouts are much appreciated before October, and they can be easily had in fine condition then from sowings made in the open border in March. There is no necessity for sowing them under glass, and the space may be better utilised with tender crops.—*J. G.*

**Early Peas.**—William I. and Ringleder are now from 3 in. to 4 in. high. They were sown on the 15th of November, and have received no protection of any kind, except what was needed to be done. The seed had to be rolled in; it had to be coated with red lead to keep off mice when breaking;  $\frac{1}{2}$  in. of coal-ashes had to be put into the ground to keep off slugs; and, lastly, bre strings of worsted had to be used to keep away the sparrows.—*R. GILBERT, Burghley.*

**The Wrong Ideal.**—A writer in one of our contemporaries, in an otherwise excellent article on Brussels Sprouts, says, "My best ideal of a plant of Brussels Sprouts is as follows:—It should be fully 4 ft. high and studded with Sprouts the size of a small Orange." In the native land of the Brussels Sprouts, and in other places where this vegetable is a favourite, it is preferred small and green. A hard little body, the "size of a small Orange," is far from what the Brussels Sprout ought to be; some harm is done in the aim to get everything as big, as full of sugar, or as circular as possible.—*V.*

**The Conqueror Tomato.**—Prof. Beal finds the Conqueror the earliest out of a large number tried at the Michigan Agricultural College. The form and ripening of the Hathaway are almost perfect, but it has proved a moderate bearer. He prefers the Trophy for a late sort.

## SOCIETIES AND EXHIBITIONS.

### ROYAL HORTICULTURAL SOCIETY.

FEBRUARY 19.

THE most attractive subjects shown on this occasion consisted of groups of Orchids from Messrs. Veitch, Williams, and Wills. With these and other choice plants, together with large quantities of well grown florists' flowers, the whole of the available space in the Council room was completely filled.

**First-class Certificates** were awarded as follows:—

**Hæmnanthus rupestris** (Ball).—A species furnished with large heads of flame-coloured inflorescence, borne on stout stalks from 6 in. to 9 in. in height.

**Cyclamen White Beauty** (James).—A good-habited kind, belonging to the Persian section, bearing large, pure white blossoms, beautifully scented.

**Primula sinensis fimbriata coccinea** (Williams).—A fine variety, bearing whorls of deep rosy-crimson blossoms.

**Cyclamen Rosy Morn** (H. B. Smith).—A fine kind, bearing large flowers of a rosy-pink colour.

**Cyclamen persicum rososum grandiflorum** (Edmonds).—A dwarf-growing variety, with marbled foliage and large and beautiful rose-coloured blossoms.

Botanical commendations were awarded to Messrs. Veitch & Sons for *Aerides vandarium*; also to Messrs. Rollison & Sons for *Saccolabium Calceolare*, a rare Orchid, bearing small waxy flowers from the base of the plant.

**Miscellaneous Plants.**—In Messrs. Veitch's collection of Orchids was a fine example of *Angraecum sesquipedalesuperbum*, bearing very large ivory-white flowers; a richly-coloured *Cypripedium Harrisianum*; a magnificent example of the beautiful white-flowered *Cattleya Trianae*; *Odontoglossum Bechii album*; *Laelia Elchei alba*, and a richly-coloured variety of *Oncidium Forbesi*. Associated with these were also well flowered examples of the peculiar *Masdevalla Chimera*, *Cyrtocloium maculatum*; and the unique *Angraecum citratum*; from the same firm also came a good plant of the brightly flowered *Hæmnanthus cinnabarinus*, in good condition, and the beautifully-spotted variety of *Odontoglossum Alexandræ*, called *maculatum*. Mr. John Wills, Onslow Crescent, South Kensington, sent an attractive group of Orchids, Palms, Ferns, and Mosses. In Mr. Williams' group were good examples of *Dendrobium superbiens*, *Cypripedium Marlei*, *Dendrobium Wardianum*, and the curious but beautifully-coloured *Trichopilia suavis*; *Odontoglossum odoratum*, and several good varieties of *O. Alexandræ*. A panful of plants of *Habrothamnus elegans argenteus* was also shown by Mr. Williams, who had, moreover, a group of *Solanum hybridum* (Empress), some beautiful Chinese Primulas, and a brilliantly-coloured plant of the new *Croton falcatum*. From Mr. Winn, Wood Street, Birmingham, came one of the most beautifully-spotted varieties of *O. Alexandræ* we have yet seen; and Mr. Johnson, gardener to P. Clarke, Esq., Uxbridge, sent four finely-flowered specimens of *Daphne indica rubra*. A brilliant and curious but beautifully-coloured *Trichopilia suavis* was shown by the Hon. and Rev. J. P. Boscawen, and was awarded a vote of thanks. Mr. Cannell furnished examples of the salmon and white-coloured varieties of *Yasuvium Pelargonium*, and also the scarlet-purple kind called Dr. Denny. Several good seedling Snowdrops were shown by Mr. Melville, Dunrobin Castle, and a white-flowered *Camellia* named *Ninfa Egeria* came from Messrs. W. Paul & Son, Waltham Cross. An excellent group of Persian Cyclamens was furnished by Messrs. Veitch & Sons, and exhibitions of the same plant also came from Mr. H. B. Smith, Ealing Dean Nursery, and Mr. Charles Edmonds, Hayes. Messrs. John Standish & Co., Royal Nurseries, Ascot, sent well-flowered specimens of *Chorozema cordatum splendens*, several Palms, Roses, and a dozen potsful of Lily of the Valley, each containing no fewer than 100 well-developed flower-spikes. Mr. James, gardener to W. F. Watson, Esq., Isleworth, furnished an attractive group of seedling *Cinerarias*, remarkable for their bright colours and dwarf habit. From Messrs. W. Paul & Son came an extensive collection of cut blooms of *Camellias*, consisting of all the best known sorts of all colours. Mr. Ollerhead, gardener to Sir H. Peck, Bart., sent a plant of *Odontoglossum Alexandræ*, on one spike of which there were thirteen unusually large waxy-looking blossoms. A beautiful plant of *Kentia macrocarpa* came from Mr. Bull, of Chelsea.

**The Fulham Nursery.**—It is stated (see p. 136) that we are preparing trees for removal on account of the ground being shortly required for a railway. This is not quite correct. It is true there is a project in hand to bring a railway to Fulham, which, if it comes, will take a small portion of my nursery, but not all in the direction in which we are now preparing trees for removal. This we are doing for quite a different purpose, viz., because in the course of a few years my lease of the "portion of the ground which is not my own expires, and may not be renewed, and I am anxious that a few of our fine and scarce specimens may then be in a fit state to transplant."—*ROBERT OSBOEN.*

MR. GRANSTON considers Yew the most difficult tree to fell; next come Beech and Ash. Oak, though very hard, fells well; but the easiest of all is Spanish Chestnut.

## RETINOSPORA ERICOIDES A MISNOMER.

I would again remind Mr. Meehan (see p. 155) that I heartily agree with him in considering the above name a misnomer for the Rochester seedling, *Thuja occidentalis ericoides*. What is known in Britain as *R. ericoides* was considered by Parlatore to be a variety of *R. squarrosa* (Sieb. and Zucc.), and in so classifying it he may have been right. They, however, differ considerably in their juvenescent conditions. The leaves of *squarrosa* are generally in opposite pairs, but occasionally in whorls of three; those of *ericoides* are generally in whorls of three, but not infrequently in opposite pairs—according to the vigour of the branch or branchlet to which they are attached. I may also state that the male flowers of the latter are of a beautiful red colour. Has Mr. Meehan ever seen a red flower on any of the varieties of *Thuja occidentalis* or on any Juniper? The *R. ericoides* of the United States is known here as *Thuja occidentalis ericoides* of which a twig was sent me, received from Mr. Meehan. Its leaves are similar in shape and disposition on the branch to the illustration of the plant (*R. juniperoides*) which gave rise to this discussion. But, independent of that, they are essentially distinct. There are other forms belonging to distinct genera—aye, belonging to different tribes—that have juvenescent leaves similar in shape and disposition to those already named. Such an one is *Widdringtonia cupressoides*. So closely does it resemble *Thuja occidentalis ericoides*, that even people well informed in such matters would have some difficulty in saying which was which. This being the case, why does not Mr. Meehan call this plant *T. occidentalis ericoides*? "Arbor-vitæ have their leaves in pairs, as Mr. Syme's drawing has." A one-year-old seedling of *T. occidentalis*, now before me, has its leaves in fours, threes, and twos; and the juvenescent leaves of *T. gigantea* are nearly always in fours; but, as in all the *Cupressinæ*, the number of aggregate leaves varies in proportion to the vigour of the species, the individual, or, indeed, the vigour of the individual twigs of a plant. We are told that "polymorphic Junipers are easily known, when carrying on through life their juvenescent form, by having their leaves in whorls of three." If this were a constant character, there would be less difficulty experienced in determining them; but, although three in a whorl is the normal number, four and two are not uncommon. A branch of *J. communis* before me has its leaves in whorls of four, while on the weak laterals they are in threes. Mr. Meehan may, perhaps, learn some day to place less faith in the number of leaves in a whorl on the branches of the *Cupressinæ*, as a specific or generic character, than he seems to do at present. Those who have studied these matters most find that the number varies in proportion to the vigour of the portion of the plant on which they are found, and therefore they place little reliance on this point as a character for classification. With such, the shape and internal structure of the leaves take precedence to the number of them in a whorl. Contrary to what I have written, Mr. Meehan states that "*R. juniperoides* of the trade is a Juniper which has simply retained its juvenescent character," i. e., that it has leaves in whorls of three. It would be interesting to know the name of the species of Juniper represented, also where it is a native of, or, if a garden variety, where and when it originated.

Geo. Syme.

**Closed Gates at Kew.**—I cannot understand why the authorities at Kew object to opening the gardens early for this reason: they admit they are for public instruction, and therefore the more the public can see of them the better. Yes, but, say the authorities, that is all very well; but when is the work in the houses to be done if the public be admitted early? Now, I know from six years' experience in the houses at Kew, that there is no validity in this objection. When I first went to Kew, I re-potted the whole of the plants in the Cactus House, and never stopped for the public; neither did they hinder me. The same, I know, is done in the Palm House, the Fern House, the new Range, and the new Temperate House. If at any time we were obliged to stop up a part of a walk, the public did not complain. As to extra labour, anyone acquainted with Kew knows that there is always enough; for what two men have to do in a private place, three are provided at Kew. Then, as to the scientific work done in the gardens for the colonies, that is all done in the propagating pits, and they are always private.—J. CROUCHER, late Foreman of the Propagating Department, &c., Royal Gardens, Kew.

**Azalea mollis.**—I have at present a quantity of seedling *Azaleas* of the *Mollis* section crossed with *Azalea sinensis*, and they are showing fine trusses of flower that vary in colour from golden-yellow through the intermediate shade of copper and buff. By crossing with *A. sinensis*, the flowers are larger and better shaped than those of the type that I grow, which consist of *Consul* *Pecher*, *Isabella Van Houtte*, *Madame Legrele*, *Baron Rothschild*, *Ebenezer Pyke*, and

*Madame Van Houtte*. I had these varieties from Belgium when they were first sent up. I have now grown them for several years, and I find that as decorative plants during the winter months they are invaluable. They can be had in flower with very little forcing in the depth of winter, and in a cold greenhouse they will flower early in the spring, keeping up a succession; and amongst other plants their showy trusses and peculiar colours make a grand display. As they are perfectly hardy, they ought to be planted in borders and shrubberies in quantities along with Ghent *Azaleas* and *Rhododendrons*. In pots I find them to grow well in a light loamy soil mixed with leaf-mould, but I have no doubt that any good peaty soil that would suit *Rhododendrons* would likewise suit them.—WILLIAM TILLEY, *Welbeck*.

## OBITUARY.

JOHN KEYNES died at Salisbury on Sunday last, the 17th inst., in his seventy-third year. Mr. Keynes, an enthusiastic lover of flowers, commenced his career as florist by cultivating Pinks and Carnations; and well do we remember the fine examples of both which he showed at Chiswick in days gone by. He next directed his attention to Dahlias, of which he was not only a skilful cultivator, but a most successful raiser of new kinds, many of his earliest seedlings still occupying foremost places in even the best collections of the present day. No longer ago than last year eight of his seedling Dahlias obtained certificates. Of late years, however, his attention has been for the most part devoted to Roses and Rose growing; and in order to show how well he succeeded with the queen of flowers, we may mention that one year, not very long ago, he carried off first prizes at the Crystal Palace in every class in which he showed. Both in public and private life Mr. Keynes was much respected for his straightforwardness, and for the earnestness and vigour with which he carried through whatever he undertook.

The death, at Orleans, is announced of M. de Laage de Meux, aged ninety-three. He it was who first introduced the cultivation of the Pine on a large scale in the desert region of the Sologne.

## NOTES AND QUESTIONS—VARIOUS.

**Antirrhinum procumbens.**—This, when grown in pots, pans, or baskets suspended from the roof of a greenhouse, has a pleasing appearance, and yields numerous whitish blossoms all through the winter.—S.

**Cochlostema Jacobianum.**—"W.E.G." must have fallen into more than one error respecting this very beautiful plant. In the first place, it does not belong to the Pine Apple family (Bromeliads), but to the Spiderworts (Commelinaceæ); secondly, that it does not seed freely I admit, but I have raised young plants from both self-fertilized seed, and also from seed obtained by means of artificial fertilization. Seed-bearing, therefore, cannot be so great a rarity as your correspondent would lead us to believe.—W. H. G.

**Artificial Manure.**—Will you kindly inform me what proportion of guano, ashes, and soot you think most suitable to make a manure for general gardening?—A. S. [To every barrowful of sifted ashes put one shovelful of guano, and two of soot; you will thus make a good mixture for general purposes.]—S.

**Rosa Brunoniæ.**—Will some reader of THE GARDEN kindly inform us where this Rose can be procured; also seed of *Rosa polyantha*? Is *Brownia macrophylla* a hardy shrub?—Sux. [The *Brownia* to which you refer is true.]

**Propagating Willow Trees.**—Will someone kindly tell me how to raise Willow plants for renovating coppices, &c.? I have tried cuttings, but cannot succeed, possibly because they were taken in an improper way, or at the wrong time.—K. [Willows may be easily propagated by cutting up long shoots of last year's or older wood into slips from 1 ft. to 15 in. in length. They should be planted in a slanting direction in moist soil, if near a pond or river so much the better. If planted during mild weather in March or February, and made firm in the soil, they will commence to grow in January or April, and become well established during summer. Pieces of Willow as thick as a broom-handle driven into the ground like pegs will also root and grow freely.—S.]

**Wide Copings as Fruit Tree Protectors.**—I desire to follow the recommendation frequently given in THE GARDEN of having a removable coping for fruit walls, either of wood or of glass, but the estimates which I have procured make them come too costly for practical use. I am sure that some of your correspondents would greatly oblige me besides myself if they would, at this season, when it is high time to get them ready for this spring's blossoms, give particular directions, sufficient to enable a carpenter, or at any rate a horticultural tradesman, to work from. It is chiefly the elaborate iron fastenings which seem to make my estimates so high. I imagine some sort of iron support from beneath will be necessary, lest the coping should be blown away by gales from below. As to width, would 18 in. be sufficient? These copings seem common in France, and I am sure they are economical there. How do they fasten them effectually and cheaply in France? Nearly every spring late frosts kill the Pear blossom on my walls.—E. Aigburth. [18 in. would be a good width for walls not exposed to heavy cold rains. A thin board or felt in very light frames ought to be easily arranged by a carpenter and blacksmith. Well-made straw mats are generally used in France. Can any of our readers advise?—En.]

"This is an art  
Which does mend Nature: change it rather; but  
THE ART ITSELF IS NATURE."—*Shakespeare.*

**Tea Roses at Syon House.**—The method of growing Roses adopted by Mr. Woodbridge is one well worth practising by anyone who has space at command, and who requires to have quantities of flowers during the winter months. The house in which they are grown is a lean-to one, which was formerly a Vinery, the border being outside. In this the Roses were planted; the main stems were brought through the front wall and the branches trained on a trellis near the glass; and, although they have only been planted little more than two years, they completely cover the roof. The principal kind grown, and the one which succeeds best, is *Maréchal Niel*. This was first tried on its own roots, but was found not to succeed satisfactorily; it was, therefore, budded on the seedling *Brier*, on which each year it has made fine growth. The main stem near the base is as thick as a broom-handle, and the shoots are as large as a good-sized walking-stick, whilst the smaller branches bear a profusion of golden blossoms. *Cheshunt Hybrid*, *Devoniensis*, and several other kinds are grown in the same house, but they do not come into bloom so early by several weeks as *Maréchal Niel*; moreover, they neither grow nor flower so freely. For succession, Roses are also grown here at the back and sides of Peach houses or Vineries, and, besides yielding a plentiful supply of bloom, they help greatly to beautify the houses.—C. S.

**Primroses.**—These are in bloom this season at least a month before the usual time, and it is with regret that I find it necessary to lift and out the plants to pieces because of the inexorable exigencies of propagation. Those who can plant their Primroses in borders or beds and allow them to remain undisturbed for two or three years are indeed to be envied, as here, where all the choice kinds get transplanted twice in the year and all others once, it is impossible to have those beautiful heads of bloom that are seen in borders in which the plants are well established. I get the best display from Primroses every spring by lifting some three or four single crowns into 6-in. pots and keeping them in a frame or cool house; thus treated they form fine heads of bloom, and are most beautiful during the month of March, which is, as a rule, the best month for Primroses. *Virginia*, snow-white; *Brilliant*, rich vermilion-crimson; *Lustrous*, intense deep crimson; and *Rosalind*, rose-red; and others, are now in bloom, and show off their fine florists' qualities and solid colours to advantage. The singularly-coloured seedling kind shown at South Kensington on the 19th ult. by Mr. Wilson is a novel and really valuable addition to these beautiful hardy flowers. All who know the so-called *altaica* have but to picture it transformed into a plant having flowers of a bluish-purple hue to understand what the new Primrose called *Scott Wilson* is.—A. D.

***Isolepis gracilis* for Surfacing Pots.**—This is a most useful plant for surfacing large pots in which Palms, Camellias, &c., are grown, and it should be cultivated by the thousand for such purposes. Small plants of it in thumbs, or 3-in. pots, can be readily dibbled in over the surface of large pots, or planted so as to form a fringe hanging over their edges. A few plants, or even a row hanging down in front of the stages in greenhouses or conservatories, have a charming effect. In very large conservatories, Camellia houses, Orangeries, &c., where large woody, and sometimes rather bare specimens are met with, a very pretty effect may be produced by means of this plant by shaking out a number of them, tying them in Moss, and fastening them with fine wire here and there on the bare branches. They will need no other care than syringing now and then to keep them damp. The numerous drooping culms will hang down and hide the Moss, and have a pretty epithelial appearance. Another method with this plant is to place it in small pots; under the rim of these pots is placed a stout wire, with a portion of it turned up to form a loop. In most old conservatories or on the back walls of old-fashioned plant-houses, where Camellias and various creepers are usually grown, there are almost sure to be bare naked places, in which a nail driven here and there, and a pot of the *Isolepis* with its wire collar placed on them, will have a novel and refreshing appearance. Under such circumstances the plants will soon hide the pots, and give a character to otherwise uninteresting places. I need scarcely add that the plant is nearly hardy, and that it revels in damp and shade.—T. WILLIAMS, *Ormskirk*.

**Precoity of Vegetable Crops.**—If the present mild weather should continue through March we shall have to contemplate something approaching a green crop famine a little later in the season. It

is a fact that all kinds of Greens are now pushing on with remarkable rapidity, and throwing up flower-stalks as fast as if it were the month of May. Turnips have made 1 ft. of growth, and at the present rate will be soon over. Nothing but dull, cold weather can hold these and other vegetables in check, for bitter easterly winds or sharp frost would kill the young tender growth wholesale. With such an abundance of Greens and a poor sale, Turnip-tops will scarcely pay for gathering, and doubtless many acres that otherwise might find their way to market will either be food for sheep or be ploughed in as manure. With this evident precoity in all green vegetables it will be found difficult to tide over the interval that elapses between the cutting of the latest white Broccoli and the gathering of the earliest Peas. For the supply during this interval we have generally to depend upon autumn-planted Cabbages; but a mild season now may in large quantities of these to "bolt," and thus the anticipated supply will be lessened. In private gardens Asparagus and Seakale are serviceable, but such vegetables as these are out of the reach of the masses for whom the general market grower has to cater. The precoity of the green crop, as now seen, will, of course, enable the ground occupied to be cleared and re-cropped at an earlier time than usual; but with a glut of Greens the sale is so poor, that any grower would prefer that the incoming of the crops should be spread over a longer period. Success in market gardening does not depend upon the quantity of the crops produced; a good remunerative price at the market is what is wanted.—A. D.

#### NOTES FROM KEW.

AMONGST hardy shrubs the most striking is the European *Cornus Mas*, whose leafless branches are now studded with clusters of small, bright yellow blossoms; the pulpy fruits, which are in shape and size somewhat like Olives, and resemble a cornelian in colour, have obtained for it the name of Cornelian Cherry. *Acer dasycarpum*, the Silver-leaf Maple of the Eastern United States, is also bright with thousands of small red flowers. This species, sometimes cultivated under the name of *A. eriocarpum*, is one of the most beautiful of Maples, and is much used in America as a shade tree on account of its rapid growth and handsome foliage. The following are the most interesting and noteworthy of the hardy herbaceous plants to be seen at Kew:—*Xiphion reticulatum* (perhaps better known as *Iris reticulata*) and its variety *Krelagei* are invaluable for spring flowering; the variety is the earlier to bloom by a week or more, but the type is perhaps the more beautiful. Their general colour is a deep violet, and they exhale a delicious fragrance of Violets. *Galanthus plicatus* is a very pretty Snowdrop, differing from the common one in its plaited leaves. The Spring Snowflake (*Leucojum vernum*) is similar to the Snowdrop, and is one of the most charming of all hardy flowers. It may not be generally known that this forces readily, thus differing considerably from the Snowdrop, which does not lend itself at all easily to any such purpose. *Helleborus colchicus*, with its purple flowers, is, at present, the most showy member of this very ornamental genus. *Bongardia Ranwolfi*—the only known species of the genus—is very rarely met with, although it is a long time since it was first introduced to this country; it has a wide geographical distribution, being found from Greece to Persia and Afghanistan. This peculiar herbaceous Berberis has an underground, Potato-like root-stock, a few pinnate leaves—the lower portion of each lobe being purple-red, the rest a dull green—and a stout-branched scape bearing golden-yellow flowers from  $\frac{1}{2}$  in. to 1 in. in diameter. In the Crocus collection many very pretty species may be seen, one of the best being *C. Sieberi*, a native of Crete, Greece, and Asia Minor; this is a lovely little species, with its golden-throated, pale blue flowers just over-topping the leaves. *C. etruscus*, from Italy, of which no figure has as yet appeared in any English work, is near the last named, but is of a paler and more delicate blue colour. Among yellows, the brightest is *C. Olivieri*, a handsome little plant from Greece and Asia Minor, with faintly-smelling, golden-orange flowers. The Crimean *C. asiaticus* comes next, and is remarkable for expanding its blooms in all kinds of weather; the three outer segments roll back, and continue so even when the flower is closed in the evening, never returning to a straight position. *C. luteus* and *C. aureus* are similar in size and colour; they inhabit the same countries as *C. Olivieri*. *C. biflorus* and its varieties, *argenteus*, *Waldenii*, *pulsillus*, and *estriatus*, are all very desirable kinds.

Besides many previously-noted species, several fresh *Orchids* are in flower, the best of which are given below. *Epidendrum Lindenii* is a tall, leafy plant from Central America, nearly allied to *E. xanthinum* mentioned in Notes from Kew several weeks ago; the flowers of this species are sulphur-yellow, and not orange as in *E. xanthinum*. *Dendrobium densiflorum album* is a very striking *Orchid* with tall, ribbed stems and pendulous racemes of flowers, the sepals and petals of which are white and the lip orange. *D. semulum* is a small

species from Australia; it has small, cylindrical pseudo-bulbs and short, upright racemes of small white flowers. *D. barbatulum*, from Western India, has lateral, many-flowered racemes borne on graceful, slightly-curved stalks; the flowers, which are about 1 in. in diameter, are almost pure white, with the exception of the green spur. *Batemanii* Colley has a pendulous inflorescence of three or four rather large flowers, which are described in books as handsome; their dull colour, however—greenish tinged with purplish-red—and somewhat disagreeable scent will not recommend them to cultivators. *Lycaste lingnilla* has greenish sepals and petals and a pure white lip, the end of which is curiously twisted; this is a very free-flowering species. *Odontoglossum luteo-purpureum* concludes our list of Orchids; it is a remarkably showy, as well as curious, species from New Granada; the long scape bears several large flowers, the sepals and petals of which are similar in form and size. *Tillandsia xiphioides*, a most charming South American Bromeliad, has small, somewhat twisted, silvery leaves and a scape bearing several large, pure white, deliciously fragrant flowers. This specimen is not attached to anything, but is suspended by a piece of wire from the roof. Along the bases of the *Cordilleras* it grows on trees and rocks, and on account of the delicate perfume of the flowers it is much prized.

*Clerodendron villosum*, from the Indian Archipelago, is a shrub with stalked oval leaves and terminal panicles of sweet-scented flowers, white, faintly suffused with rose. *Amphiscofia Pohlana*, a dwarf Brazilian Acanthad, has shining leaves and purple flowers springing from the spike of large, rosy-purple bracts. Both these plants are to be seen in the Palm House.—†

### NOTES OF THE WEEK.

THE effect of what the papers call the new villa in Hyde Park is very bad—we mean from a landscape point of view, and without reference to the space thus taken away from the public in the very spot that ought to have been preserved in a quiet green state. If such structures were necessary in a park, the place for them is the outer corners, or by the entrances or boundary roads, and not in the centre of the park. Wrong anywhere in the park, they do far more harm in the centre than if placed towards the margin, where they would be seen in connection with other brick and chimney-pot effects.

**Rockwork at Kew.**—At the head of the Herbaceous Ground there has just been completed a piece of rockwork, which most people will acknowledge to be the most successful attempt yet made in that line in the Botanic Gardens at Kew. The semi-circular outline has apparently been varied as much as the existing beds of *Narcissus*, &c., and the raised bank which forms the background would allow. By means of a few large stamps, shaded and sheltered nooks have been formed, presumably for subjects which require those conditions. If this piece of work receives anything like attention, the "rockwork," which, with its tent-like covering, has been the laughing-stock of all classes of visitors, will soon be deserted.—†

**Hardy Plants from the Cape.**—Several species of *Albica*, *Montbretia Pottii*, and *Sedum alpestre* have stood the cold of this winter, which here has been tolerably severe. *Montbretia Pottii* is a new species, which bears graceful spikes of little but numerous bright orange-brown flowers. *Sedum alpestre* is a neat little plant with white flowers, very desirable for edging flower-beds with or for planting on rockwork.—MAX LEICHTLIN, *Baden-Baden*.

**Primula purpurea.**—I have this fine Himalayan *Primrose* now in bloom. A strong plant of it has thrown up a stout stem crowned with an umbel of delicate lilac-mauve flowers. It is several days earlier than *P. denticulata* and *P. pulcherrima*, but that is no doubt a mere accident. Generally speaking, *P. denticulata* is the first to flower of the trio. The two former are doubtless only natural selections of the latter, with the slight differences that will manifest themselves in seedlings. Of all early-flowering plants these hardy *Primulas* are the most satisfactory in pots. *P. nivalis* and *P. intermedia* will soon be in flower, as will also *P. farinosa*, *P. spotsblissii*, and *P. marginata*. These will be succeeded by *P. amœna* and its varieties, and the later-blooming *P. Parryi*. Some good strong plants of *P. denticulata* would be found very useful for growing in pots for cutting from at this season of the year.—D.

**Vegetation in Kensington Gardens.**—Among your numerous readers there may be some who would like to compare the advent of vegetation in their own gardens with that in the flower walk at Kensington. I should premise that the plants quoted are the most forward of their several kinds, and that the young leaf or young blossom is indicated by *l* or *b*. *Cheiranthus Cheiri*, *b*; *Euonymus japonicus*, *l*; *Ribes sanguinæ*, *l*; *Cydonia japonica*, *b* and *l*; *Photinia serrulata*, *l*; *Kerria japonica*, *l*; *Laurostima*, *b*; *Spirea prani-*

*folia*, *l*; *Mahonia Aquifolium*, *b*; *Ribes Diacontha*, *l*; *Jasminum fruticosum*, *l*; *Mahonia repens*, *b*; and *Deutzia gracilis*, *l*. From the above it would appear that we are indebted to foreign countries for our earliest spring vegetation more than to our native plants.—M. MOGGIDGE.

**Vanilla at Syon.**—The large plants of *Vanilla* at Syon, which have on several occasions been alluded to in THE GARDEN, are now literally loaded with large clusters of pods. The plants are growing on each side of a glass partition separating two houses which have just been planted with Bananas; the moist heat which it is necessary to keep for the perfect growth and fruiting of the Bananas suits the *Vanillas*, which, through their blossoms being carefully fertilised, yearly bear clusters of from ten to twelve long straight pods.—S.

**Griffinia Blumenavia.**—This is one of the prettiest of the Griffinias, and although it has long been in cultivation, it is not very commonly met with. Its flowers, which are not so large as those of *G. hycinthina*, are of a delicate blush colour, the throat being veined with deep violet-purple. They are found to be useful in a cut state in vases, &c.; and when on the plants, associated with Ferns or similar plants, so that their pots and naked stems can be hidden, they are very effective. It is now in bloom in Messrs. Henderson's nursery at Pine-apple Place.—S.

**Phylloxera at Gunnersbury.**—In consequence of the injury committed in the Vineries at Gunnersbury by the *Phylloxera*, strenuous efforts are being made to exterminate that pest. All the Vines on the place have been rooted out, and the soil removed from the borders. No Vines whatever will be grown at Gunnersbury this year. In other gardens in the neighbourhood similar operations are, we hear, also being carried out. It is therefore to be hoped that such radical measures will be attended with satisfactory results.—S.

**Musa Cavendishi.**—A plant of this dwarf Banana at Wilderwick, East Grinstead, is now bearing a fine cluster of fruit, which promises to be exceptionally heavy. The plant is eighteen months old, and the cluster measures over 3 ft. long and 4½ ft. in circumference, and consists of over 170 pits not yet ripe.—A. J. O.

**Hardy Plants in Bloom at Tooting.**—Readers of THE GARDEN who are interested in hardy plants may like to know what is in flower at the present time in our grounds at Tooting. *Cyclamen ibericum* and its varieties, white, flesh coloured, rose, and red are now in flower, as are also *C. coum* and its varieties, bright red, white, flesh coloured, and rose. *Hepaticas*, double red, single red, rose, mauve, pale, white, and blue are likewise in blossom, also the double blue in large quantities. Of *Hebeles* or Christmas Roses we have niger and its varieties, oolotions and its varieties, abuchianus, white and red; orientalis, with its large, coriaceous leaves and bold, handsome flowers; and viridis, with its curiously-coloured blossoms. *Anemone blanda*, the loveliest of all blue spring flowers, is also in bloom, as are likewise *A. fulgens*, scarlet; and *A. coronaria* and its varieties. Its reticulata, with its rich violet-gold blotched fragrant flowers, and *I. raticulata* var. *Krelagii*, with its plum-coloured blossoms, are now in perfection, and the same may be said of *Scilla bifolia*, with its rich ultramarine flowers, and *S. sibirica*, with its bright blue blossoms. The three giant forms of *Snowdrop* are very beautiful; they consist of *Galanthus Imperati*, the largest; *G. plicatus*, the Crimean *Snowdrop*; and *G. Elwesi*, a distinct and beautiful kind. *Sisyrinchium grandiflorum*, with its rich purple flowers; *Narcissus (Corbularia) albus*, the beautiful white Hoop-petticoat of Algiers, are also in blossom. *Crocus vernus*, from the Nottingham meadows, and its rich Dutch forms of every shade, from bright yellow through all the grades of purple and the variations of stripes to pure white, are just now in great beauty. Of the species of *Crocus*, *aureus* is perhaps the most attractive, the yellow being deeper and richer than the Dutch yellow *Crocus*, and as the blossoms precede the foliage somewhat, nothing is seen but a mass of golden-yellow. *C. aureus* is succeeded by *C. sulphureus oncolor*, a pale but decided sulphur-yellow, and its variety *sulphureus striatus*, with the outer petals beautifully striped. The little pale creamy-white *C. sulphureus pallidus* is a rare and beautiful kind, and *C. susianus* and its variety *striatus*, with their reflexed petals, are both striking sorts of *Crocus*. *C. stellaris*, the striped yellow *Crocus*, is now in great beauty, as are also *versicolor* and its varieties, biflorus, ranging from the handsome Scotch *Crocus* through its various grades to the little variety of the Roman Campagna, and the beautiful *estriatus* collected by Mr. Maw. *Imperati* and its form *saravolens*, the latter delightfully fragrant, are likewise now in flower, as are likewise *Sieberi*, with its purple blossoms; *lacteus*, with its small, creamy-white flowers; and *Wildeni* and its beautiful forms *albus* and *tinctus*. *Chrysanthus tinctus*, with its golden blossoms, has been beautiful for a long time; and *vulcanicus* is now in full beauty. We have, moreover, a large piece of *Winter Aconite* in bloom, and very beautiful it is.—P. BARR.

## IN JAPAN.

HALF a century ago, as I am reminded by Mr. Hemsley's excellent article on the plants of the China-Japan region, which appeared in *THE GARDEN* on December 15, how limited was the knowledge which we then had of the treasures in store for us from this part of the world. It is extremely interesting, when looking back, as one sometimes does, towards the close of the year, or the beginning of a new one, to find that the word "Japonica" meant to our fathers and grandfathers nothing more than the *Pyrus japonica*, which brightens now, as it did then, in spring many a garden wall, or at most included the *Camellia*, then making a sensation in their greenhouses; now-a-days it is almost impossible to remember how many times this word occurs as a specific name among our garden plants, until it is brought directly to one's mind by visiting the country that has sent us so many beautiful garden ornaments. Still more vividly is it brought before one when exploring some ravine or steep green mountain-side in Japan, where each moment we hail with delight some well-remembered plant at home. On one rocky bank, the typical *Pyrus japonica* glows still more brightly than with us, and a responsive fire shines from the red *Camellia japonica* on the next, that is somewhat in shade. One pauses to admire the lovely sight, or thoughtlessly sits down to contemplate the scene at leisure, in a bower of *Aralia japonica*, when the sharp spines of its constant and most thorny ally, *Aralia spinosa*, remind us unpleasantly that



the motto "Nemo me impune lacessit" applies to plants in this country even more forcibly than to the Scotch Thistle left behind us. Spurred on to further exertions, the next few steps bring us in sight of the green *Aucuba japonica*, the pretty, but scentless, *Citrus japonica* (trifoliata) or the golden-flowered *Kerria japonica*, in their native haunts on the mountain side, which owes its peculiar greenness not to the Grasses with which we connect that colour, but to an undergrowth of dwarf Bamboos, which entirely take the place of nutritious Grasses, and give a richer and more velvety green to the mountains than can be seen elsewhere. To prolong the list of "Japonicas" is unnecessary, but before dismissing the subject, it is worth while mentioning that the epithet must not always be trusted implicitly, as the Japanese noblemen or Daimios, as they style themselves, have from the earliest epoch been accustomed, when returning from some war expedition—may be, to the Corea, North China, or the Island of Formosa—to bring back with them some new plant or tree they had seen and admired, which they planted in the courts of the temple where they worshipped. It is now believed that many of the trees common throughout Japan at this time were introduced in this way, and it is very difficult to arrive at a satisfactory conclusion as to where they originally came from. As we scramble up the valley, the wealth of *Wistaria*, that almost smothers the bushes, and the abundance of the lilac *Azalea* just showing its first flowers, and colouring many an acre with a faint lilac shade, recall in effect moorlands in autumn, and make one wonder that two plants that are especially abundant and beautiful in Japan should have escaped the affix that tells of their country

while the Japanese themselves regard the former as in some sense sacred, as the name "Fugi" shows, applied, as it is, to both the *Wistaria* and their sacred volcano Fugi-yama, to express their sense of the heavenly beauty common to both. Their devotion to the *Azalea* as a decorative plant I have before mentioned; and with such assiduity have they dug up and transplanted to their gardens all those that are of the more brilliant shades of colour, that it is only where inaccessible, or growing among great rocks that forbid transplantation, that a glowing mass of red or rose-coloured *Azaleas* can be found growing wild. On every rocky mass exposed to sunshine *Rhynchospermum jasminoides* takes the place of Ivy, covering the ground as with a carpet, mantling the rocks with its dark green oval leaves and slender stems, but never vouchsafing so much as one single flower until it reaches the top of its support, or seizes some friendly shrub, twining itself round till it gains a more open and airy situation, when at once the plant changes to such a degree, that it is hardly possible to recognise it. The roundly-oval leaves become slender and pointed, the stems become sturdy and upright, and a cloud of starry, Jasmine-like flowers scent the air each returning spring. The flowering form alone is common in our gardens in England, but the form which, like Ivy, climbs by the aid of adventitious roots, has only lately been introduced; both are, however, identically the same, though useful in different ways, and I am persuaded that it is a plant that will be found hardy anywhere in England where a light soil and sunny situation can be given it, growing closer than Ivy, requiring no clipping, and in course of time, when allowed to grow off from the wall, rewarding one with its sweet white flowers. But what a wilderness of beauty! *Deutzias*, with yard-long sprays of flower; *Weigelas* of all shades, from white to deepest purple-red; Japanese *Honeysuckle*, with pale yellow flowers, showing at every joint; *Iris* of many colours—all seem as if they were anxious to outvie their neighbour, and show how much floral beauty can be crowded into a short period of the year. It is, however, some consolation to find that the *Rose* type of beauty in our gardens is so poorly represented, that here, at least, we may congratulate ourselves at home. *Rosa polyantha* would be called a Bramble by many an Englishman, and is strangely inferior to the beauty of the Chinese variety of the same species, abundant all over the neighbourhood of Shanghai, while neither attain the blushing beauty of our *Dog Rose*, a corruption, by-the-by, I believe, of the German "Tag" *Rose* (the day *Rose*) a name that impugns its durability rather than its beauty. But to return to our valley, from which we have wandered so far, and plunging down into its deepest recesses, where the spray from the stream, as it tumbles from one rocky pool to another, encourages a growth of *Ferns* as wonderful in its ways as the flowers above, we find the great *Woodwardia orientalis* hanging its heavy head, as if weary with the weight of its pale green, massive fronds, in such profusion as almost to bar progress; and on looking upwards for a clearer path, a ray, as of gold, flickers in the sunny shade, and causes an instant diversion in its favour. Nor are we disappointed. Gold it is, but vegetable, not mineral, that greets our astonished eyes—a *Fern*, not covered with a powdery dust, such as we are familiar with in the silver or gold *Ferns* common to so many gardens, but a *Maiden-hair*, that has been, as it were, dipped in a liquid solution of gold so transparent as to allow its green colour to shine through the metallic wash, and yet so golden, that in the glancing sunlight the freshly-developed, but full-grown fronds shine as if pure gold. So exquisite is the *Adiantum monochlamys* in its native state, that if, under cultivation, it shows one-half of the beauty belonging to it, it will become a rival to the *Adiantum cuneatum*, now that it has been introduced to England, for it adds yet another charm to its graces of form and colouring in that when bruised it gives out a delicate and sweet perfume. A little higher up the hill, and in a dry but sheltered nook overshadowed by *Pinus masoniana*, grows the well-known *Adiantum pedatum*, with flat fans of pale green, side by side with another American type, the ostrich-like plumes of *Struthiopteris pennsylvanica*, both outposts of the American *Fern* army; while a tangle of *Gleichenia dichotoma*, so dwarfish and thick as to make an elastic couch on which to recline, links us with the Australian

types of vegetation. A little farther on, *Lastrea erythrosora*, with its bright red young fronds and crimson sori, covers the banks in company with a still more common Japanese Fern, *Davallia pilosella*, whose downy and slender drawn-out fronds differ widely from European species. Dwarf *Azaleas* of small growth, with tiny white flowers of the *Azalea amoena* type, bend down over the stream, where numbers of things rare, beautiful, and familiar are to be found which need hardly be mentioned now, unless it be an unnamed *Polystichum*, with firm evergreen leaves, and a habit of growth strangely resembling that of an Oak Fern (*Polypodium Dryopteris*) in its long stems and flat, triangular-shaped fronds, set on at right-angles to the stems. If by good fortune this were to withstand our climate, it would furnish our hardy Ferneries with a most distinct and bold-habited Fern, and increase the debt of gratitude which we already owe to those who, by exertion and energy, have introduced so much new beauty to our gardens.

E. H. WOODALL.

### SHOW PELARGONIUMS IN MARCH.

A MILD autumn and winter, during which plants have had no period of rest, but have continued to grow without interruption, is a trying one to the amateur cultivator of the Show Pelargonium. They must be kept fairly moist at the roots, or they will lose their lowermost leaves, leaving naked stems to view, and, once lost, they are never regained. The most robust of the plants, having a stocky growth, should be allowed to grow on for flowering early; those of taller growth, and having the appearance of becoming drawn, should be stopped and induced to break again. They will soon do this, and if they flower later they yet yield a greater amount of bloom. March is an important month with the Pelargonium. The plants should be near the glass, but in an airy position, at the same time not subject to cold draughts of air. This is a point of importance, and respecting which the growers of Pelargoniums for market are very particular. Fungus must be particularly attended to, for when the days are bright and sunny aphides will make their appearance, and closely infest the points of the branches, and they need to be kept under. Watering, too, at this season requires more than ordinary care and judgment. Enough is required to merely moisten the balls of earth about the roots and keep the foliage green and fresh, but no more. A superabundance of water in dull, sunless, cold weather leads to material harm. When the sun is warm and the atmosphere drying, a syringing overhead will be found of great value. Any shifting required should be done at once, but a large shift should never be given just now; a plant requires the next largest sized pot only so that the roots may speedily reach the sides. By tying out the side shoots, so as to give space in the middle, the plants can be trained into even shape, and the foundation of good specimens laid. The more delicate Fancy varieties—the “ladies’ Pelargoniums,” as they have been termed—require similar treatment, but much care in watering, and they should have the warmest part of the house in which they are growing.

D.

*Iris reticulata* under Glass.—I have just had a bunch of this beautiful *Iris* sent me by a clergyman who grows it at this season of the year in his greenhouse. It is not the freest flowering variety of the *Iris* tribe, but he informs me that he has a quantity of it in flower at the present time. I need hardly state that *Iris reticulata* is, perhaps, the most beautiful of its class; but I have never seen such fine and perfectly developed flowers of it as those just referred to, and I should say the plant would be of some desirable addition to our forcing plants, if growing it in a greenhouse can be called forcing. The flowers are of a deep blue colour, with a bright golden blotch on the lip, shading off to white at the edges, and also spotted with purple. It is even superior to some *Orchids*.—J. S.

*Hepatica angulosa*.—I would recommend all lovers of spring flowers who have not yet grown this *Hepatica*, either on account of the damage it receives from slugs, or because the soil of their garden is unsuitable, to try it at once. I have possessed it for some few years, but until now never knew its real beauty. Having taken Mr. Wilson’s advice concerning the perforated zinc protectors recommended in your paper some time since, I am this spring most fully repaid, in every plant is bearing a profusion of pale blue flowers, and each bloom is the size of half-a-crown. The flowers, too, are not only ornamental on the border, but useful also for cutting for small glasses; and the exquisite green of the foliage lends to contrasts well with the gorgeous lines of the *Tulips* and *Hyacinths*. I firmly believe that, in most cases, it is not the soil but the slugs which prevent people from growing this exquisite *Hepatica*.—E. F., *Petford Hall, Swaffham, Norfolk*.

## THE INDOOR GARDEN.

### IMANTOPHYLLUM MINIATUM AS A FORCING PLANT.

THIS is one of the most useful of winter-blooming plants, and its flowers, which are produced in great profusion, are greatly improved by forcing. It is an invaluable plant for either large or small gardens, not only because of its rich green foliage or the sparkling attractiveness of its flowers, but also on account of its vigorous habit and constitution. During the dull winter months a handsome specimen or two of it arranged with other plants in the conservatory are always objects of interest and admiration, and in the form of cut flowers it stands pre-eminently the foremost of its type for certain purposes. It is seen to best advantage by itself in single glasses, proportionately fitted to the sizes of the spike, accompanied by a spray or two of Fern, or, if needs be, the individual flowers may be used in a variety of ways to suit any conceivable purpose. This plant is often found prolonging a miserable existence in stoves, but these are not the places for it. Plants of it kept in heat during the greater part of the year may flower, but not with certainty, and if they do, the flower-spike is not half its normal size or strength, nor is there the same substance in the flowers themselves, which is, of course, the natural sequence of diminished growth from want of a proper season of rest. This plant is about as accommodating as many of our hardy shrubs; the natural character of root and leaf will almost indicate how it should be treated as regards compost. It is a vigorous grower, and its thick fleshy roots show that to grow it well the compost should be rich and heavy; good loam and cow manure rubbed between the hands with an admixture of horse-droppings and charcoal will answer well, or indeed any ordinary soil will do, provided there is a free course of drainage, so that if the soil should lack the necessary elements, these may be added in a liquid state. Perfect drainage is important in the case of this and similar plants which flower best when pot-bound, and which do not, therefore, come within the annual routine of potting. Large specimens of this plant are useful for various purposes; but I prefer smaller plants, as being best adapted for general purposes, either for cutting from or as “brilliant dots” amongst fine-foliaged plants when flowers are not over plentiful. The best time to pot is after flowering. If large plants be pulled to pieces, that operation should be carefully performed, and also the potting; the leaves should be sowed over at the same time, and the pots plunged in a bed of leaves at a temperature of from 75° to 80°. Keep the plants syringed daily, *i.e.* if the weather will permit of it; they delight in an atmosphere almost at saturation point at this stage, which is all the watering that is necessary till fresh roots are formed and the plants are re-established. Plants that are plunged for a time in this way are best removed by degrees, say by lifting the pot partly up or by shaking it, so as to leave a vacuum between it and the plunging material, and then by placing it, after it is lifted, on the surface of the bed for a few days. When growth is progressing towards final development, the plants may be removed to cooler houses, till by degrees they are turned out-of-doors altogether, where they should be partly shaded from the scorching sun. They should stand out-of-doors till November, when, on the appearance of the flower-spike pushing up, they should be taken indoors and plunged in a brisk top and bottom-heat, with plenty of atmospheric moisture. The flower-spike is not only hastened, but the flowers themselves are so improved in colour by this treatment, that if the blossoms of a plant that is forced and those of one flowered in a cool house be compared, the latter would, in all probability, be discarded as useless. I would recommend, therefore, all who grow this plant, whether it is flowered in season or out of season, to put it in heat a few days before the flowers begin to expand, in order to improve their colour. No doubt many people grow this plant successfully out-of-doors in the south of England, and I am not quite certain that there are not many nooks and corners in many a garden in the north of England and Scotland also (especially in sheltered places near the sea coast) where it would thrive and make a sprightly companion for *Aralia Sieboldi* and similar subjects. W. HINDS.

Otterspool.

## PERESKIA LYCHNIDIFLORA.

This is a plant seldom seen in collections, and yet it is the best of the genus to which it belongs. "Oh, but," says someone, "it won't do for bedding," it is not a fine-foliated plant, and its flowers won't do for cutting." True; but it is nevertheless a useful plant in other ways. Our ancestors seem to have had a more refined taste as regards plants than we have, for the plants which they grew were good of their kind and well varied; therefore their collections possessed an interest which those of the present day often fail to yield. This plant



*Pereskia lychnidiflora.*

will succeed in a greenhouse; it resembles *P. Bleo* in foliage, but it is not so vigorous.—J. CROUCHER, *Sudbury House, Hammersmith.*

## CAMELLIAS AND THEIR CULTURE.

ALTHOUGH the Camellia is fairly hardy, and thrives in the open air in many parts of England, it can scarcely be recommended as a plant for outdoor culture. Our spring climate is so precarious and variable, that it is only in exceptionally favourable seasons that the blooms arrive at their proper development. In its native habitats the flowering season is dry and fine. In order, therefore, to derive real enjoyment, and to realise fully its capabilities as a flowering plant, we have to imitate those natural conditions by affording it the protection of a glass roof. There are few plants that enjoy such universal popularity as the Camellia does. Its glossy, deep green foliage renders it always attractive, and the suitability of the flowers for bouquets and decoration generally is too well known to need description. In spite of this well-merited popularity, however, we find the Camellia, as a rule, but indifferently cultivated, a good collection in robust health being but seldom met with. It is, to a greater extent than any other greenhouse plant, a source of wonder and perplexity to amateurs, who are often at their wit's end to understand why buds drop instead of expanding, or why the

foliage will not assume a healthy hue, and no satisfactory growth is made. Many of the failures which take place are due to the fact that the true nature of the Camellia is but imperfectly understood by the grower. In its native land the winter is cold, the spring dry, and the growing season warm and moist. What we have to do, therefore, is to imitate these natural conditions as nearly as possible; we have, in fact, to consider the glass protection merely as a means of correcting the great variability of our English climate. Anything more than this, anything approaching to coddling or forcing, will certainly be attended with disastrous consequences.

## Soils and Potting.

The choice of soil for the Camellia has ever been a fertile source of discussion amongst practical men, and there would appear to exist considerable divergence of opinion upon that subject even at the present time. Loam, peat, and leaf-son have each their warm advocates, some preferring either one or the other in a pure state; others, again, recommend a mixture of two or all the kinds enumerated. Very fine plants have been, and are now, grown in loam or peat alone, and they do equally well in a mixture of both soils. I have been informed that the Messrs. Chandler grew theirs in two parts loam and one part peat; whilst Messrs. Loddiges used both loam and peat separately or mixed for their once fine collection. The Belgians pot their Camellias principally in leaf-mould, which is collected in the forests and used by them in a pure state. This leaf-mould is hardly to be compared to that with which English gardeners are accustomed to, as it is the accumulation of many years, and contains a large proportion of decayed wood. It may be used, as collected, without any previous preparation, and does not appear to bind or become sour when confined in a pot. This description of soil is very valuable when it can be procured as above described, and it is not only valuable for the Camellia, but it is well suited for many kinds of hard-wooded plants. With respect to loam, judgment must be exercised in the selection of it, as, although in some kinds of loam the Camellia will flourish and make perhaps stronger growth than in any other soil, yet there are many varieties of loam commonly used for potting, the employment of which, in a pure state, for our present purpose would be most unwise. It is, in fact, rather to the mechanical than the chemical properties of the soil employed that we must pay attention, for unless we secure a free and unimpeded action for the roots, we cannot expect our plants to pass through the various phases of growth and bloom with that amount of vigour which is desirable. As the Camellia is liable to remain in the same soil for years, it will be easily perceived how highly necessary it is to ensure for its porosity and freedom from sourness and stagnation. It is often from want of properly recognising this fact that many of the failures at the blooming period are to be attributed. All soils of a close tenacious nature must be rejected, and if loam cannot be procured fulfilling the above-mentioned conditions, it will be better to rely upon a compost which, if somewhat deficient in stimulating properties, will preserve the fibre in a healthy condition. Nutrient can always be given by means of liquid manure when the necessity for it is perceived, which will be during the growing season, and occasionally whilst the flowers are expanding. This will be a safe method for many whose experience in soils may be somewhat superficial, or who may not have had much experience in Camellia culture. Amateurs whose object it may be to grow but a few plants, and who naturally desire to attain excellence, should procure both plants and soil from a good grower. As quality rather than quantity is in their case the great desideratum, it is absolutely necessary to secure a soil of the very best description. The compost which I would recommend should consist of one-third loam, one-third peat, and one-third leaf-mould, crushed charcoal, and silver sand. In this mixture we have all the elements necessary to promote vigorous growth and to ensure lasting health; and, provided the ingredients be properly sweetened, it may be relied on to remain in a sweet, wholesome condition. The peat, I may add, should be fibrous, and pulled to pieces with the hand, sifting the dust away from it, and being careful not to employ any of a sour description. In planting out permanently, it is of equal importance to pay strict attention to the quality of the soil employed. A larger

proportion of loam may be used than for potting, but in that case the utmost care must be taken to ensure free drainage, as, unless the *Camellia* can be copiously watered during the growing period, the buds will fail to attain that substance which is absolutely necessary for the production of perfect flowers. Nothing is more fatal to their well-being than stagnant moisture at the root; from it proceeds a long train of evils, such as yellow foliage, stunted growth, and premature casting of the buds.

#### Potting and General Treatment.

One point must be especially kept in view by the *Camellia* grower, and that is never to over-pot. *Camellias* may be kept perhaps longer in perfect health without change of soil than the generality of flowering plants. If a plant shows symptoms of ill health, it is better to turn it out and replace it in the same pot with fresh drainage, extracting as much of the old soil as will come away without injury to the roots, and dusting the ball round with silver sand. This treatment, with occasional root waterings, during the growing season will often re-establish old debilitated plants and induce healthy growth. It is therefore impossible in the matter of repotting to lay down a hard and fast rule; each plant must be treated according to its merits. If the pot be well filled with healthy fibres, and the general appearance of the plant indicate that it is in a thriving condition, there need be no hesitation in transferring it to a larger receptacle. Should the roots, however, present a blackened or discoloured appearance, and have not thoroughly permeated the soil, then the better way is to treat it in the manner above described, and defer the shifting until the following season. It is necessary to pot firmly, working the soil down evenly between the old ball and the pot. I do not, however, approve of such hard ramming of the soil as is frequently practised; extremes are always dangerous, and there is a vast difference between insuring proper consistency and bringing the soil into the state of a garden path. I have seen plants potted so hard, that when turned out the balls presented the appearance and had assumed the consistency of half-baked bricks. This is simply bad treatment, and must by no means be indulged in in the present instance. In purchasing plants for growing on it is essential to secure them in a perfectly healthy condition, and it is well to begin with 4-in. pots. There are many thousands of *Camellias* imported annually into this country from Belgium. These plants are remarkable for their vigorous, healthy appearance; the foliage is of a deep hue, and is generally of handsome proportions; they give the idea, in fact, of containing an enormous store of vitality. This description of plant, however, often fails to realise the expectations that are naturally formed concerning it; they seem to need a great amount of care to maintain them in health. These plants are, in fact, grown under peculiar conditions, which cannot well be maintained when they come into this country; they consequently sustain a check which debilitates them to a serious extent. It is preferable for the amateur to choose his plants from English-grown stock, as, if they are not quite so large and handsome, they may be more depended on. March may be considered the best period to repot, when the plants must be placed where they can be shaded from the sun, and can be attended to in the way of syringing, for the *Camellia* delights in moisture, both atmospheric and at the root, when making its growth. \* Abundance of air must, however, be given, as undue confinement will both cause weakly growth and enfeeble the whole plant. A moist and warm, but not a close atmosphere is that in which the *Camellia* will thrive during the growing period, for we must remember that we have to deal with an almost hardy evergreen which merely requires the glass protection to ensure a regular growing temperature. When growth is completed the plants may be placed in the open air, a situation in which they catch the morning sun and are sheltered from that of midday, being best adapted to them. There they may remain until the end of the summer, to be housed before the advent of the heavy autumnal rains. It is of great importance to give free ventilation when the plants are first housed, and to see that they do not remain dry, as a few days' neglect just at this time in these respects will do irretrievable mischief. The ventilators should remain open night and day for some time, only closing them in frosty

weather. Bud-dropping is often caused by the change experienced in the removal from the open air to the close quarters of a glass structure.

#### Propagation.

Propagation is effected by means of cuttings, grafting, and inarching. Although most varieties of the *Camellia* strike fairly well, the most satisfactory results are obtained when they are grafted upon the common red, inasmuch as it insures a healthy constitution to those kinds which are naturally inclined to be weakly and uncertain in their growth. Many of the highly-bred, fine-flowered kinds would not attain any great degree of vigour if grown upon their own roots. Cuttings of the common red are inserted in August in sandy peat surfaced with silver sand, and placed in frames until September, when they are removed to the propagating house. They there make root, and are potted off in the spring, grown on in frames during the ensuing summer, and are fit to be worked the following season. Pieces of the past season's wood are taken and placed in the ordinary way of side grafting. The grafted plants are kept in close frames in the propagating house, admitting air daily for an hour or two until they have taken, when they are removed to more airy quarters and gradually hardened off. The best time to graft is in August, when the wood is ripe; they then get well established by the following spring and are ready to grow away strongly. Inarching is now only practised when it is desired to introduce a newer or better variety upon an old-established plant. The operation consists in simply paring away a portion of the bark of the stock and fitting the branch of the plant to it which it is desired to establish thereon—the wood of the graft to be pared away similarly to that of the stock. Tie them firmly together, placing the plant which furnishes the grafts so that it cannot move. They will soon unite, when the branch may be severed and will become part of the old plant. This is a good method to renovate old planted-out specimens which may have become bare and leggy and deficient in vigour. The placing upon them of fresh branches from young fresh plants infuses new life into them, and, in addition to re-clothing the plants, often has the effect of causing an increased circulation of the sap and inducing a more healthy root action. JOHN CORNHILL.

*Byfleet.*

#### NOTES AND QUESTIONS ON THE INDOOR GARDEN.

**Tillandsias on Fern Stumps.**—*Tillandsias* succeed perfectly planted on Tree Fern stumps cut into lengths of about 9 in. A few small Ferns or Mosses may also be planted round the base of the *Tillandsias*, and be allowed to cover the stumps. Such arrangements answer well indoors where flower-pots are often objectionable. They may also, if required, be suspended by means of a piece of wire. Other plants might likewise be grown in this way with equally good effect.—C. S.

**The Double-Flowered *Dentzia crenata*** is a remarkably fine variety of *Dentzia* far too seldom seen, either in the forcing house or the shrubbery. It is a much stronger grower than *D. gracilis*, and it produces longer racemes of flowers, which are quite double and pure white; they also last much longer and are far better adapted for cutting than those of the single kind. We have forced it here for the last two or three years, and find that it succeeds quite as well as *D. gracilis*. I do not consider it at all inferior to the best of the *Bouvardias* for any purpose, and I would strongly recommend it as a forcing shrub.—J. S. W.

***Pteris serrulata cristata major*.**—Few Ferns are more valuable for decorative purposes than this. Mr. Wills grows at his Anerley Nursery hundreds of small plants of it for vases and similar purposes, as well as large specimens. In a small state it is exceedingly pretty, and when grown into a large specimen 3 ft. to 4 ft. through, its beautiful created pinnae droop gracefully from arching fronds 2½ ft. to 3 ft. in length. This variety produces spores readily, but they seldom produce anything like the parent plant. Division is therefore the only sure way of propagating it.—C. S.

**A Simple Shading for Plant Houses.**—A correspondent of "The Gardener" states that he has tried lime and whitening with most unsatisfactory results, both as regards appearance and fitness to resist heavy rains. He has found plain butter-milk, laid on with an ordinary paint or whitewash brush, to be most efficient for the purpose. When put on in this way it has "the appearance of ground glass, and forms a light shade, sufficient to throw off the burning sun, and not darken the house to an injurious extent, even in dull weather." As to its enduring property, he states that some of this shading put on early last June, and recently washed off, stood the rather severe test of something like 1½ in. of rainfall.

## LONDON CHURCHYARD GARDENS.

It has often occurred to me that churchyard gardening is greatly neglected in this country. We appear to wait until some benevolent person furnishes the necessary funds before any attempt at embellishment is made. This is, to say the least of it, unfortunate, when so much might be done in so little time, and that at a trifling expense. I am confident from experience that a well-kept park or pleasure ground has great influence in improving the condition of the inhabitants in its neighbourhood. It is impossible to give directions which will prove suitable to all situations, as they are so numerous and variable, but, generally speaking, the mode of procedure may be the same in all cases. I do not think it necessary in carrying out a scheme of churchyard improvement that we should adopt an elaborate plan of landscape or floral decoration, these being more suited to private residences and public parks; what is really required is some simple and natural arrange-

ment (which, by-the-by, is perhaps the highest and best art of the landscape gardener), something which cannot fail to please without being too artificial. Nature, even under the most adverse circumstances, has provided us with the means whereby we may fill many blanks. The chief point is to know how to treat her. A churchyard should not be a playground, neither should trees preponderate, inasmuch as they have a darkening effect, nor should it be a glaring flower garden; it may, however, combine these in a modified sense, viz., it should afford scope for decent recreation, and trees, flowers, and Grass should be so balanced as to tone down and relieve each other in the proportions best suited to the locality. Turf should, in all cases, form a principal feature, the relief afforded to the eye by a beautiful green velvety sward being incomparably greater than that produced either by flowers or rockwork. Trees and shrubs are most desirable, but they should be sparingly planted in small areas. There are, of course, many instances in which tombstones will interfere with arrangements; in fact, some churchyards are so full of

them that little can be done, except planting a few trees and climbers. Our business now, however, is more particularly with open spaces, in which few inconveniences occur. Assuming a church to stand upon a rectangular plot of ground, with entrances from the street in front only, besides the entrance, roads and walks will be necessary, and much depends upon the directions which these take. Walks should never be straight—a series of graceful and natural curves being a pleasing feature in landscape gardening. When the walks are formed the work may be said to be half over. Their width should be in proportion to the area of the ground upon which they are laid out, and also to what parts of the building they are intended to lead. Their width may, however, be variously stated at from 5 ft. to 16 ft. Turf from 10 ft. to 30 ft. in width should run along the sides of the building, and in front there should be a lawn as large as the area will permit, reserving a belt for trees and shrubs along the boundary fence or wall next the street. Upon the turf just mentioned should be planted Catalpas, Ailantus,

Robinias, Sumach, Yuccas, and Enonymus. Ivy, Virginian Creepers, Clematis, and any other varieties of climbing plants may be trained upon the walls of the church, always, of course, taking into consideration the locality. We should never attempt to construct rockwork adjoining the building. Under such circumstances it is unnatural and altogether out of place; rockwork rising out of sheltered nooks cannot be objected to; but to pile stones and bricks against the walls of a church is an unparadoxable mistake. Where practical, a line of trees may be planted round the margin, and plantations formed with curved outlines may be made where it is necessary to shut out unsightly buildings or other objectionable features. In this matter our churchyards and cemeteries are greatly behind those in America, some idea of which may be gleaned from the annexed illustration. When the lines of walks have been decided upon, a practical eye would at once see the best positions for the plantations. During summer it would of course be desirable to enliven the place with a few flowers, and here again great judgment is requisite. I should most certainly deprecate any attempt at forming an elaborate system of beds; what is wanted are a few beds placed here and there without formality, and filled with the most unostentatious flowers, such as Ivy-leaved, Pink, and White Pelargoniums, Lobelia, Gazanias, and Tropæolums. Where possible, too, hardy herbaceous plants and perennials should be freely introduced in the shrubby borders; upon the Grass also, especially upon sheltered slopes, may be planted bulbs of Snowdrops, Daffodils, &c. Primroses are exceedingly pretty in such positions, the colours being varied and decidedly beautiful. Clumps of Fennel, Acanthus, and other hardy ornamental plants may, with good effect, be planted on the Grass, and in the plantations Heracleums and Verbascums. The list might be greatly extended, but, perhaps, enough has been said to show the class of work advised. I may now mention some of the best trees and shrubs which may with safety be planted in the more densely populated districts of London. Of



A Churchyard Garden.

course, greater latitude is available in more open situations. The Plane, Poplar, Lime, Sycamore, Acacia, Elm, Willow, Thorn, and, as before mentioned, Ailantus, Catalpas, Aucubas, Privets, Lilacs, Euonymus, Ribes, and dwarf Hypericums all succeed. This list may also be much increased, but only with a thorough knowledge of the peculiar constitution of the trees and shrubs employed, and also the surrounding atmosphere. It must not be forgotten that trees and shrubs have their enemies in the shape of insects, and these must be diligently hunted for and destroyed. The probabilities are that in course of time the only trees that will remain will be the Planes and Poplars. Still, some variety is desirable; and as some trees die or are destroyed by insects, it may be found necessary to plant others. A good guide in choosing trees and shrubs for London is to select those which grow most vigorously, and which lose their leaves and bark freely in winter; in other words, those which thoroughly clean themselves once in each year; without this success is difficult, if not impossible. It is probable also that the turf will require

great attention, for that too has its enemies. The ground should in all cases be thoroughly drained, and if breeze or cinder-ashes can be got, a good layer about 1 ft. below the surface will materially assist in keeping the Grass in good condition. A good and effective plan, however, is to sow thinly a renovating mixture of Grass seeds in autumn and spring, thoroughly raking the surface with a wooden rake, adding soil where necessary, and rolling. The cost would be trifling, and success would be tolerably certain. Dressing the surface with artificial manures and other means may also be tried in some localities.

C. DENNIS.

*Southwark Park.*

## THE FLOWER GARDEN.

### "DUNEDIN'S" REPLIES TO QUESTIONS ON LILIES.

Mr. WILSON observes that it seems to him that Lilies like *Lilium giganteum*, where the old bulb clearly dies, and *L. superbum*, where only the new bulb flowers, give facts in my favour; but that *L. tenuifolium* rather points the other way. I hope, however, he will be able to settle to his own satisfaction in what way he thinks this Lily differs from the others, as I have not found that there is in it any departure from the general organisation of other Lilies. With respect to *L. Thomsonianum*, M. Leitchlin, of Baden-Baden, says: "The bulb of this plant is annually formed anew; the old one entirely decays. This latter serves for some time as nourishment and support for the shoot, which soon makes its growth independently of the decaying bulb." Dr. Wallace, of the Colchester New Plant Company, says: "We have constantly observed, when Lilies are taken up, that there are two sets of scales—the outer irregular discoloured portion, which represents all that is left of last year's bulb, and an inner regular, plump, white set of scales, representing the growth of the previous and the inflorescence of the coming season." These remarks all hover so very near the verge of my discoveries, that if carried a little further by inquiry in the interior of the bulb, they would, I think, have corroborated everything that I have said on the subject. On the other hand, Mr. Baker is represented as having said, in connection with the "Old World species of *Lilium*," that a bulb, after having bloomed for the first time, "goes on living for an indefinite period, sending out each year a flower-stem from its centre, and shedding off old scales with buds in their axils." The readers of THE GARDEN will see that this idea of the "bulb going on living for an indefinite period, and sending out each year a flower-stem from its centre," is entirely contrary to the facts which my experimental investigations have disclosed, and may, therefore, have been the means of confirming many in the mistaken notion that it is "the same bulb that continues to bloom year after year."

### Lifting and Transplanting.

At p. 83 Mr. Groom says:—"Although 'Dunedin' positively asserts that Lily bulbs do not suffer from being cut down in full bloom, will he go so far as to recommend such a course as being likely to assist the perfect maturation of the succeeding year's flower-spikes?" I fear there must be some misunderstanding here, as I am not aware of anything like "perfect maturation" being required at such a time, nor do I know what is meant by the phrase, "perfect maturation of the succeeding year's flower-spikes." If Mr. Groom will oblige me by referring to p. 28 (Jan. 12), he will there see that, in order simply to illustrate the independency of the new bulb at the time when the parent bulb is in bloom, I said:—"I have cut down the stems when the plants were in full and fresh bloom without in the slightest degree affecting the growth of the new bulbs, which at this time are themselves sending down roots, by which they can gain subsistence sufficient to make them independent of the parent bulbs." I stated this merely as the result of certain experiments, as I thought it might interest some of the readers of THE GARDEN, and I added:—"Those who have carefully studied the connection that exists between the old and the new bulbs will understand this." As regards the date or time for transplanting, if Mr. Groom will turn to p. 557 (Dec. 15) he will find that I have said, "It is a fact,

which science has placed beyond a doubt, that if Lilies do not all bloom at the same time, they should not be all transplanted at the same time. Beginning, therefore," I continued, "eight or ten days after the Lilies which flower first, have shed their bloom, we go on lifting and transplanting, from time to time, until October, during the most agreeable part of the year, and during a period, too, when amateurs have a good deal of spare time on their hands, which might be turned much to their own advantage, and, at the same time, to the advantage of our professional growers." This is my idea of what transplanting, in a scientific point of view, ought to be; that is, transplanting each class soon after the bloom of that particular class has faded, and not all the classes at one and the same time. In dealing with the Lily we should never overlook the fact that it is, in its organisation, totally different from all other bulbous plants. When a Lily has once bloomed, all that Nature intended is accomplished; and nothing afterwards remains for it but to droop, decay, and die—stem, bulb, and roots all perish. The new bulb at this time requires no maturation, for within two weeks after the bloom of its parent has faded it is itself fully developed, and is become a parent bulb. The new bulb, like all its progenitors, is charged with the function of liberating a germ, which vegetates as soon as brought into a condition fitted for its growth; and this is the time it is fitted, and also the time when the transformation takes place. This is now also the most appropriate time—that is, when the new bulb is in its most quiescent state—for lifting and transplanting it, with the best prospect of a successful bloom next season. He that asserts the contrary, and continues to transplant at a later season, can know nothing correctly of the organic structure of a Lily bulb; and, consequently, he continues to act in opposition to the dictates of Nature, and also to his own detriment. I quite agree with Mr. Groom when he says:—"Is it not safer to postpone the period of transplanting until after blooming?" But then he appears to have made this remark under the impression that I had advocated something different. As regards the leaves fading, if the flowers have faded, it is of no consequence to the new bulb whether the leaves of the old flower-stem have faded or not. This is characteristic of the Lily, apart from all other bulbous plants. With respect to "the bulbs soon commencing to rot afresh," this remark also appears to have been made under some misapprehension, as the old bulb never roots or flowers again, and the new bulb is sending down its own roots long before the bloom of the old bulb has faded. It is these new roots being mixed up undiscovered with the old ones that have led many superficial observers to entertain mistaken notions on the subject. As to "pot culture," I candidly confess that I know little or nothing about it, my experimental researches having been principally confined to the open ground, in order, if possible, to induce Lily growers to unite in one understood and general system. I flatter myself, however, if Mr. Groom can adapt some of my views to his pot culture, they may be of benefit to him, as I have pronounced nothing that is not founded on experimental facts.

### Imported Bulbs.

We now come to "T. B." At p. 86 he says that I questioned the accuracy of Mr. Stewart Hardy's statement. I beg leave respectfully to deny having even entertained the idea of questioning the accuracy of any statement he has made. My questions were put to him "in all sincerity," for this special reason: A few days after his note of December 22, 1877, appeared, I called at a place in Cheapside, and obtained a supply of newly imported auratum bulbs, upon which I operated by dissection, in order to collect evidence of certain facts before making them known to the readers of THE GARDEN. This is the head and front of my offending. But what did "T. B." himself do in order to confirm Mr. Hardy's statement? He says: "For the last three years I have purchased annually four or five dozen of imported bulbs. The sizes ran from 2½ in. to 3½ in. in diameter, and all grew satisfactorily, and produced from five to nine flowers on each bulb, though two bore respectively twenty-seven and thirty-eight on one stem. I made the purchases in Jan., and had them potted and placed in a cold Vinery till they started, soon after which they were put into a frame under a north wall till the inclement weather was passed. When their

growth was completed they were transferred to my conservatory. Those purchased last year began to bloom in August, and the last of them is now only fading (January 26)." The reader will see here that there is no confirmation whatever of Mr. Hardy's statement, for, though Mr. Hardy's Lilies did not grow very high, it appears they were all planted out, and bloomed in the open air. Instead of confirming Mr. Hardy's statement, "T. B." supports mine in all essential particulars, for he shows clearly that, as a general rule, it would be a waste of money to buy imported bulbs to be planted at once in the open ground. In fact, he distinctly acknowledges this, for he says: "I have not had satisfactory results from those planted outside." I daresay "T. B." and I would agree very well if he would draw a broader line of distinction between culture under glass and culture in the open grounds of England. In reply to "Amateur" (p. 160), I am able to inform him that *Lilium auratum* and *L. speciosum* have had as fair a share of my attention as any other class, and I have not yet met with any peculiarities in them that are not at times to be found in others. If "Amateur" will turn back to p. 260, March 31, 1877, he will find something described and explained there, under the head of "twins, and three at a birth," that may perhaps induce him to review his present article, as a great part of it is, as he himself must admit, mere speculation where facts are really wanted. If he does this, I shall be glad to read his further remarks. With respect to Mr. Frank Miles, I wish he would try to ascertain under what circumstances his bulbs of *L. auratum* were gathered, packed, and transmitted to this country, as I believe their success in a great measure depends on this. I shall also be glad if he can throw any light on the admitted fact that, though hundreds of thousands are annually imported, the complaint is still, "Where are they now?" Mr. Groom has said, and I entirely agree with him, "In reference to imported bulbs, one fact must be decidedly clear, viz., that, under our enormous annual importations, the whole country would soon be a bulb garden if the bulbs did not speedily die out; the cause of which must be attributed to the drying-off process, the pernicious effects of which are annually everywhere visible." To this I may add that the difference of opinion which exists among collectors themselves clearly shows that, until the organisation of a Lily bulb is better understood, we may look in vain for a better and an earlier supply. I am prepared to prove that planting in the open ground so late as February or March, though not apparently deteriorating from the bloom of the first season, is most destructive to the young and tender germ in its incipient state, and consequently to successional bulbs, causing them to die out at a very early date.

#### Do Lily Bulbs Grow Annually Larger?

With respect to "H.'s" remarks. At p. 86 he says:—"The origin of a Lily is a germ or seed-bud, we are informed; but would it not be better to trace the Lily from the seed and follow it through its various stages up to maturity, its flowering period?" Now here I must say that I have always found my greatest difficulty to be in dealing with those who have already formed prejudiced opinions in favour of some fanciful theory. It is very clear that "H." is not aware that the germ within the bulb is the true origin of the Lily and of all that belongs to it. It is impossible that we can go further back than the germ. If we can trace the plant from that point "to its flowering period," it is all we can do; and this I have done, and attempted to describe over and over again in the most elaborate manner. If I have not succeeded in making myself understood, I can only say that I regret it very much. "H." asks:—"If a Lily dies annually, how is it that the bulb grows larger year by year?" In reply, I say that the same bulb, most assuredly does not grow larger year by year. And on this ground I take my stand; for in the correctness of this doctrine lies the whole gist of the matter. If "H." had read my former papers carefully, he must have seen that I have stated distinctly that a Lily bulb blooms only once and then dies—stem, scales, and roots all perish; and that it is the successional bulb that blooms the following year, and so on. So that, if the successional bulb grows "larger year by year" [until it reaches its maximum], it is simply owing to superior culture and congenial soil. We more often find that the suc-

cessional bulb grows less year by year; and this, again, is owing to neglected culture and the want of good and suitable soil. Dr. Wallace relates several instances that have come under his observation where the bulbs grew larger, and also where they grew less. To the experimentalist this is nothing new. If "H." could banish from his mind the idea that it is the same bulb that blooms year after year, much that is now obscure and unaccountable would appear to him as clear as the light of day. I am, indeed, sorry to differ from him on any point. Will he, therefore, oblige me by looking at the drawing of the photograph at p. 143, and my remarks which accompany it, and then say, after due deliberation, whether he still believes that the bulb (at A) that bloomed last year will ever bloom again, supposing that it had not been removed from the ground? If the block on which the drawing is engraved were put aside until the 1st of January next, and another half-dozen bulbs were then taken up and dissected as before, the same block would do for the printer, as the representation in the fresh bulbs would be the same as the present, but the actors would not be the same, that is, the site of the present A would be gone. B would have taken the place of A, C would have taken the place of B, and a new and fresh seed-bud would have taken the place of C. This was so last year, and will be so again and again for an indefinite number of years, provided the culture is good. "H." closes his remarks by saying: "Common sense tells me that the Lily is a perennial; that the germ or seed-bud constitutes one of the modes of reproduction; but I cannot look upon it as the origin." Common sense is a variable quantity in the minds of different persons, and is, therefore, not admitted to be a correct guide in such a case as this. But if "H." will refer the matter, in a proper form, to Science and Nature, they will tell him that the Lily is decidedly not a perennial, and that the germ is really and truly the origin of the Lily—that from which the stem, the leaves, the flowers, and the flower-seed itself springs.

I have said that the Lily is not a perennial, and that it is not an annual. I have also said that there is an annual bloom, but not from the same bulb. Then what is the Lily? for it is certainly not a biennial. This question I propose, on another occasion, to answer by placing before the readers of THE GARDEN the details of a course of experiments, the most interesting of all that I have made, tracing the growth of the Lily month by month from the birth of the germ until the death of the flowering bulb, this being all comprised within a period of two years.

DUNEDIN.

#### WALLFLOWERS AND VIOLETS FOR MARKET.

Those who are fortunate enough to possess a few acres of these sweet-smelling flowers are getting for them better prices than can be obtained for vegetable produce, and, enormous as is the supply of them, it is none too large to meet the requirements of vast flower-loving London. Violets and Wallflowers bring to all alike the one touch of Nature—a love and desire for something that is beautiful. The recent sunny days and dry weather have brought Violets and Wallflowers on apace, and their gathering keeps myriads of hands busy, whilst not a few poor women and children in our crowded cities have good reason to rejoice in a good Violet season. Wallflowers, unchecked by frost, are blooming gloriously, and are of that deep crimson hue so dear to purchasers. It is curious to find that the bright golden and yellow selfs will not sell—at least growers declare that no one would purchase them if they grew them; and if this be true, it tells forcibly that sweet perfumes have more charms for the poor than gorgeous tints. Effective as the Belvoir Yellow and the Golden Tom Thumb kinds are for spring bedding, they will not be grown for market unless the tastes of the people undergo a considerable change. The flowering of all Wallflowers can be accelerated by transplanting them late in the autumn, but it would not be desirable to do this to any very great extent. Where used for spring bedding such transplanting is unavoidable, but, in that case, earliness as regards flowering is a great desideratum. It is useless to expect pure colours where the seed is sowed from plants grown near each other. Insects of all kinds, bees especially, frequent the Wallflower in abundance, and the pollen is carried in all directions. It is necessary to isolate distinct colours as far as possible, in order to secure the required self hues. No doubt owing to the fact that only the dark blood-red kind is universally grown about London is largely

due the rich self colour of the flowers of the popular market kind. For market work seed is sometimes sown in the autumn, and the seedlings remain in the seed bed, and are planted out in the spring, but as a rule it is sown during one of the first two months of the year, in order that strong plants might be ready to get out early in the summer, the object of the grower being to get large plants that will produce a good head of flower earlier than late-sown plants. For bedding it is early enough to sow in March, and the seedlings should be planted out in poor soil to keep them dwarf and compact. That grandest of all single Violets, Lee's Victoria Regina, is not cultivated so extensively as it ought to be. I have had it in fine condition under glass this winter, and next year, with a good stock, I hope to have a thousand strong plants to flower in frames. All side shoots taken off old plants in November, and planted thickly in rows, will give a very fine lot of plants next autumn if replanted more thinly in April.

A. D.

### HARDY CLIMBING ASPARAGUS.

SOME of the hardy species of Asparagus are worthy the attention of the "curious gardener." Even from the point of view of ornament only, a healthy tuft of the common kind looks



A Hardy Climbing Asparagus.

well among low shrubs. There are few more graceful plants when in its summer green or when in fruit. The species we now figure is one of the hardy climbing ones noticed in the Garden of Plants (*A. verticillatus*), which grows in a twining manner about 10 ft. high, and forms a very distinct plant with much grace. It is a native of the Caucasus.

### NOTES AND QUESTIONS ON THE FLOWER GARDEN.

**Snowdrops in Masses.**—These delicate harbingers of spring are now in full beauty; but to be able to see them in perfection they must be allowed to thoroughly establish themselves in masses. On ground that has been dug their purity of colour gets dimmed through heavy rains, but in permanent position, carpeted by Moss, Grass, or Ivy, they are simply exquisite.—J. GAOON, *Henham*.

**Primula denticulata and Veronica Blue Gem.**—This *Primula* is just now in its first flush of beauty; its round heads of lavender blossom and stems thickly powdered with yellow dust are perfectly delightful; and, as I have been away so many springs, its beauty strikes me afresh. Too much cannot be said in praise of *Veronica Blue Gem*; though for a short time frost cut the flowers, it is now again opening fresh blossoms, and makes, with *Snowdrops*, *Crocuses*, and lingering *Arbutus* berries, quite a glow of colour.—E. H. WOODALL.

### PLATE CXVII.

#### THE ACANTHOLIMONS.

(WITH A COLOURED FIGURE OF *A. GLUMACEUM*.)

Drawn by H. HYDE.

The small Order *Plumbaginaceæ*, or *Thrift* tribe, yields its full proportion of ornamental plants to our gardens. The old-fashioned *Thrift* (*Armeria maritima*), with its rose-coloured or pale lilac flowers, is still not unfrequently met with as an edging plant. With various species of the *Sea Lavender* (*Statice*) we are familiar, both in greenhouses and in winter bouquets of dried flowers; while the exquisite pale blue blossoms of *Plumbago capensis* hang in rich profusion from the roof of many a conservatory. The genus *Acantholimon*, albeit less known than any of these, is a worthy associate of them, and has almost equal claims upon the practical cultivator. It is an Eastern genus, extending from Syria and the east of Greece to Western Thibet, and having its head-quarters in Persia. The flowers resemble those of the *Statice* and *Armeria*, but the habit of the species of *Acantholimon* at once distinguishes it from either of these. The *Acantholimons* do, indeed, form branching, cushion-like tufts, somewhat after the style of *Thrift*; but the leaves, instead of being soft and Grass-like, are rigid and sharply pointed, or even spiny. From among the foliage arise flower-stems, which are sparingly leafy or quite without leaves; they are simple or slightly branched, or, in some exceptional cases, elongated and divided into two toward the apex. The blossoms are small, but numerous and showy, either rose-coloured or white, and of a dry, chaffy texture, like those of the *Sea Lavenders*. The calyx is usually white, surrounding the corolla in a frill-like manner. As many as eighty-four species have been described by Bunge, while Boissier has only about half as many; it is probable that the higher number is capable of considerable reduction. The species so much resemble one another, that anything like a detailed account of them would be too technical to interest the readers of *THE GARDEN*; but their attention may be drawn to one or two which are useful and striking plants for rockwork, although not often met with in such situations. They are not difficult of cultivation, but do not grow readily from seed, the best mode of increase being by dividing the plants, or layering the shoots towards the end of the summer.

**The Grassy Acantholimon** (*A. glumaceum*, Boiss) is a pretty little plant of Grass-like habit, with green, spiny, needle-like foliage, and a short scape about twice or thrice as long as the leaves, formed of small dense spikelets, each containing from seven to nine rose-coloured flowers. It is a native of Armenia, blossoming during the summer months, and is a very useful and ornamental plant for rock-work.

**The Beautiful Acantholimon** (*A. venustum*, Boiss) is or was recently in cultivation at Kew. It is a beautiful perennial, with radical tufts, narrow grayish leaves, and rather large flowers of a beautiful satiny rose colour, which are arranged in long scorpioid racemes rising above the leaves. The spikelets forming these racemes contain from twelve to twenty flowers, which are longer than those of *A. glumaceum* and of a brighter hue. This species is a native of Mount Taurus, and flowers in June and July.

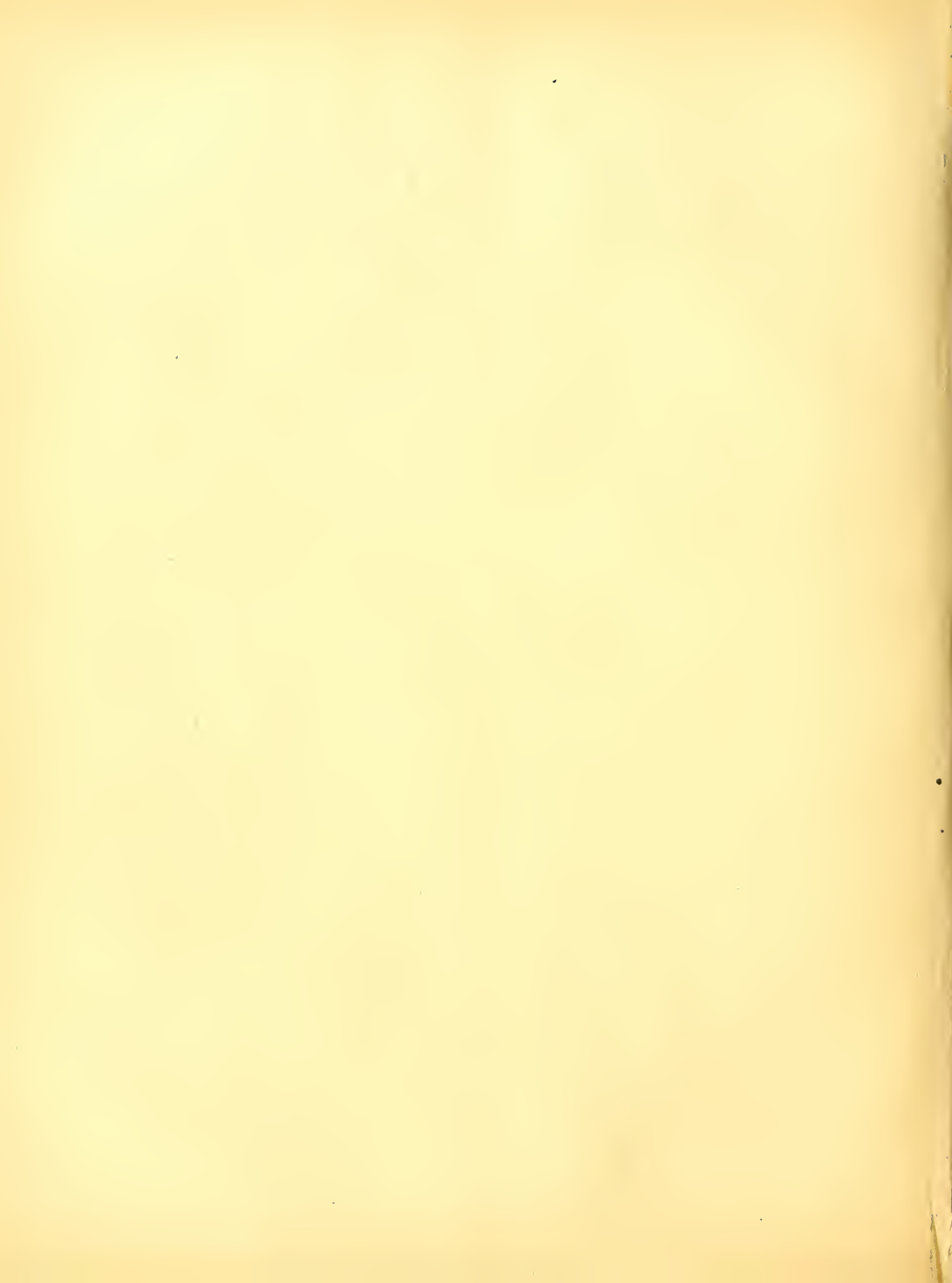
As far as I am aware, no other species of *Acantholimon* is in cultivation, but the introduction of others is much to be desired. *A. Kotschyi* is a handsome species, with long spikes rising well above the leaves and numerous white flowers; *A. melananthum* has short, very dense, capitate spikes, the limb of the calyx being bordered with dark violet or black; *A. Phrygium* is in the way of *A. venustum*, but is a more robust plant, with longer spikes; *A. androsaceum* is a pretty, compact little plant, with numerous branches and very short spikes of intensely purple flowers, enclosed in a white calyx with purple ribs.

JAS. BRITTON.

[The plant figured was sent to us by Mr. W. Thompson, of Ipswich.]

**Hardy Plants in Flower at Fulham.**—The following plants are now in flower here, viz. :—*Bulbocodium vernum*, *Eranthis hyemalis*, *Iris reticulata* (various), *Leucogonum*, *Scilla bifolia*, *Hepaticas*, and *Helleborus orientalis*.—OSMOND & SOXS.





## GARDENING FOR THE WEEK.

## HARDY FLOWERS.

**Auriculas.**—Attention was directed a fortnight ago to the surface-dressing of Auriculas. If this has not been done, as then directed, no time should be lost in doing it now. The plants have started early and strongly, and give promise of a good bloom. They must not suffer from want of water at the roots after this, and it is very desirable to thoroughly moisten the old soil. During the winter the soil becomes very dry, and if it be not thoroughly saturated before the dressing is applied, it is very difficult to do so afterwards. The weather has been favourable for the development of decay, to which a close, muggy atmosphere is always conducive. I have found it necessary to cut the decayed portion of the stem from several varieties, afterwards dressing the wound with freshly-slaked lime. I recently read an article on Auriculas, wherein it was stated that all the trusses formed up to February should be removed. The writer could not have had any practical experience, or he would have known that the best trusses are those that are formed down amongst the leaves so early as November and December. Such trusses will gradually develop themselves, and they will flower the earliest, but not too early for the Auricula show. What grand trusses I have had of Lancashire Hero (Lancashire), Smiling Beauty (Heag), Alderman Wisbey (Healdy), Geo. Lightbody (Healdy), Arabella (Healdy), Glory (Taylor), and many others from autumn-formed trusses! The pipes are more regularly formed, and the edging more perfect; besides, they are nearly double the size of late formed trusses.

**Carnations and Picotees.**—Those in pots require attention; and unless the largest proportion of the plants are grown in pots, the blooms will not be so good as the best of those exhibited at our flower shows. Many of the weakly varieties will die off during the winter if they are exposed to the atmosphere of our large cities without a glass protection; and one advantage which the grower of these flowers, and also of Auriculas, possess is, that they can be grown in smoky cities almost as well as in the free air of the country. Mr. Simonie told me that St. Paul's Churchyard, at the top of Ludgate Hill, was a more favourable situation for Auriculas, Carnations, &c., than his own garden in Sheffield; and anyone who has visited him must have come to the same conclusion. Standing in his garden on a clear day in June, you can look at the sun at noonday as if you were gazing through smoked glass, and yet Mr. Simonie carries off first prizes at the national shows. The lights should be removed every day when the weather is fine. See that perfect cleanliness is maintained in the frames, remove all decaying foliage, and destroy green fly by brushing it off, dipping the leaves in soft soapy water, or, if practicable, the frames may be fumigated with Tobacco smoke. A gentle shower of rain will do good if the plants are nearly all dry, for they are not usually all dry at once, and it is not wise at this season to allow rain to fall on plants that are sufficiently wet. The leaves should not be allowed to remain wet very long; tilt the lights, and allow the air to circulate amongst the plants afterwards. Many are troubled with sparrows eating the hearts out of the plants. In our garden they prefer to pick off every bud of Primroses and Polyanthuses at which they can get, not to eat them, but to drop them on the ground in mere wanton mischief. If they attack Carnations in frames, they must be kept from them by stretching a net over the plants in such a way that it does not touch them.

**Dahlias.**—If Dahlia roots have not yet been put into a house where there is a gentle heat, they ought now to be placed there, as previously recommended. There is plenty of time yet if a large stock of plants be not required, and it is very undesirable to force on the growth in too much heat. The cuttings should be taken off when they are 2 in. long, and each cutting should be placed in the centre of a 24-in. pot, and the pots should be set close together in a frame or pit over a bed where there is just a gentle bottom-heat. The slender cuttings form roots most quickly. Very stout cuttings will remain a long time before they do so. When the small plants begin to grow, they must be removed from the bed, and be placed near the glass, and when fairly rooted, may be potted in 5-in. pots. It is not necessary to start pot roots for a month yet; if started too early, the plants become pot-bound or drawn up weakly before planting-out time.

**Hollyhocks.**—These are not so easily propagated as Dahlias; the cuttings take longer to form roots, and are more liable to damp off instead of forming roots at all. If they be managed as previously directed, when the cuttings or grafted plants have formed roots, they should be potted into 5-in. pots, keeping the plants near the glass in a house where there is a little heat. In two weeks after potting the plants will have rooted sufficiently, so that they may be transferred to a cold frame. Keep the frame rather close at first, and

use mats on frosty nights; afterwards give air freely. Such plants will flower well, and usually produce better spikes than autumn-struck cuttings. Autumn-struck outtings wintered in small pots should now be potted into larger pots. If the plants become pot-bound, they seldom give satisfaction.

**Pansies in Pots.**—Some years ago the Royal Horticultural Society offered prizes for Pansies in pots, and I have a vivid recollection of the fine group of plants exhibited by Mr. James, of Teddes, Isleworth. It is to be regretted that the prizes were not continued, as Pansies succeed remarkably well in pots; and what a refreshing change it would be to introduce them at the March or April shows! If the plants have not yet been potted into their blooming pots, no time ought to be lost in doing so. They do well in a compost of good turfy loam, four parts; rotten cow manure, one part; leaf-mould, one part, and a little river sand added to keep the soil open. The plants must be placed very near the glass in cold frames, the Pansy being impatient of the restrictions of a heated structure. Admit air freely, and see that the plants are kept free from insect pests. Green fly attacks the plants when in confinement, and slugs are particularly fond of half-opened flowers or tender young leaves.

**Tulips.**—These did not appear through the ground so early this season as they did last; but they are now all above ground. Our beds will have the surface-soil stirred over with a pointed stick; the weeds will be removed by hand. I am not at all anxious about them suffering from cold at this season. Our soil is of a dry nature, and it is well drained; in wet soils and heavy loam the plants would suffer from wet, if frost should set in after rain. J. DOUGLAS.

## Roses.

Tea Roses that have been grown on in pots with a view to turning out in the open ground may now be planted where they are to remain; they are much more suited for covering walls, particularly low ones, than other kinds often used for such purposes, inasmuch as their habit of flowering in succession through the season, and especially up to the latest period in autumn that the weather permits, is a decided advantage, although the quantity of bloom which they produce at any particular time may not be equal to that of some of the hybrids. The soil in which they are to grow should be made very rich with manure before they are planted, otherwise their progress will be comparatively slow, and in such situations they need more attention as to water at the roots during dry weather in summer than they otherwise would do, for at the foot of a wall the soil seldom gets moistened by rain so effectually as where fully exposed. This is one of the reasons why Roses on walls are frequently met with in a stunted state. The manner in which Roses are too often trained on walls is also the cause of their often getting into an unsatisfactory condition with nothing but bare old branches, devoid of either foliage or flowers for several feet from the base upwards. This results from the whole or greater portion of the stronger shoots being nailed in an upright position; whereas if they were spread out, especially the strongest, fan-fashion, stout young growths would annually be emitted near the bottom that would keep the surface evenly covered with flowering wood. In the case of established Roses that have got in this way in such situations if they be now loosened from the walls, and the lower part of their strong branches for some feet be bent and secured in a horizontal position, the lower dormant eyes will start and furnish the required growth. In narrow borders close to buildings in which the roots of climbing Roses are confined, the soil, as elsewhere, in time gets exhausted, and does not present such facilities for digging in the requisite quantity of manure as in more open situations, the result of which is weak, puny growth. Where this happens some of the old surface soil should now be removed, and a good layer of manure or new soil substituted, forking it in as far as possible without disturbing the roots or the soil. In the case of the extremities or main feeding roots of Roses on buildings from which they get into gravel walks that run near and parallel with the buildings; in such cases the best way of feeding them is frequently during spring and summer to soak the gravel with strong, clear manure water. A thorough application so as to moisten the whole mass at the present time will be of material assistance in enabling the plants to push vigorously in their first spring efforts at growth. All pruning of Roses on walls yet to be completed should be brought to a conclusion without delay, and the nailing and tying should be finished, or the now fast advancing buds will be partially destroyed.—T. B.

## Orchids.

The temperature of Orchid houses may now be raised 5° at night, as the increased length of daylight and the disposition to make growth will require this. In the day temperature, as a matter of course, the variation will be considerable; when it is bright and clear the thermometer will now frequently rise to 80°, but when the weather is cloudy there should be no attempt at keeping it so high as this by fire-heat. For the East India house, 65° by night and 70° in the daytime without sun will be sufficient; in the Mexican house from 50° to 55° at night, with 5° higher without sunshine during the day, will be enough. The cooler Odontoglossum house may now be kept at night from 48° to 50°; with a corresponding increase during the daytime. It is now also quite time to get the blinds on, for although the sun may not be bright and clear for

more than three or four hours during the day, still even at the beginning of this month it is often so powerful as to do serious harm if allowed to shine directly on the plants; in fact, I have seen the leaves of *Aerides*, *Succoboliums*, *Angustans*, and *Vandas*, especially the latter, when near the roof, much injured by the sun coming in full force on flaps in the glass, causing them to act as scorching lenses, whereby the leaves were literally burnt off, the effect of which was at an hour's neglect in this matter took years to rectify. But although recommending caution in this respect, I wish it to be clearly understood that I do not recommend the blinds being down for a single hour, particularly at this early season, when there is not an absolute necessity for it. Correspondingly more moisture may be kept up in the atmosphere, but this should not be increased too rapidly, and even comparatively little be given to the roots of the some plants, it will be of great service, and will be of great use as quickly as to either wholly or partially prevent their flowering. This will be more likely to follow when the plants have been grown under conditions of too much shade and moisture. A little air during the brightest part of the day should be given, but this should be confined to the roof. The system of air-giving to Orchids by shutter-boxes and flaps in the walls, where the air admitted before reaching the plants would first come in contact with the hot pipes, is a plausible and taking proposition, but in practice I have found it very injurious, as when the roof ventilators are at the same time open, even ever so little, it produces a dry, arid current, expelling the moisture from the house at a time when, through the heat of the sun, it is most wanted. We frequently hear the remark made, that Orchids succeed better in houses where the roof is composed of small squares with many laps than they do under large squares in houses of more modern construction. The cause is obvious; the many openings in the laps allow of more even and gradual admission and diffusion of air at the top than where the laps are few and close.

**Calanthes.**—The different varieties of *Calanthe vestita*, and the hybrid *C. Veitchii*, should be largely grown wherever cut flowers are required in winter in quantity, but to do them well they need a comparatively high temperature. Such as have bloomed early will want immediate attention as to potting, as this operation should in all cases be carried out as soon as the young growths at the base of the old bulbs have begun fairly to push, yet before they have made any attempt to emit roots, as if the young fibres first emitted be at all injured, which is certain to occur if potted after they have begun to push, the season's growth will be thereby seriously affected. I have tried different kinds of potting material wherein to grow these plants, such as all fibrous peat, all fibrous loam, and equal proportions of both, in each case with and without the addition of dry slaty manure. I have also tried them in manure alone, such as had lain out in a heap, and lately, reaching a wire border or an Asparagus bed; as a matter of course, in every case a good sprinkling of pot shreds or broken charcoal, with a little sand, was added, yet I have found little difference in the growth of the plants traceable to the material in which they were grown; but, more than most Orchids, they are favourably influenced by a maximum amount of light. The best I ever had were grown in earthenware pans made to fit inside ordinary wire baskets, suspended so as to elevate the leaves of the plants when fully grown to within 2 ft. of the roof; for appearance sake a thin layer of Spagnum was placed inside the wire baskets so as to hide the pans. Grown in this way, with a thin shade to protect the leaves when the sun was full upon the glass, the bulbs formed were double the size I ever could get them to when set upon the stages, and it will almost invariably be found that the flowering capabilities are proportionate to the size of the bulb. In addition to the growths that spring from the base of the old bulb, they will generally push one or two from the upper portion; where a sufficient stock of the plants exist, with no necessity for further increase, I should advise all these upper breaks being rubbed off as they are formed, by which means the principal growths from the base will produce a much larger bulb. The old bulbs in existence twelve months ago, and from which last year's growth was produced, so long as they retain their vitality will be found to have a great influence in increasing the size and strength of the bulb formed during the coming season. I mention this from a knowledge that many growers discard these old back bulbs under an impression that they are useless, but from actual observation I have proved that the influence, on what we may term the second growth, is very considerable. In potting these plants, I have found it better to shorten the old roots at the base of the bulb now dead to within 1 in. of the bottom than to remove them, as by retaining them thus far, and pressing the potting material firmly round them, the bulbs are kept in their place until the new roots get firm hold of the soil. On no account should they ever be allowed to remain a second year in the old soil, for however fresh it may now appear, it will be in a condition unsuitable for them before the season is over.—T. B.

#### Greenhouse and Stove Plants.

Remove some of the most backward *Cinerarias* to a wire house so as to preserve their lateness; water those that are in bloom freely, and occasionally with manure water; keep them free from insects by fumigation. Chinese *Primulas* required for seeding should not be burdened too much, therefore reduce the quantity of flowers on each plant to one or two, and increase the strength of the plants. Keep the bluebonnet *Calceolarias* growing gently, by supplying them liberally with water and keeping them in a light and airy house and near the glass. Violets that were bloomed in pots during the winter may now be transferred to a warm border. Hyacinths and Tulips should be kept as cool as possible, and in light houses. *Lachenalis* are now blooming pretty freely; keep them near the glass and treat them liberally. Statice should be re-potted and

kept in the warmest part of the greenhouse. Save seeds of *Solanum capsicastrum*; cut down the old plants and use the young shoots for cuttings. Re-pot and remove for the same purpose the suckers of *Calla californica*. Cut off the ends of the branches, and thin plants of *Veronica* *Andromeda*, when they start them into growth. *Kalanchoes* *coccinea* should be re-potted in a compost of good loam and some thoroughly decayed manure. Cut back *Borvardsias* that have done flowering, and use the young shoots for propagating. Cut back, re-pot, and start into growth some plants of the lemon-scented *Verbena*. Turn out into frames young *Chrysanthemums*, and see that none suffer for want of potting. Re-pot and stake choice *Petunias*, and sow some seeds in light soil in gentle heat for conservatory blooming; the surplus may be economised for bedding purposes. Train *Tree Mignonettes*, and admit plenty of air to dwarf-growing plants, such as the *Veronica* of the fine varieties, as well as *Musk*, which may be potted in two parts loam and one of decayed manure, with some sand; they soon grow and form neat flowering plants. Wire baskets containing the latter, and also others planted with *Saxifraga sarmentosa*, may now be made up either for the window or for suspending from the roof of the conservatory.

**Euphorbia jaquiniflora.**—Plants of this that have done flowering should have their flower-pots pinched off. They should then be encouraged, by means of additional heat and moisture, to make fresh shoots, which, taken off with a heel, and inserted under a hand-glass like ordinary stove-plant cuttings, strike as freely as *Verbenas*. The stems of these plants are commonly cut up into little pieces, each having one or two eyes, which will strike like *Cinistatas*, *Vines*, &c., but they do not form such good plants as those obtained by the former method; besides, they root so quickly nor grow as fast as cuttings do, and the earlier the latter are rooted, and the stronger they become before their flowering period, the finer will their inflorescence be.

Pot singly rooted cuttings of *Lyons*, *Dracenas*, *Aphelandras*, *Eranthemums*, *Hoyas*, *Gardenias*, &c., as they become fit for that purpose, and keep them in a moist, brisk temperature. Make a little incision in the stems of *Dracenas*, *Diophysias*, &c., just below the crowning tuft of leaves at the summit of the naked stem, and tie around the incision some damp Moss mixed with silver sand, so as to induce the plants to callus and emit roots before they are separated from the parent stock.

**Azaleas.**—Any of these that have been forced for the purpose of flowering early should, directly they have ceased blooming, be placed where they will begin to grow; if put now in a cold house the growth, which the heat to which they have been subjected to bring them into flower will have excited, will receive a check; if this occur, the plants will be injured. Be very careful to see whether there are any thrips upon them; should these be found, give a good washing with Tobacco water. This is not only necessary for the well-being of the Azaleas, but also on account of the insects, for if the insects be only few in number, they will quickly spread to the subject in the next month, and they will live upon; the safest plan is to wash, whether any thrips are discovered or not. It sometimes happens that Azaleas that occupy pots as large as desirable get into a weak state through the soil becoming exhausted. When in this condition they are generally thrown away; this need not be done, as in a couple of years they can be brought into a thoroughly satisfactory state. The present is a good time to begin; allow the soil to become rather dry, but not so much so that the plants would need watering for several days; then cut them well into the old wood, reducing them to about half the size they were before they were operated upon. Give them a good cleansing if they have had any insects on them, and put them in a moist heat of about 60° by night. Syringe overhead once or twice a day, but the soil must not be permitted to become too wet. If all go well, they will break in the course of four or five weeks.

**Saracénias.**—The want of success often experienced with these plants is generally attributable to the mistake made in treating them indiscriminately with the ordinary occupants of the stove, not only in the amount of heat to which they are subjected, but also as to water and soil. The advice often given as to their requirements has been such as to induce those not experienced in their cultivation to keep them in too great heat, especially in the winter time, which has the effect of preventing their getting the rest they require; it also induces weak, soft, elongated growth, and many of the leaves being found developed into their wanted pitcher-like form, a condition which, owing to the anomalous singularity. The different species will succeed well with similar treatment as to soil, moisture, heat, and air. From the middle of November till the end of February they should have a temperature of 50° by night and 5° more in the day; after this time increase 5° night and day; during the spring and summer it may run from 60° to 70° in the night, and from 75° to 80° by day, according to the state of the weather. Whether they seem to need it or not, each year in February get all the soil gently away from them, re-potting them in a fresh compost, consisting of equal parts of the best fibrous peat with all the earthy matter abstracted, and chopped Spagnum liberally mixed with crocks or charcoal broken moderately fine, adding to the whole a good sprinkling of sand. If they be potted late in the season, the pitchers often come crippled. *S. Drummondii* alba and *S. Drummondii* rubra are exceptions to the others in the time of potting, as about July, when their spring growth is finished, is the best season to move them. The pots should be one-third filled with crocks; the growing stems must be kept just above the soil. They must be watered every day from the time they begin to grow freely until autumn, and twice a week in winter. All the varieties of *Saracénia*, except *S. purpurea*, must not be syringed, as it renders them soft. They should have a shelf of unplanned wood to stand on; this will hold

moisture, and it ought to be damped two or three times every day during the time the plants are growing. Let them have a place at the south side of the house near the glass, or else elevated till they nearly touch the roof; they should occupy a moist corner, and though they like a moderate quantity of air, it ought not to be admitted close to them. They must not be stood in pans, as their roots are liable to rot when so treated. A very thin shade is necessary when the sun is on them. The flowers ought to be nipped out directly they appear, at any rate whilst the plants are small, as they weaken them. All the flower-stems that are thrown up divide the crowns that produce them into two; by this means they increase, but until they get a good size they ought not to be separated. Scale is very troublesome to them, and it will seriously injure them if allowed to remain. They are also subject to green fly and, above all, thrips. These latter especially get under the rim of the mouth of the pitchers, and if not soon destroyed the pitchers will be ruined. Before they have lasted half their properties they will have newly imported the almost general mistake is to keep them too hot at first, the result of which is to cause them to make leaf-growing without any corresponding root-action, the latter very often never making any progress during the first summer. When this is the case they almost always die the ensuing winter. As soon as the plants arrive, they should at once be placed in pots that will only hold their roots with a moderate quantity of soil. Keep moist, but if they come in the autumn they should not be subjected through the winter to more than from 46° to 50° in the night, increasing the heat a little as the spring advances, and in the summer give them no warmer treatment than an intermediate house will afford.

### Flower Garden.

The replenishment of flower-beds from our reserve stock must now occupy attention; all spring flowering plants may be transplanted with impunity according to convenience. Several of the autumn-sown annuals too may be transplanted from their winter beds to where they are required for blooming, and to fill up vacancies between perennials. Hollyhocks and Foxgloves from last year's sowings should now be transplanted permanently in good rich soil; indeed, a spadeful or two of well-decayed manure mixed with the soil in each hole is an important addition. Iry, Jasmines, Clematises, Honeysuckles, Crataeguses, Magnolias, and similar plants on walls should be thinned or pruned, if necessary, and neatly trained. Form edgings of the variegated Queen of the Meadow, Arabis Polemonium, Grasses, Daisies, Golden Feverfew, Eryngium radicans, Santolinas, &c. Some of these, such as the Golden Feverfew, are only fit for spring gardening when sown from the previous year's sowings, and to be repeated again in April or May from spring-sown plants which do not so readily run to seed during the summer and autumn months. Various kinds of flower seeds should now be sown for early blooming, but the main crop of hardy annuals is best sown in the first week of April. When the weather is dry, add some turfy loam and well-decomposed manure to beds where large plants, such as those of Ricinus, Ferdinandia, Wigandia, and other gross feeders are to be grown, i.e., if the beds are now empty. If the soil last year was found to be too moist turn it out, and place a layer of stones, broken bricks, &c., in the bottoms of the beds. Mutch all newly-planted shrubs or trees, and affix strong but neat stakes to such as require support. Prune back pretty hard some Clematises for early flowering. Tree Peonies, Myrtles, the Japanese Quince, and several other rather tender plants should have a little protection from frost; for although their roots and principal stems might escape unharmed, their young shoots might be considerably injured. Prune and tie up climbing plants. Where new lawns are intended to be made, the ground should now be cleared of all superfluous trees and shrubs, and the soil should be trenched over, turning all rough material into the bottom of the trenches, and making the whole perfectly level, smooth, and firm by means of raking and making. The seed should be sown in the latter half of this month.

### Shrubberies.

In the shrubbery and its surroundings the state and position of deciduous trees should be inspected, especially those planted near the boundary with a view to give shelter or privacy. It is a matter of frequent occurrence to find such trees planted without the slightest regard to the space they will ultimately occupy, and merely placed so as to give immediate effect. Even where the trees have been planted with a due regard to their future proportions, and the intervening spaces filled with others to act as nurses for those intended to be permanent, there is nothing so common as to see the nurse plants retained until they have completely ruined the trees by crowding. The whole of the under branches, which were intended to act as a break, and upon the vigorous presence of which the beauty of the trees depend, are completely destroyed. The object of these nurse trees is only to afford the necessary shelter to those intended to stand, and to assist in filling up the intervening spaces. These temporarily planted trees should, the moment they interfere with the well-being of the others, be either removed altogether, or cut in with no sparing hand; it is often considered time enough to do this when the branches touch; but this is a mistake, for when they have grown to this condition, very serious harm will have occurred to the permanent trees from the exclusion of light and air, thus making them draw up weakly, and rendering them unable to develop their proper growth. Thousands of amateurs' gardens throughout the country suffer in this way. The present is a good time for reducing the branches, unless the trees are still of a size to be removed and it is the intention to replant them, in which case no time must be lost, as the buds of many will soon begin to swell.

### Indoor Fruit Department.

**Pines.**—Increase the day and night temperature of Pine pits, in accordance with the weather, and give a little extra moisture to the roots, especially those of plants swelling fruit; but such as have nearly finished swelling should be kept moderately dry. Shift into fruiting-pots all plants requiring that attention, and take off and pot suckers as they become ready. Do not starve young growing plants, for, if once checked, they are almost sure to produce small and premature fruit. Syringe with tepid water the surface of the beds and about the necks of growing plants, especially on fine days.

**Vines.**—Thin and stop the shoots, thin the berries, and keep up a steady moist temperature.

**Peaches.**—Thin these where too thick, but do not make the final thinning until after the stoning period is over, and until that time maintain a steady and moderately low temperature. Regulate an thin the young shoots, and syringe morning and afternoon with tepid water on fine days, and once every day, regardless of the weather. If a little top air can be left on at night, and artificial heat given to maintain the requisite temperature, it will be of material importance to the crop.

**Cherries.**—A temperature of 50° or 55° will be sufficient for these until the fruit has stoned afterwards the heat may be increased 10° by sun-heat and when the fruit is colouring a night temperature of 60° and a day one of 75° or 80°, with sun-heat, will not be too much for them. An airy house and a position near the glass is of the utmost importance in Cherry forcing, and a high temperature either by night or day before the fruit has stoned is ruinous.

**Figs.**—Give manure water occasionally to Fig trees swelling their fruit, and syringe them freely until they begin to ripen. Pot Figs are commonly used for the earliest crop, and, where houses are not specially devoted to their culture, they may be successfully ripened in the Pine stove or early Vinery. Stop the young shoots at the third or fourth joint, and remove all root suckers, unless a few are wanted next winter for fresh plants.

**Strawberries.**—The earliest will now be ripe or ripening, therefore they are best kept moderately dry and airy. Introduce plants of them for succession into Peach houses or Vinery shelves, or into houses built purposely for them.

**Cucumbers.**—Keep up a bottom-heat of 75° for these, and an atmospheric one a few degrees lower; but in the event of bright weather, an extra 5° would be rather beneficial to them than otherwise. If the bottom-heat is not sufficient, and the plants are wanting, apply fresh linings or mix fresh manure with the old fermenting material. Sow a good successional crop of Cucumbers and Melons.

**Forced Vegetables.**—Kidney Beans should be sown in succession fortnightly, or according to the demand; a Cucumber house, Pine stove, or early Vinery suits this crop perfectly, and the plants must be freely syringed, to keep down red spider. Sow a few Tomatoes at once in a moderate hot-bed, or propagate by cuttings from old plants saved in pots during the winter; plants from these cuttings fruit earlier than from seedlings. Rhubarb will soon be obtained abundantly from the open air, i.e., if a forkful or two of litter be placed over the crowns; but a few roots for succession may still be taken into the Mushroom house. Keep up a constant succession of forced Asparagus, either by placing roots in moderately heated frames, or by filling trenches between the beds with fermenting material. Start a few more Sealake roots. A temperature of 60° and a humid atmosphere should be maintained in the Mushroom house. Protect Lettuces in frames from wet, and plant some out as convenience and weather may permit; sow some seeds for succession. Sow a few Capsicums in boxes, and pot them off singly, or prick them off when they are fit to handle. Sow some Celery seeds in a gentle heat. Sow some New Zealand Spinach in a brisk temperature for summer and early autumn use. Thin Carrots in frames; keep them dry, and shelter them from rain, but expose them freely in favourable weather.

### Kitchen Garden.

**Potato Planting under Slight Protection.**—Few crops are of more importance than the Potato crop, and means should, therefore, be taken to obtain it out-of-doors as early as possible, for although Potatoes grown in pits and frames are very acceptable, still, unless brought on in such places very slowly, they are rarely equal in quality to those grown in the open air. If there exists a good south wall, this will no doubt be occupied with fruit trees; but, without in any way interfering with these, a row of Potatoes may be grown at the foot of the wall that will come in, with a little care, a fortnight earlier than they can be grown without protection, even in a sheltered border at a greater distance from the wall. Fork the ground over 15 in. wide from the wall, not going so deep as to injure the roots of the trees, and if the soil be poor, add a little rotten manure; then open a trench 8 in. from the wall and about 4 in. deep, drawing the soil forward. Take some Potatoes that a short time back were prepared by sprouting, reduce the sprouts on each tuber to two, and, in planting, cover them with the soil very carefully, so as not to injure them; 9 in. will be far enough apart, as they will be taken up as soon as large enough for use. Where there does not exist a wall that can be taken advantage of in this way a few square yards of a warm, sunny border should be selected; this should have the assistance of a temporary frame made of light boards, with strips of wood nailed across, so as to admit of being covered at night with mats, when the crop appears above ground, which it will before spring frosts are over. Crops thus produced

will be found to be well worth the labour bestowed on them, as Potatoes raised in this way will come in after those that have been grown in frames are used, and before those in the open ground that have received no protection. Potatoes in frames must receive plenty of air on all occasions when it is not absolutely frosty, or they will become drawn. The lights should be raised at both ends, so as to let the plants have air equally all over.

#### Extracts from my Diary.

**March 4.**—Sowing Henry's Prize, Aytton Castle Giant, and other Leeks; also a Little Borage and Chervil. Potting off Capsicums. Putting in cuttings of Heliotropes, Pelargoniums, and Gazanias. Thinning out and cutting back Ivy on walls. Preparing three-light manure frames for Melons. Looking over Cucumbers, stopping them and picking out all false blossoms. Covering up Eadive to blanch.

**March 5.**—Sowing Canadian Wonder French Beans in pots. Potting on Cucumber and Melon plants. Earthing up Potatoes in frames. Pulling up and clearing out Early Brussels Sprouts stumps and getting manure on the ground ready for digging. Cleaning up the pleasure grounds, and rolling down all newly laid turf and gravel. Fumigating Cucumbers, and covering up Seakale.

**March 6.**—Sowing Marrow Peas in boxes for Green Pea soup. Earthing up Beans in pots. Potting off Coleus, Alternantheras, and Verbenas. Clearing manure and leaves out of Muscat houses, the Vines being well broken. Tying in some of the forward Peach and Nectarine shoots, and disabding them where required.

**March 7.**—Sowing All the Year Round and Carter's Giant White Cos Lettuce; also Early Horn Carrot and Early Frame Radish. Potting off Petunias, Heliotropes, and Gazanias. Getting into boxes a quantity of Lily of the Valley, and putting them into gentle heat. Clearing away all the wet litter from Globe Artichokes, and putting a little more dry litter round them, in order that they may not feel the check all at once.

**March 8.**—Sowing Mustard and Cress, also a border of Spinach. Picking out Lobelias and Golden Pyrethrum. Cutting back and thinning out dwarf Laurel shrubs. Getting a mixture of leaf-mould and old Pine soil into frames in which to transplant *Calceolarias* 6 in. apart. Commencing to prune and nail Peach trees on open walls. Looking over Grapes in bottles, removing any berries that are decaying, and, where required, filling up the bottles.

**March 9.**—Planting early Potatoes, consisting of the following sorts, viz., Early Ashleaf and Gloucester Kidney, Penn's Early Market, Porter's Excelsior, and Lady Page Kidneys. Planting Wheeler's Imperial Cabbage plants, also Jerusalem Artichokes. Looking over fruit room, and removing any that are useless. Thinning Grapes, and tying down shoots in early Vineries. Fruit in use for dessert: Pines, Grapes, Apples, and Pears.—G. W. P., Dorset.

#### GRAPES AND ROSES.

ANYONE unacquainted with English gardens would imagine, on reading "A. D.'s" remarks (see p. 166), that fruit growing, more especially Grapes and Peaches, subjects so interesting to cultivators, was at a very low ebb; but the fact that anyone with an ordinary Vinery should fail to winter hardy plants and produce a good crop of Grapes as well is surely against our experience of good cultivators. What would gardeners do with their stock, not only of hardy but of tender plants, if their fruit houses could not be utilised for the purpose of wintering it? We should all like to have separate houses for different subjects; but "A. D." is mistaken if he considers plant growing and mildew Grapes to be inseparable companions. All our Vineries here, both early and late, are used for all kinds of plants, according to the season of the year and the temperature at which they are maintained. The only season at which they are entirely free from plants is when the crop is approaching maturity, when a dry atmosphere is necessary in order to ripen and keep it until required for use. And yet we have no mildew. Thrips and scale may be imported into Vineries if due care be not exercised as regards subjects introduced. But hardy plants, properly so-called, are not subject to the attacks of these, and need never be under glass when Vines are in a growing state. I have on numerous occasions seen good collections of plants, including Orchids, that had always been grown in Vineries, but I by no means recommend such a course. As regards Peaches, I consider them a more difficult crop, both on walls and under glass, than Grapes. With a Vinery and border ready made Roses might certainly be grown by any intelligent labourer; but Roses, however abundant, will never supersede choice dessert fruits, and anyone who has failed to winter plants in Vineries and grow Grapes fit for table as well, I would strongly recommend not to attempt fruit culture under glass at all, being thoroughly convinced that they have mistaken their vocation.

Henham.

J. Groom.

#### GARDEN BOTANY.

(Continued from p. 165.)

**THE COTYLEDONS.**—The curious extinguisher-like cotyledon of many Palms has already been described, but monocotyledonous embryos are very variable. When they are not sheathing, the base at least extends all round the radicle, as in figs. 69 to 71, thus differing from the exceptional dicotyledonous embryos, in which one of the cotyledons is so small in proportion to the other as to escape observation or, as is occasionally



Fig. 69.—Monocotyledonous embryo of *Dioscorea villosa* with a thin flattened cotyledon and a short obtuse plumule.



Fig. 70.—Embryo of *Dioscorea cordifolia*.



Fig. 71.—Monocotyledonous embryo of *Rajania hastata* with a relatively large, flat cotyledon.

the case, entirely suppressed. The Walnut, which is a one-seeded fruit, with an exalbuminous seed, has large, sinuously-lobed cotyledons. The base of the fruit has partitions, dividing it into two or four compartments, into which the cotyledons grow, and the upper part is one-celled. At the upper or pointed end of the shell (endocarp) the small radicle may be discerned, and in breaking the kernel in longitudinal halves, the relatively large plumule will be found. In the large, exalbuminous seeds of *Pachira* and some other *Bombacæ*, for example, one of the cotyledons is very large and fleshy, and completely enfolds the plumule, radicle, and the second cotyledon, which is comparatively small; and in germination its folds are pushed apart by the growing plumule and radicle. The cotyledons of the embryos of some plants, whose other characters associate them with dicotyledons, are quite obsolete, as in the genus *Garcinia*, mentioned in the foregoing paragraph on the radicle; in other members of the same family the radicle is very minute and the cotyledons large, as is also the case in the Almond (fig. 31) and the Kidney Bean (fig. 35). Sometimes the cotyledons adhere together by their inner faces, as in *Tropæolum*; they are then termed conferruminate. Usually they are very different from the succeeding leaves, especially in being thick and fleshy, and in having no visible nervation, but in some embryos the cotyledons are thin and distinctly veined; they are then called leafy or foliaceous. The Castor-



Fig. 73.—Embryo of Lime, spread out to show the lobed cotyledons. (Enlarged.)



Fig. 74.—Embryo of Scotch Pine, with six cotyledons (c).

oil tree and *Enonymus* seeds are examples of the latter kind. We have alluded to the suppression of one or both cotyledons, and given an instance of the latter condition. *Cyclamen* furnishes an example in which only one cotyledon is fully developed, and this grows to a relatively large size, resembling one of the ordinary leaves which follow.

**PERMANENT COTYLEDONS.**—*Streptocarpus polyanthus* is a singular plant, in which only one cotyledon is developed, and this grows out to 1 ft. or more in length, and several inches broad, and is the only leaf the plant possesses. In *Welwitschia*

*mirabilis* (fig. 72) only the cotyledonary or seed-leaves are developed, growing to a length of several feet. As a rule, cotyledons are entire on the margin, but in the common Cress (*Lepidium sativum*) they are deeply three-lobed, in fact, almost trifoliate; and in the Lime they are folded and five-lobed (fig. 73). Sometimes the number of cotyledons exceeds two, and this is a very common occurrence in the Coniferae, where the number varies from two to fifteen. In nearly all the Pines and Firs there are several. The embryo of the Scotch Pine has usually six (fig. 74), and the Stone Pine twelve. But the Coniferae differ so much in other respects from dicotyledons (exogens), with which they are often associated in classification, that many modern botanists regard them as forming, with Cycads and Gnetaceae (*Ephedra*, &c.), a distinct class between Ferns and monocotyledons.

**THE PLUMULE.**—It is not until germination commences in the majority of embryos that the plumule becomes visible, though the beginning of its formation may be found by the aid of a microscope. There is, however, very much diversity in the degree of development of the plumule before active germination begins. Thus in the Kidney Bean (fig. 35) two distinctly formed leaves, visible to the naked eye, will be seen in a dormant seed on separating the thick cotyledons. In the Almond, also

exhausting it; but meanwhile its succeeding leaves become green, and thereby fitted to perform their special function, which is defined and described in detail in the section just named. Usually the stem of a plant and all its ramifications proceed directly from the plumule, but occasionally, or indeed one might say frequently, in some plants buds appear below the insertion of the cotyledons on what is sometimes termed the caulicle or tigellus.

**GERMINATION OF SEEDS.**—This phenomenon depends upon certain conditions, varying in degree, intensity, and relative proportion for different seeds, but essentially the same for all. The modes of germination are various, and there are many attendant circumstances deserving of our attention. It may be necessary for the reader to consult the sections on minute anatomy and nutrition, in order to fully comprehend some of the processes accompanying germination, because for the sake of simplicity they are merely mentioned here. For practical purposes the germinative period may be defined as commencing as soon as the testa bursts, or some part of the embryo begins to emerge from the seed, and as terminating when the supply of nutriment either in the cotyledons or albumen, as the case may be, is exhausted.

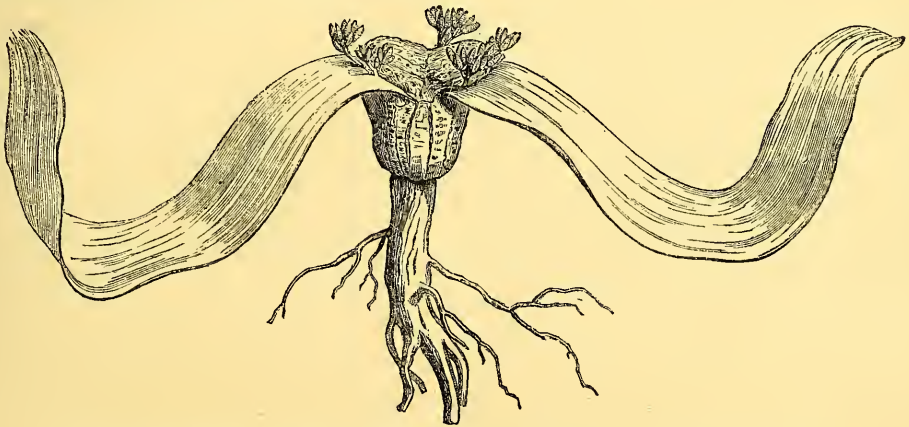


Fig. 72.—*Welwitschia mirabilis*. An example of a plant which produces no leaves beyond the two cotyledonary or seed leaves.

(fig. 31), the plumule is fully formed in the seed. The plumule of the singular Mangrove (*Pelliciera Rhizophora*) is very large in the ripe seed, and pierces the fruit sometimes before the radicle, and attains a considerable length before the latter starts. On the other hand, germinating seeds of garden Cress (*Lepidium sativum*) exhibit no visible trace of the plumule for some days after the seeds have germinated and the cotyledons have appeared above ground. But it is worth noting the different conditions under which the embryos of the Cress and Kidney Bean develop into plants. The embryo of Cress is small, the cotyledons are thin, and the seed contains no albumen, hence there can be little nutritive substance stored up for the use of the plant in the earliest stage of its growth. As there is almost no provision of food in the embryo itself, or within its reach, in the form of albumen, it follows that soon after its start into active life it must be able to absorb and assimilate the materials necessary for growth. This it is able to do, for the seed-leaves (cotyledons) assume the form of ordinary leaves, and become quite green. The significance of their becoming green like ordinary leaves will be perceived on referring to the section on the nutrition of plants. In the thick cotyledons of the Kidney Bean there is a large store of food for the growing plant, therefore it is not necessary that the cotyledons should acquire the power of assimilation. The highly developed plumule feeds upon this store of food, finally

**CONDITIONS CONTROLLING GERMINATION.**—Given a good seed that is, a seed which has not lost its vital properties, a certain amount of warmth and moisture is necessary to stimulate it into growth; and to enable the young seedling to attain perfect development as an adult plant, there must be within its reach certain substances which it requires for food. Further, the atmosphere must contain oxygen, and, as a rule, sunlight is indispensable. Only those agencies actually determining germination will be considered here. The chemical changes, so far as they are known, which the contents of the seed undergo in germination are explained in the "Chemistry of Plants."

**MOISTURE.**—The primary process in germination is the absorption of water by the seed or embryo, which distends the tissue of the latter, causing a rupture of the testa, or the growth and consequent protrusion of some part of the embryo through the micropyle. As we shall presently see, it is not always the radicle that first breaks through, though this, it is stated in many text-books, is the usual way in which germination begins. The relative quantity of water necessary to even initiate germination depends, to a great extent, upon the nature of the testa, and frequently too of the pericarp, when the latter does not split open to free the seeds. Stone fruits (drupes), for example, like the Cherry and Plum, having a hard bony endocarp, will remain in a moist place for a long time before the water penetrates to the seed itself, and the same

holds good for seeds with a very dense testa, as in many species of *Acacia*. This dense endocarp or testa seems to act as a protection to the embryo, by preventing it from germinating at an unfavourable season of the year, and from being devoured by animals. The hard endocarp or stone of such fruits as the Cherry, Sloe, &c., serves as a protection to the embryo, inasmuch as when the fruit is eaten by birds or animals, the stone passes through the stomach undigested. Instances are on record of Plum seeds and Raspberry seeds having germinated after the fruit had been boiled into jam, but it should be remembered that it is the seed, plus its pericarp, or portion of its pericarp. But in whatever light we regard it, it is a fact that by breaking open the stone of a Cherry or softening the testa of an *Acacia* seed by soaking it in very hot water, so that water is absorbed by the embryo, germination is greatly accelerated, or even commences at once. An instrument has been invented in France for cracking the hard bony endocarp in which Olive seeds are enclosed without injuring the seed, and treated thus they quickly germinate. With old seeds, also, much time may be saved by soaking in warm or hot water, according to their nature. Some seeds will even bear boiling for a short time without injury, but this extreme measure is not recommended for practical purposes without being first tried experimentally. There are, moreover, many seeds which are not provided with such a preventive to the quick penetration of water into the embryo, but which lie dormant for a long period when fully exposed to the influence of such an amount of moisture as the soil may contain. In many cases seeds that are shed in autumn appear to await the return of a greater amount of heat before they are stimulated into germination. The spores of some Ferns, too, are many weeks before they show signs of vegetation when under the influence of a sufficient amount of moisture and heat, that is to say, when a larger or a smaller amount of heat and moisture would not exercise a greater accelerating influence.

**EVIL EFFECTS OF TOO MUCH MOISTURE.**—A superabundance of water exercises a retarding influence on the germination of most seeds, and finally destroys their vitality by dissolving their soluble substances, and facilitating chemical changes of their insoluble substances. The embryo swells, but the nutriment which it requires for development is drawn from it by the fluid. Broadly speaking, only the seeds of true aquatic plants germinate and grow freely when completely immersed in water, but many benefit, by being partially immersed, and will grow when suspended just above the surface until they have exhausted the nutriment the seed contains. It is often found difficult to maintain the proper degree of humidity for small, delicate seeds, which will only germinate if upon or very near the surface of the soil. This is more or less overcome by covering the seed-pots with panes of glass, which prevent rapid evaporation, or better still, by a thin layer of Moss, and keeping the pots standing in shallow water. Indeed, the little Bog Orchis, *Malaxis paludosa*, seems to germinate and grow upon the Sphagnum of the bogs, which conveys the necessary water to it.

**THE PART OF THE SEED WHICH ABSORBS THE MOISTURE.**—Various experiments have been made to ascertain through what part of the seed the water is absorbed, with the result that in seeds having a very dense testa it appears to enter only by the micropyle, whilst it is absorbed through the whole surface of a soft, permeable testa. The principal things to bear in mind respecting the influence of water on the germination of seeds are, that an excess is almost invariably injurious, and that alternations of wet and dry states are soon fatal. But this, according to some experiments carried out by De Saussure, is not invariably the case. He found that the germination of the seeds of Wheat, Rye, Barley, Maize, Cress, Mustard, Cabbage, Lettuce, Hemp, &c., if interrupted by drying, recommenced on the application of water; whereas the seeds of Kidney Bean, Broad Bean, Poppy, &c., were killed by the drying. Some of the first retained the power of completing their germination after having been exposed to the utmost degree of desiccation attainable in the open air, in the shade, or in an artificial heat of 95°. Wheat, Rye, Cabbage, &c., in course of germination may be dried, then submitted to a temperature of 158°, without losing the power of reviving on the return of moisture. It

is true, however, that seeds possessing this remarkable quality suffer in vigour from desiccation, as the radicle perishes; and the more advanced their germination before drying, other things being equal, the longer they are in recovering from the check. When a seed has once been thoroughly saturated with moisture, the probabilities are strongly against its germinating if permitted to become dry again, because the extension of the tissue by the fluid absorbed is incipient germination. This process, having once begun, cannot be easily stopped without killing the embryo, or permanently injuring the seedling plant; but it may be retarded by embedding the seeds in slightly moist earth.

**ALTERNATIONS OF WET AND DROUGHT.**—The seeds of many tropical plants especially will not germinate if once allowed to dry, as they normally germinate as soon as they fall from the tree, or as soon as they are mature, or as soon as the next rainy season sets in. The only way in which such seeds can be successfully sent long journeys is by packing them in some dense earth which is not quite dry, nor sufficiently moist to induce growth in a high temperature, or decay in a low temperature. On the other hand, there are many seeds, particularly those having a starchy albumen, which can scarcely be kept too dry, and in a dry state retain their vitality for years unimpaired. This brings us to the fact that the seeds of different plants require different amounts of heat, associated with a proper degree of humidity, to cause them to grow healthily.

**HEAT.**—Most seeds will retain their germinating power in a moderately dry atmosphere for a considerable period, varying, however, from a few weeks to several years, and buried in a moderately dry soil for much longer periods; and the desiccating process seeds undergo in maturing leaves them in a condition to withstand greater intensities of both cold and heat than their species can bear in active growth, or even as plants at rest. As an instance of the extreme cold seeds will bear when in a dormant state without injury, it may be mentioned that the English Arctic Expedition, which returned in 1876, brought home some Wheat left in the Arctic region five years previously by an American expedition. This seed germinated perfectly, but it is uncertain to what degree of cold it had been exposed, although it was left there to ascertain whether the cold would injure it. Possibly it was sheltered to a great extent by a thick layer of snow. And, as already mentioned, some seeds will bear boiling for a short time, or a dry heat of 213° without injury. Edwards and Colin relate that Wheat, Barley, Rye, and Beans retained their vitality after being exposed to about 70° of frost. But to effect germination, or promote growth, the temperature must range between certain restricted limits, varying for different plants; and midway between the extreme limits of temperature under which a plant will grow is the most favourable to its perfect development. The upper limits of temperature which plants will bear with impunity, or flourish under, are not, perhaps, so easily defined as the low temperature, which will certainly injure plants in active growth. It should be remembered, too, that the same degree of cold that would destroy the leaves and young shoots of a tree would have no injurious effect upon it in winter, or when not growing actively. The new shoots or growths of trees and shrubs in temperate climates, after growth for the season has ceased, pass through a phase called ripening or lignifying, and the more perfectly this is accomplished, the less moisture there will be left in the shoots, and greater in proportion the intensity of cold they will bear without injury. Herbaceous plants die down to the ground annually, and the living portion left is less exposed to the influence of cold. Travelling into gradually colder countries than our own, we observe that arborescent vegetation becomes scarcer, until it dwindles quite away; and, what is more important, the roots of herbaceous plants, as well as the branches of the dwarf woody vegetation, are protected during the rigour of winter by a more or less thick layer of snow. Therefore, the hardness of a plant is not always in direct relation to the climate of the country in which it grows. For instance, a plant hardy at St. Petersburg, where the winters are very severe, but where vegetation finds a natural protection in the snow, might succumb if exposed to the influence of the comparatively mild but almost snowless winters of London. There is, however, a great diversity in

the constitution of plants in relation to temperature, though by no means so great as one would imagine without reflection; but there are many peculiarities in the constitution of plants inexplicable in the present state of our knowledge. Whilst we know that if the shoots of trees do not ripen in the autumn, and are overtaken by frost while they are in a herbaceous, sappy condition, they are sure to suffer, it is not so easy to explain why such soft, fleshy plants, as the common Groundsel and purple Dead Nettle, will bear very severe frosts of many hours' duration and several times repeated, and others less succulent are blackened by two or three degrees of frost continued for an hour or two only.

W. B. HEMSLEY.

THE NUTRITION OF DROSERA.

An objection is frequently raised to the modern view of the "carnivorous" habits of the Sundew and of some other plants on the ground that they do not benefit by this habit, but appear to carry on quite as healthy and vigorous an existence when deprived of this source of food. According to the Darwinian theory of natural selection, no habit can be acquired by an organism unless it is of some benefit to it. In a paper recently read before the Linnæan Society, Mr. Francis Darwin pointed out that the statements that animal food supplied to the leaves of *Drosera* is not advantageous to it rest on vague or unreliable data, and he described a series of careful and elaborate experiments, from which he appears to have proved that it is distinctly advantageous.

For this purpose about 200 plants of *Drosera rotundifolia* were transplanted on June 12, 1877, and cultivated in soap-plates filled with Moss during the rest of the summer. Each plate was divided in half by a low wooden partition, the plants on one side of the partition being fed by supplying each leaf with one or two bits of roast meat, each weighing about 1.50th of a grain, while the plants in the other half were starved. The feeding was performed at intervals of a few days from the beginning of July till the early part of September. The benefit of the feeding on the plants in one half of each plate was soon apparent. By July 17 the leaves were evidently of a brighter green, showing that the increased supply of nitrogen had allowed a more active formation of chlorophyll grains to take place; and from this time the flower-stems on these plants were distinctly taller and stouter. On August 7 the ratio between the number of starved and fed flower-stems was as 100 to 149.1, and by the middle of August the proportion of leaves on the two sides was as 100 to 136.9. At the beginning of September, the seeds being ripe, all the flower-stems were gathered, and the following comparisons were arrived at as the result of counting, measuring, and weighing the various parts of the two sets of plants:—

Ratio between the number of starved and fed plants	as 100 to 101.2
Ratio between the weights of the plants exclusive of flower-stems	as 100 to 121.5
Total number of flower-stems	164.9
Sum of the heights of the flower-stems	153.9
Total weight of flower-stems	231.9
Total number of capsules	194.4
Average number of seeds per capsule	122.7
Average weight per seed	157.3
Total calculated number of seed produced	241.5
Total calculated weight of seeds produced	379.7

The most important feature in the general result is that the advantage gained by the fed plants is far more conspicuously shown in all that relates to the seeds and flower-stems than in any other part. Thus the ratio between the weights of the plants, exclusive of flower-stems, is as 100 to 121.5; while the weights of the flower-stems, including seeds and capsules, were in the proportion of 100 to 231.9. The highest ratio is seen to be between the total weights of seeds produced, viz., 100 to 379.7; and this is intelligible, says Mr. Darwin, because a source of nitrogen is laid by in the albuminous seeds. Another point is, that the difference between the starved and fed plants is more clearly shown in the comparison of weights than in that of numbers or heights. It is clear that increase of weight is a better proof of increased assimilation than any other character. It may fairly be said that the above experiments prove beyond a doubt that insectivorous plants are largely benefited by a supply of animal food, and it can no longer be doubted that a similar benefit is gained in a state of nature by the capture of insects.—"Pharmaceutical Journal."

DEEP CULTIVATION.

A few remarks on this important subject, as regards the future well-being of kitchen garden crops, may not be out of place at this, the season of preparation; for although we have lately heard doubts expressed as to the beneficial effects of frequent and deep cultivation—and others go so far as to quote instances of soil that has been injured and rendered less productive by it—I must, from my own experience, come to the conclusion that in all such cases the waste of labour was due to an utter disregard and in defiance of anything approaching scientific cultivation; as it must be obvious to the most casual observer that, although the manual labour attending the act of trenching the ground does not require any great skill to direct it, yet its utility may be more than counteracted if done on a haphazard plan, without any regard to character of soil, the nature of subsoil, and whether freshly broken up or old, and what is sometimes termed "worn out" from repeated cropping. I have no hesitation in saying that the worn-out theory is entirely brought on by substituting shallow surface-stirrings for good deep and thorough cultivation, and in some measure by lack of attention to the proper rotation of crops; for, although land may be destitute of the elements necessary to perfect one crop, it may be rich in what another requires; and when the surface is cropped repeatedly with crops nearly allied to each other, it may only yield moderate results, whereas if fresh soil were brought to the surface by deep cultivation the very elements that are wanting may be restored, and substances converted into food for future crops by atmospheric action that would never have been available if buried deeply, as the more solid the land becomes, the more is the soil closed against the action of frost or air. Forland of this description trenching by merely substituting the bottom spit for the top is best, and fresh unrotted manure will be more beneficial worked in at the bottom of the trenches than thoroughly decayed materials; and the earlier it is done in the autumn or winter the better, as the winter frosts and rains will pulverise and sweeten any crude substances brought to the surface, and furnish abundant food for bringing succulent crops to perfection in all seasons, as in exceptionally wet seasons the thorough drainage insured renders the land warmer by admitting the air, and during periods of drought there is no remedy half so successful as a good depth of thoroughly pulverised and enriched soil, where the roots can descend and find plenty of soluble food at all times. No amount of labour expended on watering or surface-stirring will do more than mitigate the evil arising from shallow cultivation at such periods, for it is the lack of food that deprives vegetable crops of their succulence. If they can find it, there is no fear of their being able to withstand the highest temperatures we ever experience in this country, as most of our best vegetables and salads are natives of warmer climes than our own. And if we come to the question of economy, I am convinced that better results will be attained by reducing the area under cultivation to the limits of available labour, as it is a questionable policy to reduce the labour bill one-half if the returns are reduced at the same rate. When we come to deal with freshly broken-up land, or where a bad subsoil exists, the manner in which the trenching is performed must be modified according to circumstances; but I never yet saw land that could not be made fit for first-class garden produce by the addition of substances in which it was deficient. When the subsoil is exceptionally poor—either clay, sand, or gravelly—but a small portion should be brought to the surface at a time. With heavy land, such substances as leaf-mould, ashes, or sandy dressings, to promote a friable condition of the staple soil, will prove more beneficial than heavy farmyard manure, which will be more advantageously employed on lighter descriptions of soils; but it is better in such cases not to bury it so deeply, as, when the subsoil is gravelly, the manurial properties are liable to be wasted by the superabundant drainage. The land should, in all cases, be allowed a considerable period to elapse before cropping, for which reason autumn or early winter offers the greatest facilities, as it is then in good condition for spring cropping. Surface-stirring will then be of great benefit to keep the surface clear of weeds, and in such condition as to receive the greatest advantage from solar heat and air. By taking a certain portion in hand each year, and doing it thoroughly, the oldest gardens may be kept in the highest state

At a recent meeting of the Leicester Town Council it was decided to buy the Abbey Meadow, on the north side of that town, for a people's park.

of productiveness; and any additions to the vegetable area may be eventually brought into the same condition, however uninviting their appearance. I would say to all who are halting between two opinions, as regards deep cultivation v. surface-stirring, try the former thoroughly in winter, and follow it up by the latter during the growing season, and you will have no reason to complain of the results.

J. GROOM.

Henham.

## TREES AND SHRUBS.

### TRANSPLANTING WITHOUT BALLS OF EARTH.

SOME remarks on this subject that have lately appeared in THE GARDEN (see p. 171) may prove useful to those who are changing the sites of their trees and shrubs. Mr. Love's method, however, omitting his machinery, is very much like that of the late Sir Henry Stuart, who, it is well known, was most successful in removing trees even of larger dimensions than those alluded to by your correspondent. The late rector of Oakham, the Rev. Heneage Finch, carried out that system in the laying out of his grounds, and failure rarely attended his operations. My own experience leads me to think that an equally successful result would have been arrived at by Mr. Love had he been content with merely following the roots to their extremities in the way he recommends, and protecting the rootlets from injury. Sir Henry Stuart's system, I believe, did not find favour with the public because so many failed in their attempts to carry it out. But their want of success was in most instances owing to their not attending sufficiently to the details of his method, and the men employed did not understand their work. Mr. Finch found it no easy matter to train the labourers whom he employed. I have been surprised of late to find the antiquated notion revived that when a tree is moved it should always carry with it a mass of the soil in which it grew. The earth itself greatly adds to the

weight of the moving mass, and the only possible good it can do is to preserve the rootlets imbedded in it; and there is always fear of the adhering earth breaking away during the transit and carrying with it the fibres on which the life of the tree mainly depends. But a square mass of soil surrounding roots devoid of fibre is absolutely useless, and if the portions beyond it have been severed the tree must die. Nurserymen, it is well known, usually transplant every second year the trees they wish to sell, and when this rule has been attended to, there is little trouble in lifting them; but when a tree has stood for many years in one place, the extremities of some of the roots should accompany the tree to its new quarters. Among the trees that I have at various times transplanted there is one, a variegated Sycamore, the circumference of which at 4 ft. from the ground measures 5 ft. 3 in. This tree was moved to its present site in 1840 from a plantation in which it had stood undisturbed for at least ten years. It took two strong men to carry it on their shoulders, and the roots only just cleared the ground as it was borne along. All the earth was shaken from the roots to

diminish the weight at their end of the trunk; but there were plenty of them, and I had no fear whatever for the life of the tree. Great attention was given to the distribution and arrangement of the roots when the tree was set up, a process on which much will often depend, and which is but too often thought not worth the trouble. A failure which followed the removal of a Jargonelle Pear will further illustrate the principle which I am defending, namely, that the life of a tree does not depend on the earth about its roots when it is transplanted. It is true that in this instance I did not expect to save the tree, for it had been left undisturbed for a dozen years or more, and had nearly filled the space of wall allotted to it; but I thought I would give it a chance, so I began by making a semi-circular trench round the tree at 5 ft. from the stem, a distance which I thought would be sufficient to ensure a supply of branch roots growing from the main roots within that distance; and by underminings here and there I was able to cut through most of the roots beneath the tree. In this condition

it was allowed to remain till the following autumn, when it was taken up and moved to its new quarters; but I saw at once that the case was hopeless. The vitality of the tree almost entirely depended on the portions of the roots beyond where the severance had been made the preceding season; and, indeed, there were indications that the tree had suffered from the amputation even before the removal took place. It was the excision of the vital portions of the roots that caused its death. In the case of trees that have stood many years on one site, Mr. Love's method, whether with or without his machinery, is the only one that is likely to ensure success. B. S.



The Jujube Tree.

**Pinus Laricio v. Rabbits.**—One who has planted this Pine extensively informs me that, unlike other Pines in a young state, rabbits do not molest it, or if they do so once they will not repeat the experiment; and so satisfied is he of this, that he partly attributes the comparatively high price of young plants to its being rabbit-proof. Its timber is known to be of excellent quality. The rats at which it grows when properly treated is equal to if not greater than that of any other of its tribe, and, if I may be allowed to make the suggestion, the naturally narrow spread of its branches ought to be a material consideration in its favour when cultivated as a forest tree; if, moreover, what my correspondent has said be true, that circumstance alone ought to add much to its value.—GEO. SIME.

**The Jujube Tree.**—Lovers of curious trees may be interested to see a portrait of this as it grows in the Garden of Plants at Paris, where it is a vigorous, compact tree. Anyone who knows the climate of Paris in winter and spring will not think it a very tender tree. We should like to know if it thrives with any of our readers. The tree in question is between 20 ft. and 30 ft. high, and the engraving is from a photograph made last summer.

**The Sun-ray Pine (Pinus Massoniana variegata).**—This bird fair to become one of the most desirable of Conifers. It has proved perfectly hardy at Flushing for two winters. It is propagated by grafts on seedlings of the species, or upon the Scotch or any other two-leaved Pine. It never burns under summer suns, as nearly all other variegated-leaved Pines do. P. Massoniana does not sufficiently differ from the Scotch or Austrian Pine to render it of any special

value, except it may be as one in extensive collections, but its variation is that which gives it the one charm that wins all who see it. When the buds first break in spring the leaves are all green, with the exception of a mere line or dot of variegation; but it would seem that the leaves lengthen in this very part, so that when fully grown nearly the entire "needle" is a golden yellow, tipped only at the end with green, presenting in thick clusters a really brilliant appearance. The leaves are occasionally striped alternately yellow and green, like the new Zebra Eulalia, but most of them are as first described. If the theory that variegation is a disease needed any invalidation, we think that this Pine, as well as the Eulalia Grass, would furnish it. Both are vigorous plants, and the green portions of the foliage are none the less vigorous for lying between or upon the variegated portions. We have many times alluded to the beauty of the Golden Retinosporas, and it has seemed unaccountable to us that, notwithstanding their extreme hardness and accommodating habits they should yet creep like snails into general use, for which, no doubt, they are ultimately destined. But we think our Sun-ray Pine—as we should like to call it—will take a quicker and stronger hold upon the affections, and that a popular demand is awaiting it that few others of its class have ever known.—*Moore's Rural.*

**Propagating Willows in Coppices.**—Although Willows are easily propagated (see p. 176), and will grow in or out of the ground, it is not so easy to get them well established in coppices or as underwood. I have found the following plan to be most satisfactory in reference to the growth of Willows in rough ground: Cut out a clean notch on the surface with a spade in lock-spit form; then put in the spade in a slanting form about 3 in. and raise the ground a little more than the thickness of the cutting; slip in the cutting on the flat, not on end, and press down the surface raised with the foot, which is all that is required. The selection of Willows for planting in coppices is a matter of some importance. I have found that Willow cuttings from  $\frac{1}{2}$  in. to 1 in. thick and about 1 ft. long are the best.—*CHAS. McDONALD, Stokesley, Yorks.*

**Top-dressing Fruit Trees.**—In 1876 some Peach trees in a house here made very weakly shoots, and their general want of vigour indicated a deficiency of nourishment at the root. Early in the spring of 1877 all the soil was removed from the roots for more than 1 ft. below the surface. For this was substituted a rich mixture of loam, cow manure, and old lime rubbish; one barrowload each of the two latter being mixed with three of the former. Shortly after the trees began to grow, it was evident that they were taking advantage of the fresh material, and by the end of the season the wood was three times stronger and healthier than it was at the end of the previous one. At the present time these trees are more promising than any of the others, and we are so well pleased with them that we have done every one of our wall trees in the same way this winter.—*CAMBRIAN.*

**Seeding of Cochlostema Jacobianum.**—With regard to the apparent sterility of this fine plant, as experienced at Lakelands, I may say that, so far as my experience goes, the shortcoming in question is more apparent than real; at least I have never found any difficulty in getting it to seed freely; and that too without taking very much pains in the way of fertilising the flowers. Indeed, I have a plant under my charge which has more than once borne seed without any artificial assistance whatever. I have had it six years, and the second year after I got it it flowered. To insure success, I had recourse to artificial fertilisation, and that, too, after a very rough and ready fashion. When I thought the flowers had reached the best stage for the operation (which as they individually only last one day) requires careful attention, I merely picked out the small cone-like receptacle containing the pollen, tore it in two, thus exposing the pollen fairly, and touched the point of the style lightly with it without the aid of a brush or anything else, much in the same way as we operate on Melons or Cucumbers. My first attempt produced, I think, four pods, which ripened satisfactorily. I retained the seeds till the following spring, when I sowed them carefully, but not one seed germinated out of some two or three dozen; therefore, when the plant flowered again, which it did the following summer, I managed to secure a few pods of seeds, which I sowed as soon as they were ripe. From these I managed to raise three plants, which I have now growing in 15-in. pots; they flowered last season profusely, and I again managed to secure a few pods of seeds, which have produced eighteen young healthy plants that I am just now potting. These make my stock to consist of twenty-two plants, a result which, considering the care and attention which I have exercised in the matter, is by no means discouraging.—*A. H. Tarr, Carlisle.*

The best action which has appeared in "Punch" lately is the out of the "Double-acting Electro-Magnetic Extractor," to remove old nails, &c., from the recently levelled portion of Rotton Row—a hint to Mr. Gerard Noel.

## THE KITCHEN GARDEN.

### POTATO CULTURE IN DORSET.

For some years I have made the cultivation of Potatoes in garden and field a matter of close observation, it being of some importance, as I prepare ground for myself, labouring, and other tenants to the amount of nearly three acres. Let us, therefore, consider the subject as to preparation of ground, season for planting, and as to the varieties which I have found the best for all purposes.

**Preparation of Ground.**—Fresh manure, if possible, should be avoided. The land, if in field, should be chosen as rich as possible, from sheep having been fed off roots, and if oilcake, all the better. If possible, the ground intended for planting should, after ploughing as deeply as the nature of the soil will permit, be exposed to atmospheric influences for some time. Now, the soil in a garden requires very different treatment; or, on an average, three-fourths of the space are allotted to cultivation of the Potato, and among the poorer classes even a greater proportion; therefore the drain upon the land must be great, and met by constantly keeping up a succession of crops, the heavy manuring for all such edibles as Early Broccoli, Savoy, Cabbage, &c., restoring the land to a fit condition to receive the Potato crop; and where, for want of stable manure, this cannot be done, a good change for the ground will be found by sowing Turnips late, so as not to come to draw, and in the spring digging in the greens when "shot out." Of course, I might say much more as to kinds of dressing, viz., lime, rotted leaves, decayed vegetation of all kinds, but different medicines and different diseases.

**Planting.**—As to the proper season for this, I need say but little. All amateur and professional gardeners wish to dig from the open ground about the last week in May. I conceive there is not any gain in planting on the warmest border before February 1, and as to the general crop, the first fortnight in March, both in garden and field, will be soon enough.

**Varieties.**—For a warm border, Myatt's Early Prolific Ashleaf; for the general crop (second early), I strongly recommend Neat's Kidneys (I know not any other name); they come from fortnight to three weeks later than the Ashleaves, are of yellow flesh, boil splendidly, of excellent flavour, and I have often eaten them in thoroughly good condition at Christmas; in short, I consider it the most valuable Potato I grow, as I can raise them ripe before the disease comes. Then, for succession, the Red Emperor, or, as called by Messrs. Carter, the Main Crop, an excellent-flavoured Potato, very heavy cropper, and one of the least wasteful in paring. Next comes the king of all main crop Potatoes, the Red Regent, a kind that is good in every soil; it is a first-class boiler, and keeps well until May, and even if disease sets in, still it yields fair remuneration for planting, and is still good. For late sorts I only mention the Apples Potato, whose only fault is its deep eye. It is an excellent cropper, capital as regards flavour, and for baking, the best I know. Last, but not least, is my old friend the Flake—I do not mean his wretched caricature the Hundredfold Flake, but the genuine old Flake, with strings in it like darned cotton, but one bad of meal, and all that could be desired as to flavour. It is equal to most late kinds in weight of crop, and one of the least wasteful in the paring; good, in short, all round. EUGENE E. P. LEGGE.

*Lilton Cheney, Dorset.*

### POTATOES FOR POTS AND FRAMES.

"A. D." (see p. 154) says, "A few years since I endeavoured to distribute a White Kidney, having very short haulm, named Little Gem, &c." The fact is, I did not endeavour to distribute this variety, notwithstanding that it gained a first-class certificate at the Royal Horticultural Society's Potato trials at Chiswick, along with another of its class named Alice Fenn. I withdrew both of them, publicly stating at the committee table that I felt honoured by their appreciation, but that I did not consider the varieties sufficiently productive to become appreciated by the general public during the then great demand for large-cropping sorts. I have occasionally distributed them amongst my friends, and I still keep them for my own eating. What "A. D." says about my seedling, Fenn's Early Market, is true; and perhaps I may recall to his memory a seedling called Early White Kidney as being a sort worthy of mention for early frame and border culture, as both this and Fenn's Early Market are in commerce. They also both gained first-class certificates at the Chiswick trials. Forthcoming is a new seedling of mine, named Worthington G. Smith, which I consider a very first-class variety for early frame and border culture. I never attempt to admit a Potato in commerce till I have thoroughly proved its constancy and quality. I know there are sorts of mine in distribution which have "crept out" against my wish, and others of my seed-

lings are grown whose raiser the world is as likely to remain ignorant of as of him who raised the old Early Ashleaf. I have now between 300 and 400 new seedlings under probation, some of which, I hope, in the time may become acknowledged acquisitions.

UPWARDS AND ONWARDS.

Cottage Farm, Sulhamstead, Reading, Berks.

**Onion Seed.**—A correspondent (see p. 174) refers to the comparative scarcity of Onion seed at present, and to the fact that home-saved seed is chiefly grown in Bedfordshire. It may be of interest to know that a Bedfordshire grower of seeds has land in this locality, and grows here a considerable crop of Onion seed annually. He plants the bulbs in rows, running from east to west, about 6 ft. apart, and utilises the intervening spaces for the growth of ridge Cucumbers or Gherkins, but the latter chiefly, enormous quantities of which are supplied by him to a well-known pickling firm. The Onion bulbs are planted in the rows as close together as is consistent with good growth, and when the stalks are fully grown they form shelters both from hot sun and wind for the Cucumber plants. When the centre pods are ripe the heads of the Onion seed are cut and dried off in the sun, the stalks being allowed to stand until the Cucumber season is over.—A. D., Bedford.

**Cutting Down Lilies in Full Bloom.**—I am surprised that anyone should say that Lily bulbs do not suffer from being cut down in full bloom. We have found, after 30 years' constant experience with thousands of bulbs of *Lilium speciosum* and its varieties, *Melpomene*, &c., that the bulbs are injured or killed outright, just in proportion to the time at which cutting down is performed. If a plant be broken off in June when 6 in. or 7 in. high, the bulb will die. If cut down in July it will go off into divisions of small bulbs, and if cut down in September the bulbs will only be about half size. Our autumnal exhibition always takes place about the middle of September, and we usually cut from 50 to 100 spikes, an operation which weakens the bulbs so much, that they only produce a very few flowers the following year. In the case of any rare or choice kind, we do not allow them to be cut on any account, and such as we do cut will be done only to get a "first," as Mr. Reynold Hole's gardener says in reference to Roses. Mr. Groom's remarks (see p. 83) are invaluable to lovers of good Lilies.—C. M. HOVEY, Boston, Mass.

**Lilium auratum.**—With reference to the remarks of "Amateur" (see p. 160), may I offer the result of my small experience in the culture of this beautiful Lily? At the commencement of 1876 I began with two bulbs, which may be called No. 1 and 2. No. 1 was planted in a 6-in. pot, in a mixture of yellow loam (from the neighbourhood of Croydon), some garden soil, well-rotted manure, and a little sand. In due time one flower-stem appeared, and produced eighteen blooms, three of which were blown off by the wind, but the remainder were fully developed. The plant grew about 6 ft. high. On proceeding to repot in the autumn, I found the bulb much reduced in size, and, in order to give it a good chance of recovery, I thought it best to plant it out in a border. In the spring of 1877 it produced a feeble flower-stem which, however, soon died, and thus ended No. 1. No. 2, a smaller bulb, was planted in 1876, in a smaller pot, but in the same soil as No. 1, and in due course produced three blooms. It was repotted about September in that year, in a 6-in. pot, as it appeared to have increased in size, and in 1877 it produced six blooms—from one stem only as before. It was again repotted in September, and now this year, 1878, judging from the thickness of the new flower-stem, which is about 1 in. above ground, it seems likely to produce a larger number of blooms than it has yet done. I do not venture to express an opinion on the question of the renewal of the bulb so ably discussed by "Dunedin," but I may say that when repotting I have never discovered traces of a decayed old bulb.—W. J. T., Brixton.

**A National Entomological Exhibition** is to be opened at the Royal Aquarium, Westminster, on March 9, and already several thousand square feet of space have been applied for. The exhibition will not only include selections from the chief collections of insects in the kingdom, but also many adjuncts of interest to the general public.

**Royal Botanic Society, Regent's Park.**—We have received the schedule of prizes offered by this Society at its exhibitions to be held in the gardens during the year 1878, and at each show the prizes, as well as the classes, appear to be of a satisfactory character. The exhibitions are to be held as follows:—May 22, June 12, and July 10.

**Begonia Froebeli.**—In addition to this *Begonia* being attractive when planted out-of-doors in summer or when grown in pots, it also forms an excellent winter-flowering plant for the conservatory. Dried

bulbs of it are now plentiful, and if started early in heat they will supply a fair amount of brilliant scarlet blossoms in winter or early in spring, and they will last longer in a cold state than those of most other *Begonias*.—S.

**The Phylloxera in France.**—According to some statistics given in the "Ecomomiste Francais," Vine culture in the Department of the Hérault was practised, prior to the attack of the Phylloxera, over 420,000 acres, yielding on an average 264 millions of gallons. At the present time 141,974 acres of vineyards have been abandoned, so far as the Vine culture is concerned, so that the produce of the department has diminished to the extent of 88,000,000 gallons of wine, which at the average cost of 10s. per hectolitre, or a little over 5s. per gallon, represents £1,920,000, or nearly £2,000,000 sterling. In 1877 the loss is estimated at £3,200,000, the price of the wine being calculated at 15 francs the hectolitre, or about 7d. per gallon.

**Allium neapolitanum.**—"A. R." Bromley Common, whose note occurs on p. 162, may be assured that this plant is perfectly hardy, and would probably take as good care of itself in one of the copses about Bromley as it does in the orchards of Southern France, though, of course, it would flower much later in England.

## NOTES AND QUESTIONS—VARIOUS.

**The Judas Tree.**—There is, I believe, still standing a fine tree of this kind in the grounds of Frogmore House, overhanging the old Dutch garden, which was every spring a beautiful sight when abundantly covered with its clusters of purple-tinted flowers.—J. G.

**Bedding Viola Yellow Boy.**—This very early bedding *Viola* has never been fortunate enough to secure the attention which it deserves. It is quite distinct from any of the forms of *Viola lutea*, and has a more compact and dense habit. The flowers are stouter, of a bright yellow hue, and are borne in great abundance. Perhaps its chief merit is its exceeding precocity, being the very earliest of all yellow bedding *Violas*.—A. D.

**Fruit Prospects in Cleveland.**—The fine dry winter which we have had in this district has been favourable to the maturity of fruit buds. The occasional frosts which we have experienced have not penetrated deeply into the ground, and the present appearance of fruit trees indicates an early bloom. Gooseberry bushes are unusually forward. Apricots, which are very generally grown in this district, are not unusually forward. On warm walls Jargonelle Pears are showing flower. Between the appearance of fruit trees now and at the same time last year there is a striking difference in the Cleveland district.—C. M. D., Stokesley.

—Apricots, Peaches, and Nectarines show bloom in abundance, but Pears both on walls and standards are thinner of bloom-buds than I ever remember to have seen them. Apples are, however, thickly set with good plump buds.—B. GILBERT, Buryleigh, near Stamford.

**Christmas Roses.**—"F. G. P." will be glad to know the best place to obtain good plants of the largest sort of white Christmas Rose; also what soil suits them best. [The largest sort of White Christmas Rose may be procured from any nursery where herbaceous plants are grown. We presume you mean *Helleborus altifolius* (usually called *H. nigry* maximus), which, however, is often slightly pinkish. It grows in any ordinary good garden soil.]

**Quercus heterophylla.**—This Oak is very nearly hardy, and it retains its leaves here until January or February; in fact, it never loses them until we have a sharp nip of frost. Its flexible shoots, graceful habit, and diversified foliage make it a desirable addition to collections of hardy trees. It is sometimes called in catalogues *Q. agrifolia*.—T. SMITH, Newry.

**Winter Nelis Pears not Ripening.**—I have a fine Winter Nelis Pear tree trained on a wall. It bears freely, but does not ripen; on the contrary, it keeps tough, and is of no use. I have been thinking of cutting it down. What should I graft on it?—R. MARTIN, Trifalgar, Cork.

**Barr's Criterion Cabbage.**—This excellent Cabbage, sown on July the 17th and planted out on September the 2nd, is now producing beautiful little hearts, which we are cutting at the rate of from fourteen to twenty dozen a week. Of Carter's Heartwell Dwarf Imperial, sown and planted at the same time, we have now sturdy plants, which, however, will not be fit to cut before the end of April—thus losing a crop, and that the best of all kitchen garden crops, viz., Myatt's Potatoes. The ground on which the Criterion is now growing will be dug between the 20th and 25th of March, and planted early in April with Myatt's Prolific Potato.—R. GILBERT, Buryleigh.

**Treatment of Heaths after Flowering.**—I have recently purchased some Heaths. They have done blooming. What treatment do they require? Should they be cut down? If so, when? should they be reotted?—ROBERT P., Eastham. [Cut your Heaths consist of such kinds as *hyemalis*, *Willmoreana*, *gracilis*, or similar sorts, they should be cut back after flowering. Place them in a light airy situation, and when they break forth, give them a slight shift if they require it. Use peat and sand, and well rsm the new soil round the sides of the old ball. Also take care that the ball is not dry before it is potted.—S.]

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SATURDAY, MARCH 9, 1878.

[Vol. XIII.]

"This is an art  
Which does mend Nature: change it rather; but  
THE ART ITSELF IS NATURE."—*Shakespeare.*

### DAISIES IN TOWNS.

In densely inhabited districts where other spring flowers do not flourish these will grow and yield a continuous round of blossoms for a lengthened period. As gorgeous colour they combine every shade from the purest white to the deepest crimson; they are plain and quilled, and often singular as regards growth, as, for instance, Hen and Chicken Daisies. Hyacinths, and Tulips are beautiful, but short-lived, a remark which also applies to many other spring flowers. Anubrietas, Arabis, Pansies, and many others often damp off under the dull smoky atmosphere of London; therefore when we possess such a staunch friend as the Daisy we should make as much use of it as we can. During ordinary winters Daisies are seldom without flowers, and in such winters as that which we have just experienced they are literally in full bloom, and will continue so until removed to make room for summer bedding plants. A packet of seed costing a mere trifle will produce hundreds of plants. The seed should be sown in shallow boxes in light sandy soil any time during June, and the boxes should be placed in cool shady frames after a good soaking of water has been given them. The young plants soon make their appearance, and when sufficiently large to be handled they should be pricked out in the open ground 2 in. apart, giving them at the same time a thorough watering. Daisies love water, and are very tenacious of life. They rarely die even if thrown on the surface of the soil, provided there is an abundance of moisture. They grow rapidly and soon become a solid mass, when they can be taken up like turf. They should then be divided and planted in the beds where it is desired they should bloom from 4 in. to 6 in. apart. In February they commence to grow, and by the first week in March they are in full flower; and, as already mentioned, continue so incessantly until removed in May to make room for bedding plants. It will thus be seen that our beds might be carpeted with flowers at a season when blossoms are extremely scarce, and that at little trouble or expense.

*Southwark Park.*

CHARLES DENNIS.

**Perpetual Carnations in Open Borders.**—Having a large stock of these, and relying on young plants for winter blooming, we last spring planted out in mixed borders a quantity of the best varieties. They soon made flowering shoots in abundance, and during the summer and autumn months their blossoms proved very acceptable. Owing to the mildness of the weather, too, they have continued to expand their blooms all winter, and during the fine weather last month (February) we out several perfect blooms. These Carnations, therefore, are desirable plants for those who appreciate out flowers during winter, and who have but a limited amount of heated glass structures, for although they expand their blooms more readily in a temperature of from 50° to 55°, they will yield satisfactory results in cool houses, and even out-of-doors.—*J. GROOM, Henham.*

**Camellias in the Open Air.**—Readers of THE GARDEN have more than once heard of the luxuriant growth and fine-blooming qualities of the Camellia in the gardens at Glen Eyre, near Southampton, and elsewhere, and enough has been said from time to time to show that the Camellia can be made a grand outdoor shrub if properly treated. Mr. Cornhill, in his otherwise admirable paper (see p. 181), asserts that "it is only in exceptionally favourable seasons that the blooms arrive at their proper development." If such be the case, the seasons at Southampton must at all times be exceptionally favourable, as the numerous plants at Glen Eyre flower most abundantly every spring; and let me add that not a plant at any time receives the slightest protection. If anyone doubts this, or would like to obtain information as to the situation, soil, and sorts of Camellias grown, they cannot do better than pay Glen Eyre a visit and judge for themselves. For my part—after what I have seen in the gardens in question, where the situation is elevated; in the gardens of the centenary rector of North Stetcham, Mr. Bendon, near the river Itchen; and in the gardens of Mrs. Fleming, at Chilworth—I have not the least doubt that the Camellia might be grown as an outdoor hardy shrub in hundreds of gardens, especially if for the purpose

young robust plants that had not been previously pampered in heat were used. As long as it will thrive well in mid-Hants, so long might it be expected to succeed throughout the southern counties of England.—*A. D.*

**Cypripedium Lowi.**—This is one of the best of our winter-flowering Orchids; in fact, it blooms at all times of the year. I have a plant of it bearing three flower-spikes, of which two, with five and six flowers on them, were in bloom before Christmas, and they are still in good condition. They are upwards of 4 ft. long, gracefully arched, and the flowers measure more than 7 in. across. The third spike, on which the flowers are, as yet, undeveloped, is about 1 ft. in length. I grow it in a shady, moist pit, in which there is an average temperature of 68° in winter and 75° in summer. It is potted in broken crocks, peat, and Sphagnum Moss, well drained half-way up the pot by an inverted pot and crocks. Its leaves, which are evergreen, are some 18 in. long and 2½ in. wide.—*J. GARLAND, Kellerton.*

**Lilium auratum v. Sulphate of Lime.**—The particulars given by "W. J. T." (see p. 196) regarding his culture of this Lily are most interesting, and tend to support the theory that sulphate of lime in the soil is detrimental to the growth and full development of the plant. It would be interesting to know whether he applied manure water or soft water, for it would account for the larger number of blooms, and increased size of bulb the second year, from the simple reason that such water containing ammonia would convert the sulphate of lime to sulphate of ammonia, which, being a soluble salt, is gradually washed out. Messrs. Barr and Sugden state in their catalogue that they saw "plants of *L. auratum* grown in Rhododendron beds (I presume in peat) with stems from 3 in. to 4 in. in circumference, and attaining a height of 11 ft., surmounted with large heads of flowers with from fifty to upwards of 100 blossoms." I should like to know in what part of the country this was, for common peat in the neighbourhood of London will not support such growth; it contains the requisite iron, but is deficient in the phosphates. I have a rough account as to the results of experiments which I have made with various soils and fertilisers, which I shall one of these days send you.—*AMATEUR.*

**Auriculas in the Open Ground.**—Showy border kinds of the Alpine section of Auriculas have done well in the open ground this winter; so well, indeed, that they excel in robust health, vigour, and earliness all similar plants kept in pots and under glass. Planted on the west side of a low wall in rather stiff loam, they show that they prefer that to the finer and lighter compost in which pot plants are usually grown. Has the fact that the roots are thus in the open ground kept moist and plump anything to do with their fine, healthy development? It seems that it is not desirable to keep the balls so dry during the winter as some recommend, but the danger lies in the possible rotting of the crowns. I shall certainly try some of the choicer Alpines in the open ground during the ensuing year.—*A. D.*

**Newtown Pippins.**—A friend of mine having received a barrel of these celebrated Apples from America, gave me half-a-dozen, which were tasted by myself and several friends who take an interest in Apple growing. We were much disappointed with the flavour, and considered them inferior to several of our own favourites, such as Blenheim Orange, Pimston Pine, Cox's Orange Pippin, and Ribston Pippin. The Apples answered fairly to the description as to size and appearance given in Lindley's "Orchard" (1831) and Scott's "Orchardist," recently published. Lindley says:—"Juice saccharine, and possessing an exceedingly rich and highly aromatic flavour." Scott describes the flesh as "very juicy and crisp, with a fine aroma and an exceedingly high and delicious flavour. This Apple stands at the head of the list in America, where it comes to the highest perfection. It is largely imported into this country, and commands a high price in our markets." We were disappointed with the flavour, and having doubts about the accuracy of my samples, I took two to Messrs. Carter, Page, & Co., of London Wall, who showed them to the foreman of their nursery. His verdict was "True Newtown Pippins." If so, my faith in these Pippins is gone. Will any reader who is familiar with the Newtown Pippin give me the benefit of his experience in regard to it?—*C. G. Addiscombe.* [The Newtown Pippin has come to us in bad condition this year; but when good it is one of the best Apple known.]

**Dandelion Salad.**—The unusually fine weather which we have lately had has brought Dandelions rapidly forward; in fact, they are now at their best; little difficulty will therefore be experienced in either finding or preparing a bowl of this excellent salad. In passing through one of our vegetable markets a few days ago I noticed a quantity exposed for sale; they were, however, very coarse-leaved, and not at all the kind which I should recommend. They are also best used, if possible, freshly cut, as, if allowed to lie for any length of time after being gathered, the leaves become leathery, and lose their flavour.—*CHARLES DENNIS, Southwark Park.*

## CALLA ÆTHIOPICA PLANTED OUT IN SUMMER.

It is difficult to overrate the usefulness of this plant all the year round, for while its highly ornamental foliage renders it serviceable all seasons for mixing in groups, its season of flowering may be easily made to embrace the whole year round by having successional batches of it in store. Amongst the most prominent uses for which this plant is eminently fitted is that of furnishing large vases in entrance halls or corridors, associated with stately, or by the margins of fountains, and, perhaps, best of all, in church decoration, the cut spathes being especially sought after for Easter. We also find the white spathes effective in trumpet vases associated with Poinsettias and other brilliant colours. For winter and spring supply we find the plants much benefited by being planted out in rich garden soil during the summer months. About the end of May we take such as are exhausted with flowering, remove all their side growths, and then plant the strong single stems in rows 2 ft. apart. The offsets, when put in beds at distances according to their strength, make serviceable-sized plants for the following season, while the largest plants, if liberally treated as regards rich soil and plenty of moisture, make sturdy specimens with stems as thick as those of a Caroon. By September the majority of them will be showing flower, when they must be lifted and potted carefully, and well watered and shaded from direct sunshine for a few days. The conservatory or intermediate house will be quite warm enough in which to flower them in perfection; for if forced in too much heat, the leaves become long and weak, and the flower spathes lack substance. When planting out the stock for succession, propagate as much as possible from those plants that have produced the finest spathes. As a rule, the longest and darkest green leaves indicate the best kinds, plants with rounded, pale green foliage having small spathes. Selection in this way, therefore, may do much to improve the stock; for, although the size of the flower is greatly influenced by good cultivation, it is desirable, in the first instance, to get a good strain. Callas will also grow vigorously and flower freely during summer and autumn with their pots plunged in water in tanks or on the margins of lakes or ponds. So wide, indeed, is the range under which they thrive, that good specimens are by no means uncommon in the arid temperature of ordinary living rooms; and where moisture is but irregularly supplied, either at the roots or in the atmosphere, their vigorous roots and shining foliage, so easily freed from dust, seem to defy unfavourable conditions, a fact which accounts for their popularity. A moderately stiff loam, enriched with thoroughly decayed manure, suits them admirably.

J. GROOM.

Henham.

## LILIES AND THEIR REPRODUCTION.

THE discussion raised by "Dunedin" as to the propagation of Lilies seems to interest a vast number of people, and the question is really well worth investigation. His theory, as I understand him, is briefly this—

"All bulbs that perish, other bulbs supply,  
By turns they catch the vital breath and die."

He states (see p. 185) in last week's GARDEN that a great part of my previous communication was mere speculation. I know not to what point he may refer, but my only object is to increase our knowledge of such matters; and I think I have advanced nothing but the results of personal observation. However, the main questions to be decided are, whether or not the bulb after flowering decays; and, secondly, whence springs the flower-stem or stems of the succeeding year. Your correspondent "W. J. T." (see p. 196) so far corroborates my experience that he has "never discovered traces of a decayed old bulb." But in order to settle the question beyond dispute, I will grow in pots different bulbs so close to the surface that the tops of the bulbs may be readily exposed and watched during the season; and in October or November I shall be most happy to turn them out and show "Dunedin" the results. I did this last year with *Lilium giganteum*, and it is now shooting up from the precise centre of the bulb as previously, and there can, I think, be no mistake, as the large scales are 1 in. above the ground, and have been so for three years; and yet it is stated (see p. 184), according to the experience of Mr. Wilson, that the old bulb of *L. giganteum* "clearly dies." It really makes one despair of the truth amongst so many irreconcilable and indisputable facts; but if facts, we must then seek the cause of such discrepancies, as the vagaries of plants under dif-

ferent modes of treatment and varieties of soil are truly wonderful. My theory as to all bulbs and corms has been that there is a stool from whence the roots descend, the scales (or underground leaves, bulbs, or abortive accumulations of sap—corms), emanate, and from the centre of which stool the flower-stem is thrown up. This flower-stem has buds at the base, one or more; if but one, the same bulb (or underground leaves) continue; if two or more, additional scales are thrown out to make each bud a circular bulb, thus breaking up the one original bulb, as may be seen in the Crocus, by growing a large one in water, when, if three or four blooms come up, the one corm will, before the end of spring, be found, on removing the outer skin, to have formed three or more circular corms. If a Lily be grown in a soil containing a full amount of the neutral salts required for the full development of the plant, or say more than it requires (being an extraordinarily greedy plant when supplied with the requisite moisture and light), this superabundant food will be developed, not as in say Wheat in large quantities of seeds, but in buds or bulbs at the axils of the leaves, or where leaves have been, and even on the roots (as in *Lilium longiflorum*), where I have observed small bulbs formed on the large roots all round the exterior of the pot. Now anything to gainsay these views will be doubtless as valuable to a great many of your readers as it will be to myself. I have not referred as yet to *Amaryllids*, from which I find much to learn. In most of mine the offsets spring from the exterior circle of the stool, whilst in *Valloia* they commence at the axil of a leaf at the stool, and the leaf dying and binding the bulb tightly, the little bud or bulb is gradually brought up so high, that when the leaf or sheath round the parent bulb bursts from the expansion of the bulb, the young bulb will actually fall out on the ground. One *Hippeastrum* which I wanted to grow very strongly, and put in a 13-in. pot, has sent up ten strong suckers at the side, all round the pot; but whether they emanate from the roots or the large bulb (which seems almost impossible) I can only decide when I shake it out in autumn.

AMATEUR.

**Preserving Flowers in Their Natural Colours.**—In the last volume of the "Proceedings of the American Pharmaceutical Association" there is a simple receipt for the preservation of the natural colours of flowers in herbaria. The whole plant is drawn through a solution of salicylic acid in spirits of wine contained in a shallow basin or deep pie-dish, and afterwards swung backwards and forwards to remove the excess of liquid, dried between blotting-paper, and pressed in the usual manner. Care must be taken not to leave the plants too long in the solution, as a prolonged immersion discolours delicate flowers. The blotting-paper, too, must at first be removed frequently. Plants treated in this manner are said to dry rapidly and furnish specimens of superior beauty, retaining their natural colours in greater perfection than by any other process. The salicylic acid, which may be obtained at any chemist, must be dissolved in the spirits of wine in the proportion of 2 grains to 3 ounces. Methylated spirit must not be used, as it contains a certain amount of resin dissolved in it, which would render the plants sticky.—C. W. QUIN.

**Horse Chestnut Liquor v. Worms.**—Do grated Horse Chestnuts, mixed with ten times their bulk of water, expel, as it is said, worms from the soil in pots?—Q. [I have given this receipt a trial, and certainly there is something nauseous or disagreeable to the worms in the solution in question, for they quickly make their exit from the soil, and if left in the liquor soon die. The grating is, however, a tedious operation. I should recommend crushing the Horse Chestnuts, and steeping them in order to extract their strength in scalding water, allowing the liquor to get cold before using it. This remedy is, however, by no means equal to Messrs. Rutley & Silverlock's soap cure, the effects of which I described in THE GARDEN of October 6, 1877 (p. 318), and which is decidedly the most expeditious and safe remedy with which I have ever met, either in the case of lawns or that of plants in pots.—JAMES GROOM, Henham.]

**Cement for Aquaria.**—The "Polytechnisches Notizblatt" gives two recipes for a cement for joining glass, wood, and metal. The first consists of a mixture of equal parts of shellac and powdered pumice-stone, to be used while warm; the second is obtained by melting ordinary brimstone in a ladle, and adding an equal proportion of powdered pumice-stone. The pumice-stones in both cases must be thoroughly dried before mixing, as it is apt to absorb moisture from the air.—C. W. QUIN.

**Roses and Vines.**—Mr. Groom (see p. 190) cannot be so well acquainted as I am with the peculiar circumstances that induced me to cast out a quantity of diseased Vines in favour of good Roses. The Vines were planted in a harsh sour clay, no border having been made. There is no heating power in the house, which has, as a first important use, the growing of some thousands of hardy plants in

small pots during the winter and spring for trade purposes, and the keeping of which in check during mild weather renders it necessary to open the house, producing all sorts of cold draughts that would bring mildew on any Vines under such conditions. The Vines were a failure, and the Roses a success.—A. D.

### NOTES OF THE WEEK.

**Crocuses in Hyde Park.**—A really beautiful effect has lately been produced in Hyde Park, near the "corner," from white Crocuses coming through the Grass. As we have always pointed out without reserve the blemishes in our public gardens, so we wish to praise this and like efforts. If the managers of our parks will only go on this way in securing natural and artistic effects from simple hardy materials, the parks of London will soon become a great source of pleasure and instruction. By the way, we hope these numerous Crocuses and all others in our parks will be allowed to spread into old-established tufts. We notice now that while many gardens have Crocuses, by far the most beautiful are in small gardens, where they are allowed to form strong tufts undisturbed.

**Fritillaria pudica.**—We have to thank Messrs. Backhouse, of York, for some specimens of one of the most novel and beautiful hardy spring flowers we have ever seen, viz., *Fritillaria pudica*. It grows nearly 6 in. high, and has bright golden-yellow flowers peculiarly graceful in form and drooping like a Snowflake.

**Orchids at Gunnersbury.**—There is just now a fine display of Phallopis in one of the houses at Gunnersbury. The plants, which are growing in wooden baskets, are suspended along the front of a lean-to house, and underneath them is a narrow stage which is planted with Mosses and *Panicum variegatum*. These, being kept continually moist, grow vigorously, and the moisture benefits the roots of the Phallopis. Though many of the blooms have been out, there still remain some dozens of large, gracefully-drooping spikes of fine flowers. In another house there is a plant of *Odontoglossum Alexandrie*, with one of the largest bulbs which I have ever seen, furnished with two branching flower-spikes, each of which bears no fewer than thirty bulb-buds, and a plant of *O. Pescatorei* is furnished with a gracefully-arched spike bearing upwards of sixty expanded blossoms.—S.

**Narcissus monophyllus.**—This is one of the Daffodils of doubtful hardiness and great beauty which all must desire to see plentiful in our gardens. Mr. Elwes called our attention to a pot of it the other day, at South Kensington, bearing over fifty of its fair flowers in a 5-in. pot. The specimen was grown in Mr. Hammond's garden in Kent in a greenhouse. This and other supposed half-hardy species are charming for growth in pots, though we believe they will eventually be found quite hardy in suitable soils and properly sheltered among plants of like stature. Indeed, we believe this to be harder than the Peacock Iris, which is quite hardy and flowers freely in sunny sheltered borders in Kent.

**Dondia Epipactis.**—This interesting little flower, now in perfection in the front row of herbaceous borders and on rockwork, deserves to be better known than it is. Even those who dislike its colour cannot but be pleased with its umbels of yellow flowers ensigned in bright green leaves. Possibly rockwork may be its proper place, but I find that it looks perfectly at home and thrives well on a border. It is a most companion for the Iris reticulata, Scillas, Sisyrinchiums, and Dog's-tooth Violets, which have now begun to beautify the spring garden.—E. F., *Petygards Hall, Swaffham, Norfolk*.

**Rare Hardy Plants.**—We learn that a very rare and pretty plant, *Chionodoxa Forbesi*, is now flowering probably for the first time in European Mr. Elwes' collection at Crichester. It is, we believe, one of Mr. George Maw's introductions from Asia Minor. In the same garden there is also a wonderful Turkestan Tulip, white with an orange centre, now in bloom, which is expected to be new.

**Habrothamnus Aubletii.**—This fine greenhouse climber has been making a good display for some time past, trained against a back wall in the greenhouse at Impney Hall, Droitwich. It has, I believe, only been planted out about twelve months, and it blooms at every joint. It has very dense foliage, and the blooms are much larger than those of *H. elegans*.—T. W. S.

**Iris reticulata and its Variety Krelagei.**—Last year I complained in your columns that *Iris reticulata*, as grown by me, had failed altogether in the open ground, and that its blossoms in the greenhouse were exceedingly short-lived. Thanks to the courtesy of your correspondents, I received some useful hints as to the culture of this lovely plant, and in consequence I have this year to report that it has bloomed beautifully both in the house and in the open border ;

in fact, it has bloomed here before the Crocus and simultaneously with the Snowdrop. I should like to call the attention of nurserymen who offer this bulb for sale to the necessity of keeping the two varieties *I. reticulata* and *I. reticulata Krelagei* distinct. The latter is, in my opinion, greatly inferior to the former, and it is disappointing to receive a consignment of the inferior plum-coloured variety instead of the more beautiful violet-blue *I. reticulata*. Spring flowers here in Worcestershire are all too promising, and the gardens are already ablaze with Crocuses, and starred with blossoms of Daisies, Aubrietias, and Violas. *Anemone fulgens* is full of buds, while Wallflowers have been in blossom ever since October. Indoor Hyacinths may be pronounced a comparative failure this year ; evidently the bulbs suffered from the cold spring and wet summer of 1877. Will anybody tell me how to grow *Hepatica angulosa* successfully?—HEBERT MILLINGTON, *Bromsgrove*.

**Claytonia caroliniana.**—This pretty modest American spring flower is now in bloom in Mr. G. E. Wilson's garden at Weybridge. It is in a cold frame, but it is probably quite hardy, and when plentiful enough to risk in the open air will no doubt flourish among the many rare hardy plants in the same garden.

**Saxifraga oppositifolia.**—We have some plants of this Saxifrage on rockwork in full bloom just now ; they are literally smothered with flowers, and are greatly admired by all who see them.—W. M. THOMSON, JR., *Tweed Vineyard, Clovenfords*.

**Anemone blanda.**—Mr. P. Barr finds this Anemone to vary in colour, there being a light as well as a deep blue form, the last much the best. He has also in bloom in the open air the beautiful winter-flowering *Iris stylosa*.

**The First Rose of the Year.**—On March 1 a lady, the resecta daughter of an old Rosarian, wrote to me that a plant of *Maréchal Niel* Rose was in flower upon the wall of her house (in the neighbourhood of Danmow) ; and, upon my suggesting that the house referred to must be a greenhouse, I received by return of post a lovely bloom of the *Maréchal*, quite perfect in form, colour, and fragrance, and with it the following remarks : "Seeing is believing ! This *Maréchal* Nil ten minutes ago was growing on the wall of our house without any protection whatever ; it is the wall of the kitchen, and faces south. There are two more now out, and loads " (imagines a wagonload of *Maréchal*s going up Parnassus, drawn by thoroughbred horses, Pegasus leading, as an offering to the Muses) " to follow ! " I have only to add that I have never seen or heard of such a Rose as this now before me blooming out-of-doors in the first week of an English March.—S. REYNOLDS HOPE.

**Tropæolum Ball of Fire.**—This, in the form of good-sized plants, makes a very effective display at this time of year on the rafters of a greenhouse, where its side shoots should be allowed to hang down festoon fashion. Some good examples of it, trained in this manner, may now be seen at Hindlip Hall, Worcester, where they have quite a gay appearance.—T. W. S.

**Mr. Gordon's Herbarium.**—We understand that Mr. Gordon's herbarium is to be disposed of. It is very rich in Conifers and hardy trees and shrubs, and in many ways a most interesting collection. As the Hookarian herbarium was sold to the State for £5000, owners of good collections of dried plants may be pardoned for putting a high value on them, even from a pecuniary point of view.

**Varieties of Iris reticulata.**—We are indebted to Mr. Ware for blossoms of two forms of the violet-seeded, spring-blooming *Iris reticulata* (the ordinary form) and the variety *purpurea*. An *Iris* flowering in early spring, with colours rich beyond those of all early flowers, is a precious addition to our gardens, and the fact that it varies will make it all the more so.

**Narcissus aureus.**—I have now in bloom what I believe to be the true *Narcissus aureus*. It is a small, slender *Tazetta*, with flowers not much larger than *N. junifolius*, one to four on a stalk ; the corona is primrose-yellow, and the cup orange. I obtained the bulbs from a friend at Algiers. It has been grown in a pot in a cold frame.—H. HARPER CREWE, *Drayton-Beauchamp Rectory, Tring*.

**Hardy Flowers in Bloom at Pinner.**—This morning (March 2) I gathered the enclosed spring and winter flowers, just twenty different sorts, not including varieties. Amongst them will be found not only the lovely and most easily grown *Omphalodes verna*, but also *Anemone fulgens*, *Erythronium Dens canis*, *Scilla sibirica*, *Erica carnea*, *Lithospermum prostratum*, *Crocus vesicolor*, *Polyanthuses*, *Jonquils*, *Violets*, and others. Mine is a cold, non-congenial soil, and these plants might be grown in any garden. Crocuses, undisturbed for six years, are one solid mass of bloom.—A. K., *Eastcott Cottage, Pinner*.

WE understand that a legacy of £100 has been left to the Royal Horticultural Society under the will of the late Miss Parry, of Ham.

## NOTES FROM KEW.

Two species of *Prunus* are just now in fine bloom, and are really attractive objects. The first, *Prunus cerasifera*, is a remarkably neat-growing small tree, from the Levant; this specimen is yearly one sheet of bloom, but no fruit is ever produced, although apparently perfect pollen is very abundant. The other is the Chickasaw Plum, *P. chicensis*, of the South-eastern United States. This is not so graceful in habit as the last-named, but is yet worthy a place in any shrubbery. *Ribes speciosum*, a Californian shrub, is extremely handsome; it has small lobed leaves and long exserted stamens, which cause the crimson flowers to resemble in a marked degree some of the *Fuchsias*; indeed, *R. fuchsoides* is one of the synonyms of the plant. The British *Saxifraga oppositifolia*, and its variety *alba*, are very pretty rock plants; both are, however, much surpassed in vigour and beauty, and also apparently in precocity, by a variety which bears the name of *pyrenaica rubra*, and has flowers fully double the size of those of the type, and much deeper in colour. The well-known *S. ligulata* is flowering freely, as is also its near relation, *S. Stracheyi*, which has brighter-coloured flowers, and is altogether a more striking species. One of the most handsome of all the Alpine *Saxifragas* is *S. Buergeriana*, with its neat, mossy growth and large white flowers. A coloured figure of this was given with THE GARDEN of Sept. 15 of last year. *S. Rocheliana*, var. *coriophylla*, concludes our list of *Saxifragas*; it is a neat little plant, with pretty rosettes of small, roundish leaves, and short, leafy flower-stalks, bearing heads of white flowers. *Dondia*, or *Haecquetia Epipactis* (for it is known by both names), is a very peculiar as well as pretty little plant; it is a very dwarf Umbellifer, with dense heads of flowers, somewhat resembling those of *Astrantia*, but bright yellow in colour. One of the earliest of the true *Irises* is *Iris angulicaris*, a native of the hedges of Algeria, and a very beautiful and sweet-scented plant; it was figured in the "Botanical Magazine" as *I. stylosa*. The leaves are narrow, and from 1 ft. to 1½ ft. in length; the flowers are from 2 in. to 2½ in. in diameter, the recurved outer leaflets of these being pale violet, with a deep yellow central band, and mottled below the middle with pale yellow, while the inner ones are of a uniform pale violet colour. *Helleborus lividus* is a stately species with purple flowers; an unnamed variety, with greenish flowers and the vigour and habit of the type, is also in flower, and well worthy of notice. The finely-cut leaves and large, bright yellow flowers of the spring-flowering Pheasant's-eye (*Adonis vernalis*) are very beautiful; few members of the Crowfoot family are more easily cultivated or better worth growing than this pretty perennial herb. *Hepatica* (or as it is sometimes called *Anemone*) *angulica*, from Hungary, is most charming, with its large, blue flowers borne well above the fine foliage. *Solila sibirica* and *S. bifida* are too well known to need description; the colour of the latter is a most charming ultramarine blue. The purple flowers of the common Dog's-tooth Violet (*Erythronium Deus canis*) are now very conspicuous just above the beautifully-mottled leaves. The North-west American *Sisyrinchium grandiflorum* is represented by a good tuft of a variety bearing large, pure white flowers; these are borne singly on scapes rather longer than the narrow, Grass-like leaves. The early spring-flowering Vetch (*Lathyrus* (*Orobus*) *vernus*) is very gay just now, as well as a variety called *cyaneus*, which has flowers of a deeper blue. *L. daccidius*, which appears to be confined in a wild state to Austria, has narrower and more finely-cut leaves than *L. vernus*; the flowers are a much deeper red when young, and never assume the metallic blue colour of the first-named. *Pailostemon orientalis* has panicles of pendent, blue, Borage-like flowers, borne on short scapes, which, however, are long enough as yet to overtop the not fully-developed leaves. *Scopolia carniolica*, a native of the mountains of South-eastern Europe, is a pretty, dwarf, Solanaceous perennial, not often seen in cultivation; the light green, oval leaves are produced in pairs, and the dull purple, bell-shaped flowers are borne singly on rather long, pendulous stalks. Amongst Croci not previously noted the prettiest is *Crocus stellaris*, with its star-shaped, striped yellow flowers. This Mr. Baker supposes to be a garden hybrid between *C. massianus* and *C. ensifidus*.

The most noteworthy cool greenhouse plants are the following, all in the temperate house:—*Acacia verticillata* is a neat-habited, extremely floriferous Australian species, with Gorse-like growth and stalked spikes of bright yellow flowers. *A. Richeana* is confined to the southern parts of Tasmania, and is by far the most beautiful *Acacia* of that island; it grows like a Weeping Willow on the banks of some of the streams, and its long, whip-like, pendent branches are clothed with panicles of golden flowers. In cultivation it is eminently fitted for training up columns or along the rafters of the cool conservatory, and the length of time it remains in bloom renders it a most desirable acquisition. A large tree of *Acacia melanoxylon* is flowering freely; this, however, is not a species to be recommended for general cultivation, but is very interesting, as it shows so well the

development of the dilated leaf-stalk characteristic of the Australian *Acacias*. The lower leaves have a bipinnate blade, whilst the upper are reduced to the flattened leaf-stalk. This species is supposed to yield the "Miall" wood, a timber with a very sweet violet scent. The Sikkim *Rhododendron cilium* is one of the most useful and manageable of all the Indian *Rhododendrons*, on account of its small size, neat habit, and the freedom with which its nearly white flowers are produced. *Clematis Buchaniana* is a rampant Himalayan species with large, hairy leaves and branches, and short, bell-shaped, greenish flowers. The largest-flowering of all the *Camellias* is the net-veined *C. reticulata*, from Hong-kong; although the petals are not so well arranged as in the beautiful garden forms met with every day, a good plant, covered with its large, brightly-coloured, Peony-like blossoms, is a most brilliant object.

In the Palm house are several plants of more than ordinary interest. *Brauseola macrantha*, from tropical America, is the finest member of the genus in cultivation; the flowers are larger and deeper in colour than those of *B. eximia*, but in other respects these plants have much in common. The South Brazilian *Abutilon Darwinii* is a pretty bush, and is loaded with its very handsome, large, drooping, bell-shaped flowers, which are dark orange-red in colour, with blood-red veins. *Carissa acuminata* is a spiny shrub with opposite glossy leaves, and clusters of small, star-shaped, pure white flowers. *Acanthus montanus* is an African plant, with the spiny leaves possessed by all the genus, and woody stems, terminated by a spike of large rosy flowers.

Few fresh *Orchids* can be noted this week. *Trichopilia suavis*, from tropical America, is the most handsome of all; the sepals and petals of its large flowers are white suffused with rose, and the large, waved, and crisped lip is beautifully mottled with red and yellow. *Spathoglottis Lobbi* is a very lovely terrestrial *Orchid*, with a tall, erect, slender scape, bearing several large, bright-yellow flowers. The pretty little white-flowered *Dendrobium japonicum* is worth a place in any collection. *Brassavola cordata*, an epiphyte of the easiest cultivation, is perhaps more curious than pretty; it has long, fleshy, channelled leaves and racemes of whitish flowers. *Coleogyne falcata*, a native of Nepal, has long drooping racemes of rather disagreeably-scented flowers; the sepals and petals are white, the base of the three-lobed lip bears several crimson veins, and the middle lobe is yellow near the apex.—†

## LIFTING AND DIVIDING ANEMONE FULGENS.

"A. D." (see p. 144), having forgotten to divide his *Anemones* at the proper season, was, doubtless, quite justified in doing so after growth had commenced; of course, such a proceeding would not kill them. In my previous note on the subject I unfortunately overlooked the fact that some districts are drier than others. Here the inadequate term "wet" does not by any means describe the constant pluvial conditions under which, during a great part of the year we live; and if we leave this plant in the ground after it has gone to rest, when we look for it in the autumn we find it "missing." Why, even *A. palmata*, which is so fond of moisture when growing, rots with us when at rest; in fact, it is abundantly clear that this plant does not like a wet blanket to sleep in. I understand that in the case of most bulbous and tuberous-rooted plants "at home" the driest part of the year is that in which they rest. Where one has only one or two of any plant, *Anemone fulgens* to wit, it is usually easy enough to place them in specially favourable positions; and if these did not naturally exist, it would also be easy enough to place, as "A. D." suggests, a shovelful of coal-ashes over them, but when we have to count our bulbs by thousands even that becomes impossible. The time has come when this beautiful *Anemone* is being used for spring gardening, and, of course, under such circumstances, it must be lifted out of the way of the bedding plants, if for no other reason; and even if not necessary to make room for other plants, it is still the best plan to lift and place the bulbs in a secure position. Sand is a good medium in which to keep them, and not one of the least advantages of lifting is that one knows where they are. As to losing part of their weight being injurious, that is a pure illusion; indeed, I consider the loss of weight rather advantageous than otherwise. My first-planted bulbs, which were as dry as snuff, are now fine plants, nearly 1 ft. through, and bearing many beautiful flowers, and I am fully satisfied that under no circumstances could they be better. Besides, this plant is all the better for a change of soil, and so, I believe, are *Gladioli*. We have had spikes of the latter 7 ft. high on new ground from bulbs that had been lifted and kept in the usual way during winter. Some time ago I left a small bed of the latter alone just to watch the result. They were originally about 150, and last year—the third from planting—they were reduced to twenty-three; so much for natural conditions. But, on the other hand, those lifted and stored in the regular way are safe, as usual.—T. SMITH, Newry.

## NATURAL ROCKERIES.

STARTING on the assumption that the art of gardening is based on the study of Nature rather than on abstract geometry, the art of rock-gardening must be based on the study of natural rocks. In considering natural rocks from a point of view at once practical and artistic, we must discuss their material, their mode of occurrence, and their natural flora. Among the igneous and primitive rocks we have granite, basalt, and slate; and among more modern rocks we need only consider various sandstones, limestones, and chalk. The hard, older rocks largely modify the general surface of a country. Granite forms the spinal column of our mountain chains, rising in rugged peaks destitute of all vegetation, owing to their elevation and slope, or more often forming rounded hills with a scanty vegetation of Heath, amidst which rise piles of stones like gigantic ruins—the ruins, in fact, of once overlying granite. The Tors of Devon and Cornwall; the Logan Stone, near Castle Treryn, St. Leven, Cornwall; the Cheesewring, near Liskeard; Helmen and Rippon Tors on Dartmoor; and Hey Tor, near Bovey Tracey, are well known to

the tourist, and are well figured and described in Mackintosh's "Scenery of England and Wales." We do not want sham mountain chains in miniature in our gardens, and granite, when undecomposed, is too barren to be interesting to the gardener; yet structures similar to the Tors, and not of puny dimensions—made, moreover, of rocks, to be presently mentioned, more fertile in character—are what we do want in a rock garden which is to be natural and not a mere flinty and clinkery. Beautiful, too, in barren grandeur is the scenery of the Giant's Causeway; but if in our garden we roughly shape some hexagonal stone columns, they must not be basalt, and, being unbasaltic, they become unnatural. Few spots around our coasts are more sublime than Kynance Cove at the Lizard, where the serpentine rock, in all its richness of reds and greens, relieved by white veins of steatite or soapstone, is polished by the waves of the Atlantic, and where the botanist seeks among the white sands of the beach for the delicate green fronds of the Asparagus. But this scene, too, is not to be transferred, as it were, to the canvas of our gardens. The sublime depends largely on size; we had better confine our efforts to the beautiful. The exposures of rocky surfaces are modified by the "weathering" or "denuding" agents—frost splitting the rocks, snow and rain penetrating and producing landslips, the sun pulverising the surface with its heat, the waves of the sea or the quieter, but no less sure, action of a river current cutting back a cliff or deepening a ravine, the ice of a glacier polishing the rocky ground it traverses into domelets which now rise like sheep above the Grass of our Scotch hill-sides, and, lastly, the wind blowing sand round a corner in a natural blast. The texture and composition of the rocks has modified the influence of these agents, and so has the slope of their beds. A compact, homogeneous rock without fissures will be little affected by them. A limestone will be dissolved by the rain-water, and give rise to combs or dales, caves and ravines. A porous rock, with a clayey substratum, will give out springs at its base, and be liable, in wet seasons, to landslips. Only the hard grains of a sandy rock will be available for its own disintegration by wind. The influence of the slope of beds not only affects their water-bearing quali-

ties and liability to landslips, but also, as is well seen in railway cuttings, their "angle of repose," the necessary slope, that is, of their exposed surface. The sandstone known to geologists as the Upper Llandovery, in the Silurian system, is the first I will mention. A swift-flowing stream meandered over its pebbly bed, through a ravine some 2 ft. deep cut in its own "alluvium," overhung with Alders on the further side, with here and there a Willow just gilded with blossom when I saw the spot. I stood on a strip of meadow a few feet only in width, much of which was covered with the little golden Saxifrage, whilst behind me rose the sloping bank of the sandstone, on which all the flora of springtide luxuriated among the coppice of "Hazels tassel hung" and sapling Oaks. A perfect sheet of Daffodils first caught my eye; but soon I saw plenty of Primroses, Dog Violets, and Anemones, with here and there a budding Hyacinth or early Orchid. Our deep-rooted wild bulbs many of them rejoice in a loose sand. The slope of the coppice was steep, and it was lovely; but its summit gave it completeness. There for 3 ft. or 4 ft. the rough edges of the sandstone stood out of its perpendicular face, whilst over the top, amidst the gnarled roots of the king Oak of the glen, hung a luxuriant bunch of Polyopus. The whole of this might be reproduced—nay, improved upon—in many a garden. The next scene is on the old red sandstone in the Forest of Dean. In the background, a fine grassy hill, well covered with well-grown trees, from amongst which is a view unsurpassed of the winding Severn and the distant Cotswolds; a lower hill rises in front covered with many Oaks; between lies a steep-sided ravine. On its sides are a few Firs amongst a luxuriant growth of Bracken, Heather, Broom, and Furze; but all these do not hide the great rounded masses of red and yellow rock which have rolled down, some half way, some to the bottom. Here trickles a little stream which spreads in a wide pool at my feet. The scenery of the mountain limestone is well known. Dove Dale, Cheddar Cliffs, St. Vincent's Rocks, and Symond's Yat, by "Sylvan Wye, that wanderer through the woods," are magic charms to the mind of the appreciative tourist. The three first ravines are due to river action, possibly acting along a fissure. They may be compared to the ravine of the Blackwater, in the south of Ireland. They show that this rock will stand perpendicularly when the "dip" or slope of the beds is slight; but the north side of the Cheddar ravine, having a greater "dip," has been worn down to quite a gradual slope. The bluish-grey colour of this rock is warm and pleasant, even when bare; on its surface, and in crevices, it decomposes into a fine clay, and is well suited for trees. The Yew, White Beam (*Pyrus Aria* and *P. scandica*), Service (*P. torminalis*), Lime (*Tilia parvifolia*), Hawthorn, Hazel, Beech, Oak, Dogwood (*Cornus sanguinea*), Maple, Spindle tree (*Euonymus europaeus*), Crab Apple, Wych Elm, and Holly cover the heights of Symond's Yat and Leigh Woods, Bristol; whilst green Whortleberries and Mosses, Lichens grey, white, and umber, and clustering Heath vary the colouring of the declivities. Clematis, Columbine, and St. John's-worts abound. The Cheddar Pink and its allies, the rare *Veronica spicata* of St. Vincent's Rocks, and the *Arbutus*, *Toadflaxes*, and many other rarities are there naturalised, besides the Hart's-tongue, *Ceterach*, and *Asplenium Trichomanes*, which contrast their rich greens with

Water and Rocks with tuft of *Arundo conspicua*.

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the blue rock where the air is moist enough, are sufficient recommendation of this stone where procurable. To be natural it should be built up in as large blocks as possible into an almost perpendicular cliff. Ivy grows freely on it, and they may be utilised for such a cave as that figured in THE GARDEN (vol. xii, p. 33). The coarse grit-stones of the millstone grit mostly form open, barren heaths; but where unequally hard are sometimes acted on by the atmosphere, forming grotesque "tors," such as the Idol and Pulpit Rocks at Brimham, near Harrogate. By a jump upward in the geological series, we have next to consider the beauties of the oolitic rockeries. There are two "horizons"—to use a technical term—in the series where springs are most frequent, viz., its junction with the clays of the upper Lias at its base, and the junction of the great or Bath oolite limestone with the underlying Fuller's earth. At the first of these we find, at the foot of a bare, breezy down, a wood of Oaks, in the midst of which gushes forth a crystal stream, which rushes down the steeply sloping escarpment, while its waters leave their traces behind them; for Hart's-tongue, Grass, and Chara remain "petrified," with a coating of carbonate of lime, and in time are compacted into a firm tufa. Here also landslips are frequent, and on the sloping sides of the lovely valleys down which these petrifying streams now run, now fall in cascades, are blocks of limestone of all sizes, weathered into fantastic hollows, swathed in Clematis or sheltering some of our rarest British Orchids. It is the Fuller's earth clay which throws out the parent springs of Father Thames himself and his many tributaries. Who that has ever seen it will forget the undulating hill-side, purple in spring with the silky cups of the Pasque flower, from whose abrupt, rocky base rush seven or eight separate streams, splashing downwards into the rush and Sedge-grown marsh, from which again they overflow into a river where the floating Pond-weeds relieve the sky-blue Forget-me-not, and on whose brink in September may be seen the perfect beauty of the Grass of Parnassus set in soft Moss of emerald brightness. But even where no water is near the oolite limestones often exhibit great beauty. A bank or quarry of the forest marble flag-stones, crowned with a group of noble Beech trees, over the brink of which hangs luxuriant Ivy and Clematis side by side, while the slope is gay with yellow Mullein, blue Bugloss, pink Minsk Mallow, and lilac Scabious, is suggestive of much improvement by the addition of rarer and foreign species.

The next group of scenes to be mentioned are the glens of Fairlight, Ecclesbourne, and Old Roar, Hastings, where streams have cut through the Wadhurst clay, and fall rapidly on reaching the underlying Ashdown sand. Very similar are the Chines of Luccombe and Shankin, in the Isle of Wight, though the sand here is of different age (Neocomian). Here a stream falls vertically over a cliff of sand and winds down to the sea through a ravine, clad with trees and Ferns, which it has cut for itself. Among our sand-loving plants suited to such a spot the Foxglove is pre-eminent. In a formation of intermediate age, the Tunbridge Wells sands, we get those remarkable "tors," for which the neighbourhood of the town, after which the sands are named, is celebrated. But, besides the well-known Harrison's Rocks, the Toad Rock on Russhall Common, and the beautiful High Rocks, where grow the Columbine, the climbing Corydalis, the Dentaria bulbifera, and the Orpine, and where once grew the Tunbridge Filmy Fern, besides the beautiful rocks where Art has helped Nature in the gardens of Mr. E. W. Cooke, at Groombridge—a model worthy of imitation—there are other less tourist-haunted spots. Who knows Great-upon-Little at West Hoathly, or Rock's Farm, Buxted? Here a natural sand blast has played upon the face of an escarpment; and amidst Broom and Furze, Foxglove and Ferns, riddled with martins' nests, stands a rocking stone more beautiful than any in Cornwall. Other beauties of these sandstone formations may be seen in the railway cuttings between Three Bridges and Lewes. I should be describing scenes almost identical with those on the Llandovey and Hastings sandstones did I speak of the beauties to be seen in natural rockeries of Neocomian or lower green-sand age. Nowhere have I ever seen the Foxglove more luxuriant, finer Hyacinths or Primroses than in woods on the Hythe beds, at Blechingley, and Tilburstow, in Surrey. In a shady wood at this latter place the bright little yellow Pimpernel covered the

ground. I know no more beautiful quarter of a mile than a Gorse-covered heath, with a disused Roman road—where the Wood Sorrel and Polypropy clung to the Mossy roots of the trees, which seemed ready to fall from the sandstone shelves—leading to an Alder-grown marsh gay with Ragged Robin and Forget-me-not, in this same neighbourhood.

Last, but not least, of the rocks to be mentioned is the chalk. Ugly from its glaring whiteness when bare, no rock better sets off bright greens and gay colours. It has the additional advantage of being almost equally effective either in large blocks or in an artificial quarry built up of the very smallest fragments. The bowtering Clematis clambering with the Bryony, the bushes of Sweet Brier, Yew, and Juniper, and the greensward blue with Milkwort, pink with Rest Harrow, or studded with nearly all our British Orchids, make many a nook in the North Downs dear to the botanist who looks for beauty. Clear springs rise at the base of the chalk, but become milky on running over it. This is to be avoided. Water is a great addition to the charms of the rock garden; but, unless we wish to make a feeble imitation of Iceland scenery, let us eschew cold-water geysers—so called fountains. G. S. BOULGER.

11, Burlington Road, Westbourne Park.

### THE SECATEUR.

THOUGH this useful instrument has been strongly recommended in the horticultural papers more than once since it was first introduced to notice, still it is by no means in common use in gardens. It is very seldom, indeed, one sees it, and few of the seedsman keep it for sale. Looking through the price list of garden implements in the seed catalogues of several eminent firms, I find everything mentioned but the secateur. When I tried to procure it at some of the seed shops in this district the shopman did not know it even by name, and I had to apply to Messrs. Stuart & Mein, of Kelso, who appear to be almost the only firm that have persevered in their attempt to introduce an instrument so superior to the common pruning-knife that one can but wonder it has not replaced the latter for most purposes long ago. I am aware that a certain prejudice exists against the secateur among some gardeners, who have stated that it crushes the wood in cutting, and does injury; but this is not so. I have used nothing else but the secateur for the last thirteen years for all outdoor pruning; and I can state, without hesitation, that it does no injury to the tree whatever, while a man can do three times as much work as he can with the knife. Gooseberries, for example, are, as a rule, troublesome subjects to prune with a knife; but with a secateur a lady may prune her bushes without much inconvenience, and prune them in a short time. Ladies and gentlemen who like to do a little pruning among their shrubberies will find the secateur invaluable, and they may cut anything with it that they have strength to cut. I can manage any branch up to 1 in. in diameter, with a secateur about 9 in. long, and we have sometimes severed a 1½-in. limb; but that tries the muscles. The smallest and second smallest sizes are, however, the best for light use, and they will cut anything up to the thickness of one's finger. Though it has been strongly condemned for pruning Vines, I have never used anything else, and it has never yet injured a bud. With a common knife one has to use both hands, and to be frequently putting an edge upon the blade, but with a handy-sized secateur we can run over a house of 100 ft. long in half an hour. I have also used it for cutting out thick branches in pruning Peach trees; but I prefer the knife for cutting the smaller shoots in their case, as it is important in the case of trees liable to gum that a clean cut be made. With very few exceptions, however, I use the secateur. It must not, however, be confounded with the common pruning-shears sold by the seedsman, and which are not unlike the secateur, but clumsier, and far less powerful in the cutting, the leverage being less. They are sometimes called by the same name, and I suppose many people do not know the one from the other. The only fault of the secateur is that the spring is apt to give way under constant work; but the blacksmith can repair this easily, J. S. W.

**Raising Seedlings in Bamboo Stems.**—In the last number of the "Indian Forester" Mr. Baden Powell describes a method of raising seedlings in Bamboo tubes, so that they can be transplanted when required without injury to the roots. Pieces of Bamboo stem are taken, 4 in. to 6 in. in length and about 1 in. to 1½ in. in diameter, and open at each end. These are placed close together on a sort of bed, well beaten down to prevent the roots entering it, and then filled with fine soil. In each tube two or three seeds are then placed, lightly covered over, and watered when necessary. When the seedlings have arrived at a few inches in height they are planted out, tubes and all, in the positions they are intended to occupy permanently.

## BEST PLANTS FOR MIDWINTER EFFECTS.

The plants which give life and interest to our out-of-doors garden in midwinter are worthy of note, and it is particularly, I think, desirable to give some account of them, as, according to circumstances and variety of situation, some plants seem to do well in one locality, while in other nearly similar situations they will not grow satisfactorily, although well cared for. The plants, therefore, which I noticed in my garden doing well and producing a pleasing effect in the beginning of last January, either from their flowers, foliage, or fruit, I will hereafter mention, with such observations concerning them as I think may be useful. Of plants in flower I shall only name those which were in good bloom, and not the remnants of last autumn's flowering. It may be well to premise before going into details that my garden, although within about 900 ft. of the seashore, is fairly well sheltered from the sea breezes, well open to the south and east, and has a soil consisting of good, rich loam. It also may be well to state that some sharp frosts had visited us a little before these notes were made. Of shrubs, none were more worthy of notice, being in full flower and very effective, than several varieties of *Veronica*. Their dark green, somewhat glossy leaves, which are produced in profusion, form a fine background to the flower-spikes, which throw themselves well out of the foliage. These varieties grow under south walls, and form rounded, dense bushes, some 3 ft. to 4 ft. high. They are all, I think, of hybrid origin, running somewhat away from the originally shrubby species as introduced into this country. They seem to have sprung from such species as *V. speciosa*, *salicifolia*, *parviflora*, and *decussata*. Some originated in my own garden, and others are, I believe, well-known hybrids. I find that they seed freely, and young plants are often found on the borders arising from self-sown seeds. With the *Veronicas*, but nailed to a south wall, *Medicago arborea* was flowering abundantly, and producing a very pleasing effect with its yellow blossoms, curious seed-pods, and rich, dark green foliage. In the same situation is *Daphne indica*, a charming plant, on account of its very fragrant flowers and persistent green leaves. The flowers with me are only produced sparingly in bunches at the ends of the branches. In a west situation, nailed against the wall of the house, the dull-flowered, but very odoriferous, *Chimonanthus fragrans* was in bloom. I find this plant will not do well except nailed to a warm wall. Against a south wall, which during winter is somewhat warmed by an internal fire, *Convolvulus Cneorum* grows well and flowers abundantly, and it is a great favourite of mine on account of its silvery leaves and white flowers rayed with red externally, which are constantly produced during the winter season. Like situated, *Grevillea rosmarinifolia* was giving its bunches of rose-coloured flowers, which show well against the dark green foliage.

In the open borders in my garden *Kniphofia* (*Tritoma*) *Rooperi* and *Burchelli* were in good flower, many spikes to each plant, and many more showing themselves. These *Kniphofias* are excellent for the winter garden, and should be more generally cultivated. Four species of *Helicoborus* have been in good flower, viz., *niger*, *lividus*, *maculatus*, *abchasicus*—the first, however, far the best for the amount and perfection of the flowers. It is a plant which should be in every garden where soil and situation would permit. On some warm rockwork under a south wall *Erodium hymenodes* has been in good flower, as well as three species of *Mesembryanthemum*, one of which, *inclaudens*, I set much store upon, as its flowers do not close when the sun ceases to shine upon them. I may mention here that on this sheltered piece of rockwork I grow many species of *Mesembryanthemum* and other succulents, and that they have stood the last three winters without any covering. They get a little nipped by the hard frosts, but shoot out again and form good bushy plants very full of flower during the summer months. I may also mention, while speaking of the *Mesembryanthemum*, that I make much use of the species as bedding plants and for wall decoration, growing many of the pendent species in flattened or wall pots, from which their branches hang down, and, flowering freely, produce a pleasing effect. That valuable bulb, *Schizostylis coccinea*, flowers and does well here, giving its beautiful flowers in the winter months. It seems to grow best with me in peat, but also flowers well

in loam. *Iberis gibraltarica* on rockwork is always in flower, and during the winter, although apparently a little checked by cold, gives its blossoms freely and in good condition.

Turning now to the effect produced by foliage alone in the dead winter, I may especially mention the *Hollies*, which, although so well known, cannot be too much praised. I have a large number of varieties, chiefly small bushy plants, but all seem to do well here, and produce fine foliage, variegated and green—shining and opaque, spined or smooth—almost endless in variety, but all pleasing. After the *Hollies* the varieties of *Euoonymus japonica* are the most attractive for their foliage. They are numerous, but one in particular, with dark green leaves broadly and pretty regularly margined with golden-yellow, produces a fine effect. They seem especially to love the vicinity of the sea, and are valuable, as they can be moved with safety, even very large bushes, at any season of the year. This vitality arises from the ball-like mass of whitish fibrous roots which the plants make, and which do not spread far from the stem of the plant. One of my most effective shrubs for foliage is a variety of *Veronica*, producing long, pinkish-white spikes of flowers and large, ovate-lanceolate leaves, green splashed with creamy-white. The leaves are 4 in. to 5 in. long and  $1\frac{1}{2}$  in. or a little more wide. It is a charming shrub, a hybrid, I suppose, and well worthy of cultivation. Several varieties of *Ivy* growing against a north wall should be mentioned for their winter foliage and the pretty, and I may say elegant, effect they produce. The Irish variety variegated is one of the most attractive from its large, dark green leaves with clear large patches of creamy colour. The Irish *Ivy* is a very fast-growing variety, but when not variegated is not so pleasing in effect as the common English *Ivy* of our woods, which is an admirable plant. Among smaller shrubs worthy of notice for pleasing foliage *Griselinia littoralis* must be noticed for its fine, glossy, bright green leaves. This, with *Osmanthus ilicifolius*, grown under a north wall in peat, do well, and are very effective. In bog borders exposed to the sun, *Pittosporum Maqui*, with its peculiar pale green, shining leaves, and *Pernetia macronata*, *Erica mediterranea* and *E. stricta*, with their numerous small green leaves, are pleasant objects for the eye to rest upon. Against a south wall I find *Eriobotrya japonica*, with its large, corrugated leaves, and *Photinia serrulata*, with its large, shining, dark green leaves, so beautiful when young, and some species of *Ceanothus*, are much admired for their winter foliage. I must not here omit to mention *Aralia Sieboldi* as a good plant during the winter, its large, fine, palmatifid leaves making a grand effect, and its bunches of cream-coloured flowers, produced quite late in the autumn, are very pleasing, and add much to the value of the plant. With me it appears to be quite hardy. Of low-growing plants the variegated *Vinca major* does well with me, and much enlivens the ground in shady places. The old *Farfugium grande* also is very effective, producing large masses of leaves so curiously spotted. Sharp frosts and high winds cause the foliage, however, to turn to a rusty colour at times. Very low on the ground grows with me in almost any situation the *Cyclamen hederifolium*, producing large patches of very beautifully variously-variegated leaves. I have tried this plant on rockwork, fully exposed to the sun, and under a north border, where the sun scarcely ever shines, as well as in various other situations, and I find the plant does fairly well in all, but more flowers are produced and finer foliage, I think, comes from a large plant close under a south wall, where the soil is loam. The tubers of this plant came originally from Corfu.

Of the plants producing berries or fruit which brighten up the winter garden, *Hollies*, as a matter of course, stand well forward; but I find the produce of berries very uncertain, some years very abundant, and then perhaps two or three or more years before a good crop will again appear. *Cotoneasters* seem to be more certain in their effect, and the variety or species called *Simmondsi* is very sure of being well covered with charming red berries every winter. A standard which I have was literally one mass of red berries about Christmas time, and could be seen all over the garden. The plant of all others which is the most attractive in my garden, on account of its berries, is *Solanum pseudo-capsicum*, generally, but little grown. I have a strong plant nailed

against a west wall, growing in loam, which for the last two winters has been very charming, from the quantity of large, orange-red, glossy spherical berries produced among lively green foliage. I have been able to cut many branches from the plant for my friends, who have used them for various decorative purposes. Until near the end of the year the large bunches of the red fruit of *Rosa ferox* were particularly attractive. The birds, however, and sharp frosts which came on, soon spoiled the beauty of the fruit. Another species of *Rose* (*Rosa sanguisorbifolia*) is quite as interesting in its fruit, which is of a bright glossy-red colour, produced in great quantities, and hangs on the plant in good condition until the spring, the birds and frost leaving it uninjured. Of low-growing plants, the seeds of *Iris foetidissima* produce a good winter effect, and are very showy. The pods of this *Iris* burst very late in the autumn, and then the seeds, which are about the size of a Pea, and bright orange in colour, expose themselves in glittering rows. Some care should be given to the plant to produce a good effect, and the flower-stalks should be carefully preserved and tied up, so that they may not be too much blown about. The plant will grow in any good situation, but it seems to like best an open, cool, rather shaded locality. The pods with their bright seeds come in well for Christmas decoration of our rooms and halls. *Skimmia fragrans*, grown in peat under a north wall, fruits well with me, and retains its red berries until the spring; and I have had the common *Aucuba japonica* show good and effective fruit, but this I find can only be done by distributing the pollen carefully over the pistil-bearing plant. I have a plant which was sent to me by Mr. James McRonald, Chichester, which was a perfect mass of red, shining berries, and I saw many others in this nursery equally well covered with fruit. I might mention many more plants which I grow, and which I think well worthy of cultivation for the mid-winter garden, but I have kept myself to those which seemed to put themselves most prominently forward.

W. W. S.

Raystead, Worthing.

### WINTER-FLOWERING PLANTS.

NOTWITHSTANDING that there is so little encouragement given to the cultivation of hard-wooded indoor plants, there are many very useful subjects amongst them, especially those which flower during the winter months. When a good selection is secured, liberally treated so that flowering wood is in profusion, the out flower basket may be well supplied with little difficulty; and we know how well New Holland plants and Heath's tell in a collection on the exhibition table. While forming a collection of plants a year and a half ago a number of specialities, chiefly hard woods were procured, and the abundance of flowers we have had from them during the past winter months, and the mass of flowers out and coming into bloom give much satisfaction as to selection. The small amount of labour and the minimum of expense incurred are not despicable items where employers are not inclined to become patrons of extensive plant culture. With the best of the kinds of *Azaleas*, *Camellias*, *Epacris*, *Heathes*, and *Correas*, a good addition for winter and spring decorative purposes are *Grevillea elegans*, growing naturally with shoots about 3 ft. long loaded with flowers. *Chorozoma Chandleri* elegans, not over trained, is fine during February; *Tremandra ericoides* with long shoots; *Genetyllis talipifera* and *fuchsoides* as free-growing pyramids; *Eriocaulon*, *Pimeleas*, *Boronia*, *Daphne hybrida*, *Aotus gracillima*, *Cyrtis racemosa elegans* as standards, and *C. Alceeanus* as a dwarf. These and all the *Acacias* may be had flowering profusely from January to the end of March or later. Their care as to keeping is very simple, and when well arranged, with the usual bulbs and soft-wooded plants, a display can be maintained in the cool greenhouse which would be difficult to surpass by any other class of plants. As climbers, *Plumbago aspenica*, *Lanargia rosea* and *Habrothamnus Auhleti* may be had in fall flower from November to April. The last named seems to be a perpetual flowering plant. On a back wall of a greenhouse planted out it has been a mass of flowers since last autumn, and when grown as small plants for tables and shelves it is invaluable.

M. TEMPLE.

ONE of the prettiest legends of Arabic literature attributes to Mahomet a saying that if a man finds himself with bread in both hands he should exchange one loaf for some flowers of the *Narcissus*, since that feeds the body indeed, but these the soul. Nothing could be more subtle than this ancient confession of the part that colour and perfume

and the eternal freshness of flowers take in the education of the heart. These marvellous flowers that spring in their clean lovely dresses out of the worn face of the dingy world, a miracle of beauty silently performed by Nature every year, bring more of poetic mystery with them than any other of the countless transformations of life that charm and perplex us. They are at once the most evanescent and the most lasting of things, and their rapid death only ensures their resurrection. In all religions they have taken a very intimate place in ceremonial, and no wonder; for, in their constantly reiterated disappearance and return, they are types of all that is most flattering to the anxious spirit of man, and most consoling in the bust of creeds. The simplicity and refinement of flowers gives a special distinction to almost every art that touches them.—*Examiner*."

**New Building in Hyde Park.**—The "Times" has received several indignant communications respecting the "nost villa residence" which has just been erected in Hyde Park. The building is three storeys high, appears to contain about a dozen rooms, and is, of course, abominably ugly. Its aesthetic merits are not, however, so much in question as the right of the Crown to appropriate any portion of the park for building purposes. In addition to the site, a considerable plot of ground has been levelled and fenced in around the building, and some alterations have been made in the neighbouring paths. Most ominous of all, there are indications that a hedge or belt of shrubs is about to be planted within the hurdle fencing. A short time back we showed what similar appropriations have achieved in Kensington Gardens by ringing the changes between hurdle fences and hedges. The process—which first moves one boundary forward, then the other—has gradually brought about the alienation from public purposes of all the superlatives between the front of Kensington Palace and the Broad Walk. In this instance there may have been some justification for the trespass in the necessity of securing a reasonable amount of privacy to the occupants of the palace. But if the same plea is advanced on behalf of the new villa, the public will be deprived of the most central portion of the finest open space at the West End. Without expressing any undue suspicions, we think the time has nearly come for putting an end to these enclosures.—*Examiner*."

**Paddington Flower Mission.**—We extract the following from the printed report of this Mission just received:—"In 1876 our gross number of supplies was 377; our bunches sent out, 13,024. In 1877 our supplies were 486; the number of bunches sent out, 17,297. During the season of 1877 our weekly average of supplies was over 16 peck weekly; our largest weekly supply of hampers, boxes, or parcels containing flowers, was 29, and our smallest 4. As usual, May stands by pre-eminence 'the flowery month,' by far our largest number of packages come from then. At the Christmas seasons of both 1876 and 1877, various baskets of Holly and evergreens were received, and distributed to the Paddington Workhouse, St. Mary's Hospital, and amongst one or two smaller institutions and private individuals. We wish the dwellers in the country could know the delight these gifts afford, especially in the workhouse, by the arrival, at that usually dark and dull season of the year, of 'real country' greens and red berries, so rarely seen by the inmates of such places. We have received many gratifying testimonies of the value put on the flowers by the recipients; one acknowledgment from a hospital, where anything cheering must be specially welcomed, is most encouraging. We shall re-open the Mission on April 4 next, and we would appeal to our country friends not to let us re-open without flowers. We do not press for garden flowers, but we feel sure we shall not ask in vain during the spring for wild flowers, these universal favourites whose 'gentle faces touch the heart.' Anyone willing to contribute is requested kindly to observe the following directions, and if possible, before beginning, to advise by post their contributions.—1. All parcels, paid or unpaid, to be addressed 'Paddington Flower Mission, 18, Conduit Place, Spring Street, London, W.' (Proper labels supplied on request.) 2. If from any distance out of London, to be sent off on Wednesday. 3. If box or hamper is to be returned, please say so. 4. In all cases please to send the name and address of the contributor. Any communications on the subject may be addressed to Miss A. L. Boyle, 10, Craven Hill Gardens, London, W., who will receive and acknowledge any contributions towards expenses, and who much regrets if, through inadvertence or address not having been sent, any contribution of flowers, &c., has been unacknowledged."

**Gardenia citriflora.**—This charming little evergreen shrub flowers in such abundance in quite a small state that it ought to be in every collection where sweet-scented decorative plants are in request. The blossoms, which are produced in bunches at the axils of the leaves, might readily be substituted for Orange blossoms. It grows freely in an intermediate house or pit, and should be included in even the most select collection of plants.—*JAMES GAOON, Henham.*

## TREES AND SHRUBS.

## THE LIQUIDAMBAR AT HOME.

This is one of our native trees, second to none for ornamental purposes, but which I have never seen in a city street or park, and in very few private gardens or lawns. Its flowers and seeds are inconspicuous, but it possesses striking beauty through the whole year, for when stripped of its leaves, its erect and symmetrical growth gives it a handsome outline. In its growth it is much like a young Poplar, or Tulip tree, but retains its lower limbs, and so never acquires the columnar style of trunk of the Poplar. The smaller branches have high ridges of corky bark, sometimes a branch 1 in. in diameter having two or three of these bark "fins" 1 in. wide. This peculiarity is quite noticeable, and the branches can be used with excellent effect in house adornment for a dozen purposes that could be suggested. Its leaves are thick, of a deep shining green, sometimes 7 in. or 8 in. across, deeply divided into five or seven lobes, which are notched on the edges and pointed at the tips. The children sometimes call them "star leaves." When crushed they give out a pleasant aromatic odour. In autumn they show a great quantity of beautiful colours, from palest gold to deepest crimson and purple-maroon. This tree is said to be found from Connecticut to Virginia, and southwards. It seems to like best moist places in woods and along the banks of small streams, though it grows vigorously when transplanted to well-drained uplands. The wood is of fine grain, but I have never heard of its being used for any special purpose. It rarely matures seed, but propagates rather readily by sprouts from the roots. One of the chief things to be kept in mind in making a selection of trees and shrubs for planting ought to be their autumn colourings of foliage and fruit. It seems to me quite as important as their flowering, but it appears to be a point almost wholly ignored or forgotten. Most city streets and parks, and private grounds as well, present in the autumn of the year aside from their gloomy evergreens, only a dreary expanse of naked branches or doleful brown leaves, whereas by a judicious choice of trees and shrubs, chiefly native, they ought to exhibit their greatest beauty just before the snows of winter. The citizen of Wash-

New hardy tree, *Cedrela sinensis*, in the Garden of Plants.

a fragrant odour, is imported under the name of Jamaica or Honduras Cedar. *C. Toona*, a native of Bengal and other parts of India, furnishes timber much like mahogany in appearance, but lighter. The flowers are used in some parts of India for producing a red dye. The red Cedar of Australia, *C. australis*, is now becoming scarce in that colony, the trees having been cut down for the sake of their timber, which was commonly used in the construction of houses. The species of which a figure is here given is a handsome hardy tree, of which there is a good specimen in the Garden of Plants at Paris. It was drawn from a photograph taken towards the end of last summer. It appears to be perfectly hardy. We hope it will soon be introduced and distributed.

## UNACCOUNTABLE DEATH OF YOUNG TREES.

I HAVE just read with greater interest than usual the very clear account of Mr. George (see p. 172) as to the depredations of the caterpillar of the goat moth. I did so for these reasons. A little before Christmas it was fine, open, planting weather, and I went to inspect a long strip

of wood, which, being anxious to get up as soon as possible, I had planted thickly with young trees, from 3 ft. to 5 ft. high, chiefly Poplars, Scotch Elms, and many other sorts. To my vexation, every one which had been in full leaf in early autumn seemed dead and blasted. The man with me thought that they had been injured by hares or rabbits (a rustic's solution for the failure of every sort of crop). This could not be the case, as the trees were not barked above the level of the Grass, which was 2 ft. high. I was very ill at the time, and could not make so minute an inspection as I would have done. I then thought of white-bellied field mice, about whose depredations we have often read. On baring the stem by parting the Grass, I found, in the apparently dead trees, a narrow round ring going through the bark, but not like what a mouse or rodent would have made. Since then I mentioned this to Mr. Burns, of Cockermonth, who supplied me with the trees, and he told me that he had lately been called to view several young plantations which had perished suddenly in a similar manner; and that the man in charge of them said he had found a beetle devouring them. He might have seen a beetle, no doubt; but that was probably

not the primary cause. No doubt it was done by an insect of some sort. The trees are springing again from the root, which shows they have not been blasted by lightning.

J. GILLBANKS.

## NOTES AND QUESTIONS ON TREES AND SHRUBS.

Varieties of the Hemlock Spruce.—The queen of all evergreens is the Weeping Hemlock. Its graceful sprays have a permanent beauty that we only see equalled, in a fleeting way, by some stray form of common Hemlock. Not less striking, in its way, is the Broad-leaved Hemlock, the dark, massive foliage of which contrasts finely with the golden *Retinospora*.—S. PARSONS, in "Rural New Yorker."

A Wild Cherry Tree (*Prunus avium*).—As some notice has lately been taken of the size of this tree, allow me to mention one at present existing within a field of my farm, which presents the following proportions:—2 ft. from the ground, 21 ft. in circumference; 3 ft. from the ground, 15 ft. in circumference; 6 ft. from the ground, 21 ft. in circumference, 10 ft. from the ground, 19 1/2 ft. in circumference. 12 ft. up to the bifurcation of the branches. This grand tree was first shown me by my friend, Mr. E. Lees, when it was in fruit. Since then the hurricane of October 14 has swept away its principal arm.—J. B. Bradford Abbas, in "Science Gossip."

*Cedrela sinensis*.—This is the *Ailantus glaucescens* of Carrière. It is nearly related to the *Melias*, and forms a hardy tree in the north of China, but it is found all over the world. The *Cedrelas* are much valued for their fine appearance and for their timber. The trunk of *C. odorata*, a West Indian tree, is sufficiently large to be hewn out into canoes; this, which is of a brown colour, and has

## THE KITCHEN GARDEN.

### CULTURE OF THE AUTUMN GIANT CAULIFLOWER.

This Cauliflower is not only large in size, but good in quality, and very accommodating, coming into use, as it does, as those sown in autumn are finished. A succession of excellent heads may be had from the middle of September to the end of October by sowing a box at once, and placing it close to the glass in a late Vinery or greenhouse, admitting sufficient air to prevent weak growth. As soon as the young seedlings can be fairly handled, plant them out in a cold frame prepared as follows:—Fill the frame firm with any material that may be at hand to within 10 in. of the glass; on this place a layer of fresh soil and good rotten manure, well mixed together, and trodden quite solid to the depth of 3 in. Put in the plants 6 in. apart, supplying water freely whenever required. Give ample ventilation, increasing it gradually according to the state of the weather, till the frame may be lifted off altogether. Owing to the heavy rainfall during the autumn and mild winter, heavy soils are not only unworkable, but full of slugs and other insects. In preparing the soil for the plants, a steel digging-fork, with four prongs, is much better than a spade; it is easier to work and breaks up the soil better, rendering it more permeable to air and water—an important point as regards the growth of good vegetables. If the ground has not been trenched and ridged up in the autumn, it should be dug up two spits deep, and plenty of good rotten manure and a few handfuls of fresh slaked lime, should be mixed with it; the latter not only acts as a manure, but keeps slugs in check. About a week or so before planting out, take an old table-knife and run it down the centre between each row both ways, cutting the roots of the depth of the layer, and give a good watering from a roset can. This produces a sturdy growth, without which fine heads cannot be obtained. Every plant may be lifted with a spade, placed on the hand-barrow in a solid square, carried to its destination, and planted out, without the plant receiving any check. In keeping down weeds, a cultivator with two prongs, 2 in. apart, 6 in. long,  $\frac{3}{4}$  in. wide, and  $\frac{1}{2}$  in. thick, with a good stout handle, is much better than a flat hoe working amongst vegetables. It opens the surface, and allows air and water to penetrate freely. A second sowing about the third week in April will come in about the middle of October, and continue till the middle of December, according to the state of the weather.

Waterdale.

JAMES SMITH.

### CHEAP COLLECTIONS OF SEEDS AND PLANTS.

KNOWING that at this season many are undecided where to procure their annual supply of seeds, &c., from the legion of advertisements which present themselves, all claiming the merit of supplying the most liberal collection, a few remarks may not be out of place to show that these so-called "cheap" collections are "dear." Last year I was at some trouble in ascertaining what weight the 21 packets of seeds contained, and on carefully balancing up the results I found that many of them were sold at a higher rate than that which I paid for the same article in the leading retail houses of the metropolis, to say nothing about quality, which was in many instances very inferior, and it is on this point that I would caution amateurs who are not thoroughly conversant with the requirements of a garden to go to a respectable seedsman and state their case, when they may depend on being well served. Perhaps at the time the onlay may be considered to be large, but if the good results be taken into account they will doubly compensate for the first outlay. What is more galling than the disappointment arising from seeds failing to germinate? I must confess that seedsman's catalogues are most bewildering, and in this cause I attribute the mania for these collections. Why cannot seedsman use their utmost endeavours to simplify them? They may assert that without a fine catalogue their business would probably decline. Let me urge upon seedsman the necessity of doing away with synonyms, and let me also recommend them not to sell Early Six Weeks Turnip out of a bag of Snowball. The same may be said of white Spanish Onion; out of the same drawer come Nuneham Park, &c. Having had a slight insight into the retail trade in a London house, I am not giving these examples as imaginary, but as realities, which I could multiply if needed. Last season I bought a collection of herbaceous plants which individually averaged 4s., and they were guaranteed true to name. Well, I thought, there is a prospect at last of my getting these good old-fashioned flowers at a reasonable price; but, to my surprise, they were only miserable pieces roughly separated from a clump in a border; and the nomenclature was anything but good, a Narcissus being sent to me as Daphne Cneorum; and, in fact, the whole collection showed similar carelessness. What I want to point out, too, is the high rate charged for these pieces. Fancy an old-established clump

of Michaelmas Daisy divided into these fourpenny plants! The snub thus realised would astonish the uninitiated, and when the pieces in question are planted in borders a very large per-centage of them die. My advice is, that in whatever direction fancy takes us, I would recommend amateurs to go to the firm on whom they can depend for their seeds and plants, pay a fair equivalent, and never be allured away through cheap collections.

A. HOSSACK.

Ragley.

### WHERE TO PLANT POTATOES.

THE advice given by Mr. Groom (see p. 153) is excellent, so far as it goes, only, unfortunately, it does not carry the question much farther than it was left by Nicol and others who have written on Potato culture since his time. To say plant on such and such soils will not help those to secure a crop who do not possess the kind of land recommended; perhaps I shall be told they ought not to grow Potatoes at all, but that is rather evading the difficult points of the question than helping to solve them, as there are many gardens (indeed, the majority of small gardens) in which the choice of land is so limited as to have no practical influence whatever. The kinds of Potatoes recommended by Mr. Groom are excellent on suitable soils; indeed there are none better, but on heavier, moister land they are altogether so dependent on the weather, and in eight years out of ten are so much diseased, as to be valueless. I think the varieties of Potatoes, like some of our fruits, may be so selected as to suit the soil and climate of a place or district, and I have no doubt many cultivators are directing their attention to this subject; at least, I know our crops have been better in quality and far more in quantity during the last few years than they were formerly, when a sort of haphazard system was adopted. I am not now speaking of field culture, although if I had 20 acres of adhesive land to plant with Potatoes this spring, I should adopt the same course, and that is, plant approved, early, and second early kinds only. I have Snowflakes as firm and good now as they were four months ago, and by keeping them cool and away from the air, they will remain in good condition for some time longer. I am only giving this as one single instance. There are places I have heard where the kind I have named is badly diseased, but that only adds force to my argument that we should select our kinds of Potatoes to suit our soil. Where we cannot select land to suit the Potatoes, and on heavy retentive land, we must, if we are to have a crop of good quality, plant early-ripening kinds that can be lifted before the rains set in. The largest growers in this neighbourhood, and those who are making money by it, are now mostly growing Myatt's Prolific, Early Rose, and Snowflake, and the land produces more, and the crop is altogether more valuable than when later kinds were grown. In growing Potatoes for home consumption, it is always better to grow the kinds that can be relied on to produce a good crop, as it is a very easy matter to dispose of a part and purchase a like quantity of later kinds with the proceeds, if it be desirable. I feel convinced from my own experience that if we could persuade small growers to give up growing the old late kinds where they so often prove a failure, and grow others of more recent date—earlier ripening kinds—a much greater quantity of food would be produced than we now obtain.

E. HORDAY.

—No doubt there is much truth in Mr. Groom's article on this subject. Fresh soil, and probably also soil of moderate richness, with little or no manure, is the most suitable for producing a sound crop of Potatoes. The difficulty in most gardens is to find such soil; hence I have long contended that the place for the main supply of Potatoes is the farm, not the garden. The constant cropping and manuring that produces the finest results in Cauliflowers, Celery, Broccoli, Peas, Onions, &c., is not the most suitable preparation for a sound Potato crop; and, besides, the majority of gardens are Potato-sick. Hence only the earliest crops should be grown inside, and the main and late crops on the farm. Here they would come in on the four, six, or eight course system, and thus new soil, as it were, would always be available for the Potatoes. This freshness of soil is probably of far more moment than its quality. The Fir wood referred to by Mr. Groom probably furnished special antiseptic properties, as well as maiden land for the Potatoes. But, of course, such a site can seldom be commanded. It is a curious fact, in reference to the disease, that the roots or shade of the trees seem a partial or complete antidote to the malady. Seldom have many diseased tubers been found in young plantations, from which Potatoes are frequently taken as a nursing crop. Recently cleared timber land—whether it might have borne crops of Fir, Oak, Ash, or Beech—has shown a similar immunity. The effects of Oak leaves were likely to be partially deterrent to disease. Their large per-centage of tannin would probably prove as much or more fatal to the Potato fungus than Mr. Smith's "Salus." But be all this as it may, I think Mr. Groom

probably over-estimates the deterrent power of light soil as a preventive of the Potato disease. Last year especially the disease seemed impartial and indifferent as to soil. Light and heavy, medium and mixed, all seemed hit with equal virulence. Neither is it always the lightest soils that grow the cleanest samples, nor Potatoes of the highest quality. There is no vital or mechanical correlation between dryness in the soil and meanness in the Potato; on the contrary, it is often found that the cleanest samples and the best boilers are raised from the heaviest lands. With proper cultivation these often produce the most satisfactory results. Not, however, that heavy loams or clays are to be selected if lighter or more mixed lands are available, but that too much importance is attached to the mere lightness of the soil. It is a pleasure to be able heartily to endorse Mr. Groom's remarks on the importance of early thorough autumnal cultivation for the Potato. If the ground be poor, it may safely be manured; but it should be applied in the autumn to the land, and not direct to the seed in the spring. Deeply ploughed or dug in the autumn, left as rough as possible for the winter, and thrown up into ridges as soon in the new year as the weather permits, the entire mass of the earth would be aerated, mellowed, and enriched. The sets could be planted in these weathered furrows, and the ridges, with their thick layer of sweetened, warmed, fine soil split over them for a covering. The tubers would thus start with every earth influence in their favour, and it would be found—is, in fact, found, as measured by results—that the wares to plant is of less moment than the how. Fortunately, too, for Potato growers and eaters, the latter is within reach of all, while light soils or old woods are within reach of comparatively few. In regard to varieties the practice of West Suffolk seems to vary widely from that of East. Here such sorts as the Rough Red, Flukes, and Regents are almost driven out of cultivation by the Early Rose, Climax, and Red-skinned Flour-ball. In hundreds of gardens and allotments the Rose only is grown, and, for better or worse, it seems destined for a time to drive out most other varieties. Fortunately, too, it improves every year, and is far better in quality than when first introduced. As a cropper it can hardly be excelled, and it generally gets through the disease as well as most others, though not so well as the Red-skinned Flour-ball. The Potato that suffered most with disease about here last year was the Early Vermont. We hardly managed to save the seed of it, and others are in the same predicament. For lack of space we are compelled to grow our main crops of Peas at wide intervals among our Potatoes. I have never, however, found that either the partial shade of the tops or the impoverishing action of the roots of the Peas have had any good effect in preventing the attacks or moderating the virulence of the Potato disease. D. T. FISH.

*Hardwicke House, Wry St. Edmunds.*

## NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

**Paris Early Market Lettuce.**—We grow a large quantity of this new Lettuce last season; but, although it grows quickly and comes early into use, it soon runs to seed, and in this and other respects it is inferior to Wheelers' Tom Thumb, which I consider to be the best summer Cabbage Lettuce in cultivation.—CAMBRIDGE.

**Paraffin and Mice.**—Trusting to a recommendation in *THE GARDEN* last autumn, I planted two round beds and a long border with Crocuses, on which the mice have been feasting every night to that extent that I have just dug up the two beds, after taking the very few remaining to help to fill up the long gaps in the border. The smell of paraffin was quite strong on turning up the beds; besides this, several traps of poison have been taken, and I have caught three or four mice in steel traps. I am afraid the case is hopeless.—G. T., *Mells*.

**A New Mode of Cultivation of the Potato,** recommended by M. Calloigne, consists in placing on soil, deeply dug or tilled, halves of ordinary sized Potatoes at certain intervals apart, or, better, entire Potatoes at greater distances asunder, and in regular lines. The Potato (which is not placed in a furrow) is covered with a light layer of earth. In such good conditions of ventilation it is not long in penetrating the layer of mould, and after a few days it is repeatedly earthed up, to accelerate the growth. This method of planting is said to give very much better results than the common method of planting in furrows, and the Potato acquires its maturity before disease is declared. The Potato, coming originally from Peru, a country much hotter than ours, requires (says M. Calloigne) that the soil should be kept in a support, a medium round which as much air and heat should be made to circulate as possible. To put it in a cold trench, compact and moist, is to hinder its growth and reduce its production considerably, also to subject it voluntarily to the most troublesome influences of disease. [This is a good plan, but not new; it is the mode of planting usually adopted in Ireland.]

## THE INDOOR GARDEN.

### CULTURE OF ERIOSTEMONS.

ERIOSTEMONS are plants by no means difficult to cultivate. They are very suitable for conservatory decoration, and will bloom freely even in 4-in. pots, although they may be grown into large bushes. To be successful in their culture, vigorous bushy young plants must be procured, well-established in small pots. If they can be had in 3-in. pots it will be an advantage, as plants of that size are pretty well sure to be free and healthy at the root, and unless that is the case future progress will not be satisfactory. It is mere waste of time to attempt the formation of good specimens from plants which may have stood two years or so in the same pot, as they then become stunted, and can never be again made to acquire that free, healthy growth which is one of their characteristics when generously treated. They should be potted in turfy peat, broken small, to which should be added enough silver sand to keep it sweet and open. It is also very important to ensure perfect drainage, as although the Eriostemons enjoy abundance of water when in full growth, yet stagnation of moisture at the root is fatal to their well-being. They should be shifted in March, potting firmly, but not ramming the soil down, and placed where they may be kept close for a time, and occasionally syringed, until they come fairly into growth, when they should receive as much air as possible. They will thus be induced to form stout, short-jointed wood, which, when spring arrives, will be studded with little star-like blooms. By the second season they will have become established in 6-in. pots, when they must receive a little attention in the way of training. This will simply consist in placing one neat stake in the centre, to which the main stem is to be firmly attached, and four others at regular intervals near the edge of the pot. By means of these latter the plant is brought into shape, so regulating the branches that each one has room to grow and develop itself. The lower branchlets should be brought down as near to the edge of the pot as possible, as one of the objects of early training is to induce the formation of a good spread of bottom foliage. In a well-grown and trained specimen the stem and stakes will be almost hidden by the lower shoots. As the plants increase in size, more and larger stakes will be found necessary, the aim of the grower being to render efficient support, inducing symmetry of form without running too much into formality and regularity. If grown on into large specimens, this observation will especially apply, as many a good and handsome plant is spoiled through over-training. The Eriostemons are propagated by grafting them on *Correa alba* and ferruginea. The proper time to effect this operation is in August. Two-year-old stocks should be chosen, and the grafts should be placed as in the ordinary manner of side grafting. They should then be put into close frames in a propagating house and given air daily until struck, when they must be gradually hardened off. *E. buxifolium*, *intermedium*, *pulchellum*, and *seabrum* rank amongst the prettiest of the genus, all the species of which are very floriferous and distinct. JOHN CORNHILL.

*Byfleet.*

### LARGE-FLOWERING PELARGONIUMS.

As Pelargoniums, and especially the delicate fancy varieties, are susceptible of cold, a little fire-heat is absolutely required in frosty and, indeed, in dull, clammy weather. The plants can scarcely be said to cease growing at any time during the winter, and now, while the weather is mild they make a decided headway. Now is the time to lay the foundation of specimens in the case of young plants that have not yet been trained. A piece of strong bast should be tied round the pot just below the rim. A fine, but sufficiently strong, thread of the same material should be placed round the lowermost branches, which should be thersly gently brought down to the rim of the pot, taking care to apply the necessary force in such a manner that they do not snap off. The advantage of this method is that the hearts or centres of the plants, which otherwise would be much crowded, are thrown open, the surface of the specimen is broadened, the area of bloom is increased, without any necessary assumption of that severely formal mode of training seen at the large London flower shows. By judicious stopping, a good level framework of a plant can be had, but the shoots should be a little longer in

the centre than towards the edges. Anyone having a warm house can manage to have a long succession of *Pelargoniums* in flower. If some that are well established in pots have a little fire-heat given them in the evening, keeping them at about 50°, their growth will be accelerated without drawing if ventilation be afforded when necessary. Then the heads of bloom can be prolonged into late summer by keeping some of the later-flowering varieties at a moderately low, but safe, temperature. Cuttings taken in August, and put singly into small 3-in. pots, make capital plants for flowering late if they be stopped, low down in October, and then shifted in early spring as soon as they push into growth. They should be shifted into  $\frac{1}{2}$ -in. pots, and again into 6-in. pots, in which to flower. They do not make large specimens, but they grow into capital blooming plants. Greenly in troublesome now, and no pains should be spared to keep the plants clear. D.

### NEW HYBRID FUCHSIAS.

At a late meeting of the French Société Centrale d'Horticulture a letter was read from M. Lemoine, of Nancy, on some new hybrid Fuchsias obtained by him. Fuchsias, says M. Lemoine, are crossed with the greatest difficulty. Notwithstanding this, I obtained a hybrid variety last year which I unfortunately lost through not knowing the proper conditions of cultivation. This year I am in the same position. I hope, however, on this occasion to arrive at a better result. I have succeeded in crossing *Fuchsia boliviana*, which has the general habit of *F. corymbiflora*, although distinct from it in many of its characteristics, with a species which I received from the well-known traveller, M. B. Roehl, and which I have called *Fuchsia izarea*. The last-named Fuchsia has more interest for the botanist than for the horticulturist; nevertheless, its flowers, which are very small, with a thin tube, are remarkable for their colour, which has all the brilliancy of that of *Pelargonium zonale*. It was with the pollen of *Fuchsia izarea* that I fertilised *Fuchsia boliviana*. By this means I obtained a hybrid having the general appearance of *F. boliviana*, with the same bunches of flowers, but they have the divisions of the corolla turned outwards like those of the *F. izarea*, but with all its brilliancy of colour. Cuttings of this hybrid may be struck with the greatest ease, but if they are kept too warm they all die. It is only since I transferred them to a comparatively cool Orangerie that they have thriven. At the present moment they are showing buds on their extremities. Like the *F. izarea*, this hybrid must be kept in the most complete shade during the summer. C. W. QUIX.

**Solanum Berries and Mice.**—Where *Solanum* berries are used for winter decoration, care must be taken to keep mice from them, as I find them invariably the most troublesome little depredators which spoil a good collection of plants in a short time. They climb up the branches and gather the berries as readily as a squirrel. Their presence may be detected by the remnants of the berries left on the surface of the pots. For catching mice I find the old-fashioned figure 4 trap very effective; any ordinarily handy labourer can make and set it, and at this season of the year I find it a good practice to keep a few set in various parts of the gardens, so that Peas and other seeds may not be molested.—J. GROOM, *Henham*.

**Tulips for Dinner-table Decoration.**—These are highly effective, as their brilliant colours show themselves off to great advantage under artificial light. We grow quantities of them specially for that purpose in 3-in. pots, three bulbs in a pot, and just as they are expanding they are at their best. Vermilion Brilliant is a striking variety, being a true vermilion with stout foliage; Pottebakkers, white and yellow, are exquisite; and the Duc Van Thol is also exceedingly effective, being dwarf and a good forcer for early work. Amongst double Tulips we find the best to be Tournesol, red and yellow; Duc Van Thol, scarlet; La Candeur, white; and Imperator rubrorum, crimson. In beds of fresh green Moss or Lyco pod, or mixed with dwarf *Adiantums* or *Pterises*, these kinds are extremely useful. The same, or perhaps even a better, effect may be produced with Hyacinths, but when they are used in quantity their perfume is considered by many to be too powerful, except when ample ventilation can be given.—J. GROOM, *Henham*.

**Hyacinths a Second Year.**—What is the best way of saving Hyacinth bulbs that have flowered in glasses and pots?—*Sir*. [As a rule, Hyacinths which have been forced in pots or glasses do not succeed well the second year, but you might try them treated as follows:—Cut off the flower-stems as soon as the blooms have withered, and plant the bulbs, without removing the soil from their roots, in the sunniest part of the garden in good moist sandy soil, or plunge them as they are in the pots. In September take up the bulbs, shake the soil from them, and re-pot them in rich turfy loam and sand.—*S*.]

### PLATE CXVIII.

#### TUBEROUS-ROOTED BEGONIAS.

Drawn by Miss DUFFIELD.

THESE beautiful, free-blooming, and easily cultivated flowers are rapidly becoming great favourites; and the more widely they become known, the more will they commend themselves to the notice of horticulturists, as undoubtedly the best value they can possibly obtain for their money—in the first instance, during the months of June, July, August, and September as ornaments of the summer bedding garden; and, secondly, as soon as there is any danger of frost at night, as ornaments of the conservatory for another month or six weeks by lifting them into pots from the beds, which can be done without the slightest check, as they invariably lift with capital balls and masses of fibrous roots closely and compactly surrounding the tuber. They thus afford from five to five and a half months of continuous and unintermittent bloom, which is more than any other plant with which we are acquainted will do. All that they require to make them thrive and grow luxuriantly and quickly into large, freely-branching tufts, which soon completely cover the beds, is a light rich soil, and copious waterings while making their growth if the summer be at all hot or rain abstain from falling for any length of time. The beds should also not be planted too thickly, as if the tubers be at all strong and of good size they make such vigorous and abundant growth, that if put too close to one another, the plants will soon crowd and interfere with their neighbours; but when this inadvertently happens, every second one may with perfect safety be taken up even in the middle of summer and removed to another bed, where, after a good watering, it will next day appear as if it had never been transplanted at all, and the room afforded by its removal will be most welcome and serviceable to those left in the bed, allowing them fully to develop themselves, by means of which growth they will soon cover and fill up the gaps made by the removals in question. All that they require is a sheltered situation, well and fully exposed to the sun, as the only thing to which they object is exposure to high winds, which are apt to break off the soft succulent stems at their junction with the tuber. No amount of heavy rain does them the slightest injury; the blooms are not knocked off by it, and though the heads droop somewhat and bend under it, they rise again absolutely uninjured as soon as the sun shines out after the shower. Those who wish to increase their stock of these lovely plants (as most who once begin their cultivation will desire to do) should begin in good time to take off their cuttings, just as they would those of a Zonal *Pelargonium*, about the middle of July, and these cuttings will root freely in silver sand and water in from a fortnight to three weeks, and before the end of the season make good-sized tubers, which often give a little bloom towards the end of autumn, and flower abundantly in the open ground the following year. Indeed, young tubers in about their second year often yield individually finer blooms than older and larger ones, which, as soon as they commence to start and show the eyes from whence the shoots spring, may be cut up just like a Potato.

The accompanying plate gives a faithful and accurate representation of three of the finest hybrids of British origin that have yet been obtained. The white one, named Queen of the Whites, is not yet in commerce, but it will be distributed by the Messrs. Veitch, of Chelsea, as soon as they can get up sufficient stock of it. The free-blooming, though smaller-flowered, species named Davisi, after Messrs. Veitch's collector, Mr. Davis, who sent tubers of it to them from Peru, is also not yet in commerce. The name of the lighter-shaded variety under Davisi is Emperor, sent out in 1877; and that of the fine, darker-shaded variety at the bottom of the plate is Acme, sent out the previous year, and which is certainly one of the finest and most free-blooming of all varieties. The Queen of the Whites, obtained as a chance-comer among a lot of seedlings of *rosiflora*, seems also to be an exceedingly free bloomer—a pan of small plants, all of them finely in bloom, being sent by Messrs. Veitch to the great show at Carlisle last autumn, where they presented an exceedingly pretty appearance, the shade of white resembling that of *Cypripedium niveum*.

W. E. G.





## THE FLOWER GARDEN.

### BEDDING PLANTS FROM SEED.

It is not everyone who has the space or means to provide and winter a large number of Pelargoniums and other tender bedding plants. No matter how favourably one may be situated, the keeping of a large stock of such plants involves a good deal of trouble, and takes up space that might be more profitably occupied. Moreover, it is quite practicable to make a garden very gay in summer and autumn—I will say nothing now about winter or spring—with seedlings alone, without keeping or purchasing a single plant; and a comparatively small amount will buy the seeds required. There will, of course, in some cases be a difference in habit and some variation in colour, as in those particulars a certain natural freedom, involving some departure from the normal type, is nearly always perceptible in seedlings, and must be expected; but to many people this will not be an objection. There are, however, a few plants which come true from seed through many generations; one of these we have in *Verbena venosa*, one of the best and most pleasing hardy bedding or border plants. I have raised many thousands of this *Verbena* from seed, and never saw any variation in them. It would be a great help to flower gardeners if other shades of colour of this useful old plant could be obtained. Another plant that comes true from seed is the *Salvia patens*; but both this and the preceding should be sown in a hotbed early in spring, in order to get them into flower early. This *Salvia*, as is well known, has tuberous roots, which can be taken up and stored in dry sand safe from frost. It is one of the most brilliant blue summer-flowering plants in existence, and was used more freely many years ago than now. Lobelias of the speciosa section come fairly true from seed; there may be some variation in strength and compactness of habit, but this feature can be subdued and regulated by cutting or pinching back any plants that seem disposed to outgrow their neighbours. Can anything, again, as a mixed bed be more showy than a mass of seedling *Petunias*? The colours are not harsh and irritating like the scarlet *Geranium*, but soft and pleasing; the soil need not be rich—in fact, they flower best in a rather poor soil—and in the driest summers they do not require artificial watering. There is, however, I suppose, some drawback to every earthly thing, and towards the autumn, especially if the weather be damp, they have a tendency to over-luxuriate, and to droop over the edges of the beds. The best way to keep them within bounds is, instead of pegging them down, to form a sort of rough trellis-work 6 in. or 8 in. above the soil, and train the shoots over it, not waiting, of course, till the shoots are too long before this is done, or the difficulty in putting matters right will be increased a hundred-fold. Treated in this way, the beds have a neat and tidy appearance, and I think also this training tends to check growth and keeps the plant more compact. Seedling *Verbenas* make a handsome bed, little inferior to the *Petunia*; and for a large bed, where the soil is good and deep, few things are superior to the double *Zinnias*, which can be had in various colours, separately if desired. Balsams, again, are not half so much used for open-air decoration as they deserve to be. Those who have only seen them starving in small pots cannot form an idea how beautiful they are when planted out in good soil in an open situation away from trees. Among yellow-flowering plants, the small single form of *Tagetes signata pumila* is useful, but it is not equal to the double variety, which really makes a very handsome bed. Both of these, however, no matter how carefully saved and selected, are all the better for having their growth regulated a bit till the beds are filled.

Those plants that take the lead should be pinched back when necessary, and this can be done without encouraging too much severe formality. However much we may be in love with Nature, there is an incongruous appearance about a group of plants that seem to have no natural resemblance to each other. Nature never groups plants in that way, and the pinching of a robust shoot when necessary adds to the plant's blooming capacity. For large beds or back positions in borders, the lemon and orange varieties of the African *Marigold* are very lasting and showy. The dwarf kinds of *Ageratum*, if selected and saved with care, may be raised in a gentle heat with but little trouble, and, with a little management, in summer very effective masses may easily be had. The tuberous *Begonias* will some day be a prime feature in sheltered positions; they will grow in all the colours of the *Pelargonium* without their liability to be washed out by rain, or exhausted by attempts at seed-bearing during periods of drought, and they require no expensive preparation to keep them through the winter. I have no doubt in a well-drained site they may be kept as easily as *Cannas* under a covering of litter. They may be raised from seeds in a hotbed, and if sown early and well attended to, most of the plants will flower the same season. The seeds are very small, and must be only lightly covered, just the merest

sprinkle of sand. Much more might be said upon this subject, and many other names of suitable plants given, not only of flowering plants, but also of plants of stately or pleasing habit of growth, all of which may be raised from seed, and will continue in most cases to improve in appearance during the summer and autumn till cut off by frost. I have said nothing either about the large number of perfectly hardy plants well suited for massing, and that cost nothing to keep. Take, for instance the large family of *Violas*, in almost all shades of purple, yellow, and white, and even a black may be had if desired. In a limited space one can only touch upon a subject so large in a very superficial manner, little more, indeed, than just to act as a reminder; and in doing so I do not wish it to be inferred that I am recommending those who have plenty of conveniences for wintering their stock of plants and cuttings, and who care little about winter or spring flowers, to give up doing so. I am only anxious to point out that by curtailing the winter stock, and making up with seedlings raised in spring, the space under glass perhaps might be more profitably occupied. Most of the plants I have named, and others of a similar character that might be added to the list, such, for instance, as the various varieties of *Phlox Drummondii*, which in good soil are exceedingly attractive and lasting in character, require a hotbed to start them in spring.

The best time to begin operations is about the end of February or beginning of March. Some anxious people start earlier, but it is better to wait for sunshine and full daylight, so as to keep a steady, well-sustained growth. The size of the hotbed must of course depend upon the number of plants required; but an ordinary two-light frame will hold seed-pans or pots sufficient to raise many thousands of plants in their young, undeveloped state. A second hotbed of a moderate temperature will be required later on—say about the middle or end of March—as by that time many of the young seedlings will require to be pricked off, as gardeners term it, an inch or so apart, into other pans; or boxes will do admirably. And early in April a cold frame or pit should be available to harden them off, beginning with the hardiest kinds. In this way an economical and efficient plant manufactory will be established, that will give far less trouble than striking the same number of cuttings, for which a stock of plants must be kept through the winter. There are one or two other matters of detail that might be referred to with advantage. The pots or pans should be clean and well drained. The soil should be used in a moderately dry state; this can be insured by placing a sufficient quantity in a shed a fortnight previous. Sandy loam and leaf-mould in about equal proportions will be suitable, and it can be passed through an  $\frac{1}{2}$ -in. sieve, and the rough reserved to place over the crotches in the bottom of the pots. The soil should be pressed in moderately firm, and be watered with a fine-roset pot, especially for all small seeds, as in a great measure this obviates the necessity for future waterings till the seeds have germinated. The covering of soil over the seeds should be about equal to the diameter of the seeds, or a little more. A sprinkle of sand will be the best covering for very small seeds. A bottom-heat of about 80° will be ample, and a few inches of sawdust or Cocoa-nut fibre forms a very good bed to plunge the pots in. When the pots are all arranged in the bed, mark it up for a week, night and day; the seeds will vegetate best in the dark; the light only helps to evaporate the moisture. At the end of the week look into the bed and see if any of the young plants are showing themselves; if they are, gradually increase the light, matting up every night, as before. The second hotbeds must be prepared in time, before overcrowding does injury.

E. HOBDAY.

### THE HOLLYHOCK AND ITS CULTURE.

NOTWITHSTANDING the damp character of the summer of 1877, the Hollyhock disease proved most destructive. It, together with the wet late season, so much affected the plants, that seed of a good strain of Hollyhocks is exceedingly scarce and difficult to be procured. For this season, at least, we shall have to depend mainly on seed imported from the Continent. At the autumn exhibitions in the north of England, where Hollyhocks are generally shown extensively and well, they were in September last not only sparingly represented, but the flowers were small and sadly disfigured. Such a season as that of 1877 may not, however, occur again for another ten years. In growing Hollyhocks, especially for exhibition purposes, much care is required in the selection of varieties, and particularly in reference to their culture. The first consideration ought to be a proper situation and soil in which to grow and bloom the plants. Probably the best site for a plantation of Hollyhocks is one open to the east and south, but sheltered on the west and south-west. The gales from these parts prove very destructive, and it is a great disappointment to have some of the most promising flower-stems snapped off just when a fine spike of flowers was anticipated. As the Hollyhock is a strong and fast-growing plant, a good depth of rich soil is absolutely necessary to the production of fine blossoms. It is best to prepare the ground in

autumn, and then during the winter to fork in once or twice a good dressing of well decomposed manure. This operation not only mixes the manure more thoroughly with the soil, but the movement of the soil necessitated by the operation becomes a means of exposing a greater quantity of the newly turned up soil to the action of the weather, thereby pulverising and sweetening it for the reception of the plants. Autumn planting is sometimes followed, but it is a risky process. If the plants do well and pass through the winter in safety, they get a rare start in early spring; but if they fail, the loss is great. If I were growing a collection of Hollyhocks, and it was advisable to plant in autumn, I should hold over one of each variety, keeping the plants in pots all the winter. Hollyhocks, if young and vigorous plants, do well during the winter in pots in a cold frame; and they should have a shift into a larger pot in early spring, so as to encourage them to grow. From plants so treated as fine blooms can be had as from those planted out in autumn. Growers of Hollyhocks who plant out in October adopt the practice of mulching the plants with manure and rotten leaves, and this serves as an excellent protection from frost. Spring planting may be done at any time during March and April. If the plants are weak, they will be best kept in pots till May. They are greatly helped at planting time by placing some fine rich soil about the roots to give them a quick start. It is advantageous to give the plants a slight watering as soon as planted if the weather be drying, and when dry weather sets in to water freely, and give some weak liquid manure water occasionally. This causes the plants to throw up a most vigorous stem, and this needs to be properly secured to a stake as it advances in height. Those who grow for exhibition allow but one spike to a plant, but those needed only for decorative purposes may be allowed to carry two or more. If fine individual blossoms are required, the buds must be thinned out to nearly one-half of their number, for anyone having a slight knowledge of the Hollyhock must be aware that many more buds are formed than there is space to expand. But a Hollyhock cultivator does not do this disbudbing at once, but commences with a few of the smaller buds, leaving the strongest, and so gradually thinning out till there remains the number required. If blooms are wanted for the exhibition table, some shading must be employed, or the sun, wind, and rain will impair their delicate beauty. Mulch well with good manure once or twice during the summer, water freely as required, and, if the dread disease should put in an appearance, dress the leaves with a mixture of soft soap and Gishurst Compound in a liquid state, and continue to apply it till there is an abatement of the ravages of this pest. D.

### PROPAGATING BEDDING PLANTS.

THE modern propagating house is yet but a stranger in most private gardens, the two or three-light frame resting on a prepared bed of fermenting material being the most commonly used, for reasons which must be obvious. This, together with pots or pans and soil proper for the purpose, must now be got ready where bedding plants have to be propagated on a large scale. The stock of Lobelias, Verbenas, Heliotropes, and other occupants of our flower gardens should be put into heat a fortnight at least before cuttings are taken off them, as the young soft growths made under such circumstances take root and grow more vigorously than the hard growth that was ripened off last autumn to withstand the winter. Early propagation is often a failure from want of a little system as regards arrangement; for instance, cuttings taken from plants out of a warm house and removed to a cold shed, where everything is cold, from the crocks upwards, cannot be expected to succeed as well as if there had been some little care taken to have all the material in readiness beforehand, and of an equal temperature. This becomes a matter of importance when the cuttings are rooted and are being transferred either to pots or boxes, where they are to remain till planting time. Verbenas and similar plants I find to succeed best transplanted into boxes, which should be crocked and filled with rich soil, such as the remains of a Cucumber bed. Both boxes of soil should be put into a warm house, and the cutting pots or pans should be taken thither to be shaken out and planted into the boxes. Those who prefer putting this class of plants in pots instead of boxes can take the same precaution by moving a portable bench into a warm Vinery or other forcing house "at work." It is generally at this stage that young plants receive a check, and instead of steady growth progressing with the season, the attacks of disease become in a measure unmanageable. Verbena disease is clearly propagated in this way; it is the result of checks and a saturated atmosphere, and is an infectious and dangerous enemy. The best remedy for it is not to start propagating too early, and to avoid checks keeping the plants in a growing atmosphere till the weather becomes naturally warm enough to admit of their being hardened off gradually, and ultimately turned out of doors. Where the stock of bedding Calceolarias has, by one cause or another,

turned out unsatisfactory, this defect can be filled up by making a bed of litter to the depth of about 2 ft. or so, just enough to create as much warmth as will expedite root action. On this bed place a frame of the size that is required, and fill it up to within a foot of the glass with the siftings of leaf-mould, a layer of fine mould being used for the top, then put a layer of sand over this, and insert the cuttings thinly, keeping the frame close and moist till they show signs of active growth, when air should be admitted freely. The stock thus raised may be planted out finally from this frame without further trouble. W. HINDS.

*Otterspool.*

### ATHYRIUM FILIX-FEMINA ELWORTHII.

THIS Fern, of which the annexed is a representation, was raised from spores by me, with many other tasselled varieties, from the true grandiceps, which I found myself—not the plant that the late Mr.



*Athyrium Filix-femina Elworthii.*

Ivery sent out under that name, which is properly macrocephalum, also raised by me, and called by Mr. Lowe scopiforme. Since then I have raised a great many very beautiful forms which are as yet unnamed, and also some that are named. C. ELWORTHY.

*Nettlecombe, Taunton.*

**Polyanthuses and Primroses.**—A writer in one of your contemporaries assumes that these are one and the same. I do not agree with him. He appears to regard the Gold-laced Polyanthuses as really representative of the Polyanthuses, but all others that are termed "Fancy" Polyanthuses, to distinguish them from the Gold-laced types, are but advanced forms of Primroses. If he grow the true Primroses and the Fancy Polyanthuses, he would soon find marked and even specific differences between them. A clergyman, writing to me from Kent, states, "I find it hard to save Primrose seed, but can get any amount from Polyanthus." Herein is one great difference. Another is that the seed of the former is smaller, and of a paler colour. Others might be named, for they become familiar to those who cultivate varieties of the two sections; but they would not be understood by those who are not growers of these flowers.—D.

**Leucothoe Davisiae.**—This beautiful little evergreen shrub is closely allied to Cassiope, from which it seems to differ chiefly in the corolla being more contracted at the mouth, and in having larger, petioled leaves. It grows from 3 ft. to 5 ft. high, bearing bright green, leathery, oblong, blunt foliage, 1 in. or 2 in. long, with spiny-toothed margins. The flowers are pendulous, on slender erect terminal and axillary racemes, which are produced in abundance; the corolla is pure white, about  $\frac{1}{2}$  in. long, and of a cylindrical or ovate form, with contracted mouth and five short spreading teeth. It is a native of the Sierra Nevada, California, and will probably prove quite hardy in this country, with the culture of other North American Ericaceae. The seeds, being very small, must not be covered with soil, but simply with a layer of damp Moss, and a cold frame with a northerly aspect will be the most available place for raising them.—W. THOMPSON, Ipswich.

**Banksian Roses.**—Is the white Banksian Rose a free bloomer? If it is, we have not got the true one. The yellow or lemon-coloured variety on the same wall is annually laden with flowers.—J. G.

GARDEN BOTANY.

(Continued from p. 193.)

TEMPERATURES AT WHICH DIFFERENT SEEDS WILL GERMINATE.—Numerous experiments have been carried out to ascertain the lowest and highest temperatures at which different seeds will germinate, and the temperatures most favourable to the growth of diverse plants. Some of the results obtained by the most trustworthy observers are so interesting, as to deserve citing, especially as they chiefly relate to plants in general cultivation. In all cases the figures have been reduced to Fahrenheit's scale. Any figure over 5 in the second decimal place in the conversion is raised to 1 in the first place. Leaving the microscopic organisms of the vegetable kingdom out of the question, the inferior limit of active growth is about 32° and the superior limit 120°, though few plants reach either of these extremes. Professor Julius Sachs obtained the following results from observations made to determine the temperature at which germination would take place, at what temperature it proceeded most rapidly, and the highest temperature at which the seeds would germinate at all:—

	Inferior limit.	Most rapid growth.	Superior limit.
Wheat . . . . .	41° Fahr.	53° 7 Fahr.	108° 5 Fahr.
Barley . . . . .	41	53 7	108 5
Pumpkin . . . . .	56 7	92 7	115 2
Kidney Bean . . . . .	49 1	92 7	115 2
Maize . . . . .	49 1	92 7	115 2

The foregoing figures can only be considered as approximations to the truth, but they may be accepted as sufficiently exact for all practical purposes. It is, of course, exceedingly difficult to obtain those relating to the extreme limits, and the observations of different persons do not absolutely agree. Indeed, it is not at all likely that they would be identical in all cases, independently of the difficulties attending the experiments, because the vital energy of the same kind of seed would not invariably be the same. According to this table, Wheat will not germinate below 41° Fahr., nor above 108° 5; but another observer, Köppen, obtained 45° 5 as the lower limit at which it would germinate, and 85° 5 as the temperature at which its growth was most rapid. The figures relating to Maize by both observers are almost identical. De Vries obtained the following results from experiments instituted to ascertain the most favourable temperature for the growth of the plants in question, and the upper limit of temperature at which growth ceased:—

	Most rapid growth.	Superior limit.
Kidney Bean . . . . .	88° 7 Fahr.	above 108° 5 Fahr.
Sunflower . . . . .	88 7	below 108 5
Cabbage . . . . .	88 7	108 5
Hemp . . . . .	88 7	above 108 5
Melon . . . . .	99 5	99 0
Mustard . . . . .	81 3	below 99 0
Cress . . . . .	81 3	below 99 0
Flax . . . . .	81 3	above 99 0

There is no doubt that the temperatures given in the last table refer simply to germination or to subsequent growth for short periods only; and those given for the most rapid growth are probably all too high for the healthy development of the plants. The temperature given in the next table, from observations made by A. de Candolle, seem to be more in harmony, generally speaking, with the results of practical experience, though Sachs characterises them as "moderately trustworthy, as far as relates to the inferior limit, but hardly so much so with respect to the superior limit and the temperature of most rapid growth," as, he adds, "may be concluded by comparing with the results of other observers." It is evident that different observers have not conducted their experiments on precisely the same basis, and therefore they have not the same value from a practical point of view.

	Inferior limit.	Most rapid growth.	Superior limit.
Mustard . . . . .	32° Fahr.	69° 3 Fahr.	32° 4 Fahr.
Cress . . . . .	35 2	69 3	32 4
Flax . . . . .	35 2	69 3	32 4
Collomia . . . . .	41 0	62 6	about 82 4
Nigella . . . . .	42 3	above 69 3 (?)	82 4
Candytuft . . . . .	42 3		
White Clover . . . . .	42 3	69 3—77 0	below 32 4
Maize . . . . .	43 2	69 3—82 4	about 95 0
Sesamum . . . . .	55 5	77 0—82 4	below 113 0

ROOT-GROWTH AT DIFFERENT TEMPERATURES.—This part may be concluded with some figures of the lengths attained by roots in the same number of hours at different temperatures, giving the lower and upper limits of the growth of the roots of seedlings. The figures relate to Maize, and were obtained by Sachs during periods of 48 hours. In the original the measurements are given in millimetres and tenths, but to one unfamiliar with the French metric system these figures convey no definite idea of the actual lengths, and therefore they have been converted into parts of an inch. These are, however, not absolutely correct, because, in order to simplify the calculations, a millimetre is taken as 0·04 of an inch, and 0·4 of a line or tenth of an inch.

Temperature.	Length attained by the root, Millimetres.	Lines.
62° 3	2 5	1 0
79 2	24 5	9 8
91 8	39 0	15 6
93 2	55 0	22 0
100 8	25 2	10 1
108 5	5 9	2 4

It will be seen that there was a rapid increase in the growth of the roots of Maize for each increment of temperature up to a certain point, above which, subjected to successively higher temperatures for periods of forty-eight hours, there was a marked decrease. Sachs does not state whether he continued his experiments in successively higher temperatures until growth was quite arrested. The difficulties attending experiments of this kind are so great, that it would be necessary to have the mean growth, at given temperatures, deduced from many series of observations, all conducted on the same plan, before we could act upon the results in practice. The following tables are interesting, as showing the discrepancies and agreements in the results of different observers, and the most favourable temperatures for the root-development of various plants. Throughout the figures relate to growth during periods of forty-eight hours. The first table embodies results obtained by Köppen:—

Temperature.	Lupin.		Pea.		Maize.	
	Millimetres.	Lines.	Millimetres.	Lines.	Millimetres.	Lines.
57° 4	9° 1	3° 6	5° 0	2° 0	0° 0	0° 0
64 4	11 6	4 6	8 3	3 3	1 1	0 4
74 3	31 0	12 4	30 0	12 0	10 8	4 3
79 9	54 1	21 6	53 9	21 6	20 6	11 8
83 3	50 1	20 0	40 4	16 2	36 5	14 8
86 4	42 8	17 5	35 5	15 4	64 6	25 8
92 3	14 2	5 7	25 0	9 2	69 5	27 8
97 7	12 6	5 0	8 7	3 4	20 7	8 3

Among the most noteworthy features of the above table are the temperatures at which each of the plants exhibited the greatest energy of root growth, and the actual lengths which the roots attained in periods of forty-eight hours. Both the Lupin and Pea made the longest growth at a temperature, in round numbers, of 80°, and in both instances the actual length attained, about 2 in., was the same. Maize roots grew most rapidly at a temperature of 92°, reaching nearly 3 in. in forty-eight hours. This agrees very well with the results obtained by Sachs, his greatest growth of Maize roots being at 93°, namely, 2·2 in., which was reduced nearly half on raising the temperature to 100°. The next table is the result of experiments conducted by De Vries:—

Tempera- ture, metres.	Melon.		Mustard.		Cress.		Flax.	
	Milli- metres.	Lines.	Milli- metres.	Lines.	Milli- metres.	Lines.	Milli- metres.	Lines.
59° 2	0° 0	0° 0	3° 8	1° 5	5° 9	2° 4	1° 1	0° 4
70 9	0 0	0 0	24 0	10 0	38 9	15 6	20 5	8 2
81 3	13 2	7 3	52 0	20 8	71 9	28 8	44 8	17 9
87 1	27 1	10 8	44 1	17 6	44 6	17 8	39 9	16 0
93 0	38 6	15 4	30 2	12 1	26 9	10 8	28 1	11 2
99 0	7 3	28 1	10 0	4 0	0 0	0 0	9 2	3 7

Generally speaking, the figures of this table accord with the results of practical experience, and they give a good idea of the diversities in the constitutions of plants. One point especially deserving of attention is the fact that plants native of temperate climates attain their maximum energy of growth at a temperature at which a tropical plant, like the Melon, commences growth, or grows very feebly; and the temperature most favourable to the development of the Melon was highly detrimental to the health of the others, and completely arrested growth of Cress. Köppen, who has conducted a vast number

of experiments bearing upon the effects of heat on the growth of plants, found that the more constant the temperature, the greater the increase of growth for the same amount of heat, and the greater the fluctuations the less the growth in proportion to the mean temperature for a given period. To give an example, a seed of *Pisum sativum*, common Pea, which had germinated and grown during 144 hours at a constant temperature of  $59^{\circ}2$  the roots had attained a length of about  $4\frac{1}{2}$  in.; when the mean temperature for the same period was  $60^{\circ}8$ , oscillating between  $65^{\circ}$  and  $59^{\circ}$  twice, the growth amounted to only  $3\frac{1}{2}$  in.; and when the temperature varied between  $59^{\circ}$  and  $80^{\circ}$ , the mean being  $64^{\circ}4$ , the length attained by the roots was only  $2\frac{1}{2}$  in. This seems to be all that is necessary to say here on this subject, but the relation of humidity, heat, &c., to the growth is more fully examined in the section on growth of plants.

**THE ACTION OF AIR ON GERMINATION.**—Healthy germination can only take place when seeds are within reach of the influence of the air. By this it is not intended to say that seeds must be fully exposed to the atmosphere, but it has been proved experimentally that the soil or water in which the seed is placed must contain some of the oxygen of the air, or the vital force of the embryo will not be quickened. Left to itself, the penetration of air into the soil is a slow process, but frequent digging and stirring effects the object quickly, and renews the supply of this element, besides benefitting the growing plants in other ways. Every practical gardener is aware of the almost marvellous effects of repeated hoeing among crops, especially the Cabbage tribe.

**ACTION OF LIGHT ON GERMINATION.**—It is assumed by many persons that light is prejudicial to germination and darkness essential to it; but most seeds appear to germinate equally as well when exposed to light as when covered up, providing always that they are kept sufficiently moist. In a natural way the only covering seeds get is a more or less thick layer of leaves, as the seeds usually fall before the leaves. Nestled among the leaves, the seed does not dry up, as it would on the bare ground, and we only imitate Nature, substituting soil for leaves usually. As a rule, it is the object of the cultivator to make the condition such that nearly all the seed germinates, and this in a general way is more easily done by burying the seed in a small depth of soil. But there are some seeds, especially small ones, that germinate more freely on the surface of the ground protected by dwarf herbage.

**STIMULATING AGENTS IN GERMINATION.**—Allusion has already been made to different means of hastening the germination of seeds, such as breaking the shells, soaking in very hot water, or even boiling for a short time. There are some substances which appear to exercise a stimulating effect in the germination of seeds and the future growth of the seedlings. Camphor, a vegetable product itself, appears to possess this property in an extraordinary degree. Indeed, it has been averred that camphor has the power of revivifying seeds, or at least of causing them to germinate when ordinary treatment failed. Benjamin Smith Barton was the first to point out its action upon plants at the end of the last century; and a few years ago a Mr. Vogel, of Munich, carried out a number of experiments with camphor on old seeds. Controlling experiments were conducted simultaneously, ordinary water being employed instead of camphor water. Seed of Cress three or four years old, treated with ordinary water, germinated very imperfectly and long after sowing, while that moistened with camphor water germinated quickly; that four years old in twenty-four hours, and that three years old in seven hours. Radish seed, which is usually regarded as useless after it is three or four years old, was tried seven years old, and it germinated in four days, or in a much shorter period than good fresh seed under ordinary favourable conditions. Seed of the Pea eight years old germinated in forty hours, and many other old seeds treated with camphor water exhibited equally rapid germination. Some that would not germinate at all under ordinary treatment had their germinative force revived by camphor. Other seeds, Clover, for instance, appeared to derive no benefit from the solution of camphor; but where it acts its influence is not limited to germination, but is extended to the subsequent growth. Humboldt discovered that chlorine accelerates germination, and acts as a restorer

where the vital force is almost exhausted or quite lost, so far as the usual method of treatment is concerned. This must be used in a highly diluted form; about two drops of an aqueous solution of chlorine in 2 oz. of water. Iodine and bromine are said to possess similar qualities. Acid and ammonia salts in very small quantities in the water have been found to hasten germination, but they have not the power of reviving seeds.

**OTHER MEANS OF FACILITATING GERMINATION.**—Under this head all the various modes of preparing different seeds for sowing would have to be considered were this a treatise on raising plants from seed. As it is, it is not out of place to direct attention to the fact that the seeds of many plants undergo, according to their nature, some process before being committed to the soil. It is, in most cases, a process of removing the pericarp or pulp from the seed by maceration, by crushing, or gradually softening by storing away in moist sand. Thus the fleshy fruits of the Hawthorn are collected in autumn, and as each fruit contains from one to three "stones," enclosing one or rarely two seeds each, it is desirable to separate and soften the stones before sowing, otherwise the seedlings would come up very unevenly and very irregularly as to time. To effect this, the fruits are mixed up with moist sand and stored away in pits or turf-covered heaps until spring, when the "stones" readily separate from each other and open. By a similar process Teak seed, which, if sown without preparation, is usually from one to two years before it comes up, may be made to germinate, as we learn from Amery's "Notes on Forestry," in three or four weeks. W. B. HEMSLEY.

## THE FRUIT GARDEN.

### DROWNING ROOT FUNGI.

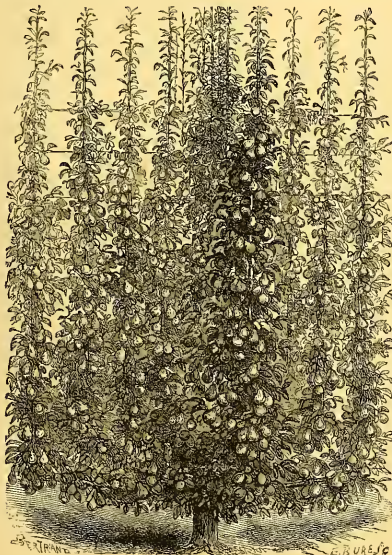
I CAN fully confirm Mr. Hobday's remarks on this subject (see p. 172). I have seen many trees greatly injured by root fungi in the south of England, especially where the soil is light and shallow, resting on a subsoil of chalk. In such localities fungi are particularly destructive, evergreen trees, such as Conifers, being exceptionally liable to their attacks. When I first came to Henham I found the trees in two fine Peach houses, that had been built and planted on the most approved principle, almost destroyed by root fungi. Indeed, to such an extent was the fungus established in the borders, that the soil looked quite white and mouldy with it, and the effect was, that when the trees started into growth the young leaves turned white, curled up, and dropped off, and if rubbed between the fingers the outer skin would peel off. Many of the branches died outright; and although later in the season the trees grew away strongly, it was too late for the wood to ripen satisfactorily. In our attempts to fork out the fungus it was evident that the parts of the border most affected were those at the front near the hot-water pipes, where the roots were most abundant; while at the back of the house, where the drip from some shelves had kept the border continually wet, no fungus was to be found. We therefore resolved to try the water cure, by giving abundant supplies of rain water with the chill taken off it, weakly diluted with soot and manure water, adding a mulching on the surface to prevent evaporation. The following season only a few branches were attacked, and by cutting these back as far as they appeared affected, and training in young wood from the base, we soon had the trellises thoroughly furnished with bearing wood. The third season we had to enlarge the trellises considerably, and ever since we have annually had fine crops of both Peaches and Nectarines. I have no doubt that in this instance the fungus was introduced to the border by mixing manure with the turfy loam, of which it was principally composed. The soil being rather light in texture, and the drainage perfect, a great quantity of water would be needed by way of compensation for the evaporation from so large a surface of foliage, and also for the wants of a crop of fruit. The watering of borders that have become dry to any depth should be done thoroughly to be effective, and the surface, too, if hard, should be loosened, in order to allow the water to penetrate equally all over the border, and the watering should be repeated at short intervals; mere surface waterings are

worse than useless. No manure should be used that is at all suspected of containing any substance likely to encourage fungus growth. If the staple soil be good, fresh manure would not be required in a new border for several years, when it can be added as top-dressing or in a liquid form during the growing season.

JAMES GROOM.

**Fruit Tree Protection** (see p. 176).—Straw mat copings are used in France by many cultivators. They are fixed on the top of the walls with nails, and are supported from below by a wooden bracket fastened to the trellises with which the walls are usually covered in that country, and to which the trees are trained. However, wooden copings are also used, but these are fixtures. We are going to try this spring Spruce branches hung from a narrow coping, and we expect the result will be satisfactory. Select branches that have a curved feather-like bend, and fasten them firmly on the top of the coping. These branches will curve naturally over, and, if neatly done, this green coping will look not at all unsightly. Many may suggest other modes of fastening them on the top of the wall, but I think that two studs thus  $\square$  would be sufficient to secure each branch. Where expense is no object, glass copings, no doubt, are the best.—HENRY KNIGHT, Floors.

**Winged Pyramid.**—This handsome form of tree is figured from



A Winged Pyramid Fruit Tree.

a photograph taken in M. Jamin's very instructive garden at Bourg-la-Reine, near Paris. The Winged Pyramid form is not adopted for its appearance only, as it has advantages in the preservation of the fruit from destruction by wind, and in the perfect exposure of both fruit and wood to the sun.

**Utilising the Air-roots of Vines.**—One of the best crops of Grapes grown in pots which I have seen this year is growing in the gardens at Syon House. The pots are plunged in a small bed, in which there is a slight heat, and are mulched with soil and manure. All shoots from the base of which air-roots are produced are bent slightly down, so that these roots may be layered in soil placed in large drain pipes, which are placed in an upright position on the bed. Down these pipes the roots soon descend into the bed below, and the Vines are thus so much benefited, that where shoots would otherwise only be allowed to carry one bunch, they are in this case permitted to carry two. The most forward of the bunches have just been finally thinned, and some of them when ripe will be very large for pot Vines. To form a succession to these, Vines, instead of being potted, are planted out in a narrow bed in front of the house; and, although it is generally thought that young Vines forced early and fruited the

first year are of no use for forcing another season, Mr. Woodbridge finds that by leaving strong shoots which failed to produce fruit their whole length, or nearly so, instead of spurring them in, as good and probably a better crop can be produced the second year than the first, for the obvious reason that there are more roots, and that the second season they do not require to be forced nearly so rapidly, as they naturally come earlier.—C. S.

**Grafting Apples and Pears.**—Where trees of these are found to be unfruitful year after year, either from the varieties being unsuited to the locality, over-luxuriance, or other causes, the best way of converting them quickly into fruitful trees is to cut the entire head off, not too closely, and to graft it all over with some trustworthy sort. By this means a healthy head of bearing wood is speedily developed, small branches healing much more rapidly than large limbs that are liable to decay, and so cause the destruction of the entire tree. Double-grafted trees, as a rule, bloom more abundantly than single-grafted ones, as, owing to over-luxuriance being checked, the energies of the tree appear to be more directed towards forming blossom than wood buds.—J. G.

**Cure for American Blight.**—The remedies which have been recommended for the destruction of this are innumerable. M. H. Lusseau, a landscape gardener of Bourg-la-Reine, has just published a small pamphlet on the subject, in which he recommends oxalic acid as the best cure for this destructive insect. M. Lusseau was first led to try this powerful poison by observing the effects produced on the aphides by rubbing the trees attacked by them with the fresh leaves of the Sorrel, which contains a large quantity of oxalate of potash. M. Lusseau speaks of his specially prepared oxalic acid as being superior to any other, but this is an assertion which we must beg leave to doubt. Good oxalic acid bought from any respectable chemist, at about eighteen pence per lb., will be as efficacious as M. Lusseau's. The acid should be dissolved in the water in the proportion of one ounce to seven pints, and the solution well scrubbed into every nook and cranny of the tree. Ten days afterwards the operation should be repeated, as it frequently happens that a few of the aphides will escape the first application. M. Lusseau has tried this remedy with great success for more than twelve years. At any rate the remedy is a cheap one, and is easily tested. It is as well to repeat that oxalic acid is a virulent poison.—C. W. QUIN.

**Figs Fruiting.**—Some of the stronger-growing kinds are made to fruit with great difficulty, especially the Castle Kennedy, Carrington, and Brunswick. If the current year's wood be notched at nearly every joint as the trees grow, and placed to the wall (if in such a position), they will throw out short stiff shoots like spurs, which will form fruit the same season. But to have the trees in fruitful condition for the following year, lift a few roots at one side of the tree in August and lay them over a layer of lime rubbish, bones, and soil rammed firmly, replace the earth, give water, and the roots will make some growth, but not the branches. Should they continue to grow, the roots on the other side of the tree may also be lifted in September (not too late to cause premature shedding of the leaves), treated as the others, and the following season abundance of fruit may be expected. We have adopted this practice for many years with Figs without failure; also with Peaches. A number of trees planted last year, which grew with great vigour, were treated as the Figs, and the gross wood became grown as a Nut, and is setting well. The flower-buds are in clusters of sixes and sevens. We consider it important to have the roots healed and growing before the leaves fall.—M. TEMPLE.

**Mulching in Winter.**—It often happens that mulching in winter, applied even as late as January, answers an excellent purpose. More plants are injured or destroyed during the freezing and thawing of the last half of winter, connected with the bright sun, which is more frequent at that time, than during the earlier portion. On a moderate scale, and when additional fertilising is not required, we find evergreen branches to answer an excellent purpose, as we have had occasion to remark heretofore, especially when the rotting of green leaves may be feared from too dense or impervious a cover. But when such danger does not exist when mice are not feared, and a vigorous start to the plants is desired in spring, nothing is better than coarse stable manure with plenty of litter. The richer portions are washed out and carried down into the soil, and the straw remains on the surface to protect from sharp winds, freezing, thawing, and the effects of the sun's rays on the frozen plants.—"Albany Country Gentleman."

**Apricot Bloom.**—The blooms on both Hemskerk and Moorpark Apricot trees fully expanded for the first time this morning (March 3rd) in the bright warm sunshine. It would be interesting to learn from other directions the date on which the first blooms of the Apricot expanded this spring, as it would afford valuable proof of the divergences as regards the advancement of vegetation in various localities. Of course I allude only to trees on the open wall. My own are on a warm south aspect, and on a cottage with a projecting eave of some 18 in. in width.—A. D.

## GARDENING FOR THE WEEK.

## Roses.

**Pruning.**—Many who grow Roses for exhibition prune at different times. This effects a double object. We are all pruned at once early, and the weather was to be of such a character as during the present season, for instance, most kinds would immediately commence pushing the shoots required for bloom; and when, as so often occurs after an unusually mild winter, we experience keen spring frosts, the growth would be either completely cut off, or so far injured as to seriously interfere with the display of bloom; and if the pruning were altogether delayed until danger from the above cause was not likely to be incurred, the blooming of all would be so much later as to considerably shorten the flowering season; whereas by pruning a portion, say early in March, another portion a fortnight later, and the remainder at the beginning of April, the danger of the whole being injured is avoided, and there is the chance, should the weather not be such as to injure them, of getting a portion so much earlier, and under any circumstances a better succession will be afforded, and this succession will not only be confined to the first flowering of the plants, for as a matter of course amongst the Hybrid Perpetuals those that bloom the earliest are correspondingly enabled to push the second growth necessary to secure a second crop of flowers. Those who grow Roses for ordinary decorative purposes will find it to their advantage to follow this course. This more particularly applies to standards and half-standards; dwarf grafted plants, or such as are on their own roots; of these also a portion may be pruned where grown bush fashion, but where they are intended to be pegged down it would be well to defer their pruning for a week or ten days later, as where grown in this way from the position in which the shoots are trained horizontally or, as more usual, with their tips a little lower than the base, it causes the plants to break almost simultaneously over the whole length, which is the great advantage, taking all in all, that the system presents; yet if the growth made be not kept back until all danger from severe frost is over, their capability to flower satisfactorily will be endangered. It is the more necessary to consider this, as the shoots when thus pegged down are just placed at the dew point, that is, a few inches above the surface, where the cold is always the most severe. As will be understood, these remarks are intended to apply to non-exceptional parts of the country, in the extreme southern counties, or in the western coast. Rose pruning, as other operations, can be carried out without the danger here indicated; and in the damp inland districts further north it is always well to defer the pruning a little later, as, by dear-bought experience, I have been convinced it is better to wait a little longer for the flowers than to run the chance of having the first, which are invariably the best, blooms cut off; and it is well to bear in mind that in open winters the pruning should always be deferred later than after severe ones, although the growth which, from the commencement of February, they make when there is an absence of protracted frost having to be cut away weakens them, and often tempts the grower to prune before it is safe.

**Attention to which Roses require Pruning.**—This not only varies considerably in the case of different kinds, but also as regards the object the cultivator has in view. Those who grow for exhibition prune comparatively close, so as to concentrate the strength of the plants into a few shoots, which, from their limited number, are necessarily strong, and may be expected to bear a few large flowers. For ordinary purposes it is better to prune less severely, as numbers of flowers are generally more acceptable than a few exceptionally large ones. It is difficult to convey in writing the exact method advisable to follow, as even among individual varieties require to be somewhat differently treated to others; but it may be taken as a safe rule that the stronger the natural growth of the variety, and the more vigorous the state of the individual plant, the less pruning needed, for the obvious reason that a plant in this condition is calculated to support a greater number of shoots with a proportionately larger crop of bloom than one that is weaker, either by accident or the less vigorous habit of the sort. In all cases it is advisable to remove completely out from their base the whole of the weak, thin wood the produce of last or previous seasons, and which has not sufficient substance to push shoots strong enough to flower; for the presence of these uselessly taxes the energies of the plants, drawing support which is better concentrated in the stout, blooming wood. These weak growths also tend to crowd the plants, keeping out both sun and air. With Roses that are naturally weak growers it is necessary to prune to fewer eyes than in the case of the strong ones, otherwise, if left too full, the flow of sap directed to the formation and support of a vast number of shoots than are ever strong enough to bear flowers, to the manifest detriment of those which are. As I have before stated, to the Tea varieties must be pruned very cautiously, leaving their strong growths without further interference than being somewhat shortened; but with these, likewise, it is advisable to thin out all the weak shoots. With the weakest growers of the Teas also leave the strongest shoots a considerable length, but reduce the number proportionate to the natural strength of the variety, and the more or less vigorous condition the plant happens to be in.

## Orchids.

**Potting.**—The general potting should now be pushed on; by this I mean such plants as are best potted in the spring, but where a large and varied collection of these plants are grown during every month of the year some or other of the species will need this operation. In this matter a good deal of discrimination is required, as nothing can be so injurious to the current season's growth than the disturbance of their

roots consequent upon removal whilst growth is being made. Any mutilation of the roots, such as is unavoidable in re-potting, is far more adverse in its consequences upon Orchids than with any other plants. From the persistent manner in which their roots cling to any surface with which they come in contact, it requires little reflection to see that removal must necessarily effect a check such as is not consequent upon the potting of plants in general, neither do they possess the recuperative powers, after being thus disturbed, that most other plants do. Acting upon this, it will be obvious that no Orchid should ever be potted until it absolutely requires it; at the same time where there are any doubts of the soil in which they are grown having been reduced to a close, adhesive condition, there should be no hesitation in moving them to fresh. Even if it should be found that the material is got into this state when the growth of the plant is right in the midst of formation, there ought to be no delay in shifting it, for, though the moving may result in the current season's pseudo-bulbs not attaining more than half their wonted size, yet this had better occur than the roots remain in the unhealthy mass, where they will most probably perish as fast as they enter it. I mention this for the guidance of young hands in Orchid growing, for the reason that they often make mistakes in the condition of the soil, which may appear sufficiently fresh and fibrous on the surface when it has become by age wet and adhesive underneath. This not unfrequently occurs where plants have been repeatedly potted, and it is not necessary to state that this is not a good reason for the well-being of the plants, as also for their appearance, but it never should be resorted to if there are any doubts about the material lower down in the pots being in an unsatisfactory state. All plants of any genus or species that form pseudo-bulbs and produce flowers from the current season's growth at or near the time of its completion before going to rest, and that have now rested and are about to commence growth, should at once be potted if they require it. In the case of plants that rest after growing, before producing their flowers, such as the majority of Dendrobies and others of similar habit, it is not well to pot them if it can be avoided until after they have bloomed, as the unavoidable breakage of their roots is certain to limit the extent of their flowering. This is all the more likely to occur when the plants are in a stout, healthy condition, with an abundance of roots adhering firmly to the pots or baskets in which they are grown, and where the object in re-potting is more with an intention of giving them additional root-room than through the material in which they grow having got into an unsuitable state. With such Orchids, and there are many, that grow and flower almost simultaneously after having rested for a period, after the completion of the preceding year's growth, there is no choice but to pot when required, either before the growing and blooming commences, or after the flowering, when growth is in full progress. In the case of such plants as these I should prefer potting previous to the flower-buds beginning to push, for although, as I have already stated, it will more or less interfere with the flowering, yet it will be generally found more expedient to do this than to pot at the later period, when the plants are in the full bloom of their season, and the growth of the young of peat, which forms so important and considerable an element of the soil in which the majority of Orchids are grown, I recently pointed out the necessity for using that containing the greatest possible amount of fibre, for on this depends its capabilities to last in a condition suitable for the roots. For Dendrobies, Colognyes, Epidendrums, and Chysis, I have found the proportions best suited to consist of two parts peat to one of Sphagnum, and one of broken crocks and charcoal, with a little sand. In all cases for plants that are to be grown in pots or baskets suspended from the roof I should prefer charcoal, on account of its being so much lighter, as where a large number are hung up in this way, it is a matter of importance to reduce the weight as far as possible. For Cattleyas, Lælia, Odontoglossums, Oncidium, Miltonia, Trichopilia, and Masdevallias, three parts peat to two of Sphagnum and one of crocks and sand will answer. Anguloa, Brassavola, Brassia, and Lycaste, three parts peat to one of Sphagnum, with a good sprinkling of crocks and sand. Cypripediums, except the insigne section, succeed better with a little larger proportion of peat to the Sphagnum than plenty of crocks or charcoal. Strong growers Zygopetalum, of the Mackay and orbifolium section and Limnæodes I have found succeed better in good fibrous peat, with crocks and sand, without any Sphagnum intermixed. The strong-growing Phaius and Cypripediums of the insigne section appear to like loam better than peat.—T. B.

## Conservatories.

Pots containing three or four Tulips, bordered with Club Moss, and set off in the centre with such Ferns as *Pteris serrulata*, have a beautiful effect in conservatories, and the same arrangement may with advantage be carried out in the case of Hyacinths. Forced shrubs are now particularly attractive and should be mixed harmoniously with such plants as are not in flower; amongst them are Lilac white and purple, Weigela, Roses, Frumsee, Thorns white and scarlet, Spiræa, Daphnia, Acacia, &c. Chærisia, Cyclamen, Zonal Pelargonium, Chinese Primula, Epacris, Heath, and Fuchsia are also now in great beauty. Plants in general are making fresh growth, and consequently require more water. Prune and tie all that require such attention. Any that are in a backward condition in borders should be moved, and have others put in their places. In planting from pots, loosen the ball of soil and spread out the roots, for, although this may occasion a little check for a time, the plants thrive better afterwards. All hard-wooded plants requiring re-potting should be attended to at once, and the soil for a few days after closely covered with a conservatory. They should not be watered for some days after being potted, but the atmosphere should, if possible, be some-

what damp. Climbers of various sorts should be thinned and tied, taking care in thinning to provide for a free display of flowers rather than a gross production of wood.

**Retarding Plants for Late Blooming.**—The materials for keeping up an effective display in conservatories will now have become more plentiful than during winter, and one of the most important considerations is, to see that portions of such plants as will bear retarding without injury are at once placed under conditions to ensure their being made available later in the season. Where, indeed, anything like a continuous supply of blooming plants is required, it is quite necessary to have at command a house so placed that the sun will have little influence upon it, except for an hour or two morning and evening. A lean-to with a north aspect is best. Many imagine that such houses are only required by those who retard plants for purposes of exhibition; this is a mistake. By selecting a portion of the stock of *Camellias*, *Azaleas*, *Epicurises*, *Geraniums*, *Oenotheras*, *Cyclamens*—in fact, any of the numerous greenhouse plants that are used for conservatory decoration, the blooming season may be prolonged to almost double its usual length, especially if judgment be used in selecting varieties that are naturally late in flowering. *Camellias*—*candidissima*, fine white; *Beali*, red; *Lavinia Maggi*, striped. *Azal* as—*Brilliant* and *Juliana*, both red; *Extrani* and *oronata*, both bright rose; *Gleditsi* *formosa*, white striped. *Epicurises*—*Eclipse*, *grandiflora*, *rubra*, and *minuta splendens*. These and others, which the careful observer cannot fail to note, can be retarded without injury, so as to come in at a time when they will be found of great use. And it is not only during spring that such a house will be found of the greatest value; it will also be an excellent place in which to harden the stock of *Ghent Azaleas*, double-flowering *Plums*, *Lilacs*, *Spiræas*, &c., that have been forced, and which frequently, from want of a suitable place, are subjected to treatment ill calculated to render them of use the following season. Later in the season, too, it will suit *Camellias* well that have set their bloom, and which, from want of proper accommodation, are turned out-of-doors. Still further on in the season, late-flowering *Chrysanthemums* may be kept safely in such a house until the middle of January, at which time they will be found most useful.

**Renovating Old Camellias.**—Large *Camellias*, which have got leggy from want of judicious pruning when young or through overcropping, may be improved in the following manner:—Take, at once, a couple of healthy young plants in 6-in. pots of any approved kind, place these on the surface of the ball of the plant to be operated upon; then march the heads of each of the young plants as low down as they can be got on the opposite sides of the large plant. These will become firmly united during the summer, when they may be severed from their original stems, and, in the following season, before growth commences, the head of the stock may be cut away just above where the young plants have been inhaled, when they will commence to grow apices, and in a little time make handsome plants. Movable shading of this material should be got ready, as bright sunshine on a hot day makes short work of many things in flower. Pinch out the points of a portion of the stock of *Pelargoniums*. These will be useful in July after the early ones are over. Start another batch of *Achimenes*, *Gloxinias*, and *Tydasas* for summer decoration. See that *Lilies* breaking through the soil are not left where they have an insufficiency of light, otherwise they make weak growth, which no care afterwards will put right.

### Stoves.

Gradually increase atmospheric humidity and temperature in these structures, and apply water rather more liberally to the roots of the plants. Almost all stove plants will now require repotting or top-dressing, and insects, if any, must be destroyed. For should they be spared the next month they will reward such kindness by committing unlimited mischief. Plants of all kinds should, therefore, be thoroughly cleaned before they are repotted. No stove plant should be shifted into cold soil. Shift *Palms*, using for the purpose a compost consisting of fibrous peat two parts, turfy loam one part, and some sand and finely broken crocks, an open compost and plenty of water being requisite for such plants. Shake out plants of *Impatiens* and re-pot them in a mixture of loam, leaf-mould, well-decomposed manure, and some sifted sand. Five *Gardenias* a compost of loam and peat in equal proportions, mixed with sand; the same compost, with a little more loam mixed with it, will also suit *Brownias*. *Dalechampsias* should have leaf, loam, and peat in about equal proportions; *Stephanotis* fibrous loam, peat, and some well-decayed manure; *Sauzechias* and *Rondeletias* peat, loam, a little leaf-mould, and sand; and *Legerstromias* peat and loam. Indeed, most hard-wooded plants grow freely in good peat and loam, with some silver sand added, and but few of them will object to the addition of a little leaf-mould. Gross-growing and soft-wooded plants, however, such as *Muscas*, *Ornams*, *Eranthemums*, *Tonias*, *Fuyas*, *Pentas*, *caras*, *Gesneras*, *Lasinidras*, *Coccyphylans*, *Carcumas*, &c., are very fond of some thoroughly decayed manure mixed in the soil in which they are potted; leaf-mould, Mushroom manure, spent hot-bed manure, &c., may be so used.

### Ferns.

The general potting of these should have been done last month, but if the operation has been delayed until now it ought to be at once accomplished. If the plants have begun to grow they will be more liable to suffer from shifting than they otherwise would be, but with careful attention in the way of shading, maintaining an equable but gradually increasing temperature, and supplying a moderate amount of moisture both to root and top, little danger need be apprehended. Ferns whose

fronds spring directly from the soil require a richer compost than such sorts as *Davallia canariensis*, whose rhizomes grow above ground. To the former give a mixture of equal parts of good fibrous peat and loam, with the addition of some leaf-mould, plenty of silver sand, and some small chips of fine sandstone. If the plants be required, however, for furnishing purposes, a little more loam and a little less peat will induce a hardier growth, and one better adapted for house work than the luxuriant growth promoted by the first-named soil. Those with rhizomes above ground may be potted in fibrous peat and a little leaf-mould, pegging the rhizomes down on the soil. Some of the *Davallias*, *Polypodioms*, *Plymatodes*, *Pleopeltis* and others grow well on old stumps of Trees Ferns affixing themselves thereto like *Orchids*. If the stumps are in the vicinity of other Ferns, spores of different species are sure to vegetate in their crevices, more particularly those of *Adiantums*, *Gymnogrammas*, *Aspleniums*, and *Pterises*. Syringing Ferns is an operation requiring skill and care, for although some genera are partial to such treatment, others are particularly averse to it, more especially the *Adiantums*, *Gymnogrammas*, *Cheilanthes*, and other delicate and farinose kinds. Finny Ferns are best grown in glass cases, or under hand-lights or bell-glasses, or a division of the *Ferney* may be specially set apart for their culture. Most of the small delicate species thrive well on blocks of decaying wood, pieces of the Tree Fern stumps, or in pots; whilst for strong-growing kinds, like the *Todeas*, pot culture is the best and most convenient. For pot culture fibrous peat, chopped Sphagnum, and some fine sandstone chips make a good compost, and for *Todeas* the surface may be mulched with live Sphagnum. The smaller kinds of Ferns thrive well on little mounds composed of fibrous peat and sandstone chips, or on a block of wood embedded in a turfy peat from which they take their nourishment out of the wood. These ferns like a steady moist atmosphere, but too much artificial heat is detrimental to them; in fact, a greenhouse temperature is almost sufficient for the whole of them. In watering let the water fall lightly upon the fronds, but in addition to these slight sprinklings water must also be given to the roots, more especially during the growing season. Hanging-baskets should now be replenished with Ferns and *Selaginellas*, and *Wardian* cases should be examined and refilled if necessary.

### Lawns and Walks.

The present winter has unmistakably exposed any defects that exist in the drainage, and where these are apparent means should immediately be taken to remedy them; and if the work be at once completed, the soil thoroughly well rammed down, and the turf carefully laid, the Grass will commence to grow directly, and the disarrangement in a few weeks will scarcely be perceptible. A wet lawn should never be tolerated, as after wet weather, even in summer, it is frequently for days unfit to walk upon with any degree of comfort. In draining a lawn the work should be so done as to insure the water quickly percolating from the surface down to the pipes; this is best effected by filling over them broken bricks, rubble, clinkers, ballast, or any similar open material to within 8 in. or 10 in. of the top. The whole surface should then be well swept, in order to remove all worsted leaves, or broken twigs, and rolled so as to present a neat appearance. Those who take a pleasure in having their gardens orderly usually each spring surface their walks with a thin sprinkling of fine gravel, independent of the general gravelling that is from time to time required; to effect this in a satisfactory manner, it is not necessary to pick up the old material to the same depth as when a considerable quantity of new gravel is laid on, still the surface should be loosened about 1 in. or so after a shower with an ordinary iron rake; but if the weather be dry, there is no necessity to wait, as the required softening of the old gravel can be easily done with a watering-pot. In the choice of material for this surface-dressing, it is necessary to study the nature of the gravel obtainable in any particular locality. Where the soil is of a loamy, adhesive character, with little or no sand intermixed, the gravel should not be so fine, that is, a larger-meshed sieve ought to be employed in riddling it, for, although the very fine gravel looks well when smooth and set after being rolled in a moist state, yet, from its adhesive nature, directly it is wet it becomes sticky and disagreeable to the feet. No well-made gravel walk will ever become soft, no matter what amount of rain has fallen, except during a time of excessive frost, when, as a matter of course, even the best gravel walks become loosened. In parts of the country where gravel is of a sticky, soft nature, it is best to pass it through a riddle with 1-in. or 1-in. mesh, afterwards using a fine sieve to screen out all the earthy portion, retaining nothing but the small stones; if this be sprinkled on the top so as to just cover the surface, and well rolled in whilst damp, it will make a walk clean, smooth, and pleasant to tread upon even in the wettest weather.

### Flower Garden.

Spring flowers are now daily becoming so plentiful that herbaceous and shrubby borders are getting quite attractive; on lawns, too, are tufts of *Crocuses*, *Snowdrops*, *Dog's-tooth Violets*, and other favourite bulbous plants that are beginning up and up, and are their beauty, when once planted in such positions. Under the wide-spreading canopy of large deciduous trees a spring carpet of white, yellow, and blue, furnished by early-blooming bulbs, is most desirable and pleasing, and in such a situation they thrive where not a vestige of Grass will grow. Only the commoner kinds, however, should be used in that manner, for the finer ones, if so treated, are apt to degenerate; hence the necessity of a good position for them, where they can retain their foliage until the bulbs are properly matured, when the foliage may be cut over, and the surface of the ground covered with a mulch of other kinds of rooting plants. Lawns should be swept, rolled, and, if necessary, mowed. Where they

are covered with Moss it should be raked off, a top-dressing of finely-sifted soil applied, and some Grass and White Clover seeds sown at the same time. The top-dressing should be equally spread, raked smoothly and level, and then well rolled. Should the lawn be thinly covered with Grass, although free from Moss, a top-dressing of good soil, with some guano mixed with it, and also a sprinkling of Grass and Clover seed, will greatly renovate the turf. Before applying it, however, go over the surface with an iron-toothed rake, so that the old and new soils may be more readily unite; siccot, salt, or guano applied alone in rainy weather is also productive of excellent results. If the edges of lawns or Grass walks be well rolled before trimming them, that operation can be more neatly and accurately done. Turfing of lawns may still be performed, but the sooner one works in this line, now the better will the Grass stand in the summer's drought. In the absence of turf, seeds may be used, but in that case a long time elapses before a thick, close carpet can be formed, and continuous attention in the way of mowing is requisite. Alterations in the flower garden or pleasure grounds may still be proceeded with. The planting of deciduous trees cannot, however, be too speedily finished now for a season; evergreens may be transplanted later. Coniferous trees, as a rule, transplant very well in the spring time. In planting, preserve the roots as entire as possible, and do not bury them more deeply than is necessary; stake such as require support. Instead of roughly filling in the soil, it should be well and carefully worked in amongst the roots with the hand, and a good soaking of water at planting time has also an excellent effect in setting the soil about the roots.

**Bedding Plants.**—Hotbeds should now be put up for the propagation of these where hot-water heated structures are not available for that purpose. Such beds may either be raised above the ground or sunk, and in extensive places some of both kinds will be found serviceable. A little extra warmth may be communicated to ordinary frames by means of a lining of fermenting material applied to their sides; this additional heat will induce the plants to start into growth and to soon begin to yield material for cuttings. Propagation of *Verbenas*, *Heliotropes*, *Ageratums*, and other soft-wooded plants should now be commenced, and places heated slightly should be prepared for the reception of the young plants when they are rooted and boxed or potted off. Apply a brisk heat to *Ferdinandas*, *Abutilons*, *Wigandias*, and other strong-growing, sub-tropical plants that were starved in pots last summer for producing stock, and pinch out their tops so as to induce the formation of side shoots for propagating purposes. Seeds of various kinds of plants for summer gardening may now be sown, such as those of *Aecia lophantha*, *Cineraria acanthifolia* and *maritima*, *Acanthus latifolius*, *Centaureas*, *Cannas*, *Pyrethrums*, *Lobelias*, &c. *Perillas*, *Mari-golds*, *Stocks*, *Asters*, and similar plants are best left undisturbed until next month.

#### Kitchen Garden.

Make another sowing of Peas. Where suitable sticks are plentiful, tall kinds are the best to sow at this period of the year, as they bear longer than dwarf sorts, or such as are of medium height. Where tall varieties are grown, always give plenty of room; there should be not less than 5 ft. between the rows, as to crowd them is the reverse of any gain, for without sufficient air and light the pods never fill as they ought. Directly the earliest sowings are sown, a line of Spinach should be sown between the rows. This will be ready for use and the ground cleared before the Peas are fit to gather, and it will in no way interfere with their growth.

**Onions.**—The main crop should be sown as soon as the land is sufficiently dry, but on no account if it be so wet as to adhere to either the tools or the feet, as should the seed be sown when the soil is at all sticky, subsequent dry weather will be sure to bake it so hard as to prevent its working well through the ensuing season. In pointing in the surface-dressing of manure spread over the ground, do not let it be too deep, or the young plants will be too long in getting their roots into it. Many of the north country Onion growers put the greater portion of the manure they use on the surface, allowing it to remain until it is well sweetened by the action of the air, sowing the seeds in it, and covering the whole with 1 in. of soil from the alleys. With this, as with almost all other vegetables, the system of growing in rows should be recommended. It must be admitted that it is not a considerable saving in sowing than the broadcast plan, but it affords such great facilities for thinning the crops, for the use of the hoe in destroying weeds, and for keeping the surface stirred (by which the ground is aerated and made open for the descent of rains, and the

loss of moisture by evaporation in dry weather is prevented), that the first trouble is amply compensated for by the succeeding results. The use of soil should not be omitted, especially in old gardens where the land is at all light, for in these the ravages of the Onion grub are most felt; the soil not only acts as a powerful manure, but the soil retains the smell through the season in a way that is so objectionable to the fly as to have a considerable influence in preventing it depositing its eggs on a sowing where the land has been dressed with it. After the ground has been levelled, tread the whole quite solid. The lighter the land is naturally, the more solid it ought to be made. Then mark out the rows 1 ft. apart and 3 in. deep. After sowing, draw the soil over the seeds with the back of the rake. Again tread the ground thoroughly, and finish by rolling.

**Broad Beans.**—In dry districts where Broad Beans were sown about the beginning of the year they will be now above the ground, and a second sowing should be made; this crop also likes heavy soil. Sow more Radishes, raking in the seed, it not being necessary now to cover it with litter. See that the litter is removed altogether from the second sowings as soon as you, for after this time the frost is not likely to be sufficiently severe to injure them. Sow a little Mustard and Cress every fortnight in well-manured ground; to have this young and tender, it is necessary to sow often. Lettuce should also be sown on the richest piece of ground available—a little of the Cabbage variety (Tom Thumb) as well as Cos—the former will be sooner fit for use and precede the erect-growing kinds.

Rows for the latter should be 15 in. apart; the others will do a third less. In sowing, the best method is to drop the seeds, half-a-dozen together in patches as required to be grown; afterward thin them out to a single plant. If the weather be mild, a portion of those that have been wintered in frames should be planted out in sunny, sheltered position, but do not risk the whole, as I have known the weather after this time to be so severe as to seriously affect them, especially after a winter like the present, when every kind of vegetation has been kept so long so soft and growing. Take them up carefully with a trowel, so as to preserve the roots as far as possible from injury; give some water as soon as planted, and if the days be sunny or the nights cold, place a small flower-pot over each plant for a few days, but not pressed down so closely as to exclude the light.

#### Extracts from my Diary.

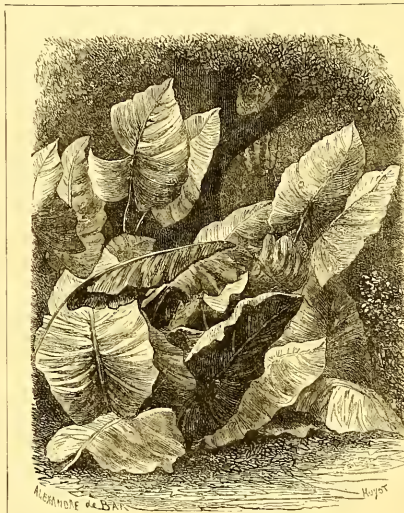
**March 11.**—Sowing the main crop of the following sorts of Onions, viz. Early White Naples, Improver White Spanish, Bedfordshire Champion, Danvers Yellow, and James's Keeping. Putting in cuttings of Tomatoes. Potting old smooth-leaved Cayenne Pine stools for suckers. Planting out Potatoes in frames previously brought forward in pots. Planting Selected White Spanish Onions for seed; also a few Beet and Early Nantes Cut com.

**March 12.**—Sowing Mustard and Cress; also Parsley and Early Frame Radish. Putting in cuttings of Alternantheras, Coleus, Mesembryanthemums, and Salvia. Potting off Melons, Heliotropes, Petunias, and Verbenas. Transplanting autumn-sown Onions and Red Cabbage plants. Lifting some large crowns of Victoria Rhubarb for making a new plantation. Renovating the linings round manure frames. Looking over the Strawberries in bloom. Removing all weak plants and cutting out all the weak flowers.

**March 13.**—Putting in cuttings of scented Verbenas, Pelargoniums, Gardenias, and Fuchsias. Potting off *Iresine* and *Ageratum*. Planting out Brown Cos Lettuce plants from the autumn-sown bed; also a few Cauliflower plants. Giving Cucumbers a little earthing. Looking over the Grapes in bottles, cutting out bad berries, and filling up the bottles where required.

**March 14.**—Sowing the following sorts of Peas, viz., William I., James's Prolific Marrow, G. F. Wilkes, Fortyfold, Carter's Commander-in-Chief, and Suttou's Giant Emerald Marrow. Potting off Alternantheras, Coleus, and Lobelias. Taking up Chamomile roots, dividing them and making a new plantation. Finished the pruning and nailing of Peach trees on open walls. Getting the wire guards put over the Peas and Broad Beans to protect them from jackdaws and sparrows.

**March 15.**—Sowing Mignonette in pots. Pricking off Celery in boxes and putting them back into warm frames, so as to keep it growing. Clearing out an old worn-out forced Asparagus bed, and put in another. Earthing up Potatoes in frames. Thinning out Carrots and Radishes in frames. Trimming out Pea sticks. Getting soil into manure frames ready for Melons. Getting netting and other covering over Apricot trees for protection.



*Caladium esculentum* after a Storm.

March 16.—Thinning Grapes, and tying down the shoots where required. Manuring and digging Rose borders. Earthing up Beans in pots. Cutting back and thinning out dwarf Laurel clumps. Tying in some of most forward shoots in early Peach house. Tying up Cos Lettuce, and covering up Endive to blanch. Manuring and digging the ground previously occupied by Brussels Sprouts. Covering up Sea-kale, and planting Potatoes. Fruit in use for dessert:—Pines, Grapes, Apples, and Peas. W. G. P.

Dorset.

### THE CULTIVATION OF ASPARAGUS WITH THE PLOUGH.

We take the following details concerning the cultivation of Asparagus with the plough from a pamphlet by M. Godefroy-Lebeuf, of Argenteuil. With the exception of the west, there is hardly a single locality throughout the length and breadth of France in which a large portion of the ground given up to market gardening is not devoted to the cultivation of this favourite esculent. It seems somewhat strange that the cultivation of Asparagus should make so little progress in the western districts of France, seeing that lands on the borders of the ocean are essentially favourable for the purpose. The sandy downs of those districts, which now produce nothing but Reeds, and here and there a scanty crop of small Potatoes, would, if devoted to the cultivation of Asparagus, yield a hundredfold of what they do under the present system. This apathy is all the more surprising, seeing that land is so cheap in these localities; besides which, it is easy to cultivate, manure, and above all, seaweed being plentiful. Other crops, too, yielding a good profit might be grown at the same time. The so-called green Asparagus has been gradually neglected, and has been replaced by the market or white Asparagus. The grower need have but little fear of not being able to get rid of his crop. As in the case of all good vegetables, he will find plenty of commission agents in all parts of the country who will buy his produce on the spot, and send it off to market. Last March whole cargoes of French Asparagus were selling in the London market before it made its appearance in the Paris Halls. M. Godefroy-Lebeuf does not hesitate to advise the Vineyard proprietors, who have felt the sharp mandibles of the Phylloxera, or the Beetroot growers, who are half ruined by taxes, to grow Asparagus. The method of growing Asparagus described here is not new. It was first devised by M. Parent some twelve years ago, since which time he has carried it on with thorough success. M. Parent has succeeded in growing Asparagus at a merely nominal cost. The following details of M. Parent's method of growing this vegetable will show that profitable crops may be obtained at a very small expenditure of time, money, and labour:—

**DESCRIPTION OF THE PLOUGH.**—The experience of the Asparagus growers at Argenteuil show that deep ploughing is not merely useless, but hurtful. The plough to be used for this purpose should not therefore enter the ground to a greater depth than about 3 in. The plough is a light one, and made entirely of iron. It will be readily understood that as such a plough has to work in the midst of plants with fleshy and far-spreading roots, it must necessarily be so constructed that it moves along with the greatest ease. These conditions have been completely fulfilled in the case of the Asparagus plough, or, as it perhaps ought to be called after its inventor, the Parent plough.

**PLANTING.**—We must begin by laying it down as a maxim that Asparagus must be grown in a firm soil. The ground must be ploughed to the depth of 8 in. Care must be taken to clear the land of roots and stones, alleys being provided for their convenient removal. This part of the work must be done during the autumn. In southern districts planting takes place immediately after ploughing. It has, however, been objected that as the Asparagus is, to a certain extent, a plant with tubercled roots, it ought to have a period of rest, and that the proper time for this rest being during the autumn, Asparagus planted at this time would be likely to suffer much more from damp than if it were planted during the spring. In the southern districts, however, M. Lebeuf maintains that autumnal planting is preferable. Everybody knows that the majority of Lilies, Amaryllises, and plants with bulbs, tubercles, or fleshy roots begin their yearly life in the autumn.

If they are dug up on the approach of winter, and the roots examined, it will be noticed that they are in a perfect state of development. If the Asparagus in the latitude of Argenteuil begins to grow a little later, it is because it does not meet with the climatic conditions necessary for its proper development; but if it is planted in the south, where the rays of the sun have more power, the young roots will begin to develop themselves a short time after they are planted. In speaking of the south of France, M. Lebeuf does not include the mountainous parts of that district under that head. Elevated plateaux ought to be classified according to their mean temperature and dampness. Autumn planting cannot be carried out with profit in districts which are too cold and moist. It is for the grower to determine under which category his land is to be placed, and to adopt one system of planting or the other, according to circumstances. In the central and northern districts a period between March and May should be chosen, according to the latitude, the mean temperature, and the condition of the ground. In any case, care must be taken not to plant immediately after severe rain, and never in heavy ground at any time. If the young plants are received at a time when the soil is too wet, there is no harm in keeping them in a cool, dry place, spreading them out so as to give them plenty of air, and avoid all chance of mouldiness. Under these conditions the young plants may remain out of the ground for a full month. With good soil, well-ordered cultivation, and a proper selection of plants, there is no difficulty in succeeding thoroughly in the cultivation of Asparagus by means of the plough. In the year 1874, after ten years' experience, the commission of the Société d'Horticulture appointed to report on the matter, acknowledged that the Parent system was a great success, although the ground upon which M. Parent's crops were grown was not of the most favourable nature. The ground having once been ploughed, must not be manured during the first two years. It must be carefully cleared of all weeds, large stones, &c., and divided into squares, each square containing twelve rows. The rows should be made at a distance of about 4 ft. apart, measuring from the middle of one row to the middle of another. Each square should be separated from its neighbour by a pathway at least 10 ft. wide, which will serve as a passage for manure as well as for the gathered crops. When no longer necessary, this pathway may be sown with some fast-growing crops such as Oats or Rye. The ends of each row are marked with a stake. At the time of planting, an operation which ought to be performed on a fine day, a trench is to be made from one stake to the other. The trench, once made to the proper depth, according to the quality of the ground, a labourer makes with a hoe a number of holes about 6 in. deep in the middle of each trench. In each hole he places an Asparagus plant, taking care to spread the roots out quite flat. Growers have given up the idea of making a little mound for the plant to rest upon, as they found that it was apt to become broken up by the frost, and to fall during drought, so as to expose the roots of the plant. The roots of the plant must be covered over with light earth to the depth of about 2 in. This completes the work of the first autumn in the south, or of the first spring in the north. During the course of the summer the beds must be hoed, and if the season is very dry, the young plants may be earthed up lightly. This hoeing ought to be repeated frequently, taking care to clear the ground of weeds, and stirring up the soil thoroughly, so as to destroy all eggs of insects. For the latter purpose it will be as well to hoe the whole surface of the ground every year during the month of June, this being the time that the cockchafer deposit their eggs, which only need to be exposed to the light and air to dry up and perish. The first two years hand-hoeing must be resorted to, for the harrow would disturb the young plants too much, but as soon as the Asparagus is sufficiently strong to bear the operation the harrow should be used, care being taken to harness the horse to the side. Let us suppose that the Asparagus has been planted for nearly two years, and that the young shoots have now gained sufficient strength to resist the attacks of all insects, with the exception of the cockchafer grub. We do not recommend manuring before the third year, when the land is moderately rich. The manure is deposited by the cart in rows of little heaps, which are afterwards distributed evenly all over the beds, as in manuring corn-fields. The report drawn up by M. Victor Bart

tells us that one of the members of the commission objected to this method of manuring, and recommended that the manure should be deposited round the base of the plant itself. M. Lebeuf does not understand the wisdom of this proceeding, for the member of the commission who made the objection, and the other members who sided with him, ought to know that in every Asparagus bed the roots of the plants extend in all directions; and that whenever manuring proves useless, it is because the manure is placed on the top of the stool, which becomes gradually stripped, and, especially in old Asparagus beds, ceases to develop any fresh buds and new roots wherewith to nourish them, instead of towards the extremity of their tubercles and ramifications.

The question of manure is a very important one. M. Parent advises the Asparagus grower to use sheep's manure, but this manure is very scarce, not only in France, but in most parts of Europe. It is to be wished that the Russians, instead of defiling the Black Sea and Sea of Azoff by throwing into them the enormous accumulations of sheep manure, many feet in height, which are constantly being formed in the Crimea, and at Taganrog, would send this valuable Asparagus-growing material to this side of Europe. We should, however, only recommend sheep manure to be used where the land is poor, and even then in moderate proportions. Fish manure and road scrapings form excellent fertilizing agents for Asparagus; it is, in fact, the manure that is used at Argenteuil. For light lauds cow or horse manure would grow excellent Asparagus. If we manure the second year, the material must be lightly ploughed into the ground at the end of autumn. The plough must be passed lightly over the whole surface of the plantation, always taking care to harness the horse in such a manner that the heads of Asparagus shall not be trampled down.

**EARTHING UP.**—The operation of earthing up, which consists in covering the stools about three weeks before gathering the crop with a certain quantity of soil, varying in amount according to the age of the plantation, has for its object the blanching of the heads of the Asparagus, without which their market value would be depreciated. Let us suppose that the Asparagus has reached its third year of growth. Up to this time we have done little more than keep the beds neat and clean, and lightly earth up the first year's heads, if the weather be very dry, or, at any rate, earth them up a little on the approach of winter, in order to avoid the destruction of the plants by frost. The approach of the first year for gathering renders earthing up a necessary step. The operation is best performed with the plough. The horse is harnessed in such a way that he cannot trample on the stools. The share of the plough the first time takes a portion off the top of the ridge, which is deposited on the stools. The second time a fresh portion of earth is taken off and turned over on to the stools, so as to form a heap of mould 8 in. or 10 in. in height. The earth is taken from the left side of the ridge the first time, and from the right the second.

#### Gathering.—Interlinear Cultivation.

The operation of earthing up having been completed, no carts need enter the plantation until gathering time comes. The pathways may therefore be sown, taking care only to leave just room enough for a man to pass. The ridges, too, may be utilised, only one being necessary for gathering two lines; the other may be used for growing vegetables of different kinds, such as Potatoes, dwarf Peas, Haricot Beans, Strawberries, &c. During the years which precede the gathering, the intervals which separate the rows of Asparagus, which may be utilised for pathways, are utterly useless as long as no gathering is going on. The Asparagus is cut by means of a knife or chisel of a particular form made expressly for the purpose. When only small crops are to be gathered, it is not necessary to use this special appliance; but when the vegetable is grown on a large scale, where neat cutting and expedition are necessary, it is of great advantage. It consists of a gouge, flattened at the top, the lower edge being toothed like a saw. M. Parent, who is the inventor, soon saw that the gouge in use at Argenteuil, which is saw-toothed at one side, split the Asparagus too much, making a jagged cut. He consequently tried a gouge with a plain edge, but it slipped on the stalk and

did not cut it cleanly. M. Parent perfected the instrument by putting teeth on one edge, as has already been described. The Parent Asparagus cutter divides the stalk at  $1\frac{1}{2}$  in. or so from the top of the stump, the pressure being exerted from the exterior of the clump to the interior. This operation must be performed with the greatest care. In all establishments where Asparagus is grown on a large scale, movable sheds are constructed, so as to afford the Asparagus gatherers shelter from the weather. The cutting takes several hours, and the Asparagus, if not rapidly protected from the effects of the open air, will speedily become withered and unfit for market. M. Parent has done away with sticks for tying up the Asparagus stalks, so as to prevent them from being broken by the wind. He has effected this saving by simply cutting the extremities of the stalks. This operation is performed three weeks after gathering by means of a "sécateur." The cut should be made above the twentieth branch for the male plants, and above the twenty-fifth for female plants; but this must be regulated according to the general strength of the plants. The female plants are generally less vigorous than the male; but, as I have just said, it all depends on the health of the plantation, taking care, however, never to cut below the twentieth branch in any case. Besides the saving effected by doing away with training sticks, this kind of pruning strengthens the plant generally. If the heads are cut back too much, the stalks will be developed at the expense of the next crop.

**UNEARTHING.**—In the autumn following the first harvest the operation of unearthing must be performed. It is, of course, the converse of that of earthing up already described. The labourer, passing along the beds the first time, takes off the top layer of the bed, throwing it aside. Passing along a second time, he takes away the exact quantity necessary to bare the stool. In winter, in fact,  $1\frac{1}{2}$  in. or 2 in. of earth is sufficient to protect the stump without preventing it being warmed beneficially by the early rays of the spring sun. As the Asparagus has been cut at  $1\frac{1}{2}$  in. or 2 in. from the base of the stool, it follows that the share of the plough will slide over these stumps without disturbing them.

In cultivating Asparagus by the plough, we plant nearly on a level with the soil. It will be easily seen that on account of the property possessed by the Asparagus roots of rising higher every year, the beds will soon present an aspect which will be directly contrary of that which they showed at the time they were made, that is to say, the trenches will become mounds, and *vice versa*. The Asparagus will thus be growing on the top of the mound, and this mound will gradually become higher as the plantation becomes older. The space, too, between the mounds will become deeper as more soil is taken out of it.

#### The Varieties to Choose.

In the case of shallow, cold, and badly-exposed soils, the late variety ought to be used. This variety grows but slowly, which renders it specially fit for cultivation in soils of no great depth. By choosing an unfavourable aspect we may cut late, and the crop will last a long time. In deep, warm, well-exposed districts, we must use the early variety. In southern districts we should, by preference, choose this kind. The great thing is to send Asparagus to market as soon as possible; the late kind, therefore, in spite of its other good qualities, is clearly unfitted for this purpose.

The grower will easily understand, from what has gone before, how economical this method of culture must necessarily be. We shall soon find that we save time in all the following operations. First of all in the tilling of the soil, next in planting, again in earthing up, which may be done at the rate of  $1\frac{1}{2}$  acre per diem, and in unearthing, which may be carried on at the same rate. In gathering, making into bundles, and in doing away with sticks for tying up the shoots, we economise both time and money. Again, by being able to cultivate the alleys and the beds themselves, we may almost pay the rent of the land. We do not mean to say that this system of Asparagus growing is perfect, but we must allow that it is a very important step in advance. We do not, it is true, obtain such excellent results as if we pursued the old-fashioned plan adopted at Argenteuil, but the crops are, nevertheless, good and profitable.

**THE FIG TREE AS AN OPEN-AIR STANDARD.**

COL. TREVOR CLARKE read a paper on this subject at South Kensington last Wednesday. He stated that, although it was known that the Fig was cultivated successfully in this way on the southern coast, and in some of the maritime districts of the north, yet its culture as a standard in the midland districts had been and was still to many somewhat doubtful. He had for some time past been making experiments in this direction in his own garden, the locality of which is, as near as possible, in the centre of England, and, from the results which he had obtained, he thought that the culture of the Fig near London as a standard was well worth consideration. The White Marseilles was reported to succeed best, but the Brown Turkey had also done fairly well. In favourable seasons standard trees had ripened their fruit better than those on walls, whilst in unfavourable seasons they had been neither better nor worse. Standard trees had the full benefit of the sun and wind on all sides, the latter playing not the least important part in ripening the wood, whilst only one side of trees on the wall were subjected to their influence. As regards pruning, in whatever way the Fig is grown, if the terminal shoots be allowed to grow untouched, the weight of the leaves soon brings them into an horizontal or sometimes even a drooping position, thus rendering the wood more fruitful; therefore it was best to keep the wood thin and uniform. Mr. Clarke's garden, in which these experiments have been carried on, is somewhat sheltered by a boundary wall, but has otherwise no climatal advantages. The soil is a strong red loam, sometimes clay, and in this good results have been obtained, the success being chiefly attributed to the steady growth of the trees and thorough maturation of their wood. The greatest drawback to the White Marseilles variety of Fig is that in a wet season it is said to be very liable to drop its fruit.

C. S.

**A RAT GUARD.**

To keep rats away from anything that is hung up the following simple method may be used: Procure the bottoms of some old fruit



cans by melting the solder which holds them upon a hot stove. Bore holes in the centre of these discs, and string a few of them upon the cord, wire, or rope upon which the articles are hung. When a rat or mouse attempts to pass upon the rope by climbing over the tin discs, they turn and throw the animal upon the floor. This plan, shown in the illustration, will be found very effective.—“American Agriculturist.” [Pasteboard or thin wooden discs are just as effective. The great thing is that they should hang quite loose, so as to afford no foothold to the rat.]

**TAR-PAVING v. WEEDS ON WALKS.**

The subject of weeds on walks, and the best methods of eradicating them, has been brought forward on many occasions, but no really good remedy has yet been suggested, except the old-fashioned one of hand picking. No one can, of course, deny that salt and strong acids, such as nitric or sulphuric acid, will kill weeds, but these cannot be generally used in consequence of the walks being bordered by Box, Grass, or other live edgings, near which the greater portion of the weeds grow; moreover, the acids, if used sufficiently strong to be thoroughly efficacious, are very destructive to watering-pots and the clothes of the operator. Indeed, so far as my experience has gone, I may say that acids and salt have neither been satisfactory in regard to cost nor effect. I am of opinion that if walks and roads were only formed where they were really necessary, and of suitable width, the traffic and a moderate expenditure would be sufficient to keep them free from weeds. Walks through woods

and plantations with trees overhanging them will, as a matter of course, always be troublesome in consequence of damp, but frequent sweepings and rollings would keep them in fairly good condition. Tar-paving is an effectual remedy for weeds of all kinds; but it is often badly made, and thought by many to be unsightly. If, however, crushed spar were used in the first instance, or if the walks were occasionally sprinkled with finely broken cockle shells, they would have an agreeable appearance. Walks of this description dry rapidly after rain, are perfectly free from mud and dirt, and weeds are never seen upon them. Before laying down tar-paving the foundation must be of the most solid description, and the drainage perfect; battens or ornamental tiles should be fixed at the sides of the walks, an operation which should be done very neatly and at the proper level, allowing for 3 in. in thickness of tar-paving. For all purposes two kinds of paving are sufficient; one coarse the other fine. Two in. of the former should be spread evenly over the walk, and thoroughly rolled. The ordinary garden roller is not so suitable for this purpose as a heavy stone roller. The success of the work very much depends upon its solidity. When the first layer has been sufficiently rolled, the fine layer must be laid on evenly to a depth of 1 in., care being taken to level this properly, or the walks will present a wavy appearance, and the surface-water will not run off rapidly. I cannot too strongly impress upon those about to make tar paths the necessity of heavy rolling—solidity preventing the absorption of moisture, which destroys the tar and is a frequent cause of failure. It must also be borne in mind that tar-paving, to be really good and durable, must be composed of clean stones—i.e., stones free from dirt—burnt and mixed while hot with gas tar, which should also be heated. If crushed spar be used it should be sprinkled uniformly over the surface of the walk and well rolled while the paving is in a soft state; on the contrary, if cockle shells or similar material be employed, the surface, after being well rolled, should be allowed to harden for a few days, when the paths must be painted over with boiling tar and covered directly with finely-crushed shells or the dust which has been sifted out of the burnt stones. The roller may then be passed over the surface a few times and the work is done. Walks made as just described are most suitable for the kitchen garden, and may in many instances be extended to the pleasure grounds. The odour of the tar passes off in a few days, and if the paving be properly made, it is unaffected by solar heat, and will bear any reasonable traffic, with even a horse and cart. The maintenance of such walks and roads consists in painting the surface periodically with tar, say once in three, four, or five years, and putting on shells, as in the first instance. The cost of this is very trifling. I am confident that, properly made, tar paths cannot fail to give satisfaction, and, although at first they may be somewhat more expensive than ordinary gravel walks, I will venture to state that if their durability, cleanliness, elasticity, and, above all, their entire freedom from weeds be taken into consideration, the balance will be greatly in their favour.

CHARLES DENNIS.

Southwark Park.

**Soldier Gardeners.**—General Sherman, according to the “New York Tribune,” lately received from Major Brisbane, Montana, reports of soldier gardeners for the year just ended. They state that the troops have been for two years constantly in the field during all the summer or growing months, yet both seasons they have had excellent gardens. All the vegetables used are of the best quality. So far as living is considered, Fort Ellis is one of the best stations for cavalry in the country, and the cheapest to supply. There have been no desertions for a long time, and the commander attributes this in a large measure to the manner in which the soldiers are fed and cared for. The reports above alluded to give the amount of Potatoes, Onions, Turnips, Carrots, Beets, Parsnips, Salsify, and Cabbages, raised on 26½ acres by companies F, G, H, and L of the 2nd, and company G of the 7th Cavalry. The commander says the value of the several articles, if bought there, would be about as follows:—

Potatoes .....	3865	dols.	Beets .....	315	dols.
Onions .....	2352	“	Parsnips .....	225	“
Turnips .....	785	“	Salsify .....	9	“
Carrots .....	206	“	Cabbages .....	1250	“

9007 dols.

## SOCIETIES AND EXHIBITIONS.

## ROYAL HORTICULTURAL SOCIETY.

MARCH 5.

THIS meeting took place on this occasion in the conservatory, which is itself just now gay with Rhododendrons, forced bulbs, and other flowering plants.

**First-class Certificates.**—These were awarded as follows:—

**Azalea William Carmichael** (Williams).—A hybrid, the result of a cross between *A. amœna* and a large-flowered kind. It flowers freely whilst in a very small state, and its blossoms, which are of a rosy-purple colour, are larger than those of *A. amœna*.

**Amaryllis Mrs. Rawson** (Williams).—A strong-growing kind, bearing large flowers with petals of a bright maroon-crimson conspicuously edged with white.

**Primrose Ootoroon** (Dean).—A dwarf-growing, Auricula-flowered kind, bearing a profusion of dark velvety crimson blossoms.

**Primrose Ealing Crimson** (Dean).—A kind with purple or magenta-coloured blossoms of unusual brightness.

**Primrose Scott Wilson** (G. F. Wilson).—A new and distinct kind, bearing bluish-purple flowers, and one likely, as regards colour, to be the forerunner of an entirely new race of Primroses.

A botanical commendation was awarded to Messrs. Veitch & Sons for *Epidendrum Wallisi*, a kind bearing unique little flowers, which have bright yellow sepals and petals, and a whitish purple striped lip; altogether a pleasing variety, and one well worth a place in good collections of Orchids.

Medals were awarded to Sir Trevor Lawrence, for a group of Orchids; to Messrs. Veitch & Sons, for a collection of Amaryllises; to Mr. John Wills, Mr. B. S. Williams, and Messrs. Osborn & Sons, for collections of plants; and to Mr. Ford, gardener to E. Hubbard, Esq., for a collection of Apples and Pears.

**Orchids.**—These were well shown by Sir Trevor Lawrence, Mr. B. S. Williams, and Mr. John Wills. In the collection from the first exhibitor was probably the finest plant of *Dendrobium Wardianum* that has ever been exhibited. It was growing on a flat piece of wood, and was furnished with nearly twenty stout pseudo-bulbs, eight of which were in flower, and numerous strong young growths were starting from the base, the flowering-bulbs representing complete wreaths of richly-coloured blossoms, of which the plant bore no fewer than 130. The plant was fastened to a naked stem of one of the *Araucarias* growing in a tub in the conservatory, where it could be seen to the best advantage. Above it was an exceedingly fine plant of *D. luteiflorum*, and the soil in the tub was hidden by well-flowered plants of *Odontoglossum Alexandræ*, *O. Rossi majus*, Ferns, &c., the whole effect being greatly enhanced by a central plant of *Sophranitis grandiflora* growing on a round stick of wood, and bearing sixteen brilliant scarlet, waxy blossoms. The contrast of colour produced by this group was the admiration of everyone present, and the Floral Committee awarded to the exhibitor the highest medal in their power. In Mr. Williams' group were well-flowered plants of *Dendrobium glumaceum*, *Cœlogyne cristata*, *Odontoglossum triumphans*, and the beautifully-scented *Pilumna fragrans*, from Columbia. A pair of well-flowered plants of *Odontoglossum cirrhosum* were shown by Mr. H. G. Elliot, Clapton. Each bore three or four branching spikes of flowers, which, though rather small, were beautifully spotted and perfumed. A cultural commendation was awarded them.

**Amaryllises.**—Good collections of these were exhibited by Messrs. Veitch & Sons, of Chelsea, and Mr. B. S. Williams, of Holloway. In the first group the best kinds were *Chelsoni*, a large, well-shaped flower of a dark crimson colour. *Fair Maid of Perth*, a free-flowering kind with medium-sized white blossoms, the upper petals of which are effectively striped with purple. An unnamed seedling was the best scarlet kind in that collection. A very effectively striped variety was one named *Wallenstein*. Mr. Williams' group contained a scarlet-flowered kind named *Prince Arthur*, and one named *Aurora* bore flowers of exquisite shape, and of a rich velvety maroon-crimson colour. Mr. Little, Uxbridge, also sent several Amaryllises of a meritorious character. In competition for prizes, offered by an amateur deeply interested in the improvement of the Amaryllis, for the best dark and light seedlings, Mr. Williams was awarded the first prize in both cases. The dark kinds consisted of a bright maroon-crimson named *Prince Teck*, and a dark scarlet kind named *Fairster*. The light varieties consisted of *Mrs. Rawson* and *Dr. Masters*, two very distinct kinds well worth extensive culture.

**Cyclamens.**—These were not nearly so numerous as on the last occasion, only one group being shown, and that by Mr. H. Little, Wellington Place, Uxbridge. The plants throughout were well-flowered, and the colours exquisite, varying from the purest white to the deepest magenta and purple.

**Cut Flowers.**—Colonel Trevor Clarke sent cut blooms of an Amaryllis raised in 1821, and when contrasted with seedlings of the same class of the present day, it was found that little or no improvement had been made since that date. A good collection of cut blooms of *Camellias* was shown by Messrs. W. Paul & Sons, including boxfuls of the white *fimbriata*, the rosy-scarlet *imbricata*, the bright single-flowered *corallina*, and the striped *Adamo*. Mr. Charles Turner, Slough, sent cut flowers of an attractive new Tree Carnation named *Alegitiere*, which will, on account

of its bright scarlet, well-formed blossoms, prove to be a valuable kind for market and general decorative purposes. The largest flowers of *Aponogeton distachyon* gathered from the open air which we have yet seen were shown by Mr. Parker, Tooting. Mr. G. F. Wilson, Weybridge, sent excellent flowers of *Rhododendron præcox superbum*, cut from plants in the open border. Messrs. G. Paul & Son furnished examples of the green-flowered Rose (*Rosa uniflora*). Mr. B. Hook, Reading, showed cut blooms of *Helleborus* and cut sprays of *Lonicera fragrantissima*, bearing white, waxy flowers, were sent from the Society's gardens at Chiswick.

**Miscellaneous Plants.**—An effective group of plants came from Mr. Wills, Onslow Crescent, South Kensington. It consisted of *Odontoglossum*, *Phalænopsis*, *Indian Azaleas*, and *Dendrobes*, intermixed with Mosses, Ferns, &c., and overlung with Palms, Pandanads, and *Dracænas*. Messrs. Veitch & Sons contributed a group of plants, consisting of *Rhododendron Early Gem*, surrounded by well-flowered plants of the beautiful white Japanese *Spiræa Thunbergi*, which is so easily grown, and so effective for conservatory decoration; also a pretty little Australian Fern, named *Doodia aspera multifida*. Mr. Parker also showed a pretty little Fern, named *Asplenium resectum*. Mr. B. S. Williams sent flowering plants of new hybrid varieties of *Indian Azaleas*, the results of crossing *A. amœna* with the large-flowered kinds, which, on account of their flowering whilst in a very small state, as well as being easily forced, they are likely to become popular; also a panful of plants of *Anemone fulgens*, *Primula denticulata*, and *Triteleia uniflora*. Mr. Aldous, South Kensington, contributed a neat group of plants, consisting of *Lily of the Valley*, forced bulbs, *Azaleas*, *Palms*, and *Ferns*. From the Society's gardens at Chiswick came flowering plants of *Imantophyllum miniatum* and *L. superbum*, the latter being, when seen side by side with the old variety, greatly superior to it in every respect. Messrs. Ivery & Son sent a seedling *Kennedy* named *K. Iveryana*, bearing a profusion of pretty blue, Pea-shaped flowers. For the decoration of the conservatory this is a first-class plant, of easy culture, and one which may be grown successfully either in pots or planted out; for furnishing flowers for cutting it will be found invaluable. A well-grown collection of *Palms*, *Yuccas*, *Crotons*, *Aralias*, and *Ferns* came from Messrs. Osborn & Sons, Fulham. Mr. W. Paul again exhibited plants of *Camellia Ninfa Egeria*, a white-flowered kind, remarkable for its compact habit of growth, deep glossy green foliage, and free flowering qualities.

**Primroses.**—Mr. R. Dean sent several pots of Primroses of a meritorious description, as did also Mr. Harrison Weir, Staplehurst. Colonel Trevor Clarke showed a neat little plant of *Ornithogalum narbonneense*, well furnished with stout trusses of some fifteen or sixteen white blossoms and buds.

**Fruit and Vegetables.**—A fine collection of Apples and Pears came from Mr. Ford, gardener to W. E. Hubbard, Esq., Leonard's Lee, Horsham. It consisted of twenty-one dishes of Apples and four of Pears, all of which were plump and sound, and excellent as regards colour and quality. Among the best Apples were *Winter Quoining*, *Court Pendu Plat*, *Alfriston Yellow*, *Newtown Pippin*, and *Cellini*. The Pears consisted of *Easter Beurré*, *Beurré Rance*, *Beurré Berckmans*, and *Uvedale's St. Germain*. A good dish of *Bedfordshire Foundling* and several other kinds of Apples also came from Mr. Lewis A. Kellick, Maidstone. Excellent bunches of *Black Alicante Grapes* were shown by Mr. Atkins, gardener to Colonel Loyd-Lindsay, and Mr. Mowbray, gardener to the Earl of Leven. Mr. Ford sent a good collection of Potatoes, including clean examples of *Carters' Main Crop*, *Bresée's Prolific*, *Veitch's Improved Ashleaf*, and *Myatt's Prolific*. Mr. Wilson showed fruit of *Theobroma Cacao*, from which the *Cocoa* of commerce is produced.

**Scottish Horticultural Association.**—The annual meeting of this Association was held at 5, St. Andrew Square, Edinburgh, on Tuesday last, Mr. Dunn, Dalkeith Gardens, in the chair. There was a large attendance of members. Mr. John Methven, the secretary, read the report, which showed that since the institution of the society, on March 20, 1877, twelve meetings had been held, with an attendance of between eighty and one hundred at each. The members at present on the roll of the Association were stated to be 241. The treasurer's report, submitted by Mr. Laird, showed that the total income had been £25 5s., the expenditure £14 18s. 11d., and the balance in hand at the disposal of the society, £10 6s. 1d. After the re-election of office-bearers, the constitution and bye-laws of the Association were submitted *seriatim*, and, after some discussion, approved of. The chairman proposed that Sir William Gibson-Craig, Bart., of Riccarton, should be elected hon. president for the ensuing year. It was announced that the first prize for a flower garden plan had been gained by Mr. William K. McLeod, Dalkeith Gardens; second, William Martin, Linton Park; third, William Garrett, Linton Park; and fourth, George McKinlay, Dalkeith. Sixteen plans were sent in for competition, all of them being of considerable merit. The judges were Messrs. Gorrie, Trinity; McNab, Botanic Gardens; Thomson, Drumlanrig; and Webster, Gordon Castle. It was intimated that Mr. Downie had again placed £5 at the disposal of the Association, to be applied as they thought proper. Messrs. Downie & Laird, Royal Coates Winter Gardens, exhibited a truss of a new seedling Himalayan *Rhododendron*, which has been named *Princess Louise*. Its large flower-truss is dome-shaped, of large size, and leathery texture. The colour is cherry-rose, the stamens black, and the anthers white, producing a novel effect. The plant from which the truss was taken has over fifty flower-heads on it fully expanded.

## KEW GARDENS.

We learn with regret that Sir Joseph Hooker's brother-in-law and some of his friends are endeavouring to collect the signatures of scientific men, with a view to prevent the opening of the Royal Gardens at Kew to the public in the morning instead of in the afternoon, as hitherto. Notwithstanding this, however, we think we can assure Sir Joseph Hooker and any of his "scientific" friends weak enough to give their signatures for such a purpose, that they will not succeed. The following is the memorial, for which signatures are requested:—

*To the Right Honourable the First Commissioner of Her Majesty's Works and Public Buildings.*

Sir,—We, the undersigned professors, teachers, and students, cultivators of natural science, and examiners for the public services, beg respectfully to lay before you our view of the *urgent need there is of keeping the Royal Gardens at Kew closed, as hitherto, to the general public before 1 p.m.*

We are led to believe that amongst the most important objects which the Government has in view in maintaining the Royal Botanic Gardens of Kew as a scientific institution is the providing for the wants of teachers and students, and especially medical, by giving them such indispensable means of instruction in pure and applied botany, as is afforded by classified collections of living plants and by museums exhibiting their structure, uses, &c. In support of our belief, we beg to draw your attention to the following extract from the Recommendations of the Committee appointed by Her Majesty's Treasury, in 1840, to inquire into the management of the Royal Botanic Gardens of Kew as then conducted, which recommendations we assume to have been the basis upon which the establishment was placed on its present footing, and has ever since been supported by large grants of public money.

[Extract from the report upon the present condition of the Botanical Gardens at Kew, with recommendations for its future administration, 1840, p. 4.]

"If the Botanical Garden of Kew is relinquished by the Lord Steward, it should either be at once taken for public purposes, gradually made worthy of the country, and converted into a principal means of promoting national science, or it should be abandoned. It is little better than a waste of money to maintain it in its present state, if it fulfil no intelligible purpose, except that of sheltering a large quantity of rare and valuable plants.

"The importance of public botanical gardens has for centuries been recognised by the governments of civil states, and at this time there is no European nation without such an establishment, except England. The most wealthy and most civilised kingdom in Europe offers the only European example of the want of one of the first proofs of wealth and civilisation. France, Prussia, Austria, Bavaria, Russia, Hanover, Holland, not to mention smaller Governments, have all botanical gardens, liberally maintained with public funds; and, what is more curious, Dublin and Edinburgh have similar establishments to which grants of public money have been liberally furnished; but London has nothing, except a small garden at Chelsea, maintained by the funds of a private corporation. It has usually happened that botanical gardens have been established to meet the wants of universities; and so long as London was not the seat of a university, the necessity of establishing a public botanical garden was less pressing than it is at present. Now that a great number of students are annually collected in London for the purpose of study, it has become indispensable that such means of instruction as a botanical garden affords should be provided. It appears, from returns obtained from the Society of Apothecaries, that annually, on an average of the last three years, as many as 433 medical students have been registered as attending lectures on botany in London; they are compelled to attend these lectures, not only by the Apothecaries' Society and the College of Surgeons, but by the regulations of the Army and Navy; and yet this large number of young men studying the most important of professions is practically deprived of the advantages of referring to a botanical garden, without which it is impossible that their studies can be prosecuted efficiently. It is true that there is a botanical garden at Chelsea, belonging to the Apothecaries' Society; but it is not to be expected that the funds of such a corporation, however liberally disposed it may be, should suffice for the maintenance of such a botanical garden as the wants of students render necessary."

To carry out these suggestions has ever been the aim both of the late and present director. Their efforts have been continually directed for the last forty years to adapting the Gardens, on the one hand, to meet the requirements of the public; on the other, those of scientific men. We would invite attention to the excellent museums, unique in their scientific character and importance; to the houses especially devoted to economic plants; and the large and well-ordered herbarious department, the arboretum and fruticetum, as well as the garden of medical plants. These are visited and studied by scientific men, not only from London, but from all parts of the country, and by foreigners, to whom it is of the utmost consequence

that they should be able to pursue their studies uninterrupted by ordinary pleasure-seeking visitors.

We venture, moreover, to point out that if the general public be admitted at an earlier hour than at present, the means now afforded by the unrivalled collections at Kew, of meeting the wants of teachers, &c., which they supply to them, will be rendered *practically nugatory*; for neither in the open ground, nor in the museums and plant houses can instruction be given when these are thronged by visitors of all classes from a great metropolis. On the other hand, THE TEACHER AND HIS PUPILS WILL IMPEDE THE PASSAGE OF THE PUBLIC; while of the visitors themselves, some from curiosity, others from a desire to be informed, would mix with the students, when oral instruction on the teacher's part would be difficult, and the reception of it by the pupils impossible; nor could examinations of any sort conducted under such circumstances.

We would, indeed, venture to take this opportunity of requesting that further facilities might be advanced in setting aside some beds containing a selection of medical and other plants for the express use of certain recognised medical and other schools of the metropolis, as well as the cultivation of certain specialities for lecturing and examining purposes, to be obtained, under necessary regulations, from the authorities of Kew; this would greatly enhance the scientific value of the Gardens, and would be deeply appreciated by a large class of teachers and students.

We beg to subscribe ourselves

Your humble and obedient servants,

We italicise the portions of the above which will appear most strange to those acquainted with the management of the Royal Gardens at Kew. The above memorial is accompanied by the following circular:—

26, Alma Square, St. John's Wood, London, N.W.

Dear Sir,—May we ask the favour of your signature to the enclosed memorial, with the addition of any titles and scientific positions you may hold? We would also request your aid in obtaining the signatures of any of your scientific friends.

We need hardly point out that the forenoon opening of the gardens and grounds of Kew to pleasure parties from the metropolis (a proceeding the adoption of which is now being urged on Her Majesty's Government) would render the forenoon hours as unavailable for purposes of study as the afternoon hours now are; and would thus defeat the principal object for which the establishment was created.

We are, Sir,

Yours faithfully,

GEORGE HENSLOW,

Lecturer on Botany at St. Bartholomew's Hospital and at the Birkbeck Institute, and Examiner in Natural History for the College of Preceptors.

ROBERT BENTLEY,

Hon. F. and Prof. Botany at King's College. Prof. Mat. Med. and Bot. to the Pharmacoeut. Soc. of Great Britain. Prof. Bot. London Institute and Examiner on Bot. to the Royal College of Veterinary Surgeons.

Memorials are much used at Kew. The Hookerian Herbarium was bought by the help of one. The design of bringing the herbarium to London was put aside by one. And now the public are to be kept out of the gardens by means of one.

**Meetings in the Park.**—To my mind all meetings in Hyde Park are nuisances. They are generally promoted by obscure men who wish to become notorious. London parks are, in their nature, pleasure grounds, in which the inhabitants of the metropolis hope to find quiet and repose. To convert them into areas for political gatherings is, for many reasons, most objectionable; but to convert them into battle grounds, where rival sections may test the popularity of their several opinions by free fights, is as dangerous as it is objectionable, and the only persons who can eventually benefit by such a state of things are the roughs. Thanks to the foolish behaviour of the "City gentlemen," the right to hold a public meeting has now been raised. Thirty years ago political parties in New York used to wage a war of stones and pistol-shots against each other, much to the discomfort of the inhabitants of that city. The evil worked its own cure. At present one party never interferes with the "demonstration" of another party. Last time I was there I saw several thousand Democrats assemble round a scaffolding in Union Square to hear speeches, and then march down Broadway with flags and transparencies. The Republicans looked on. A few days later the Republicans had a similar "demonstration," and the Democrats looked on. Thus all riot and disturbance was avoided, and it seems to me that if we must relieve our feelings by demonstrations, we should do well to imitate the New Yorkers.—"Truth."

## THE LIBRARY.

## NOTES ON INJURIOUS INSECTS.\*

This pamphlet, which it is hoped may be the beginning of a series of observations for the prevention of insect ravages, gives some useful information with regard to certain kinds of garden pests. Some experiments on methods of getting rid of the Asparagus beetle and its larvæ, when present in such numbers as to be destroying the plants, have turned out quite successfully; and other notes are given of practical interest, concerning applications for the prevention of Onion fly at Bury, Lancashire; methods of treating the ground for wireworm in Essex; and other matters connected with the subject, including the method in which some of the insect pests which go through their pupal change in the ground, or are aided by artificial protection, are often encouraged. The notes are by various observers, both agricultural and entomological, mainly English, but a few from North Britain, who have followed the suggestions given in a pamphlet—"Notes for Observation of Injurious Insects"—issued last year, calling attention to the great yearly loss by unchecked insect ravages, and especially to what might be done by the effects of the remedies in different districts being recorded for a few years, so as to obtain a knowledge of their applicability under various circumstances of soil and weather. The subject has been taken up much more generally than could have been expected on a first trial; good practical observers have come forward, and observations are promised for the coming season, and it is to be hoped that, as the beginning has thus been made, which is usually the difficult point in a project of this nature, the work may be expanded into taking in all our really injurious insects, and mature into a record of observations which, being entirely devoted to the causes, remedies, and prevention of insect injury, would be of much practical value. For this, co-operation is needed and requested, with all necessary references and addresses, in the "Notes for Observation of Injurious Insects," forwarded gratuitously on application by the printer, Mr. T. P. Newman, 32, Botolph Lane, Eastcheap, E.C., who also furnishes similarly ruled sheets for entries and the report of observation.

**The Freedom of Science in the Modern State.**†—Those of our readers who have been somewhat bewildered by the wild speculations respecting the origin of plants and animals set afloat in England of late years may derive some satisfaction from an eloquent and able address read by Professor Virchow before the Munich Association for the Advancement of Science. Earnest inquirers who have felt it difficult, if not impossible, to accept the theories of Sir John Lubbock and others, according to which we owe the propagation and preservation of plants with strongly-scented and brilliantly-coloured flowers entirely to insects, will find some comfort in Professor Virchow's protests against our taking the problems of research for actual facts, and the opinions of scientific men, no matter how eminent they may be, as established truths. With a few exceptions, this protest has been accepted by German naturalists, who feel themselves set free from the fetters of scientific dogmatism. The immediate origin of Professor Virchow's energetic protest was a paper read at the same meeting by Professor Häckel, of Jena, in which he adopted the theories of Lamarck and Darwin with regard to evolution. The preface to the English edition of the discourse has been written specially for it by Professor Virchow. The translation is admirably done, the tone of grave *persiflage* adopted by Professor Virchow being effectively preserved throughout.

**Fruit and Bread a Scientific Diet.**‡—In this book the author who is one of the leading German dietic reformers of the age, seeks to prove that man is a purely frugivorous animal. How far he has proved this proposition we must leave physiologists to determine. We can, however, most thoroughly endorse all that Dr. Schlickeyen says in praise of fruit, especially of the Apple, which he places at the head of the list, as far as its dietic value goes. We have always held that too little fruit is eaten in this country, but, judging by the large increase in cheap fruiterers' shops which has taken place during the last few years, the old notion that raw fruit is unwholesome, a superstition which still obtains to a great extent amongst the lower classes of the community, seems to be dying out. We cannot agree with the author that all fruit, using the term in its popular sense, should be eaten raw. The learned doctor allows his enthusiasm on behalf of fruit to carry him a little too far sometimes.

\* "Notes of Observations of Injurious Insects: Report 1877." Printed by T. P. Newman, Botolph Lane, Eastcheap.

† "The Freedom of Science in the Modern State." A discourse delivered at the Association for the Advancement of Science, Munich, by Professor Adolph Virchow, of Berlin. London: John Murray.

‡ "Fruit and Bread a Scientific Diet." By Gustav Schlickeyen. Translated from the German by M. L. Holbrook, M.D., &c. New York: M. L. Holbrook Co.

**Hooper's Gardening Guide.**—This is profusely illustrated with woodcuts. It contains choice selections of hardy flowers, annuals, &c., with instructions for their successful culture. Seed sowing, flower garden arrangements, rockeries, Ferneries, and Alpine gardens all receive a share of attention; altogether, the book contains much more valuable information for the amateur gardener than many more pretentious works.

We have received a specimen copy of "Flora des Jardins" from M. Chabaud, curator of the Botanical Garden at St. Mandrier, near Toulon. It treats specially of the flora of the Mediterranean climate, and promises to be an interesting addition to works on garden botany. The plates are extremely well done. The annual subscription for the twelve monthly parts is £1 8s. 4d., or each part 2s. 1d. It is published by the author, M. B. Chabaud, St. Mandrier, near Toulon.

**Carte's Practical Gardener.**—This has reached an eighth edition, a pretty good indication that it is found useful, 40,000 of it having been, it is said, distributed. It is of a handy size, arranged in calendrical form, and the information given is as concise as it is practical.

**Spring Flowers in Dublin.**—The mild sunny days of February have had a wonderfully quickening effect on spring flowers. Just now a beautiful bunch could be cut out-of-doors from such flowers as Daphne, Hepaticas, Anemones, Violets, Narcissi, Primulas, Heaths, Saxifrages, and Squills, which are all in great beauty, and at least a fortnight earlier than usual. I had almost forgotten to mention the Hyacinths which, out-of-doors and unprotected, are now in perfection. Appended is a list of subjects which flowered in February, and the date of their opening:—Feb. 1st, Daphne Marum; 4th, Mandragora vernalis; 5th, Berberis Aquifolium; 8th, Anemone stellata; 11th, Arabis alpina; and Vinca major; 12th, Lonicera verum and Eranthis hyemalis; 13th, Narcissus longistylis, Palmaria grandiflora, and Polygala Chamœburns; 15th, Ficus grandiflora, Hepatica angulosa, and Primula rosea; 17th, Rhododendron præcox and Viola the Czar; 18th, Iris reticulata and Anemone versicolor; 19th, Lithospermum orientale and various Heaths; 20th, Arabis blepharophylla, the Almond, Saxifraga oppositifolia, Orobus vernus, and Draba aizoides; 21st, Borago orientalis, Symphytum caucasicum, and Saxifraga Sternbergi; 22nd, Doronicum caucasicum and Viola forbiana; 23rd, Primula marginata, P. Palmieri, and Cardamine rotundifolia; 25th, Scilla bifolia and Narcissus maximus; 26th, Nouna flavescens; 27th, Ribes sanguineum and Saxifraga coriophylla; 28th, Narcissus telamonius, Epimedium versicolor, Erythronium Daus-garden, and various Hyacinths.—H. W. MOORE, *College otaic Garden, Dublin.*

**Kensington Gardens.**—There is an article on these gardens in the "Pall Mall Gazette" of the 6th inst. displaying more correct knowledge in the matter than is usual in such articles. We may, when space permits, reprint a few passages which seem to us to merit consideration.

## NOTES AND QUESTIONS—VARIOUS.

**Winter Nells Pears Not Ripening.**—Is Mr. Martin's tree (see p. 196) in a good situation? If not, he should remove it and plant it against a south wall. No fruit tree better repays good culture than the Winter Nells, and no Pear surpasses it in excellence. Is your correspondent certain that he has the true sort? With me it never fails to ripen. My tree on the Ormeau stock on a south wall is covered with bloom buds.—JOHN GARLAND, *Killerton, Esex.*

**Galium Molluge variegatum.**—This pretty plant I found in Storsy Lane, leading to the archbishop's residence at Addington, near Shirley, Surrey. I have grown it for years, but never in quantity till last season. It is one of the best plants for rockwork with which I am acquainted. It is very striking during the winter months, and when in bloom, at a short distance off it seems like clouds of silver.—WM. ELLIOTT.

**Varieties of Sedum acre.**—I have discovered on Mickleham Downs, in Surrey, a golden variety of Sedum acre, which I propose to call S. acre aureum, and another S. acre pumilion variegatum. They are both pigmy forms of this charming Stonecrop. I have also a Sedum acre found on the rocks at Torquay, and on growing the Surrey and Torquay plants I find that they differ widely from one another. The Devonshire variety grows much faster than that from the Surrey hills. They will doubtless be good subjects for carpet bedding and rockwork.—WM. ELLIOTT, *Stapleford Hall, Notts.*

**Mushrooms in Cellars.**—You would oblige me very much if you would tell me whether Mushrooms can be grown in a cellar under the dwelling-house, the manure being first of all sweetened outside, or whether disagreeable fumes would rise into the house. The cellar is furnished with a ceiling.—G. S. M. [Mushrooms have been grown successfully in cellars in two or three places with which we are acquainted, and, as far as we know, without any unpleasant consequences.]

No. 330.]

SATURDAY, MARCH 16, 1876.

[Vol. XIII.]

"This is an art  
Which does mend Nature: change it rather; but  
THE ART ITSELF IS NATURE."—*Shakespeare.*

## THE OPENING OF KEW GARDENS.

To the Editor of THE GARDEN.

SIR,—The memorial which you reprinted in last week's GARDEN must, I am sure, have surprised most of your readers. With regard to the use of Kew Gardens by medical students, I think it is extremely important that more definite information should be given upon that point; and this could, of course, be most satisfactorily obtained from the lecturers at the various medical schools. That the medical students of London can get the specimens necessary for their purpose without resorting to Kew Gardens, is certain; the gardens of the Royal Botanic Society in Regent's Park, and of the Apothecaries' Company at Chelsea, are, from their position, more readily accessible to the majority of students, and it is from these gardens that the specimens used in the lectures and demonstrations of several of the medical schools are supplied. It is not too much to say that, compared with the benefits unostentatiously conferred by these two gardens in these respects, those afforded by Kew have been insignificant.

With regard to the assertion that the Kew collections cannot be used for educational purposes during the time that they are open to the public, I can state, from my own knowledge, that such use has repeatedly been made of them, and that without the interference of the public with the students, or *vice versa*. As a matter of fact, the "herbaceous department" and "garden of medicinal plants" are by no means attractive to the general public; indeed, the herbaceous ground, from its position, escapes the notice of many casual visitors to the gardens, while others find the long rows of straight narrow beds far from interesting, and pass through them as rapidly as possible.

If it be really desirable that the gardens should remain closed to the public until one o'clock, it is essential that some substantial reasons for this course of action should be brought forward.

JAMES BRITTEN.

—The subscriptions towards meeting the expenses incurred in the attempt to attain the opening of Kew Gardens throughout the day will show that the matter is far from being (as the Kew authorities and their few supporters would have us to believe) of a purely local character. As a further proof we may add that the opposition shown to those desirous for the proposed reform by the Kew officials has been remarked and freely commented upon by foreigners. The late Sir W. J. Hooker has left on record this peculiarly gratifying fact that, contrary to the anticipations of many persons, the privilege of the free daily admission of the public to the gardens, grounds, plant houses, and museums has been rarely abused. This experience of the late director must apply with equal force now that Kew is under the directorship of his son, for if the yearly number of visitors is greater at the present time than it was then, so is the staff in like proportion. That the British public is tractable enough is abundantly proved by Sir W. Hooker's evidence, given in the last issue of the "Authorised edition of the Guide to the Royal Botanic Gardens," dated 1873.

In THE GARDEN Mr. Croucher effectually disposed of the theory that scientific work would be prevented by the earlier admission of the public, for, as he tersely remarks, none whatever is carried on, except in buildings to which the public have not access.

The statement that, if the gardens are opened earlier, the labourers will have to be care-takers during the morning as well as in the afternoon, and that another set of care-takers will be required to attend to cultivation, is, to say the least of it, absurdly exaggerated. Only on busy bank holidays do the labourers leave their ordinary work to look after or interfere

with the public in any way whatever. Except on the days just mentioned, and on Sundays, the labourers are care-takers in no active sense. They leave at 6 p.m. in summer, and from then until 8 p.m. the gardens are left in the sole charge of a few policemen, notwithstanding the large number of visitors. Assuming that no alteration for the better could be made in the present arrangements as regards the number and duties of the staff employed, it can easily be shown that very little extra money would be required to fully carry out the proposed reform. The constables and gatekeepers have to be on the place at 8 a.m., so no additional expense would be incurred in this item, as a few decent labourers could perform the duties of the gatekeepers (as is frequently the case now) during the hour allowed for dinner in the middle of the day. As regards policemen, the case is somewhat different, but the three extra hours daily for six or eight policemen during summer and half that number during winter could not amount to much, and, by a slight change, this amount might be obtained without the British taxpayer having to contribute an additional penny.

The movement is of such general interest and importance that, in concluding, I can only hope the end may be attained, as it need not involve much, if any, extra expense, and as scientific work would not be in any way retarded.—"A KEW MAN."

—It is satisfactory to find that THE GARDEN is using its influence to get Kew Gardens opened throughout the day. Many have doubtless been put to great inconvenience through their being kept shut in the morning. There is one class in particular who are prevented from visiting Kew, on this account—I mean horticulturists from the country to attend the London flower shows. Many gardeners who exhibit in London would often have gladly availed themselves of the opportunity of visiting Kew had they been able to get in at say eleven o'clock, after they had stazed their exhibits, and during the time when the shows are closed to all but the judges. It has, I think, been said that such people may gain admittance at an earlier hour if they apply to the authorities; but if it is just that people for whom Kew Gardens have most interest, and who, more than any other class, should be at all times admitted, should be obliged to ask as a favour what they are entitled to as a right? As to opening the houses in the morning, all gardeners know that if there be any time in the day when they would rather open their houses than another, it is in the morning, and not in the afternoon. Long before ten o'clock in the morning all watering could be done.—W. P.

—As the statements of the Kew authorities, regarding the supposed interference of the public with the ordinary work of the gardens, have been refuted, I may perhaps be allowed to give my testimony, so far as the Museums are concerned, against the statements in the Memorial printed in THE GARDEN last week. I have had twenty years' experience in the Museums, during which time I was on duty from six to six in summer and from dawn to dusk in winter, with the exception of an hour and a quarter in the middle of the day. I can vouch that seldom, if ever, has any "professor, teacher or cultivator of natural science" brought pupils into the Museum before public hours, and even during public hours I have but very seldom seen anything like lessons given. The only exception is the course of lectures given to the young gardeners by the Museum Curator from 8.45 to 9.15 during the summer mornings.—G. RICHARDS (20 years attendant in Museums at Kew).

Mr. Jean Sisley writes to us from Lyons saying that the excellent Botanic Garden there is open throughout the day without any reservation, except in the case of the houses when the men are at breakfast for one hour. We have already published paragraphs showing that the Paris, Edinburgh, and Dublin gardens are also open to the public early in the day.

As a type of the "arguments" used against the opening of the gardens at Kew, we reprint the following specimen from the "Journal of Horticulture" of last week:—

*Meetings have been held, and deputations have waited on the First Commissioner of Works; flowers of local oratory have been cultivated, and the "rights of the people" have been asserted, as they always are when a small section of the community wants to appropriate public property for their own benefit. The only argument we have heard in favour of this movement is that some speculating builders having formed a neighbourhood along the road between Kew and Richmond, the inhabitants who have become possessed of these houses are endeavouring to increase their value by adventitious means, and these are, to urge the Government to open the Royal Botanic Garden of Kew from morning till night, that these people and their domestics may disport themselves at the national expense. Such a proposition, even at first sight, seems*

monstrous, and when it comes to be investigated one cannot but be surprised at the presumption which these people are capable of. It is known by experience that grounds like those at Kew, beautiful as they are, have not yet had the soothing and humanising effect on the British rough that optimists think they have.

When Kew gardens, like other national botanic gardens, are open to the public throughout the day, the above may be interesting as a specimen of the gentle and logical "arguments" which some do not hesitate to print in connection with the opening of this national garden to a public who support it with a liberality wholly unparalleled. Words very fitting to support the insupportable!

**Iris reticulata and its variety Krelagei.**—Here, in Derbyshire, *Iris reticulata* is perfectly hardy, and I have never found the slightest difficulty in growing it. It succeeds well in almost any situation, although when grown in a warm and sheltered position its flowers are much finer than they otherwise would be. The bulbs increase rapidly if left in the ground undisturbed. I have now three large clumps of it in full beauty, containing sixteen, twelve, and nine blooms respectively. These were planted in the autumn of 1876, and have not been moved or disturbed since. A single bulb which I planted in 1874 has now made a clump which this spring has six blooms. The variety *Iris reticulata Krelagei* comes into bloom here about ten days earlier than *I. reticulata*, to which it is decidedly inferior, both in colour and size. The two varieties should never be planted in close proximity to each other, for the lovely deep violet of *I. reticulata* does not harmonise with the dull Plum-colour of *I. reticulata Krelagei*.—HUGO HARPUR CREWE, *Calke Abbey, Derby.*

—There are among *Iris reticulata* var. *Krelagei* different strains, some very inferior, others just as good or even better than the type *I. reticulata*. In a strain which I have raised from seed the flowers of the former are rather broader in all their parts, and the purple is just as bright, only of a reddish hue. Seedlings vary, and I have slightly different ones. To perpetuate this and to improve the produce, sowing and sowing again must be maintained. *I. reticulata Krelagei*, moreover, has the advantage of being fourteen days earlier than the typical form. If Mr. Millington will remind me in June next I shall have much pleasure in sending him some of my bulbs to prove my statement.—MAX LEICHTLIN, *Baden-Baden.*

**Hydrocotyle sibthorpioides.**—This is an interesting, little-known, hardy trailer, well adapted for brackets and small baskets. As its name implies, it somewhat resembles *Sibthorpia europæa*, but it is a hardier and a handsomer plant. The leaves are cretated and serrated; they lie flat on the ground, and are not, like those of the *Sibthorpia*, produced in a confused, dense manner. This sparseness of foliage adds to its beauty, as every one of its pretty leaves has an individuality which the *Sibthorpia* does not possess.—T. WILLIAMS, *Ormskirk.*

**Spring Bulbs in Rose Beds.**—For several seasons we have planted our bulbs out, after having flowered them in pots, in beds, and banks of Roses, and the two certainly appear to advantage together, as the bulbs give a bright cheerful appearance to beds, which at this season would be nearly bare. As the Roses are pegged down, only the strongest young wood of the preceding year's growth is retained at pruning time, and the Roses may be set at tolerably wide distances apart, which allows ample space for a few clumps of Hyacinths, Narcissus, or Tulips, while a good margin may be allowed for an edging of Crocuses, Snowdrops, or Squills. We annually top-dress, but never dig the beds, and the bulbs are nearly ripened off before the shade from the Roses becomes dense enough to injuriously affect them.—JAMES GROOM, *Henham.*

**Pampas Grass Plumes from California.**—The plumes of this stately Grass were sent from California last autumn in large number to New York and other eastern cities. Nothing can be finer in the way of ornamental Grasses than these spikes, about 3 ft. long, of a dense wavy mass of silken florets and hairs, of nearly pure white. This Grass (*Cymbidium argenteum*) is dioecious, the pistillate or female spikes being greatly inferior to the staminate in size and silkiness, so much so that some dealers supposed that another Grass had been sent to them. The Pampas Grass must be cultivated largely in California, probably expressly for these plumes, which appear as if they had been exposed to sulphur fumes, as they are much whiter than we have seen them elsewhere. This Grass is scarcely hardy at New York, though it may usually be kept through the winter by giving the roots a covering. A sack placed over the clump, filled with leaves, and covered with boards to throw off rain, makes a not very sightly, but an efficient covering.—"American Agriculturist." [Messrs. Hooper, of Covent Garden, have had some of these spikes of Californian Pampas Grass, and very fine they were.]

## NOTES OF THE WEEK.

**Tritomas and Geums in March.**—*Tritoma grandis*, which forms such a noble object in some gardens late in autumn, is now throwing up flower-spikes freely in the Exotic Nursery, Tooting. This is remarkable, considering the enormous strength which it throws into the flower-stems in autumn. It is a most valuable plant, and in various ways distinct from all other *Tritomas*. The hybrid scarlet *Geum*, semi-double and single, are also flowering freely in the same place. They are young plants, which always have a greater tendency to flower out of season than the old ones. Among the fine-foliaged hardy plants in the same nursery *Eryngium Scra*, with its large rosette of handsome leaves close to the ground, is now very interesting.

**Pultenaea rosea.**—In Messrs. Rollissons' nursery, at Tooting, there is just now a good display of this new and interesting hard-wooded greenhouse plant. It comes from the Grampians of Victoria, where it is found at an altitude of 5000 ft. Its flowers, which are borne in round clusters on short, Heath-like branches, are of a bright rosy-lilac, a colour altogether distinct among *Pultenæas*, most of which are yellow. As a greenhouse decorative plant this will, when better known, doubtless prove a general favourite, both on account of its dwarf, bushy, free-growing habit and its neat, Pea-shaped blossoms, which are produced in profusion for several months in succession.

**Iris stylosa.**—As delicate and refined as the choicest of Orchids are the flowers of this *Iris* at this season. We find them being borne freely on established plants in several London gardens, and nesting among thick tufts of Grass-like foliage, they remain partially secure from frost and cold entering winds. Though not an attractive plant, on account of its flowers being thus hidden, for furnishing cut blooms it should be grown in every garden, for when mixed with even the most delicate flowers of the stove or Orchid house, the silky, sky-blue flowers of this *Iris* possess a charm and softness unequalled by perhaps any other flower of the same colour.

**Coloured Primroses.**—We have received some lovely hybrid Primroses from Mr. Clapham, Ramsdale Bank, Scarborough. Some of them, with the exception of the yellow eye, are nearly black; others are crimson laced and flaked with white; and some, like the *Polyanthus*, are narrowly laced with yellow. They are, however, sent chiefly to show that Primroses with a circular outline are preferable to those that have deeply-lobed flowers. They are undoubtedly the forerunners of an improved race of Primroses.

**The Variegated Comfrey.**—This plant is now very handsome, on account of its bold and striking variegation. At present the leaves are all in rosettes close to the ground, and in this shape form a bright ribbon at Mr. Parker's nursery, at Tooting. By-and-by the stems and leaves will rise and form a larger plant as the spring advances, and afterwards there will be numerous drooping blue flowers over all. In short, the plant may be used with excellent effect in the garden of hardy flowers, although generally it is only seen in mixed collections of lardy variegated plants.

**Azalea Rollissonii.**—This new double-flowered *Azalea* is now finely in bloom in the nurseries of Messrs. Rollisson & Sons, who imported it from the mountains of Japan. It may probably prove to be hardy, in which case it will be a valuable acquisition for border or rockwork planting. It is of very dwarf and compact growth, having spreading branches and small, hairy leaves. The flowers are about 1½ in. across, of a light salmon-red colour, very freely produced, and have the appearance of a well-formed *Balsam*. It received a first-class certificate last summer when exhibited at the Royal Botanic Gardens for its value as a decorative or market plant, for which purpose it is, when well known, likely to find general favour.—C. W. S.

**Chionodoxa Forbesi.**—There is no question about this being quite hardy. It is now in bloom with me in a cold glazed pit, but I gave a few of the bulbs which Mr. Maw kindly sent me to my cousin, Miss Lovell, who planted them at once in the open border at Calke Abbey, near Derby, where they have bloomed freely during the last week.—W. HARPUR CREWE.

**Aponogeton distachyon at Tooting.**—About London, during the winter, there has been no more interesting sight than the profuse bloom of the fragrant Cape Aponogeton. In the open air, in Mr. Parker's nursery at Tooting, myriads of its handsome flowers, with a scent like that of the Hawthorn, float gracefully on the water, and long and most graceful fresh green leaves lie quite flat on its surface. In the midland and cold districts it is necessary, for the perfect culture of this plant in the open air, to grow it in spring or other water that does not freeze; but in mild districts and in the south of England this is not needed. In Mr. Parker's nursery

where it grows so freely, it is supplied with water from an Artesian well, conducted into the reservoir in which it is grown. Where natural springs keep a pond from freezing it will grow well in any part of the country, with, of course, a little care in starting it. In addition to its blooming throughout the winter in England in the open air, it may also be grown and flowered well as a pot plant; in suitable positions it may be had in bloom all the year round, and it may be well flowered in an inverted bell-glass in a room.

**Narcissus maximus.**—This is just now in fine condition in the College Botanic Garden, Dublin, large old clumps or masses of it making a fine show. It is indeed a noble plant, and deserves all the praise given it in THE GARDEN of last year. There is a good collection of Narcissus here, but this, to my taste, is the best of them all.—W. D. D.

**Scilla bifolia var. nivalis**, or *S. nivalis* (Boiss), is a rather showy little bulbous plant, just now in flower. Its numerous little balls of the purest white contrast beautifully with the corulean blue of *S. sibirica*.—MAX LEICHTLIN, *Baden-Baden*.

**Iberis semperflorens about London.**—This fine old plant, which is seldom seen in our gardens, is now in flower on the warm, light soil in Mr. Parker's nursery, at Tooting, and has been so for some time. It is common in Southern Europe, but scarce with us, no doubt on account of having perished in certain soils and localities. It ought to be in every garden in all mild districts, and also in warm soils on banks and rock gardens.

**Camellias at Chelsea.**—The large Camellia house in the Exotic Nursery is just now well worth a visit, the fine specimens which it contains being fully in bloom. All the best known sorts are here represented, and afford a good opportunity for selection. The central path through the house is gay on both sides with profusely-flowered plants of *Rhododendron Early Gem* and the white *Spiraea Thunbergi* placed alternately.

**Psychotria leucantha.**—This by no means common plant is well worth growing, for the sake of the clusters of snowy-white blossoms which it seldom fails to produce, even on small plants. A warm greenhouse temperature suits it perfectly, and the blossoms, which are produced from the axils of the leaves, last for a long time, and are sweetly scented. They might be used before they are fully expanded in place of Orange blossoms.

**Coptis orientalis.**—This rare little Japanese plant has been in flower here during the last fortnight. It is a small perennial, the flowers of which are never very showy nor conspicuous. Their interest consists in their singularity; they are of small size, white star-shaped, five or six in an umbel, of which each bush produces several. It flowers very early in spring, and on that account will be found useful.—MAX LEICHTLIN, *Baden-Baden*.

**Sarracenia Drummondii alba.**—A large specimen of this *Sarracenia* now forms an attractive feature in Mr. Williams' nursery, at Holloway. It is furnished with no fewer than fifteen large, dark, crimson flowers, which form a striking contrast to its delicate white, green-veined, trumpet-like pitchers.

**Monsieur Naudin.**—We have great pleasure in announcing that our friend, M. Naudin, one of the Garden of Plants, has been appointed to take charge of the most interesting garden at Antibes, lately given to the State. This was the celebrated garden of the late M. Thuret. It is now proposed to make it an experimental and botanical garden, which will be, so to say, a branch of the Jardin des Plantes under a southern sky.

**Dendrobium superbiens.**—The longevity of the flowers of this new *Dendrobium* is remarkable, blossoms which were opened on plants in Mr. Williams' nursery on Dec. 1 having only just decayed. It will therefore be seen that plants of it, if kept in a moderately cool dry temperature, would be attractive objects for at least three months in the year, and this during a season when good flowering plants are in most request.

**Medinilla magnifica.**—This well-known stove plant is seldom met with in really good condition, but it is well worth all the trouble it is necessary to bestow upon it in order to bring it to the highest state of perfection. Grown in a warm, moist temperature, and kept free from insects, large specimens of it in the Holloway nurseries, loaded with massive, pendent clusters of rose-coloured blossoms, rank among the most attractive objects of the stove.

**Orchids at Clapton.**—The Orchid houses in Messrs. Lows' nursery are just now very attractive, thousands of plants of the choicest kinds of Orchids being in full bloom. These include remarkably floriferous examples of *Dendrobium Wardianum*, *D. crassinode*, and the slender, free-flowering, delicate sulphur-coloured *D. luteolum*. A house devoted to the charming *Odontoglossum cirrhosum* contains many plants furnished with handsome spikes of sweet-scented, beautifully-spotted blossoms of that *Odontoglossum*;

whilst the *Phalenopsis* house, of which we made mention some weeks back, is now a grand feature. Thousands of plants of these attractive Orchids in full bloom represent a miniature meadow of waving, butterfly-like blossoms. The kinds now in bloom consist chiefly of *P. rosea*, *amabilis*, and *Schilleriana*. *P. grandiflora* is nearly over, but there still remain a few of its large, ivory-white blossoms to set off flowers consisting of other colours to advantage, and thus render the whole more interesting.

**Two New Roses.**—Mr. Henry Bennett, of the Manor Farm Nursery, near Salisbury (I cannot write the word without a very sad regret that we Rosarians shall see no more at our congresses a brother, whom we of us loved as a true florist and a good man—John Keynes), sends me two *Rosebuds*, which inspire me with hopeful admiration. The one is a new Hybrid Perpetual, called *Mabel Morrison*, in wood and foliage closely resembling the *Baroness Rothschild*, from which *Rosa* it is said to be a sport, but having flowers of a pure white, not showing until autumn the pink complexion of *mamma*. *Mabel Morrison* promises to be a precious acquisition in our present dearth of really white *Roses*, larger than *Madame LaCharme*, and more reliable and hardy than *Niphotes*. The *Rosa* was raised by a zealous florist, Mr. Joseph Broughton, of Leicester. The other *Rose* is from sunny France, bought by Mr. Bennett from *Madame Ducher*, of Lyons, and has that marvellous combination of colours only to be found in the Tea-scented class—a soft apricot-yellow flushed with rose. *Madame Welch* seems to me to have charms equal to those of *Catherine Mermet*; and “what can mortal wish for more?”—S. REYNOLDS HOLT.

**The Spring Snowflake.**—A dozen years ago it was a rarity to see a flower of this in the choicest private collection of hardy plants; now it begins to be somewhat plentiful, and it is very probable that it will some day be a greater favourite than the *Snowdrop*. It deserves to be so from its handsome rich green leaves, larger flowers, and freedom and vigour when established. It is one of the many fine hardy plants which are never valued, owing to being too frequently seen in a weak state. When well established in rich, free soil, as it now is in Mr. Wilson's garden at Weybridge, it is unsurpassed for beauty among the many spring flowers that now adorn our garden. At Heatherbank it is so vigorous, that the stems frequently bear two flowers each.—“Field.”

**Erica melanthera.**—Though this is one of the prettiest *Heaths* which we possess, yet, singular to say, it is not grown in such quantities as many other kinds. Either in the form of small plants or as specimens it never fails, under good culture, to produce a profusion of small, puce-coloured flowers with black anthers; the blossoms, too, last in perfection for a very long time both on the plants and in a out state, in which the long feathery sprays are effective when judiciously introduced amongst light-coloured flowers. Moreover, the outting of the flowers does not injure the plant in the least, but rather improves it by rendering it more bushy. A few good specimens of it may now be seen in several gardens round London.

**Laurels in Ireland.**—Everyone seems to me to write about *Quills* and *Primroses* being in flower, but no one has a word to say about *Laurels*. Mine are like forest trees, and this year, being so exceptionally mild, they have blossomed like the *Portugal Laurel*, and given us the glory of summer in the beginning of March. I can imagine nothing more beautiful than their creamy inflorescences, backed up by the large, shining leaves. The flowering of the *Laurel* does not, however, occur often with us—once in a dozen years, perhaps.—J. M. BARRY, *Mocullup Castle, Lismore*.

**Orchids at Chelsea.**—There is now a fine display of blossom in Messrs. Veitch's Orchid houses. Specimens of the attractive *Dendrobium Wardianum*, suspended from the roof, and furnished with pseudo-bulbs from 3 ft. to 4 ft. in length, beset with richly-tinted blossoms, make an effective feature; *D. crassinode*, grown in small baskets, is likewise furnished with short, stout, pseudo-bulbs, also laden with blossoms. There are, too, large plants of the beautiful *Odontoglossum cirrhosum*, bearing great branching spikes of sweetly-scented blossoms. Associated with them are well-flowered plants of *O. Andersonianum* and a very beautiful *Odontoglossum* named *Jennings*, which appears to be a variety of *O. gloriosum*. This has well-flowered blossoms with whitish sepals and petals spotted with rich brown. In addition to these, several specimens of the chocolate and golden-flowered *O. triumphans*, and the oblate, small, ivory-white-flowered *O. pulchellum* are also flowering abundantly. *Odontoglossum roseum* bears small, red, star-like blossoms, and *Masdevallia Chimera* is bearing numbers of its peculiar-looking blossoms.

**Species of Amaryllids.**—We understand that a premium will be offered by some Fellows of the Royal Horticultural Society for species of the Order *Amaryllidaceae*, of which due notice will be shortly given. It is very desirable that this beautiful and varied race of plants should be brought together if only for scientific purposes, as much confusion still exists amongst them.

## NOTES FROM KEW.

**Hardy Plants.**—*Erythronium giganteum*, a yellow Dog's-tooth Violet from Western America, which flowers a little later than its European congener, the common Dog's-tooth Violet, is a very showy and desirable plant, although its foliage is not so pretty as that of the European species. The earliest of the Tulips appears to be *Tulipa precox*, from the south of Europe; the flowers are very handsome, scarlet blotched with blackish-purple and yellow. *Anemone pavonina*, from the Mediterranean regions, is very attractive on account of its brilliant red flowers. Another Wind-flower, *A. Nuttalliana*, from North America, resembles the Pasque-flower, *A. Pulsatilla*, of the limestone pastures and chalk downs of England, but is rather more shaggy-looking than that species, and has flowers a trifle paler in colour. *Draba aizoides*, the British yellow-flowered Whitlow Grass, is a charming little rock plant, about 2 in. or 3 in. in height. A nearly-allied species, *D. Aizoon*, from Carinthia, has larger leaves, but is very similar in appearance to the last named. *Dentaria digitata* is another very handsome, dwarf, Cruciferous perennial, the large, rosy-purple flowers being rendered more conspicuous by the light green leaves. This is a North American plant, and is infinitely more beautiful than the common Coral-root, *D. bulbifera*, of the woods and copses of some of our southern counties. *Soldanella alpina* is a very charming Alpine; its small, firm, round leaves and numerous peduncles bearing each two or three drooping, beautifully-fringed, blue flowers, combine to render this one of the most elegant of rock plants. Amongst Primroses the prettiest are *P. nivalis*, with large, umbellate heads of white flowers; *P. marginata*, with mesly leaves, and flowers of a light purple colour; and *P. Dinyana*, with smaller, bright reddish-purple flowers. Three species of Leopard's-bane are worthy of special mention, on account of their beauty and of the ease with which they can be grown. The earliest of these European Composites is *Doronicum caucasicum*, the large, bright yellow flowers of which are very conspicuous. *D. Pardalianche* is a rather taller grower, and *D. austriacum*, which flowers next to *D. caucasicum*, is also rather larger than that species. All these will succeed in almost any soil or situation, and are admirably suited for the wild garden, as they flourish well under trees. Indeed, *D. Pardalianche* is thoroughly naturalised in several places in Britain. The smallest of all the Hoop-petticoot Narcissus is *N. nivalis*, which has been bearing its miniature yellow blossoms for a week or more past. *N. juncifolius* var. *rupicola* is a very rare plant in collections; it is also a small grower, and differs from the type in its lesser size, and also in the lobed, not truncated, corona. *Asphodelus acutis* is very pretty and uncommon. Its large, rose-coloured flowers are borne on a dense, umbellate, very shortly-stalked head, nestling in the tuft of rush-like leaves. *Daphne Blagayana*, a native of Carniola, is a most desirable rock plant. The good-sized flowers are produced in umbels, are deliciously fragrant, creamy-white in colour, and the anthers, reaching to the mouth of the tube, form a fine yellow eye, which adds to the beauty of the plant. The blue and white Grape Hyacinths (*Muscari botryoides* and *M. botryoides* alba) are too pretty to be passed over without mention. *Bolboodium venustum*, from Spain, is a beautiful little bulbous plant, with purple, Colchicum-like flowers. This, which seems to like a sandy loam and to object to strong, clayey soils, is worthy of careful cultivation. *Nonnea lutea* is a free-flowering little annual from South Russia; its yellow flowers are produced in great abundance, and the early period at which it blooms ought to secure it a place in the flower garden, where it will sow itself and hold its own without becoming a weed. *Cardamine trifolia*, a bitter Cress, with trifoliate leaves and upright racemes of pure white flowers, is well worth growing. The *Mandrake* has played too important a part in popular superstition for any species of *Mandragora* to be passed over. *M. vernalis* is now in flower; the entire, lance-shaped leaves spring from the summit of a very short stem, and the flower-stalks, springing from amongst the leaves, bear each a solitary flower, greenish, tinged with dull purple. Two *Fritillarias* conclude our list of hardy plants. *F. lilacea* has (at Kew) single-flowered stems, about 6 in. in height, and greenish-purple flowers; it came from California and Nevada. *F. crassifolia*, from the mountain regions of Armenia, is a still smaller species than the last, and has dull purplish-red flowers.

**Indoor Plants.**—The most interesting of the greenhouse plants are those mentioned below. The Jessamine-flowered *Rhododendron*, *R. jasminiflorum*, introduced many years ago to this country from Mount Ophir, in Malacca, by Messrs. Veitch, through their collector, Mr. T. Lobb, is a very elegant species, and one eminently adapted for greenhouse work, as it flowers freely in a young state. The pure white flowers, to which the anthers form a sort of red eye, are produced in large heads, and are remarkable for the long, straight tube and salver-shaped limb. The Snowball tree, the cultivated variety of the British *Viburnum opulus*, is an extremely pretty object when forced, and vies with many rarer and more

expensive plants which are used for similar purposes. *Pyrus Malus* var. *floribunda* also forces readily, and its beautiful red buds contrast well with the fully-opened white flowers. *Lonicera sempervirens* var. *minor* is a very attractive and desirable rather plant for the cool conservatory; its fine red flowers are very freely produced. *Adenandra umbellata*, a most charming Rutaceous shrub, from the Cape of Good Hope, has flowers nearly 1 in. in diameter, white, with the exception of a reddish line at the base of each of the five petals. *Xerotes longifolia*, a peculiar New Holland plant, has long, toothed, somewhat Grass-like leaves and panicles of orange-yellow flowers, which exhale a strong Vinous odour, similar to that of the yellow Water Lily; this Sedge-like herb ought to grow well in the open air in sheltered positions in most of our southern counties. *Bomarea Caldasii* is a very handsome Cape climber, with large umbels of orange-red flowers, minutely spotted with black. *Beschorneria Tonelli* is an Agave-like *Amaryllid* from Mexico, but its long tubular flowers, being greenish in colour, are not nearly so handsome as those of *B. yuccoides* or *B. tubiflora*. The preceding may be seen in the Succulent House (No. 5).

**Orchids.**—Of these the following are amongst the best not previously noted;—*Odontoglossum cirrhosum*, from Ecuador, is very beautiful; its lance-shaped sepals and petals are pure white spotted with brown and the lip is yellow. *O. Rosii* is a smaller species from Mexico; the whitish ground colour of the sepals is nearly hidden by large brown spots; the petals are white, except at the base; the base of the lip is yellow, the remainder being white; the column is of a purplish colour. *Notylia nuptialis* is a rare species from tropical America; it much resembles a small *Angraecum* in habit, and bears its little, whitish flowers in dense, pendulous racemes about 6 in. in length. *Dendrobium thrysiflorum*, introduced from Moulmein by Messrs. Veitch some years ago, is like *D. densiflorum* in habit, but is a stronger grower than that species; the lip is a rich golden-yellow, the remaining parts of the flower being white. *D. superbum*, generally known under its garden name *macranthum*, is a vigorous plant with large, showy, purplish flowers, which, however, emit a disagreeable scent. *D. Kingianum* is a small Australian species with rosy-purple flowers.—†

**Solanums and Mice.**—Mice have a particular fondness for the berries of the Solanum, but as soon as their depredations are discovered I have checked them in the case of standard plants by putting a collar made of cardboard half-way up the stem, beyond which they could not pass. In the case of bush plants the simple expedient of placing them upon inverted pots, so as to elevate them several inches above the pots of the surrounding plants, proved to be an effectual bar to their incursions. Of course traps were not neglected. The old figure 4 trap is one of the best in my experience, and it can be made in five minutes or so.—A. D.

**The New Zealand Flax for Tying.**—The leaves of *Phormium tenax* (the Flax Lily of New Zealand) constitute one of the best materials which we have for tying plants. It is superior to bast or Raffia Grass, and, being green, is not unsightly. The New Zealand Flax grows freely in any rich loam to the height of 5 ft. or 6 ft., and is perfectly hardy. The leaves should be cut as they are wanted for use. They split freely, as fine as thread and almost as strong. The plant is very ornamental, and some of its variegated forms are extremely beautiful; it is a matter of great convenience to have a plant growing in the herbaceous border from which a few leaves have only to be cut to supply oneself with a good tying material which costs nothing.—JAMES PINK.

**Dwarf Sedums.**—Mr. Elliott seems (see p. 222) to be unaware that there is already in existence a variety known as *S. acre aureum*. What is so generally grown as the golden-tipped Stonecrop is thus named in plant lists, and has been so for these past ten years. *Sedum acre elegans* has silver variegation, but with this variety the pale colour is not limited to the points of the shoots, but generally marks all the new growth. It is a very pretty kind, and is best in summer, the golden-tipped form being in great beauty in winter and spring. Curiously, although both of these kinds are assumed to be sports from *Sedum acre*, which blooms so freely, yet neither of these flower. *Sedum acre elegans*, silver variegated; glaucous, silvery glaucous; and *lydium*, deep green, are the best known kinds for carpet bedding, and are more useful than any tender plants.—A. D.

**Wild Cucumbers.**—M. Naudin, who, it is well known, has made a special study of the Cucurbitaceæ family, asks us to state that he will be very much obliged to any of our readers who, living in hot countries, happen to meet with any of the family growing in a wild state, if they would send him ripe seeds of the same. His address for the future will be Villa Thuret, Antibes, France. This climate for the growth of the Cucurbitaceæ will be all that can be desired.

## THE FLOWER GARDEN.

### CUTTING DOWN LILIES IN FULL BLOOM.

"I AM surprised that anyone should say that Lily bulbs do not suffer from being cut down in full bloom. We have found that the bulbs are injured or killed outright just in proportion to the time at which cutting down is performed." This is what Mr. C. M. Hovey, of Boston, Mass., says (see p. 196) with reference to my remarks of an opposite nature on the same subject. I am glad to see a communication from the New World, and hope they may continue, but Mr. Hovey's, at present, does not throw much light on this part of the subject. Some of the readers of THE GARDEN may recollect that in October last (see p. 375) I said: "On Saturday, the 30th of June, I lifted several clumps of *L. candidum* when they were in full bloom, having previously cut off the stems with the flowers. As I had to leave home on the following Monday for six or seven weeks, I placed them in a basket in my tool-house for further examination. On my return home, towards the latter end of August, I took the bulbs out of the basket and re-planted them, as I had noticed amongst them some interesting specimens. Considering that these bulbs had been taken up while the parent bulbs were in full bloom, and that they had been out of the ground more than six weeks, they were in very good condition; the parent bulbs were, however, very much decayed. This I expected, for as the parent bulbs had bloomed once—all that Nature requires—nothing remained for them but to decay and die. In about a fortnight after I had re-planted the new bulbs I was rewarded by seeing the green tufts shooting up above the ground. Allowing the specimens, which I had replanted separately, to grow for another fortnight, I again took them up, when I found them to be in as strong and healthy a condition as any other Lilies of the season. The other bulbs that I had lifted and re-planted at the same time were, when I left home a few days ago, growing as strongly, if not stronger, than those that had not been disturbed at all. In addition to what I have said on this subject, I may mention that a nurseryman, whose grounds are near London, is in the habit of growing thousands of Lilies for the sake of the flowers as a marketable commodity. After having cut off all the flowers, he lifts the bulbs, and after gathering all the offsets for stock, as he calls it, he re-plants the bulbs. This he does annually, and I have never seen a better show of bloom. Mr. Hovey says that he is surprised that anyone should say that Lily bulbs do not suffer from being cut down in full bloom. I hope he will look out for my next paper on another part of the subject, because I think his surprise will be somewhat increased, but not, I trust, in an unbelieving way.

Assizes, Western Circuit.

DUNEDIN.

Being "all curiosity" to know "Dunedin's" discovery with regard to Lily bulbs, which he promises to let us know shortly, I venture to suggest meanwhile (though I feel myself reminded that fools rush in where angels fear to tread) that, in default of a better word, the term, "rhizomatous bulb" might best explain the somewhat contradictory characteristics of what have hitherto simply been called Lily bulbs. Some Lilies, notably *L. pardalinum*, are so markedly rhizomatous, that, while the scales decay after one year, the root-stock and base of the decayed scales remain for at least three years (I have not observed this bulb for a greater length of time). In one instance the root-stock, growing horizontally, divided into two equal parts, the two ends clothed with scales being still joined by a fresh and succulent stem. This Lily, then, is neither a simple bulb, nor does it die and renew itself entirely every two years. On the other hand, only last week I found the young growth from a bulb of *L. testaceum* actually growing up inside the decayed flower-stalk of last year, and blanched in consequence. This points clearly to the upward and unbroken growth from the core of last year, which was so exactly under the flower-stem of last year as not to have

swerved in the least to one side or the other. In this hybrid the scales of more than one season's growth are visible in autumn very distinctly if a bulb be mutilated one year and examined the next autumn. In a third instance there appears to be a total change both of scales and core in a year's time. *L. Martagon dalmaticum*, therefore, seems to justify some of "Dunedin's" remarks, but I shall be curious to see if he can find a term that will satisfy both himself and his fellow searchers after truth. The different ways of reproduction in Lilies are so marked that alone it would afford subject matter for endless remarks and controversy. I will therefore content myself with offering a name that seems somewhat to express the true nature of what has hitherto been recognised by the name of Lily bulb.

E. H. W.

### HARDY PRIMULAS.

This is the most interesting period in the year as far as this charming family of hardy plants is concerned, as all the earlier kinds are now in bloom, and many others are following in close succession. We have here single and double Primroses, Polyanthuses in many forms, and *Auricula* single and double, all of which largely come under the head of florists' flowers, and are very different from the kinds that

have distinctive botanical appellations. The Japanese *Primula amœna* is one of the most beautiful of Primroses, both as regards flowers and foliage, and already this has proved the most fertile in the production of kinds from seed. In addition to the dozen sorts of seedling Primroses now being sent out, we have as many new and very charming kinds raised by an eminent amateur cultivator, Mr. James Allen, of Shepton Mallet, and I have further some forty seedlings that will flower for the first time this year, so that the *amœna* section promises to excel the Chinese species in the production of variety, and is at the same time much easier grown. Just as the Chinese *Primula* has done its winter's work the Japan form comes in and takes its place admirably as a greenhouse decorative plant. Earliest of all these hardy Primulas to flower are the Himalayan *P. denticulata* and *P. purpurea*, both beautiful forms for the greenhouse or the open ground, but one is reluctant to subject such very charming flowers to the uncertainties of our climate, except in some sheltered position. *P. purpurea* differs from *P. denticulata* in having leaves of a darker tint and with smoother edges, and in producing trusses of flowers of a rather deeper tint; but both are equally beautiful, and should certainly have a place in every garden.

Both under glass and in the open ground the beautiful snow-white *P. nivalis* is in full bloom, and a lovely gem it is. It is the earliest of all the *Auricula* section, and is one of the most distinctive. In order to have *P. nivalis* in all its beauty, several plants of it should be placed in a 12-in. pan and be dressed over with Moss; it then resembles balls of snow cushioned with green. *P. intermedia*, just expanding its flowers, is a desirable companion to *P. nivalis*; the contrast afforded by the deep rich purple hue of the flowers of the former is most striking. Perhaps one of the prettiest of all these *Auricula* Primulas is *P. marginata*, also just in bloom; the flowers resemble in shape an inverted bell of a pale purple hue; the foliage of this kind is singularly pleasing, the leaves being very farinose, and in some the edges are distinctly marked with white. *P. villosa* has small hairy leaves that have serrated edges, and the flowers are small and of a pale reddish-purple colour. This has just expanded, as have also the flowers of the Liliputian *P. minima*, a very charming kind that does not too freely flower, and should therefore be all the more cared for. *P. integrifolia*, a kind even more minute than *P. minima*, is about to flower this year for the first time; it has hitherto refused to blossom. I have also some unnamed seedling Alpine varieties just beginning to flower that promise to be very pretty, and a couple of named varieties of *P. intermedia*—*Portia* and *Minstrel*—sent out a few years ago. Of powdered kinds, the



Date Palms placed in the open air in summer, with Acanthus in the foreground.

pretty *P. farinosa* is just about to open its little trusses of bloom, and the stronger-growing *P. verticillata*, sometimes called *P. abyssinica*, will be in bloom in a few days. Some of the varieties of *P. amona* are in flower, and all will be so in a week or two; but April is the great month for these kinds. *P. Munroi* is just pushing up its leafage from the crowns that have been dormant through the winter; and a variety of stronger growth, that I anticipate will be identical with one recently figured as *P. nivalis turkestanica*, promises to succeed it. A. D.

**Daisies from Seed.**—We find these to be extremely useful for edgings, or as a front row in ribbon borders. I retain a vivid recollection of the beautiful effects obtained at Cliveden by means of these little hardy flowers. But hitherto I must confess that the results obtained from plants raised from seed have not been encouraging, so large a percentage of them having single flowers, although the seed has been procured from the best source. This, however, need not deter anyone from having Daisies, as they are cheap plants to buy, and may be readily increased by division. I would recommend that seedlings be proved in some trial ground before they are used for bedding purposes.—JAMES GROOM, *Henham*.

**Anemone fulgens Lifted and Unlifted.**—Mr. Smith's latest remarks (see p. 205) respecting this *Anemone* exhibit the futility of attempting to lay down strict rules as to the cultivation of any given hardy plant in many and various localities. In his case the soil and climate are moist, and the roots are in danger of rotting if left in the open ground. Here, where the rainfall is comparatively limited, and the atmosphere and soil are seldom excessively wet, the roots thrive well in the ground, and are far better there than if they were lifted and stored in the best possible way. Except where it is absolutely necessary to do so for business purposes, I should recommend that the roots be not lifted too often, or if necessary for bedding they should be taken up with good balls of soil, when the plants would suffer but little. Even scarlet garden varieties of the *Anemone* that have been untouched for twelve months are grandly in bloom in the open ground, but none of them are so gloriously coloured as *A. fulgens*.—A. D., *Bedfont*.

**Camassia Fraseri.**—*C. esculenta* is one of the best known and the most esteemed of our hardy Liliaceous bulbs. It is a safe prediction that the *C. Fraseri* will ere long become as popular. It is a native of the States east of the Mississippi. Its flowers are rather smaller than those of the western species, but when seen in perfection it is scarcely less attractive. It grows about 1½ ft. high, with from six to eight leaves rather shorter than the scape, the latter bearing a raceme of from ten to thirty pale blue flowers, each about 1 in. across when expanded. All the parts of the flowers are smaller than in *C. esculenta*; the style is scarcely declinate, and the segments of the perianth are marked externally by only three or four nerves, those of the western species having from five to eight nerves. It is well known that the bulbs of the *C. esculenta* furnish a not unimportant article of food to the Indians of Oregon and California under the name of Quamsh, and those of the present species are equally employed as food by the Indian tribes of the districts where it occurs.—W. THOMPSON, *Ipswich*.

#### NOTES AND QUESTIONS ON THE FLOWER GARDEN:

**Crocuses and Pheasants.**—I have a border filled with various kinds of Crocuses. The pheasants have destroyed all the bulbs of the yellow varieties and left all others untouched. Can any of the readers of THE GARDEN account for this?—R. HANBURY, *Poles, Ware, Herts*.

**Iris reticulata.**—"J. S." (see p. 80) says that *Iris reticulata* is not the freest flowering variety of the *Iris* tribe. I have just counted 137 blooms on a single row 3 ft. long. That does not look like sparse blooming. What does "J. S." say as to the varieties of *I. Kœmpferi*?—A. R.

**Lithospermum fruticosum.**—As a perpetual flowering plant I do not know any that equals this *Lithospermum*; a plant of it here on rockwork has been in flower for considerably more than a year, without, I believe, a single day's intermission, though of course sometimes in winter there were but few flowers open on it.—C. M. OWEN, *Knockmullen, Gorey, Ireland*.

**Hybrid Primulas.**—I send you a flower-head (though much injured by the stem having been eaten away by slugs two or three days ago) of a hybrid *Primula*, between *P. denticulata* and *P. pulcherrima*, raised by Mr. Anderson-Henry, of Edinburgh, who gave me the plant. The calyx, when the flower is in bud, is almost black, the head of flower being a perfect ball. There are thirteen other smaller heads coming on, though the plant was a small one, consisting of one crown. It began to blossom here somewhat earlier than *P. denticulata*.—C. M. OWEN, *Knockmullen, Gorey, Ireland*. [The flower-head sent resembled that of *P. pulcherrima*, but the flowers were much paler, being blue with a yellow eye, and though somewhat bruised, evidently when in perfection very pretty.]

#### ORCHIDS AT STAMFORD HILL.

In Mr. Bockett's collection of Orchids I recently saw one of the most beautiful and distinct varieties of *Odontoglossum Alexandræ* (crispum) that I have yet met with; the variable character of this species is well known, but this is essentially different in its markings from any I have previously seen. The flowers individually are of medium size; both petals and sepals are broad and have plenty of substance, and the ground colour is the purest possible white. In the centre of each petal and sepal is a large circular blotch, almost regular in outline, blackish-brown when the flowers first expand, but growing slightly paler as they get older, these single large spots bringing out the pure ground colour to a remarkable extent. As most people will have observed, the marking on these *Odontoglossums* is not always of a persistent character, individual plants sometimes varying from year to year, but should the plant in question retain its present character it will rank as one of the very finest of these most lovely plants. Standing near it was a very fine example of *O. mulus*, bearing a grand spike of large primrose-coloured deep brown spotted flowers; also the rare and exquisite *O. Blandianum*, in form not unlike *O. gloriosum*, as in the latter variety the sepals and petals are slightly incurved at the point. The ground colour of the labellum is pure white with distinct purple spots; the petals and sepals are also white, but not so pure, spotted and lined with warm brown. In the same house was a fine example of *O. Andersonianum*, bearing a branching spike furnished with twenty-four flowers, and a good form of the variable *O. cirrhosum* with large, beautifully-marked blossoms; also several varieties of *O. triumphans*. On the various *Odontoglossums* in this house I counted some thirty-five spikes bearing open flowers, and 130 others in different stages of development. Intermixed with the chaste, light-coloured flowers of the *Odontoglossums* were a number of examples of the bright scarlet *Sophranitis grandiflora*, an association that was strikingly effective. In the adjoining house, which was principally filled with *Odontoglossums* and *Masdevallias*, were several other good plants in flower. In the other houses devoted to Orchids were half-a-dozen large masses of *Coleogyne cristata*, wreathed with their crisped white blossoms, than which few more useful flowers for winter exist. Associated with these were also the lovely *Lolia anceps Dawsoni*, and the highly-coloured *L. anceps grandiflora*, several examples of *Cypripedium villosum*, one bearing twenty-four flowers. *Cattleya Trianae delicata* is furnished with thirteen large, beautifully-tinted blooms, and I noticed half-a-dozen other forms, one of which deserves especial notice. The individual flowers are very large; they have broad sepals and petals of the most delicate pink, and a very large, intensely-coloured labellum, as deep in shade as that of *C. labiata*. In the same collection were *Dendrobium nobile cœrulescens*, and also *D. nobile pendulum*, the latter bearing 200 flowers. Of the numerous forms of *D. Wardianum*, one in particular, though not so deeply marked as some met with, is a most lovely plant, bearing 130 flowers, and forming a complete wreath of the most delicate colour. Associated with these were likewise *D. crassinode*, *D. Farmeri aureo-flavum*, numbers of *Phalenopsis*, including *P. grandiflora*, *P. amabilis*, and *P. Schilleriana*; *Coleogyne Lemoniana*, bearing thirty-five spikes of its large, white, lemon-shaded flowers; *Odontoglossum Roelzi*; *Spathoglottis pubescens*, bearing distinctly-formed yellow blooms, the lower petals streaked with purple; and the small-growing *Saccolabium violaceum*. There were also coming on a couple of finely-grown examples of the late-flowering *Angraecum sesquipedale*, each bearing two spikes, five flowers being on a spike. T. B.

**Mixed Collections of Orchids.**—Much has of late been written about the culture of cool Orchids and hot Orchids, and beyond all doubt such things as *Masdevallias*, *Dissas*, and some *Odontoglossums* must have cool quarters, but we are sometimes startled to hear that cool Orchids are grown in the same houses with *Vandas*, *Aerides*, and other hot subjects, as, for instance, at Clonfert, on the Tweed. I have seen lately the same practice successfully carried out at the College Botanic Garden, Dublin, where, for want of proper accommodation, all the Orchids are grouped in one house, the kinds requiring warmth being on the outer stage and rather elevated, the kinds requiring coolness being on the front and end stages. Here were

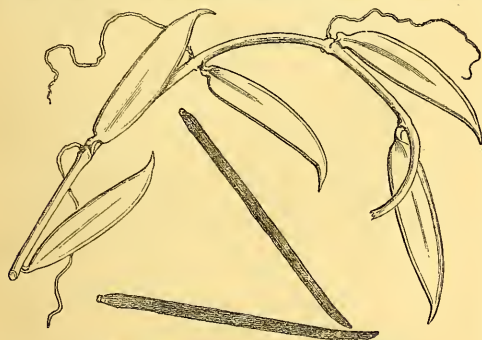
*Angrænum eburneum* in fair health with two fine spikes of bloom, *Odontoglossum grande* with fine large well-fed bulbs, *Coleogyne cristata*, *Peristeria elata* with fine large healthy bulbs, *Lycastea*, *Epidendrum*, *Cattleya crispata* with very fine growths, *Lælia superbiens*, and others, all bearing witness to the care bestowed on them last year, and promising grandly for the present season's growth. No one need despair of having a pretty large and varied mixed collection of Orchids in one house if the necessary attention be bestowed on them.—W. D. D.

### SCENT-YIELDING PLANTS.

By G. W. SEPTIMUS PIESSE, Ph.D., F.C.S.

#### *Vanilla planifolia*.

Of all Orchids this climbing Epiphytal one is the most valuable from a commercial point of view, on account of its scent-yielding fruit. There are several species of *Vanilla* which yield beans or pods more or less fragrant, and of these some five kinds are common in our English markets, the value of which varies from 10s. to 80s. per lb. The genus *Vanilla* is indigenous to Peru, Brazil, and Mexico, and some of the species have been successfully cultivated in the West Indian Islands, Ceylon, and the Mauritius. From the last-named wonderfully fine specimens were sent to our International Exhibition of 1862, for which the jurors awarded a gold medal. There is no



Stem, leaves, and pods of *Vanilla planifolia*.

reason why the culture of *Vanilla* should not be extended into some of our warmer colonies, such as Western Australia and Queensland. Its propagation is by no means difficult. *V. planifolia* climbs up the tallest trees, and its main stock becomes woody and hard as that of the Vine; the root sends up many offsets, which may be separated, and in that way the plant may be increased. Cuttings of the last growths, 2 ft. or 3 ft. in length, may also be made and rooted successfully. The *Vanilla* will produce saleable pods the third or fourth year after propagation, and they may then be gathered annually, in September, in increasing quantities for thirty or even forty years. Therefore, he who plants a *Vanilla* forest leaves his son a valuable heritage. Two good specimens of the plant may be seen in the Orchid house at Kew, and it is also grown plentifully at Syon.

When the pods are gathered, which should be done before they are quite ripe, it is most important that they be properly cured, otherwise they rapidly become mouldy and lose their scent. Parcels in this condition may often be found at the Mincing Lane drug auctions. The curing of the pods is best effected by drying them in a moderate heat, pressing them with the thumb and finger from end to end, and then brushing them over with an oil that does not itself become rancid, such as that of Cocoa or Cashew Nut. It is at the apex of the pod that the mouldy parasite first appears; the pods then quickly become soft and flabby or dry and chippy. On the other hand, when *Vanilla* pods are in good condition, they become covered with an efflorescence of needle-like crystals of Vanillic acid. The interior of the Bean is then soft, unctious, and balsamic.

In order to obtain the perfume or essence,  $\frac{1}{2}$  lb. of such pods are cut up small, and put into one gallon of pure alcohol, of a strength known as 60° over proof, giving the whole a shake up daily. The ingredients must remain together for say four weeks, at which time all that is worth extracting will be found in the spirit, which may then be strained off quite clear and bright. It is then suitable as a flavouring agent, or when blended with other scents it makes delicious perfumery. Those sold under the titles of *Clematis*, *Heliotrope*, *Wall-flower*, &c., mostly contain about one-half in bulk of *Vanilla* extract. About two centuries ago *Vanilla* may be said to have been unknown in this country; it is, however, stated that Morgan, an apothecary, showed to Queen Elizabeth a sample, but he knew nothing more about it than that "it was brought from abroad by some Spanish merchants." At the present time the total annual average crop of all the varieties of *Vanilla* from the several countries which produce it may be estimated at 80,000 lb., representing a value of not less than £150,000.

#### *Vetiver* (*Andropogon muricatus*).

The fibrous roots of this large Grass yield a most peculiar but pleasing perfume. If the scent of *Roses* may be termed sweet, then *Vetiver* has a bitter smell of the Myrrh kind. *Vetiver* Grass, which is also known under the name *Khus-Khus* Grass, grows extensively in Bengal and Southern India. It is there manufactured into awnings, blinds, and sunshades, but it is principally used for screens, which, during the hot season, are placed in doorways and windows, and are known as "tatties," which, when wetted, diffuse a peculiar and refreshing perfume, and the evaporation of the water at the same time cools the air. *Vetiver* is imported into England in bales of about 2 cwt. each, but the average annual quantity does not exceed 5 tons, and about the same quantity goes to France. When *Vetiver* is distilled and is good, it yields about 10 oz. of Otto for every cwt. Several perfumes, such as *Mousseline des Indes* and *Maréchal*, owe their speciality to a small addition of this material. Bundles of *Vetiver* are sold for perfuming linen, and when ground it is used as an anti-moth material.

#### Elder Flowers.

In Nichols's "Progress of Queen Elizabeth" he mentions that at Hawkstead, among the rooms on the ground-floor, was one called the still-room, an apartment where ladies of the Court much amused themselves in distilling fragrant waters. In the Northumberland "Household Book," a work so often quoted by historical writers, there appears the following list of plants, viz., "Roses, Borage, Fumitory, Parcelly, Balme, Walnut leaves, Sage, Elder flowers, &c., for the use of the still-room." The still-room maid to this day preserves her name, though not all her old avocation. The cymes of the Elder, after being plucked and placed in a heap, very quickly heat; the corollas then fall off and are separated, by sifting, from the stalks. During the season many tons of these are sold by Covent Garden herbalists. Of corollas 9 lb. are distilled with 4 gallons of water; the first 3 gallons that come over only are preserved for use under the title of Elder-flower water.

**The Saffron Plant in Greece.**—Although much used for dyeing and culinary purposes, the Saffron plant is not yet cultivated in Greece. It is found in large quantities growing wild on the slopes of the hills and on rocky plains, especially where the soil is of a dry, calcareous nature, as for instance on Mount Hymettus, about Delphi, and in the mountains of the Greek islands. Most of that which is wild is collected by the inhabitants of the islands of the Greek Archipelago, who take it to Smyra and dispose of it to the merchants, who in turn sell it to the small shepherders. In the Turkish portion of the Archipelago the gatherings are made by the women, particularly in the little island of Simi, and sold in the bazaars of Smyra and Salonica as Macedonian Saffron. The amount that is collected on the mainland of Greece and sent into the market would scarcely exceed 50 lb. in weight. If, however, this easily-cultivated plant were properly grown this figure might very soon be depleted, especially as it may be so readily propagated either by the division of its bulbs or by seed. The principal species of Crocus (which still retains its ancient name *Krokos*, bestowed on it by Theophrastus) growing wild in Greece are *Crocus sativus*, *C. vernus*, and *C. minimus*.—X. LANDERER, Athens.

## THE INDOOR GARDEN.

### LARGE PLANTS OF POINSETTIA.

Of late years large specimens of Poinsettias for winter flowering have almost disappeared, a matter difficult to account for, unless by the mere change of fashion, and that has latterly run in favour of small plants, rooted and flowered the same season. These are as useful for decorative purposes as they are beautiful in almost every imaginable position. The Poinsettia is also most accommodating in regard to size. It may be flowered at almost any height, from 4 in. to 4 ft.; but there is no reason why the beauty and usefulness of dwarf Poinsettias should drive the taller plants out of cultivation. The latter are invaluable for the centres of stages, the floors of lofty old-fashioned plant stoves, for halls, staircases, corridors, and backs, &c., of floral arrangements in lofty rooms. Every winter and spring, in most private gardens, quantities of fine Poinsettias are thrown away after flowering once that would flower even more profusely if kept another season. Poinsettias that have been liberally cultivated one season lay up, as it were, a reserve of strength at the base of their stems for a strong break and grander bracts the next year. They may be dried off in any out-of-the-way house with a temperature of 60° for a month or two, then cut back and started afresh, and they will break and do well under such rough treatment. They would, however, do better still could the leaves be fully exposed to the light for a time, and the wood be allowed to ripen gradually. The best place for this finishing process is on a stage near the glass, not under it—the place mostly chosen for the storing of Poinsettias where the old plants are kept over. Sufficient water should only be given to keep the leaves from flagging. A temperature ranging from 60° to 70°, with a rather dry atmosphere, are the best conditions for maturing the wood of Poinsettias. This care in ripening the wood is well bestowed, if only for the superiority of the young plants raised from it. They are far superior in habit, and produce finer bracts than those raised from immature, gross wood. As soon as the plants are sufficiently ripened off, they should be cut down to within 4 in. or 6 in. of the ground, and kept without water for a fortnight or so, until the wounds heal; the roots may then be watered, and the plants placed on a stage in the stove near the glass, or in a pit in bottom-heat to break. A temperature of 70° or so is the most suitable for the roots, the tops having from 5° to 6° less heat where the plants are broken in pits. Select from three to a dozen of shoots of equal strength as near as may be to form the future plant, and rub all the others off. It will be but seldom that there will be any excess of shoots, as Poinsettias are not given to produce large crops of branches. As soon as the shoots make an inch or so of growth, shake the plants out of the pot, remove as much of the old soil from them as possible without breaking or bruising the roots, and carefully repot. This requires to be done with care, as Poinsettia roots are numerous, are easily injured, and resent injury by bleeding at once. The roots should also be carefully distributed through the soil. The plants are by no means particular about soil. The orthodox mixture of half-peat, half-loam, a fourth sand and powdered charcoal answers well. Equal parts light loam and leaf-mould, or loam and well rotted manure with a dash of bone-dust, is perhaps better. Some of the finest plants ever seen by the writer were grown in spent tan, fortified with house sewage. After the first shift a close regimen and partial shade should be applied. The best place for carrying out these conditions is a close pit, with bottom-heat derived from manure, leaves, tan, or other fermenting material. These genial sources of warmth quicken the roots into prompt and vigorous action, and the pots are filled and the tops started in a very short time. As soon as the roots reach the sides of the pots, and before they become matted, the plants should receive their final shift into their flowering pots—3-in., 10-in., or 12-in. pots may be used according to the size of the plants. The latter will grow a magnificent plant with from eight to twelve stems—such specimens are seldom seen. As soon as the plants get a good hold of their flowering pots, a cooler system of treatment may be adopted. Bottom-heat should be dispensed with and more air given, and until towards the autumn, say

through August and September, the plants may be grown in cold pits, shut closely up, however, about four o'clock after a heavy overhead syringing. This will develop a sturdy habit with great size and substance of stems. The shoots should never be stopped. A good many cultivators recommend this. They say it makes the plants bushy and multiplies the number of shoots. As a rule, it does neither. The shoots stopped generally only break one bud; there is, therefore, no multiplication of the number of shoots. As the new shoot is apt to run further before showing a bract than the old one, there is, consequently, no shortening of its length. The stopping is, therefore, a waste of time and of growing force, as well as a sacrifice of beauty, for the bracts are hardly ever so fine on a pinched shoot as on an unstopped one. Sufficient shoots should be chosen at first to form the plant, and these should be kept in form, so that the finished plant should consist of so many shoots as near as may be uniform in strength and beauty. Neither should the Poinsettia be trained nor tied down. The plant is perfect with its shoots and leaves left the natural size and length; and where there are many shoots, it is very easy to regulate them so that each bract has room to display its full beauty without overshadowing the others. Towards the middle of September the first batch of Poinsettias should be placed in a temperature of 65°; a moist atmosphere is also important at this stage. If the tops of these fine shoots can be kept within a few inches of the glass, the bracts will not only be distinguished by a much higher brilliance, but even the upper leaves of the plants will be deeply stained with crimson or vermillion, as if the excessive colour of the crowns had run into and suffused the leaves at their bases. Another lot may be introduced into heat early in October; and, in fact, no Poinsettias will be safe in cold quarters after the beginning of that month. These remarks apply to all Poinsettias; but they are particularly applicable now that we have such a valuable addition to this invaluable tribe of plants. To anyone who meditates throwing away a single root-stock of Poinsettia plenissima, we hope our urgent "don't" for the foregoing reasons will be in time to prevent such a prodigal waste of beauty and of growing force.

D. T. FISHER.

### ACACIA RICEANA.

It is surprising, considering the readiness with which anything new is picked up, how long some really good plants are neglected, amongst which this *Acacia* is an example. We cannot state how long it is since it was introduced into this country, but from the apparent age of some plants with which we are acquainted, we should think it is perhaps thirty years or more. And yet it is comparatively little known. Hardly anyone who comes into our greenhouse here, where a fine plant of it is growing, knows its name or have seen it before. But the plant strikes everyone at the first glance, as it cannot fail to do, for it is one of the finest of the *Acacias*, and the list of greenhouse varieties is a long one. A number of years ago attention was directed to its merits, and there was a demand for it, but it became again neglected. It is now its flowering season, and we desire again to point out its value as a climber for the cool conservatory or greenhouse. The flowers are like those of all the *Acacias* in character, but more feathery, and are borne on long, pendulous, and perfectly supple shoots, that droop perpendicularly from the stem, making the plant appear to be quite laden with feathery spray. It is a fast-growing subject, too, when planted out and trained up the rafter. Only a few years ago a small seedling plant of it was put out in the bed of the greenhouse here, and it is now about 20 ft. high, and extending at the rate of 4 ft. or 5 ft. annually, besides producing quite a profusion of lateral shoots which droop 4 ft., or 5 ft. from the rafters, and flower their whole length. By gaslight the plant has quite a fairy-like appearance, and the long pendulous shoots may be out off and used for decorative purposes with nique effect; and, what is of much importance, they stand uncommonly well. Where a graceful drooping plant is needed for the roof of a conservatory or corridor, we can heartily recommend this *Acacia*. It is an evergreen, and the shoots themselves, without the flowers, are very pretty from their creeping habit; but it is at mid-winter that it is at its best, and it lasts in flower for a long period. Our plant began flowering at Christmas, and though a sheet of flower, it is hardly at its best yet. This *Acacia* is best propagated from seed, and we believe it is generally so propagated by the trade. It grows well in good loam, or loam and peat; and it is of little consequence whether the roots are in an

inside or outside border. An old tree here has all its roots outside in unprepared soil, and it is healthy and vigorous enough; but the younger plant which has been referred to has its roots confined to a pit inside the house. The branches need little training. Any number of leading shoots may be led off when covering space quickly is an object; these only need to be carried forward, horizontally or otherwise, the side shoots being allowed to hang down as they grow. Plants of it may, however, be grown as standards in roomy conservatories, in which case they would form handsome weeping trees.—“Field.”

#### CRESTED CELOSIAS.

THE annexed cut represents a finely variegated *Celosia* lately sent out by Messrs. Vilmorin, of Paris. The brilliant flower heads of these *Celosias*, and the length of time during which they may be had in bloom render them very desirable plants to cultivate either for the purpose of supplying cut flowers, or for greenhouse or conservatory decoration, where for effect they have few equals among soft-wooded plants. Unfortunately, they are very subject to red spider; and, unless kept well syringed while growing, and freely supplied with water at all times, they



*Celosia cristata variegata.*

become so much injured as to lose their foliage entirely long before the flowers become shabby. Valuable, too, as they are for summer, they are even more so for winter work, and, for that purpose they should be sown in May or June. The seeds soon germinate if placed in a shady position in the stove, or where they can be kept under a bell-glass or hand-light to prevent the soil drying, which, unless protected, it soon does in summer. When the young plants are up, pot them in light rich soil, and shift them on as they progress. Till the end of August or middle of September no place will suit them better than a close pit or frame, where they can be plunged in leaves, or something of that kind, syringing freely overhead both morning and evening to keep down red spider. M.

#### WINTER-FLOWERING GREENHOUSE PLANTS.

THE commonest plants in bloom during winter frequently command an amount of admiration equal to that so willingly accorded to the magnificent examples of cultural skill and painstaking which adorn the exhibition benches in summer. Comparatively few garden establishments are expected to furnish collections of stove and greenhouse plants for exhi-

bition purposes; but all, or almost all, are required to produce flowering plants throughout the winter as well as in summer. Let us begin with soft-wooded greenhouse plants, or such as will be likely with ordinary care to render a greenhouse or conservatory gay and cheerful throughout the winter and early spring months, and also furnish at the same time an abundant supply of cut flowers which in almost all establishments are more or less in demand. In the first place may be mentioned

#### The Chinese Primula,

(*P. sinensis*), which is certainly one of the best of our winter-flowering plants. It is generally, although not necessarily, treated as an annual, on account of young plants of it being found to succeed best. In order to have plants of it in flower by Christmas, the seed should be sown early in April in a seed pan or well-drained pot filled with light soil. The seed should be gently pressed into the soil with a smooth piece of wood or the bottom of a small flower-pot, and it should be only slightly covered with silver sand or fine soil. The pot or pan should be placed or plunged in a slight bottom-heat—say in a Cucumber frame or pit—or it may be set in an ordinary greenhouse, placing a piece of glass upon the surface of the pot or pan until the seeds have germinated, when the glass should be removed, and the young seedlings shaded during bright sunshine. When large enough to be handled, they should be pricked into pans of soil composed of say two parts light rich loam, and one part finely-sifted leaf-soil. The plants should not be placed too closely together, as they should be allowed to remain there until large enough to be potted off singly into pots some 3 in. in diameter. By the time the plants have become well established, the season will be somewhat advanced, and they may with safety be placed in a cold pit. As soon as they have well filled their pots with roots, they should be shifted into the pots in which they are to flower, and which need not exceed 5 in. in diameter. The soil used may be similar to what has been already recommended. The plants may be allowed to remain in this pit until about the middle of November, when they should be placed where they are intended to bloom, such as on the front shelf of a greenhouse or other suitable situation. All the varieties of the Chinese Primrose are essentially winter-flowering plants; therefore, if, from late sowing or other causes, their flowering is retarded until the spring is advanced, careful shading is then necessary during bright sunshine, and even with this precaution the display of spring bloom will be inferior to that of mid-winter. So many fine varieties of this beautiful winter-flowering plant now exist that it is difficult to make a selection. I will venture, however, to name the following distinct varieties, viz: *Magnum Bonum*, a vigorous growing kind, which produces large trusses of violet-crimson flowers of good substance, and elegantly fringed; *Sunset*, a beautiful sort, which bears large trusses of a distinct shade of colour, viz., a rich magenta or scarlet; *alba*, a kind with flowers of the purest white, and beautifully fringed. The above are three of the most distinct varieties with which I am acquainted. But there is also a distinct section of these plants known as the Fern-leaved varieties, which, in addition to fine flowers, possess foliage of a very ornamental character; of these, two of the best and most distinct are *filiicifolia* and *filiicifolia alba*; there is, too, another section of more recent introduction, and that is the double, or rather semi-double fimbriated sorts, all of which reproduce themselves true from seed, and are known as *rubra*, *magenta fl.-pl.*, *alba fl.-pl.*, and *Maiden Blush*. All the above semi-double varieties are essentially distinct from the well-known old double white and double red Chinese Primroses, which have for so many years been grown in the greenhouses of this country, and to which of late years many valuable additions have been made. They are sometimes considered as somewhat miffy or difficult to manage, but this can hardly with justice be said of them. I have always found them to succeed best when the minimum temperature of the structure containing them is not allowed to fall under 45°. As they do not usually produce seed they are necessarily increased by division or by means of cuttings which root freely when inserted in a mixture of silver sand and sifted leaf-soil, and placed upon a slight bottom-heat in a close propagating pit; they should be inserted not later than the beginning of March. As regards soil for Chinese Primulas

it should be a mixture of about two parts of rich turfy loam and one part of leaf-soil, with, if thought necessary, a small portion of silver sand. When the plants are placed in their flowering-pots (which need not exceed 5 in. or 6 in. in diameter) a few small lumps of charcoal may with advantage be inserted in the soil of each pot.

#### The Persian Cyclamen.

This is another very beautiful winter-flowering plant, and one which belongs to the same Order as the Primrose. It may be had in flower from the beginning of December until May. By crossing it with the more hardy and high-coloured European species, improved varieties have been secured, as well as increased hardiness in the constitution of the plants. Some of the varieties are also conspicuous on account of the beauty of their foliage. The treatment formerly accorded to Cyclamens has of late years undergone a beneficial change. Instead of allowing the soil in which they had grown to become quite dry as soon as the flowering season was over (by which practice the tubers were frequently injured), they are now allowed to go to rest gradually, water being only entirely withheld when the foliage has quite disappeared. Many growers, indeed, adopt the plan of turning the plants out of their pots into a bed of prepared soil in the open air as soon as they have ceased flowering, and from this bed they are potted early in autumn, or as soon as growth has commenced. This more natural system of treatment is generally attended with the best results. Cyclamens may be increased by offset from old tubers, but they are most readily raised from seed, which should be sown as soon as it is ripe, when it will generally vegetate quickly; whereas old seed will not unfrequently remain for months in the soil before it germinates. The seed should be sown in a pot or seed-pan of light soil (such as has been recommended for the Primrose), and the young plants should afterwards be pricked off into other seed-pans not too closely, as in these pans they may be wintered, and early in spring they should be potted singly into 3-in. pots, and from these, when large enough, they should be shifted into their flowering-pots, which should be some 5 in. in diameter. Soil suitable for them may consist of about two parts rich light turfy loam, and one part well decayed cow manure or leaf-mould, with a portion of sand. During the summer they should occupy a cold pit, where they can have plenty of air, and be slightly shaded during strong sunshine. Plants thus treated will generally bloom profusely during the ensuing winter and spring months; and unless it be in cases in which large specimens are desired, such plants are in some respects to be preferred to older ones. Varieties of Cyclamens are now very numerous, but the following six may be considered as a good selection, viz., the original *C. persicum*, white and crimson; *candidissimum*, pure white; *grandiflorum*, a large-flowered and fine variety; *rubrum*, bright crimson; *marginatum*, white margined with rose; and *roscum*, a beautiful kind shaded with rosy red.

#### Cinerarias.

These useful winter and early spring-flowering plants are easily increased either by means of cuttings or division, but the method mostly followed is that of raising the plants from seed. One section produces blooms of a somewhat irregular form, but this is compensated for by the richness of their colour, which is a deep blue. Another strain of more recent introduction has well-formed double flowers, which to a certain extent reproduce themselves from seed, or at least furnish a considerable percentage of plants with double flowers, and the best of these should be increased by means of cuttings. When it is desirable to have seedling Cinerarias in bloom by Christmas, or soon after that time, the seed should be sown early in April, and as this is exceedingly minute, care must be taken to prevent its being sown too deeply. A well-drained pot some 6 in. in diameter should be filled to nearly the rim with light soil, which should be made quite level, and watered with a fine-rosed watering-pot; the seed should be sown upon the moist surface and pressed gently into the soil, covering the pot with a piece of glass until germination has taken place. When the young plants have become large enough to handle, they should be pricked off into seed-pans, and afterwards potted singly into small pots, shifting them afterwards into large ones as they

appear to require it. It is of the greatest importance that they should sustain no check from either want of room or lack of water; on the contrary, they should be kept growing as quickly as possible. The best situation for them during summer is a cold pit, where the pots can be plunged in ashes and the plants kept near the glass, shading slightly during intense sunshine, and moving them into the greenhouse or other light structure soon after the middle of October. The soil for the final shift (which should not if possible be later than the middle of August) may consist of two parts rich turfy loam, and one part well-rotted cow or hotbed manure or leaf-mould. It may be added that the Cineraria is exceedingly liable to the attacks of aphides, which, if unchecked, will speedily disfigure if they do not entirely destroy the foliage. For such pests no remedy is equal to repeated fumigation with Tobacco smoke, and this, too, should be applied carefully, as an overdose might seriously injure the foliage.

#### Zonal Pelargoniums.

Of late years these have become greatly improved. They have always, correctly enough, been regarded as summer-flowering plants, but they may at the same time be induced to bloom in winter. One condition necessary as regards the plants specially intended for this purpose is that they should not be allowed to flower during the summer, and young plants in comparatively small pots are better suited to the purpose in view than older and larger specimens. Autumn-struck cuttings should be shifted in March or April into pots one size larger than those in which they have been wintered. They should be placed in a cold pit and kept near the glass, where they can have abundance of air. Early in summer they should be transferred to their flowering-pots, which need not exceed 8 in. in diameter. They may then be placed in the open air, and the pots should be plunged in ashes and well attended to with water, all trusses of bloom being removed as soon as they appear. Early in October they may be taken into the greenhouse, and may now be allowed to flower, which they will generally continue to do until the end of January; but in order to insure success, the minimum temperature of the structure should not be allowed to fall under 45°, and the atmosphere should be kept somewhat dry. Those sorts should be selected for blooming in winter whose flowers are naturally of good substance, and the trusses not too large.

#### Salvia splendens.

This is an old, but very effective winter-blooming plant, the terminal plumes of bright scarlet flowers, of which have a light appearance, and they remain in perfection from the beginning of November until at least the end of January. It is easily increased by means of cuttings, and young plants of it generally succeed best. The cuttings should be inserted as early in spring as they can be obtained, and, although less hardy than the Chrysanthemum, they may nevertheless during summer have in all respects similar treatment as regards soil, exposure, &c. But they cannot with safety be left in the open air later than the beginning of October. *S. gesneriflora*, a more recent introduction than *S. splendens*, is also an exceedingly showy winter or rather early spring-flowering plant which may be treated in all respects the same as that kind.

#### Coronilla glauca.

This is an exceedingly useful winter-flowering plant, which is moreover nearly hardy, and its flowers, which are bright yellow, remain long in perfection. When grown under glass its season for flowering is during the depth of winter. It is easily increased by means of cuttings formed of the young shoots, inserted in a mixture of sand and leaf-soil early in spring, and such cuttings will form small-flowering plants for the following winter. They will, however, be found to be more serviceable both for the production of cut flowers, and for general decorative purposes the second season. The same plants may, if desired, be grown for many years, but when old they are apt to become infested by a small white scale, which ultimately render them unhealthy. Any light, and not too rich, soil is suitable for their culture.

#### Cytisus racemosus.

This and several other species of the same genus make useful plants to flower during winter and early spring, and they

may be treated in the same manner as the Coronilla. When they have done flowering, their shoots should be more or less cut back, and they may then be made to assume any desired form, such as a standard or a pyramid. They should be grown in the open air in summer, and be placed again under glass early in October.

#### Acacias.

Most of these flower early in spring, though some of the species do not remain long in perfection. Among the most ornamental are *A. affinis*, *armata*, *Drummondii*, *grandis*, *pulchella*, and *vestita*. The last is one of the best, and it is well adapted for training on the back wall of a greenhouse, for clothing pillars in a conservatory, or for ordinary pot-culture. Its flower-buds begin to show themselves soon after Christmas, and give the plant an ornamental appearance long before the blooms are fully expanded, when they remain in beauty until about the end of March. All the species of Acacias are increased by means of seed or cuttings, although some difficulty is now and then experienced in increasing some of the species by the latter method. They are by no means particular as to soil; a mixture of turfy loam with a small portion of peat suits them perfectly.

#### Echeveria retusa.

This is a very beautiful winter-flowering plant, and one which only requires to be better known to be more extensively grown, if only for the purpose of furnishing cut flowers in winter. It is a Mexican plant, and belongs to the *Crassula* family. It succeeds well in an ordinary greenhouse, in which it will begin to throw up its large spikes of beautiful flowers about Christmas, and will generally continue in bloom until the middle or end of March. The flowers have the property of remaining long in good condition when cut and placed in water. They have a rich wax appearance, and their colour is orange-scarlet faintly striped with yellow. The plant itself is easily increased by means of cuttings, which may be inserted singly in 3-in. pots, filled with a mixture of sand and sifted leaf-soil, and placed upon a shelf in a propagating house, or in any other structure where a temperature not under 60° is maintained. Such cuttings will speedily form roots, and may be shifted into 5-in. or 6-in. pots. During summer they may occupy a cold pit, but they should be placed in the greenhouse early in October. Plants of this description will be in bloom soon after the middle of December. Any light and not over rich soil will suit them.

#### Libonia floribunda.

This is also a useful winter-flowering plant, and one which is easily increased by means of cuttings formed of the young shoots. It continues to bloom throughout January and February, and should occupy the warmest parts of the greenhouse, as a very low temperature is not unlikely to cause it to drop its leaves. It will succeed well in a soil composed of turfy loam, with a portion of peat or well decayed leaf-mould.

To the winter-flowering plants just named should, if possible, be added a collection of *Chrysanthemums* and a selection of *Camellias*, winter-flowering *Cape Heaths*, and *Eparcises*, together with such imported bulbs as the *Hyacinth*, the *Narcissus*, and early-flowering *Tulips*.

P. GREVE.

Culford Hall, Bury St. Edmunds.

#### DEUTZIA GRACILIS.

THIS charming little Japanese shrub which with propriety be called everybody's plant, as it will grow and flower under almost any sort of treatment, and it can be had in bloom from Christmas to midsummer. It is one of the most useful of plants for conservatory decoration and also for furnishing cut flowers, and the cultivator may always depend on being well rewarded for any extra care which he may bestow on its cultivation. It strikes freely from cuttings taken from the young growth and put in thumb-pots in sand and leaf-soil in an atmosphere of from 60° to 70°. As soon as they are rooted, they should be potted off into 3-in. pots and replaced in heat, and as soon as the roots have reached the sides of the pots, they should be shifted into 5-in. pots, using a strong, fibrous loam with a little clean coarse sand at each potting, making the soil firm. Keep the plants in a good moist heat till they have made their growth, when they require a drier atmosphere in which to ripen the young wood before they are

turned out-of-doors. If this be not attended to, plants of it started in November and December will be a failure, through the blooms going blind at a time when flowers are of most value. When the growth is finished and well ripened, harden the plants off by degrees and plunge the pots up to their rims in ashes in a sheltered situation well exposed to the sun. If any of the plants require a shift, do it before plunging them, as they force better than when it is left till they are taken into heat. Plants required to be in bloom at Christmas should be started in an atmosphere of from 55° to 60° about November 20, and a few should be introduced into heat once a fortnight where a succession is required. For late blooming set the plants behind a north wall until they are required. When they are in growth and the pots are full of roots, supply them freely with liquid manure, and when in bloom, keep them cool and shade them from the sun, in order to prolong the bloom. When the flowers have faded cut out all the old wood, allowing nothing to grow but the young shoots from the bottom, and as they advance in growth draw them towards the rim of the pot, so that when in bloom the flowers will hang gracefully over the side.

JAMES SMITH.

Waterdale.

*Clematis indivisa lobata*.—This attractive greenhouse species is just now coming into flower in a cool house. It is not a hybrid variety, but a species from New Zealand. The flowers are white and rather fragrant, but the stamens and pistils are of a purplish-red colour, affording a pretty contrast to the white petals. It is an easily-cultivated plant in a perfectly cool and airy greenhouse. Where it is restricted to limited space it is best grown in a pot, for it is a vigorous grower, and soon covers a large space. The flowers are produced in profusion from the axils of the leaves, and this must be taken into account in training the plant. One matured shoot, well exposed to the light, will produce quite a wreath of flowers. It may also be trained in the form of a balloon if confined to a 9-in. or 10-in. pot. One or two limbs only should be led away from the root and trained regularly round the balloon trellis spiral fashion, so as to cover all the space, but without crowding the shoots in any way. About this season they will break freely and produce a mass of blossom. Common loam principally, with a little leaf-mould or peat and sand, makes a good compost in which to grow it.—W.

#### NOTES AND QUESTIONS ON THE INDOOR GARDEN.

*Imantophyllum miniatum* as a Forcing Plant.—I agree with Mr. Hinds (see p. 180) as to the usefulness of this plant for decorative purposes. But Mr. Hinds appears only to have discovered half its merits. When treated the same as *Eucharis amsonica*, it can be had in bloom two or three—or even more—times in one year.—A. W.

*Amaryllis formosissima*.—This has dark scarlet or crimson blossoms, which are abundantly produced on established plants, and for decorative purposes, in a cut state, they are very valuable. It is largely grown by Mr. Woodbridge, at Syon House, C.-S.

Seedling *Cape Pelargoniums*.—I have sent you blooms of one of our *Echinatum* seedlings for inspection; the habit, &c., of the plant is exactly the same as that of the old *Echinatum*, and the colour of the flowers being the only point of difference.—CHAS. E. PARSONS, *Chilwell*. [The flowers in question were bright rosy-pink, approaching to crimson, with a white purple-streaked centre, and spotted on all the petals with maroon. Though individually small, they are produced in clusters of from fifteen to twenty, thus fully making amends for want of size, which with some might be considered a fault.]

*Semi-double Show Pelargoniums*.—The large-flowered semi-double *Pelargoniums*, such as Prince of Novelties and Queen Victoria, are of immense value for flowering early in spring. When well bloomed they are exceedingly attractive, and the flowers are most useful in a cut state. To have the plants in bloom thus early, a beginning must be made in propagating a stock at a very early period in the year previous. They must have plenty of time to acquire strength, the wood to become firm, and the roots to well fill the pots before the winter. Instead of waiting until the plants are out of bloom, and have ripened their wood before propagation is commenced, the cuttings should be struck about the time they are coming into bloom. The top of the young shoots will, if moderately firm, strike freely with the assistance of a brick bottom-heat. The usual routine of putting off, shifting on, and stopping must be carried out, and it must be borne in mind that they should receive the last shift about the first week in August, and the last stopping not later than the third week in that month. Pots of about 5 in. are the largest size that ought to be employed. The varieties that have been found to be the most desirable are album plenum, white; Beauty of Oxtou, maroon and crimson, with white margin; Captain Raikes, crimson marked with black; elegantissimum, vermillion, with white margin, the edges of the petals beautifully crisped; Madame Everard, crimson and maroon, in the way of Prince of Novelties, but better; Queen Victoria, vermillion and white; and Ville de Casen, dark crimson, with maroon markings, on the upper petals.—"Gardener's Magazine."

## PLATE CXIX.

## A GROUP OF CARNATIONS AND PICOTEEES.

Drawn by H. NOEL HUMPHREYS.

WITHIN these last few years Carnations, Picotees, and similar flowers have become such favourites, that growers of them for sale have had some difficulty in propagating sufficient stock to meet the demand. There is no doubt that this desirable state of things is to some extent owing to a return to the more refined taste of former years. The gaudiness of many modern flower gardens, with their panels and carpet bedding, is anything but pleasing to those who love flowers for their sweetness and beauty. The Carnation possesses both of these qualities, and it is also a plant of easy culture, succeeding well either planted out in beds or in the form of isolated specimens in the flower borders. Those who intend to cultivate Carnations out-of-doors should not trust entirely to the varieties which are exhibited at flower shows, inasmuch as some of the sorts that are valued for their shape and purity of colour are weakly in constitution, and do not succeed out-of-doors in winter. Raisers of seedling Carnations aim at obtaining well-marked flowers, the greatest favourites being scarlet bizzarres. In these there are two colours, viz., scarlet and maroon on a white ground. The petals should be broad and smooth, without serratures on the edges, and the markings should also be regular, and, if possible, there should be no spots on the whites. Next to the scarlet are the crimson bizzarres, then the pink and purple. There are also purple, scarlet, and rose flakes, classed in the order in which the names of these colours stand. In these the different colours are laid out in stripes, or, more properly speaking,

in flakes. Flowers with bright high colours are those most in request, and their ground colour should be pure and as near white as possible. Sells and flowers with fringed petals are disregarded. In large collections there is annually a certain percentage of what is termed run flowers; the white disappears entirely, and if this happens in a scarlet flake, there will be but one colour left, and that a scarlet self. Any other colour may also vary in the same way, leaving self-flowers the colour of the flakes. When this happens the plant becomes stronger and better able to withstand out-of-door culture. I have propagated many of these sports, and by some they are preferred to the marked flowers.

In order to grow the Carnation well out-of-doors, the ground should be prepared by being deeply trenched, and while this is being done, a good dressing of stable manure should be worked into it. I have planted Carnations and Picotees at different seasons, but perhaps November and February are the best months for doing so. If there be plenty of plants I would put them out in November, but in the case of scarce varieties I would much prefer keeping them in pots through the winter, so that the plants could have the shelter of a cold frame. Both the Carnations and Picotees like a soil with a considerable portion of clay in it, but it must at the same time be porous, and well

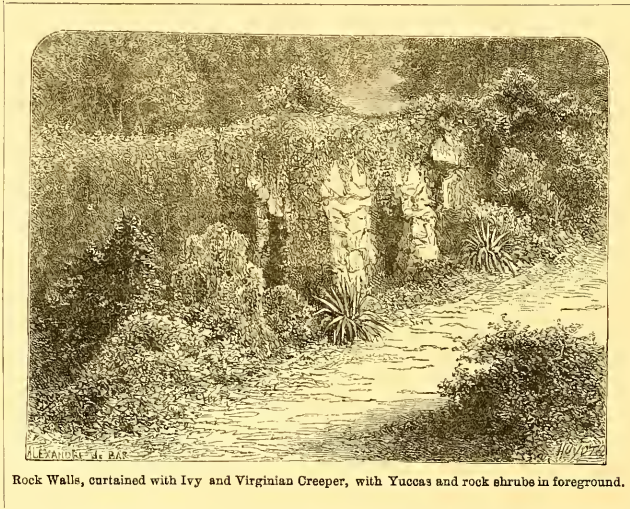
drained underneath. The tender fibrous roots seem to run into a mixture of leaf-mould and rotted stable manure mixed with the soil more than into any other material. I plant more closely together than many do. Carnations do not produce many flowers in proportion to the leaves, and one must leave room to layer the "Grass" round each plant. This can be done if the space between is about 1 ft. I generally provide neat flower-sticks to stand about from 2 ft. to 2½ ft. out of the ground. The most desirable are those made of double laths, and painted green. The sticks are placed to the plants when the flower-stalks have grown about 6 in. or 9 in., and after tying must be attended to, as the flowers are heavy, and Carnation flower-stalks snap very readily at the joints.

Layering should be done the first week in August. Strip the leaves off the base of the growth to be layered to about half its length; then, with a sharp knife, cut through a joint upwards; the layer is then fastened to the ground in an upright position with a peg. Some light sandy soil must be placed round the plant to facilitate the emission of roots. Half the plants may be removed to form another bed, or to plant out in the borders. If the others be allowed to remain where they are, and a surface-dressing be applied to the beds of light rich soil the following spring, the plants will grow freely and yield a rich harvest of beautiful blooms. Carnations are easily propagated by means of seeds, which may be sown in boxes set on a slight hobbed in March or April. When the seedlings are large enough to handle, they may be pricked out into boxes of the same size, placing them about 2 in. apart; when well established, plant them out 9 in. apart in prepared beds. They will flower the second year.

A few of the hardiest Carnations best adapted for border culture are:

*Scarlet Bizzarres*—Campanini (Turner), Guardsman (Turner), Lord Lewisham (Bunn), Mercury (Hexall), Sir J. Paxton (Ely); *Crimson Bizzarres*—Albion's Pride (Headly), Eccentric Jack (Wood), Gem (Headly), Graceless Tom (Wood), Marshal Ney (Headly), Rifleman (Wood); *Pink and Purple Bizzarres*—Falconbridge (May), James Taylor (Gibbons), Satisfaction (Rudd), Purity (Wood); *Purple Flakes*—Ajax (Hexall), Dr. Foster (Foster), Earl Stamford (Elliot), Juno (Baldon), Premier (Milwood), Squire Meynell (Brabbin); *Scarlet Flakes*—John Bayley (Dodwell), Sportsman (Hedderley), Superb (Ingram). The Scarlet Flakes are not free growers. *Rose Flakes* are very pretty, and by many persons of taste the most esteemed. The best sorts are—James Merryweather (Wood), John Keet (Whitehead), Mr. Hexall (Turner), Mrs. F. Burnaby (Turner), Sybil (Holmes), Samuel Newman (Hooper). *Sells* constitute a class much admired by the general public; some of the best are—Cremore (purple), Bride (white), Elysian Beauty (rose), Italian Clove (fine large crimson), King of Yellows, Mrs. Matthews (pure white, very sweet). To these may be added the true old crimson and purple clove-vented varieties.

Picotees are quite as well adapted for border culture as Carnations, and are divided into three classes. First in order is



Rock Walls, curtained with Ivy and Virginiaian Creeper, with Yuccas and rock shrubs in foreground.



CARNATIONS AND PICOTEES (A GROUP FROM SLOUGH)



the *Red-edged* class, the best of which are Forester (Taylor), J. B. Bryaut (Ingram), Mrs. Bower (Bower), Mrs. Horny (Turner); *Purple-edged*—the best in this class are—Admiral (Turner), Chanticleer (Fellowes), Ann Lord (Lord), Mary (Simonte), Picco (Jackson); *Rose and Scarlet-edged*—Edith Dombraim (Turner), Ethel (Fellowes), Fanny Helen (Niven), Mrs. Fordham (Turner), Miss Wood (Wood), Obadiah (Kirtland), Purity (Payne).

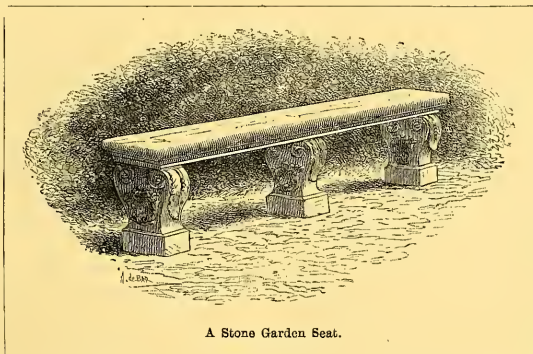
The above selection is made of sorts that succeed out-of-doors. A selection for exhibition purposes would be different. The accompanying coloured plate has been prepared from flowers of Carnations and Picoetes submitted to the artist just as they were cut from the plants; not having been subjected to the manipulations of the florist's tweezers. If this had been done the outlines of the flowers would have been more regular, and the small faulty petals would have been removed. It is certainly better that the public should see and judge of the flowers in a natural state than when art has been employed to assist Nature.

J. DOUGLAS.

## GARDEN BOTANY.

(Continued from p. 193.)

**QUICKNESS OF GERMINATION.**—Under the ordinary conditions of storing, seeds of various kinds retain their germinative force for one or more seasons, according to their nature; but after being kept beyond a certain time the energy of their vitality gradually diminishes until it is completely lost. The term for which seeds retain their germinating powers varies widely in different species; but in a general way it may be said that the younger they are the quicker they sprout under the same conditions, and the more vigorous the subsequent growth of the seedling. As seeds become older, the more feeble and uncertain their germination, and the longer the period that elapses before they show signs of active life. It is because they have begun to perish, and the store of



A Stone Garden Seat.

nutriment laid up for the use of the nascent embryo has been gradually wasting away; so that growth is necessarily retarded and rendered very slow until the seedling has had time to recover the loss, when it may proceed as rapidly as in a plant starting under more favourable conditions. Being, in a manner of speaking, invalids, old seeds require much more care and attention than fresh, and, like a half-starved man, must be cautiously fed at the outset. An excess of moisture, or a deficiency of warmth, soon proves fatal to a seed in this enfeebled state. A little higher temperature than is necessary for a vigorous seed of its species is recommended, and a very careful regulation of moisture. The safest method to prevent saturation and consequent decay is to manage so that the moisture reaches the seed in the form of vapour, and then the seed will gradually absorb it according to its wants. Age, then, other conditions being the same, has a great deal to do with the time occupied in germination, or, perhaps it would be better to say, to prepare the embryo for germination, because not only is the early growth of an old seed slower than that of a fresh one, but the first visible sign of life is much longer making its appearance. The lesson to be learnt from this warns us against mixing the seeds of different seasons and sowing them together. But, apart from age, there is a wonderful disparity in the vital energy of seeds, as displayed in their more or less rapid germination after they have been subjected to the proper conditions, and in the amount of growth the seedling makes in a given time. It should be fully under-

stood that the conditions must be congenial and suitable in each case, or the comparisons are worthless. Oftentimes we hear or read of certain seeds lying dormant in the ground a long time—a year or two, or three—after being sown, and then springing up; but in most cases the deferred germination may be ascribed to some unfavourable condition. On the other hand, no artificial preparation of the seed, beyond divesting it of its pericarp or taking it out of the fruit, is supposed, otherwise the chances are equalised to a certain extent. In describing the tests, the nature of this was pointed out as apparently limiting the period consumed in germination in some cases; in Acacia, for instance, in which it is so dense, that moisture is a long time permeating to the embryo. But there are others as many species of Gentian, Lily, &c., which are very slow to germinate, often as long as a twelvemonth after sowing. Others are remarkable for the short period that elapses before they begin to germinate. Many of the Cruciferae, Cabbage family, quickly germinate. Thus, fresh seed of the common Brassica, *Lepidium sativum*, in the most favourable temperature will begin to push forth the radicle in ten or twelve hours after being sowed and watered. Willow seed also germinates in a few hours. Some seeds do not germinate so evenly and vigorously the first season after collection as the second and two or three, or more, successive seasons. The seed of Corn Salad, *Linum grandiflorum rubrum*, and *Vinca rosea* exhibit this peculiarity. Possibly this may be accounted for by the fact

that the production of flowers extends over a considerable period, consequently the seeds of the earlier flowers are more perfectly matured than those of the later ones. The seed of the tuberous *Chervil* must be sown in September or October, and lies in the ground four or five months without showing any sign of life. This phenomenon is, of course, common in Nature, but the seed of *Chervil* loses its vitality if kept out of the ground. Seeds of the same age from the same tree, and even from the same seed-vessel, sometimes germinate very irregularly. M. Carrière records a very remarkable

instance. In 1854 he sowed some seeds of a Chinese Peach, and subjected them all to the same conditions. Two came up in 1855, two others in February and August, 1856, three in 1857, two in 1858, and the last in 1859. It is possible, of course, that although it was intended that the conditions should be the same, the seed were not all exposed to exactly the same influences. In some cases rapid germination seems to be a natural provision to ensure the perpetuation of the species under otherwise unfavourable conditions. One of the most singular on record is that of the germination of the seed of the "Rose of Jericho" (*Anastatica hierochuntica*), also a member of the Cruciferae. It is a dwarf, radiately-branched annual, which inhabits the sandy wastes of North Africa and Syria. As the seed approaches maturity and the leaves decay, the branches curve inward, forming a ball of the entire plant, which is soon detached from the soil, and blown hither and thither. The incurved branches prevent the seed from being scattered, where the next sand-drift might cover them too deeply; but as soon as rain comes the branches unfold and the seed-pods open. The germination of the seed follows very rapidly. Seeds of this plant taken from a specimen purchased at the last International Exhibition at Vienna, and sowed about five o'clock in the afternoon, had germinated by one o'clock the following day, and their rootlets pierced the soil. The seeds of this plant also retain their vitality for very many years, as I am informed by Mr. Nicholson, of Kew.

**DURATION OF THE VITALITY OF SEEDS.**—This depends upon

a variety of circumstances. Under exceptional conditions, such as being buried at a considerable depth in a moderately dry soil, some seeds will retain their germinating power for an almost indefinite period; but great doubt and uncertainty attach to all the accounts of the germination of very old seeds. This remark applies to the so-called Mummy Wheat, said to have been raised from grain taken from an ancient Egyptian sarcophagus, and some other instances of the same nature. It is, however, not impossible that some seeds may retain their germinative force under the exceptional conditions indicated for a much longer period than that for which we have unimpeachable evidence. A humid atmosphere is very destructive, but exposure to a moderately dry air acts beneficially. The degree of cold a dormant embryo will bear with impunity, providing it has not been saturated with liquid, seems to be practically unlimited. Mr. Darwin and others have made experiments on seeds by immersing them in salt water. Out of eighty-seven kinds sixty-four germinated after being in salt water for twenty-eight days, and a few after an immersion of 137 days. Instances are on record, too, of seeds of American plants which have been washed on the shores of Western Europe germinating after their long voyage across the Atlantic. Considering the question from a practical point of view, that is, how long different seeds will keep good under the usual conditions of storing, we may glean some useful information. For the substance of what follows on this point I am mainly indebted to the results obtained by the firm of Vilmorin & Co., of Paris, obligingly communicated to me through my friend, Mr. Hermann Stenger. The germination of unripe seed is the subject of another paragraph, the gist of which is that many unripe seeds will grow if sown directly they are collected. This fact furnishes the solution of another no less singular fact if taken by itself. It is this, that Carrot seed ripened in England will not retain its germinating power so long by at least one year as French-grown seed; and this peculiarity has been observed in Radish, Cabbage, and other seeds. This is, doubtless, due to climatal causes. In France the average number of sunny days in autumn greatly exceeds the number we enjoy in this country, consequently seeds are usually harvested in a better condition for keeping. Care should be taken, therefore, to harvest seeds as thoroughly as circumstances will permit. But perfectly ripened seeds of different species vary greatly in their germinative force; and the approximate duration of vitality of most common seeds when stored is known. Some seed, such as Angelica, Coffee, &c., must be sown soon after they are collected; others, like the China Aster, Alder, Birch, and Sycamore, will rarely germinate the second year, whilst others retain the power for an unknown period. Authenticated instances of seed, retaining their germinating powers for a considerable number of years are by no means numerous. Seeds of *Sida Abutilon*, which have been in Messrs. Vilmorin's warehouse for at least a quarter of a century, germinate as freely now as when first received. M. A. de Candolle, of Geneva, sowed in 1856 seeds of 385 species collected in 1831, 20 selected seeds of each sort being employed in the experiment. Only 17 species germinated, and of 15 of these only 1, 2, or 3 seeds, but 15 out of 20 of *Dolichos unguiculatus* and 6 of *Lavatera gred.* Radish seed has been known to grow freely when 17 years old, and it is also recorded that Kidney Beans 100, Rye 140, and *Mimosa pudica* 60 years old have germinated. Probably some of these records are due to unintentional errors in the experiments. So far as my practical experience goes, prolonged vitality seems to depend upon the nature of the pericarp, testa, or albumen, though there are some inexplicable exceptions. Thus Carrot seed will keep good four years, whereas Angelica and Parsnip, members of the same family, having more oily seeds, will only grow the first and second spring respectively after they are collected. The seeds of Australian Acacias, which have a very hard, dense testa, are long-lived, but the Kidney Bean, which belongs to the same family, rarely grows after the third season. Some seeds, for different reasons, are preferred two or three or more years old to quite fresh ones; in some instances because the older seed germinates more regularly as to time, as pointed out elsewhere. Old Balsam seed, other things being equal, has the reputation of yielding a larger proportion of double-flowered plants than new, because its vital force de-

creases with age. There are cultivators, too who think that old Cucumber seed gives better results than new. Probably there is some truth in this, but I have seen no record of the results of experiments conducted for the purpose of determining these points; and I am neither able to confirm nor refute them from my own experience. From what is said at the beginning of this paragraph on the duration of the vitality of seeds according to ripeness, it will be understood that any figures relating to the number of years different seeds will retain their germinative force must be regarded as approximations to the average duration of their vitality, under the ordinary conditions of storing, rather than as absolute and invariable periods. The following table embodies the results of the lengthened experience of the firm of Vilmorin and Co. It should be explained that some of those given as of one year's duration are only regarded as really fit for sowing the season following their collection. The terms for many species are under, rather than over, stated—Cucumber, for instance.

*Average duration of the germinative power of the seeds of some cultivated plants:—*

	Years.		Years.		Years.
Acacia . . . . .	many	Cervil . . . . .	2	Parsnip . . . . .	2
Alder . . . . .	1	Cervil, tuberosus . . . . .	1	Pea . . . . .	4 or 5
Amaranth . . . . .	5	Corn Salad . . . . .	1	Potato . . . . .	3
Angelica . . . . .	1	Cress . . . . .	5	Parslane . . . . .	8
Anise . . . . .	3	Cucumber . . . . .	5	Radish . . . . .	5
Artichoke . . . . .	5	Egg Plant . . . . .	7	Rampion . . . . .	5
Aster, China . . . . .	1	Eradive . . . . .	9	Rhubarb . . . . .	3
Balsam . . . . .	many	Leek . . . . .	2	Rocket . . . . .	2
Basil . . . . .	6	Lentil . . . . .	3	Rosemary . . . . .	4
Beans, Broad . . . . .	6	Lettuce . . . . .	5	Salsify . . . . .	2
Beans, Kidney . . . . .	3	Mais . . . . .	2	Samphire . . . . .	1
Beetroot . . . . .	5	Mallow . . . . .	5	Scorzenera . . . . .	2
Borage . . . . .	3	Marjoram . . . . .	2	Seakale . . . . .	2
Burnet . . . . .	2	Melon . . . . .	5	Sorrel . . . . .	2
Cabbage . . . . .	5	Mustard . . . . .	5	Spinach . . . . .	2
Capsicum . . . . .	4	Nasturtium . . . . .	5	Strawberry . . . . .	3
Caraway . . . . .	2	Onion . . . . .	2	Tomato . . . . .	5
Cardoon . . . . .	7	Parsley . . . . .	3	Turnip . . . . .	5
Carrot . . . . .	4				

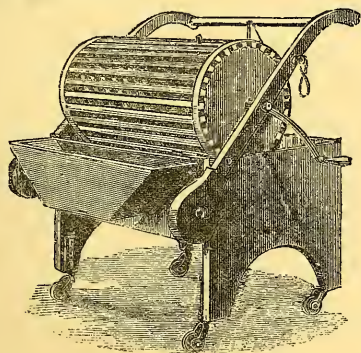
An analysis of the above figures shows a general agreement in the constitution of the seeds of different plants of the same families, with exceptions which can be accounted for in the way already explained. The relation of albumen and duration of vitality are somewhat contradictory; but, confining our remarks to the plants here named, exalbuminous seeds and those with very little albumen retain their vegetative power longer than seeds with a minute embryo and a relatively large quantity of albumen. Taking a broader survey, the rule holds good that the more highly developed embryo, whether small in itself or large, will lie longer dormant without losing life than the large or small embryo of albuminous seeds. Sir Joseph Hooker somewhere states that seed of *Nelumbium speciosum* taken from a herbarium, known to be upwards of one hundred years old, germinated. This has an exceedingly dense testa.

**DURATION OF THE VITALITY OF SEEDS ON THE MOTHER PLANT.**—Most plants shed their seeds, or the seed-vessels fall off, the same season as they are produced. Many of the Proteaceæ (*Banksia*, *Hakea*, &c.) and Conifera (particularly some species of *Pinus*) bear the unopened seed-vessels or cones of numerous successive seasons. The first seed-vessels produced by some of the Proteaceæ do not open, if not detached from the plant, until the death of the plant, or under the influence of a very severe drought or forest fire. So long as they remain attached to the parent plant, the seed-vessels appear to absorb sufficient moisture to prevent them from opening; and so long as the seed-vessels do not open the seeds retain their vitality, assuming always that they have not been injured by insects or in any other way. It is the same with some Pines; and *P. maritima* may be named as a familiar instance. Or it should be said that the cones of several seasons may be seen on a tree and unopened at the same time. The cones of thirty successive seasons have been observed on some North American species. But the cones open when removed from the tree and exposed to drought, and then the seeds soon lose their germinative power. To prevent the cones from opening before it is desired, the Americans bore a hole up through the axis or centre and fill it with treacle, which they plug in. W. B. HEMSLEY.

## THE KITCHEN GARDEN.

### A VEGETABLE WASHING MACHINE.

In the Oneida Community large numbers of people are brought together to form one extensive family, and their kitchen operations are consequently on a correspondingly large scale. Many of the minor operations in domestic matters, which, when performed in an ordinary family, seem to require but little time and labour, when multiplied to meet the wants of a family as large as that of the Community in question become onerous and time-consuming. Washing Potatoes and other vegetables preparatory to cooking is one of these, and it is one in which, where much is to be done, the cook will gladly welcome any aid. Among the other labour-saving machines devised by some inventive member of the Community is a machine for washing Potatoes and other vegetables, of which the annexed is an engraving from a photograph. It consists of a slatted cylindrical grate, provided with a crank, and is so arranged that it may be revolved in water contained in a square tub, or it may be lifted quite out of the water by means of the handles of the frame in which it is hung, and carried over to discharge its contents into the wooden funnel, seen at the side of the tub, from which they fall into a basket or whatever may be placed beneath to receive them. The Potatoes or other vegetables are placed in the cylinder through a door not shown in the engraving; they are revolved in the water for about three minutes, when, by a single lift of the grate by the handles, they are dumped out perfectly clean. A similar machine is sometimes used in starch



A Vegetable Washing Machine.

factories. In large families, schools, or other institutions where cooking is done on a liberal scale, a machine of this kind will be found to save a great deal of unpleasant labour.—“American Agriculturist.”

### TREATMENT OF VEGETABLES FOR SEED SAVING.

It may justly be said that the saving of garden seeds, particularly of culinary vegetables, comes more within the scope of the professional seed grower than the practice of those engaged in ordinary gardening pursuits; but with some things of a special character there is no doubt that there are considerable advantages derivable from the cultivator saving his own seed. This applies not only to such subjects as are liable to deterioration through accidental fertilization by bees and similar agents, but also in the case of plants that are not susceptible or seldom become crossed in this way, yet to keep them up to their wonted excellence need careful selection. To this latter point it would be difficult to attach too much importance, so far as regards many of the most essential culinary vegetables. With such things as Peas, Broad Beans, Dwarf and Runner Beans, Celery, Onions, Tomatoes, Radishes, Parsnips, Lettuces, Leeks, Carrots, Beet, and others of like character, in which accidental crossing seldom takes place, it is certain that by attentive observation and careful selection of individual plants that evince a marked difference in their character, often as to more vigorous growth, as in the case of Beans and Peas, improved varieties may frequently be secured. With plants, the root portion of which is eaten, such as

Onions, Beet, Turnips, Carrots, and the like individual plants, may, in any garden, almost every year, be noticed that possess better-shaped roots, and that have altogether a distinctive character from the bulk of the crop. Where this selection for seed-bearing purposes of the most promising plants is not followed, deterioration is certain to take place, as in a few years may be seen by anyone who will take the trouble to work out an experiment on the subject. For instance, if a good strain of any variety of Turnip be sown, the greater portion of the bulbs will be well shaped, having thin tap roots, and free from thick necks, and coarse foliage, yet here and there, even from carefully selected stocks, there will almost invariably be a few found with coarser, thicker tap roots and tops, and worse-shaped bulbs containing more tough fibrous matter. If for seed purposes, any given number of roots be taken promiscuously from the crop, including a portion of inferior examples, such as the above, and this is continued for a few years, it will be found that the strain collectively becomes very indifferent, even to an extent that the comparatively few coarse bulbs at first overlooked would not have seemed to warrant; this can only be accounted for from the fact that the rough, ill-shaped roots generally appear to possess more than an ordinary share of fertility in seed-bearing, a circumstance which I have often noticed with many vegetables. With Carrots, this would appear to be the case more than with many plants. A rough, thick-necked root with a coarse big top will generally produce a larger head of fully-developed seeds than one better formed; at all events, so far as my own observation has gone in the matter, this conclusion has been borne out. With Celery, more than most things, an odd plant or two in a row may be often observed that without any advantages as to extra room, position, a greater abundance of manure, or, in fact, anything that could account for it, will show a decided superiority over the rest of the plantation. The same thing may be seen in Lettuces and similar vegetables, and with Endive to a greater extent than most plants; this can be accounted for by the fact that with plants, as with animals, there are some that, from the first stages of their existence, are endowed with more strength and vigour than others. It is by the judicious selection of these for seed purposes that the stocks of such vegetables as we cultivate can not only be kept to perpetuate the true character for which the variety is distinguished, but even improved. In respect to seed-growing of all such things as are particularly liable to get crossed or intermixed independent of the handiwork of the hybridist, and of which the Brassicas or Cabbage tribe may be taken as the principal representatives, most people with only limited experience in gardening matters are aware that these are so subject to get crossed through the agency of insects, that it is necessary to take considerable precautions with a view to keep them pure; otherwise any particular variety of such things as Cabbage or Broccoli is sure to become an interminable mixture, wherein the greater number of the produce will be found very dissimilar to the variety required, and in almost every case inferior to it. For example, it is a well-known fact that if a single plant, or any number of plants, of a given kind of such vegetables as those under consideration be in flower sufficiently near plants of another sort also in bloom, so that bees will visit both in their honey-gathering excursions, cross-fertilization is thus effected to an extent that will completely destroy the distinctive character of the plants produced from the seed. It will generally be noticed when a new variety of any such things as Cabbages, Cauliflowers, Broccoli, Kale, Brussels Sprouts, &c., first makes its appearance that the plants raised from seeds come true to their kind; yet, however desirable the sort when fully proved turns out to be, in a few years it often becomes a difficult matter to obtain it true; this can easily be accounted for. In the first instance, it was necessary on the part of the raiser, with a view to get a character to the variety in question, to use every care to keep the strain pure, and for the additional trouble and labour involved in this he was remunerated by the much higher price the kind, whilst new, commanded; but when this incentive no longer existed, through the sort becoming plentiful, proportionately less care was exercised by the seed-grower; hence the deterioration that ensues, and with which too often all the care and vigilance it is possible to use by those engaged in both the wholesale and retail of garden seeds is

insufficient to cope. It was through the disappointment I experienced in not getting some things of proved excellence true to their kind that induced me to set about saving a few of the most important of these myself, for to anyone who has to provide for a large family an uninterrupted succession of such things as Broccoli through the autumn, winter, and spring, it is something more than a disappointment to have a particular variety, upon which reliance has been put to come in at a given time when sown at its proper season, coming in either a couple of months earlier or later than it was expected, with a consequent gap in the supply.

Possibly the easiest way to make my practice in the matter understood will be to give a few brief details on the course I adopted. It is a well-known fact that the seeds of most of the Cabbage tribe retain their vitality for several years when stored under favourable conditions; acting upon this, I never attempted to save more than one variety of Cabbage, Broccoli, Cauliflower, or Brussels Sprouts that would be in flower at the same season. The Cabbages and Cauliflower I selected were always from such as had been sown—the former in the spring of the year preceding, and the Cauliflower in the autumn, being particularly careful to choose the best plants which most fully exemplified the distinctive form of the variety they represented, with plenty of strength and vigour, as it would be a great mistake to gather seed from a weakly plant; these were marked when sufficiently advanced to show their true character, and were allowed to remain to bloom during the spring and summer. With only having one kind in flower at a time there was nothing to fear by their getting crossed with other sorts, so far as being contiguous to anything from which this might result, but bees travel a considerable distance with the pollen of other flowers adhering to their legs and bodies. To guard against the intrusion of these, the plants were covered with fine hexagon netting, supported on Willows struck in the ground, with their heads bent together and tied over the plants. The woolly nature of the netting prevented anything getting through it; and to stop anything getting under it, it was brought right down to the ground and there secured, applying it directly the flowers began to open, and removing it as soon as the blooming was over. There is no necessity for this covering where there is a certainty that none of the same family of plants are in flower for a good distance, but I should not like to run the risk if any happened to be growing within say the distance of half a mile, as a few plants of curled greens, the stools of Brussels Sprouts, or anything similar negligently left to run up to flower, and exhaust the ground when they ought to have been dug in or removed to the refuse heap, would be ruinous to our work. If the heads of the Cauliflower be left entire and the weather come wet, I have found them liable to rot in the middle, consequently the centre portion before they began to run up was cut out. All that is further required is to use a net to protect the seeds from birds from the time they have grown to their full size, as long before ripe they are often attacked, and the whole cleared out so as to scarcely leave a seed. This is much more apt to occur where there is only a limited number of seed plants than where grown in large breadths. Broccoli, Brussels Sprouts, and Kale were treated in like manner from plants sown the spring previous; Lettuce and Endive alike from plants selected as the best of their respective varieties, both from seed sown the autumn before. With root crops, such as Turnips, Onions, Carrots, Beet, and Parsnips, it is essential to select the smoothest, best formed roots, giving preference to those over such as may be larger, yet coarser. They should be looked out at the present time from the stores of the above vegetables, and ought to be kept under cover in a place where they will be quite cool, to as far as possible retard their growth until they are planted out, which with all, except the Beet, may be done at the beginning or end of March, according to the weather and locality where they are to be grown. The Beet will not bear spring frosts like the others, consequently I deferred planting it out till the first or second week in May. With this vegetable colour is held quite as much in estimation as the texture; consequently it is necessary to be very particular to choose such as are the deepest in colour. Many varieties much extolled at the present day are more remarkable for the colour of their leaves than the required portion—the roots. Those that have roots of a reddish-crimson

shade are generally deficient in colour when cooked, whereas such as are almost black-crimson possess the wanted colour after boiling. In all cases choose an open situation on land rather poor than rich, as the object is not to promote luxuriant growth, and give plenty of space to all proportionate with the head-roots they require. Each stem of the Beet was supported by a single stick, to which it was tied, otherwise they are liable to get blown down. With the Onions I inserted some upright sticks in the row, tying others longitudinally across them, to which the tops were properly secured. With Radishes, I found it necessary to be particularly careful in selecting for seed those that were best shaped, or they more than most plants appear to have a disposition to degenerate. The excellent Olive-shaped variety, which, when true to its kind, for general purposes has no equal, is apt, unless where there is considerable care in selection of the seed plants, to result in a coarse produce, about half-intermediate betwixt it and the Turnip-rooted varieties. In the case of Tomatoes, there is nothing like growing one good kind alone, if seed is intended to be saved, selecting only from such plants as produce the most even, best shaped, highest coloured fruit. With Celery, the seeds of which will keep so as to vegetate freely for five or six years, it is well to look over the crop, in which will generally be found a few plants superior to the rest. Those should be selected that show the least disposition to produce suckers round the base, and that are not inclined to come too thick or club-shaped at the bottom, as when this occurs it causes a deal of the outer leaves to split at the base, which in wet seasons, with such as are intended to be kept till late in the spring, is liable to cause decay. One of the most important conditions is, that all plants retained for seed should be perfectly solid in their stems, with no inclination to become hollow, not even in the outer ones after being subjected to severe frost, a test which will prove the requisite solidity of Celery more than anything else. The plants of this vegetable intended for seed are best allowed to remain in the rows where grown through the autumn, but not fully earthed up, giving them protection with a little Fern or litter in hard weather. In the case of Peas, Broad Beans, and also Runners and Dwarfs, all that is necessary is to sow sufficiently early to allow the seed to get fully ripe before autumn, and thin enough, so that every plant will have a chance of developing its character; to go over the rows and pull out all plants that appear weak or inferior as soon as the pods are fairly set; and with Peas and Broad Beans, to so far as possible confine the seed saving to such plants as show a disposition to produce the greatest number of seeds in a pod. With Cucumbers and Melons, although for diversity growers are often tempted to cultivate a number of varieties, yet it is always better to be confined to one or two good kinds of each, in which case there is little difficulty in keeping them true. As to preserving seeds for any length of time, all extremes of heat or cold should be avoided, neither should the place in which they are kept be damp, or the opposite, too dry. There is no doubt that seeds keep better in the capsules in which they are grown than when shelled or thrashed out.

T. BAINES.

**A Useful Celery.**—Among a number of kinds, old and new (many of the latter cannot be distinguished from sorts we have known for years), none has been so serviceable as a true selection of Turner's Dwarf Incomparable saved from a stock in a private garden for many years. The seed was sown in an open border last April, and treated in the usual way; none has run to seed, and none has rotted in the ground. They are very dwarf, but almost to the outer stalks they are blanched, very crisp, and of first-rate flavour. The proportion of waste is less than that of any other kind; little earthing up is required, and the stems are of great thickness. Altogether, I consider Incomparable a Celery which cannot be surpassed by any other known kind. It is singular that this variety cannot be bought in the trade true to name. When this Celery is grown for a very late supply (say to June) it may be allowed to blanch itself. Planted in trenches four or five rows in each, very little earthing up is necessary, and loss from rotting is scarcely known.—M. TEMPLE.

**A Wild Onion.**—Dr. Regel is reported to have discovered in the Himalayas a variety of wild Onion, which he regards as the original source of our ordinary garden Onion. It is called *Allium Cepa sylvestre*.

## TREES AND SHRUBS.

## ABIES POLITA.

So confused has the nomenclature of the recently introduced species of this section of Pines become—several of them being distributed under three or four different names—that any incident calculated to clear up their synonymy is worthy of record. The confusion in question is partly owing to the close affinity existing between a few of the species; but as regards the one now under consideration, I must say that I never saw it cultivated under any other specific name than that of *polita*. It is so distinct in character from all its congeners, that once seen it is not likely to be ever confounded with any of them. Still the fact of a plant of it having produced cones here last year has enabled me to compare it with authentic specimens in the Herbarium at Kew, with which, I am happy

to say, it agrees in every particular; and as others may desire to so satisfy themselves, I herewith furnish an illustration of a cone and the parts of which it is composed—a leaf and a bud. When Professor Parlatore wrote the article *Coniferae* for the "Prodromus," he was in doubt as to the cone of this species being pendulous—he having to record one exception to the rule in this section, namely, *A. oborata*, which has erect cones—but I have found that it is decidedly pendulous. At first it is erect and pale green, but as it increases in size and weight, it becomes pendulous, and when mature, assumes a light chestnut-brown colour. This species inhabits the mountains of the provinces Dewa and Matsu, in North-eastern Nippon, Japan, where it forms, it is said, a handsome tree from 80 ft. to 100 ft. in height, with stout horizontal branches and long undivided drooping branchlets. I find that nearly all the Japanese

Spruces have very persistent leaves, and that they remain on the trees in a healthy state for from eight to ten years. This persistency of the foliage in the case of open-habited Conifers adds much to their beauty when employed as ornamental subjects, planted either singly or in groups on an extensive lawn or park. The leaves of our plant (which are long, stout, and spiny-pointed) are remarkably persistent, and, being of a glossy green, contrast well with the large reddish-brown buds. It is not fastidious as to either soil or position, being sufficiently rigid to withstand the keenest blast, and it seems as much at home in heavy as in light soils; but it is probable that, like the majority of Spruces, it may prefer a peaty soil to all others. It is in great demand for ornamental planting, its moderately slow growth debarring it from ever becoming a profitable timber tree in Britain; but, owing to the difficulty of obtaining seeds, plants of it are at present somewhat expensive. Fortunately, however, cuttings of the weaker shoots are easily rooted, after which they soon push adventitious leaders, and are then, I believe, as good as

seedlings. It may also be grafted on the Norway Spruce, with which it readily unites. It is very hardy in this country, being, even in its youngest state, very late in starting into growth in spring; indeed, all things considered, it is a most desirable ornamental tree. GEO. SYME.

*Borrowash.*

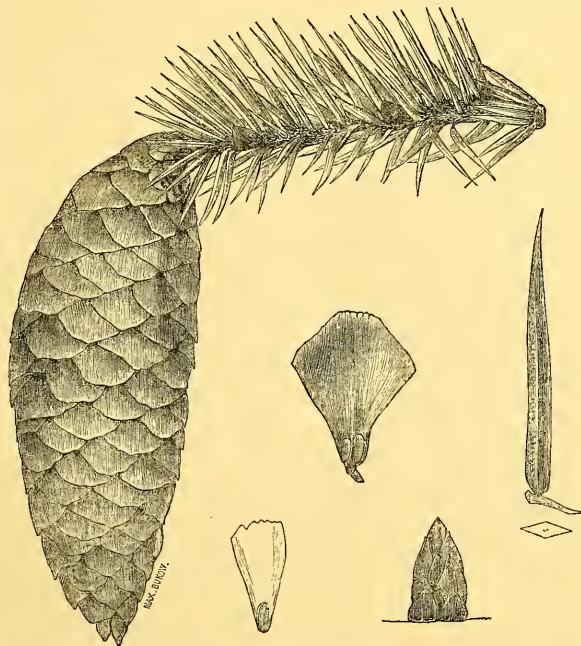
**The Rain Tree.**—The so-called "Rain Tree" of Mogobamba, South America, was made the subject of a brief communication by Mr. Thicketon Dyer at the Linnean Society's meeting on the 7th inst. This tree promises to excite as much interest amongst residents in hot dry countries as the supposed anti-malarious properties of the Fever Tree (*Eucalyptus globulus*) have done amongst the inhabitants of hot wet ones. From information obtained through Mr. Spruce, it seems probable that the Rain Tree is a species of *Pithecolobium*, and the so-called "rain" the fluid excreta of Cicadas, which feed on the juices of the foliage. Thus other trees might become "rain" trees. Indeed, the whole phenomenon, therefore, appears comparable to the production of honeydew from the Lime by the agency of aphides.—J. M.

**Planting Trees in Roads.**—The Honnello Local Board has recently been considering the desirability of planting trees in some of the broadest thoroughfares in the district; but the motion in favour of the proposed planting was lost on a division, there being seven for it and eight against it. Some of the objections were both original and ingenious. One speaker objected on the ground that the trees would grow up and shade the fruit trees grown in the market gardens; another stated that the roots would get into the drains and choke them, and that the leaves falling in autumn would be a nuisance; and a third remarked that the trees would injure the roads by keeping off the sun and wind. And so, in the end, this sort of wisdom prevailed. So much for the enlightenment of local Boards.—A. D.

**Camellias in the Open Air.**—I quite agree with the remarks of "A. D." on this subject (see p. 197).

Camellias grow luxuriantly and bloom freely out-of-doors in this part of Wales (near Swansea). Both red and double white blooms are open now (March 11) in exposed places. They never fail to flower yearly, but in some seasons they open in January and February; cold or frost does them no harm, but rain blemishes the blossoms. Our trees are not growing against walls or in sheltered positions, but as standards and bushes out on the lawn. The largest Camellia tree here is a double red variety; it has a stem about 2 ft. high, 3 ft. in circumference, and it branches into a fine round head which measures 21 ft. through the centre, and about the same in height. Are there any larger Camellias than this growing in the open air in this country? When the flowers are cut and put in water before the buds are fully expanded, they open as spotless as those grown under glass.—CAMBRIAN.

**Magnolia conspicua.**—Large specimens of this Magnolia in several London gardens have already burst their bloom-buds, and in a few days (if the weather be favourable) they will be a sheet of blossoms.



*Abies polita*, with bud, scales and leaf magnified.

## GARDENING FOR THE WEEK.

## Roses.

**Rose Insects.**—There is one difficultly inseparable from the cultivation of Roses, and that is their liability to insects; the three principal with which the grower has to contend are aphides, the Rose maggot, and red spider. After a mild winter like the present, some of the mature aphides, by secreting themselves on the leaves of any green vegetable form upon which they can exist near walls or other sheltered places, with the advent of the first sun's warmth begin to increase. Roses upon walls or in any sheltered position I find have already begun to be affected with them. Proportionate with the number of plants grown these insects are usually much worse to cope with in private gardens, which are generally more or less sheltered, than in the large open breaths cultivated by those who grow Roses for sale, and which are ordinarily in more exposed situations—a position in which they are freely open to the wind rendering them not nearly so susceptible to their inroads. As these, like all other insects, are much more easily kept down when attacked, as soon as their presence is detected no time should be lost in washing the trees. A good syringing with Quassia water will kill them, but for its effects in destroying both the mature insects and their eggs, and also in rendering the newly-expanded leaves distasteful to them, I have found none of the many remedies prescribed equal to Tobacco water to which has been added 2 oz. or 3 oz. to the gallon of Gishurst. The influence of this is such as to correct the oily nature of the Tobacco water in a way that makes it stick to the affected buds and leaves much better. From the insect-destroying properties of the Gishurst itself the Tobacco water, when used with it, may be employed much weaker than when applied alone. A dry day should be chosen for the work, which will enable the wash to adhere to the leaves better. A timely application of this sort I have found of considerable use in preserving Roses from the maggot, rendering the young leaves which are first preyed upon distasteful to the grub. The advantage of syringing and dipping the shoots of Roses affected in this way over dusting them with any powder disagreeable to the insects, is that it reaches all parts much more effectually with less waste. To those who are in the habit of never attempting the destruction of insects until they are swarming upon the plants, it may appear early in the season to speak of them, but if sought for even before many leaves are developed, the aphides will be found on the young expanded buds, and from experience I am satisfied that in this most essential operation of freeing the plants from insects remedies applied in time effect a great saving in both labour and the material used, as well as preserving the first blooms, which are the most acceptable, from coming malformed and useless, as Rose flowers, when arrived at maturity, are never worth much if in the bud state they have been preyed upon by insects.

**Mulching the surface of Rose beds with rotten manure** is of the greatest importance to secure a satisfactory crop of flowers during the current season, and equally necessary to the production of strong growth for the ensuing year's bloom. This is especially the case in dry situations, where the soil becomes parched during the summer season, and is much more effectual than the application of even an unlimited quantity of water alone, and this quite independent of the body of soil in which the plants are grown having been previously well enriched. The applying of manure in this way to standards, half-standards, and such as are grown bush fashion may be delayed for some weeks, but with those that are grown on their own roots to be pegged down the mulching should be put on directly the pruning is completed, before the shoots are pegged in the positions they are to occupy, or it cannot be conveniently done afterwards. Previous to this, as soon as pruned, the beds should be forked over, pointing in at the same time any manure that may be needed to incorporate with the soil.

## Orchids.

**Dendrobiums.**—The handsome, though old, autumn free-flowering *Dendrobium chrysanthum* will now be making active growth, and should be kept moderately warm, but not too hot. It is a native of the hilly district Nepal, and, like most plants from the same country, succeeds better in a medium than a high temperature. It needs plenty of moisture whilst growing. If this is wanting the bulbs stop short, never attaining their full length; the result of this is that the bloom is proportionately deficient. Another handsome species long known amongst Orchid growers, but still not very plentiful nor very often seen in good condition, is *D. Cambridgeanum*. This also is a hill region plant, from Khowsee, and, like the preceding, does not do well in a high temperature, succeeding far the best near the roof on a block. It will now be pushing up its fine yellow and purple-blotched lipped flowers. Care must be taken in the operation of watering not to wet the advancing buds much, or they are liable to damp off. One of the most useful of all *Dendrobies* for the production of flowers for bouquets, &c. is the Chinese *D. moniliforme*. There are two varieties—the large one much the best. It can be had in bloom without difficulty about Christmas, or soon after. It will now be commencing growth, and should have plenty of water at the root. Like all Orchids from the same country, it does better with more air and more light than it is advisable to admit to the generality of Orchids. Both this and the well-known, nearly allied species, *D. nobile*, with its many varieties—amongst the best of which are *D. nobile coccineum* and *D. nobile Wallichii*—can be better grown in the front shelf or close to the upright end glass of an earlyinery, where they are not exposed to work, than in an Orchid house, the drier atmosphere during a considerable portion of the day suiting them better. In such a structure I have

always found that this section of *Dendrobies* make shorter, stouter bulbs, with a much freer disposition to flower. So much is this the case, that in this way, these plants will frequently bloom from the preceding summer's pseudo-bulbs whilst yet the leaves are fresh and green upon them, a circumstance that rarely occurs when they are subject to ordinary treatment. Amongst the finest of all *Dendrobies*, as also ranking with the finest of all Orchids, is the white-flowered *D. formosum*; it requires more warmth to grow than such as the preceding. The different forms of this plant may be had in flower at various times in the year, but such as completed their growth late in the autumn and have since been at rest will shortly begin to grow, and must receive more warmth and moisture. The varieties of *D. Farmeri* intended to flower through May and June must still be kept dry at the roots, as also in a comparatively dry atmosphere. Even if the flowers are now showing, they may be kept back without suffering in any way, with only just as much moisture as will keep the bulbs from shrivelling too much, as if water is given liberally and they are kept tolerably warm, the flowers come on very fast; the same holds good with *D. densiflorum*, but the latter will bear a much lower temperature whilst at rest. In the tall, erect-growing section, *D. Dalhousieanum* and *D. fibrarium oculatum* are amongst the best. Where *D. Dalhousieanum* is required to flower late in May and June, it must still be kept quite dry at the roots, as if only a little moisture is given it will have the effect of pushing it off into growth. The Australian *D. speciosum*, one of the most magnificent species in existence, is often discarded by many, under the impression that it is difficult to flower. This is anything but correct if it is properly treated; if subjected to the moist, hot, close atmosphere of an ordinary Orchid house it will keep on growing year after year without producing the least surplus of the roots, and should find it more in its natural home, Kingiam, and *D. Johannis* will grow and flower as freely as any of the genus if grown in an ordinary warm greenhouse.

**Disa grandiflora**, a very beautiful Cape Orchid, when it commences growth, can scarcely be kept too moist; it should be syringed overhead at least twice a day. Anyone possessing an ordinary greenhouse should have no hesitation in growing it, placing it near the end of the house, where it will not be too much under the influence of a direct current of air from the front lights. It must have a damp medium to stand upon, as a current of dry air, such as is usually rising through an open stage or trellis is unsuitable for it. The most elegant *Dendrochilum*, *filiforme* and *glumaceum*, the former by far the most beautiful, will now be fast pushing up their flower-stems. Whilst in this stage, see that too much moisture from the syringe does not reach them overhead; but they must be well syringed at the roots, and should find it more in its natural home, as they do not like anything approaching a low temperature. *Epidendrum vitellinum* for many years was looked upon by the majority of Orchid growers as all but unmanageable, generally growing smaller every year from the time the plants were introduced until they ceased to exist; but now that its requirements are better understood, it deserves to be grown in quantity. From its comparatively small size, the little room it occupies, and the freedom with which its beautiful orange-red flowers are produced, it forms a most desirable contrast to the generality of other Orchids. It succeeds best in a temperature similar to that in which most *Odontoglossums* thrive.—T. B.

## Greenhouses.

Indoor plants have almost invariably started into growth; therefore such as require a shift must at once receive attention. Borders in which plants are growing should be lightly forked up, and if the soil is exhausted a dressing of loam, leaf-mould, rotten manure, or good peat may be added, according to requirements. Some plants need more water than others, and, in such cases, neatly-formed basins of soil should be made around them, so as to retain sufficient for their wants without overflowing. This is an excellent time for transferring plants from pots to conservatory borders, and, in doing so, disentangle and spread out the roots as much as possible. This may check growth for a time, but eventually, other circumstances being favorable, plants so treated will succeed better than such as are planted with the roots coiled up in a ball. Camellias, *Rhododendrons*, *Acacias*, &c., when grown in pots are more under control than such as are planted out; but the latter are generally the most satisfactory, both as regards growth and bloom. *Chanthus panicus*, if too thick, should have its shoots thinned out a little, so as to give sunlight light to the flowers. Passion-flowers should be pruned well in, and the soil in which they are growing should be thoroughly saturated with water, so as to induce them to start freely into growth. Cut in the branches of *Habrothamnuses*. Several of the free-growing *Fuchsias* are well suited for conservatory roof decoration or that of pillars, especially when planted out in borders. If trained to the rafters from the middle of April until they are completely denuded of side branches in the end of October or November, or for the purpose of resting them, and admitting light to the other inmates of the house, they form objects of interest, being richly laden during all that time with both flowers and foliage.

**Chrysanthemum** cuttings struck at the end of the year will by this time be well rooted and hardened off; they should be at once moved into 6-in. pots, using ordinary loam made rich with one-third rotten manure and leaf-mould in equal proportions, to which a little sand has been added. There is no grosser-feeding plant in cultivation than the *Chrysanthemum*. To grow it successfully the soil must be rich, and in its early stages it must never be allowed to become pot-bound, for if this occurs, no after treatment will ever impart to the plants their wonted vigour, as the stunted condition the roots get into when confined in little pots has the effect of prematurely hardening the shoots. It will be

necessary to decide upon the desired state of the plants. In most cases it is advisable to adopt two or three forms, but the flat, Mushroom-headed fashion should never be followed. The most generally useful for decorative purposes are plants with a dozen or more shoots, ultimately trained with just as many sticks as will support them. All plants intended to be grown thus should, at the time of potting, have the points pinched out to induce them to break several shoots. This shape will be found the most suitable for the Pompano, and also for the large kinds of *Chrysanthemums*, and also for the Pompano. Many of the large kinds that produce the finest individual blooms are not capable of being seen in their best form if many flowers be allowed to each plant; for ordinary purposes, six or eight will be enough on each; for growing in this way the plants must be also stopped now to cause them to form three or four shoots. Those who are disposed to attempt the production of a few of the finest flowers may do so by only allowing each plant in a 9-in. or 10-in. pot to carry from one to three flowers. These will be found very effective when in bloom if arranged in the greenhouse amongst the dwarfier flowers, relieving the even surface, which is justly held objectionable in a stage filled with *Chrysanthemums* of nearly the same height. To grow them in this way the young plants now potted should not be stopped at all, but simply trained to a single stem all through the season, allowing it to branch out in summer near the top to as many shoots as it is destined to carry flowers. *Chrysanthemums* are frequently seen but mere shadows of what they are capable of being produced; yet they are easily managed and well repay a little extra attention.

**Herbaceous Calceolarias** that have now filled their pots with roots and are pushing up their flower-stems will have their blooming capabilities much increased by the continuous use of liquid manure; these should be in a warmer place than the *Ciccerarias*, and a vigilant look-out kept to see that aphides do not get established upon either of them.

**Pelargoniums**.—The earliest-blooming, large-flowered, and fancy *Pelargoniums* will now be showing their flowers; and as the roots by this time will have taken full possession of the soil, they should be supplied with manure water once or twice a week. If attention in this matter be not paid to these plants, there is a difficulty in keeping the foliage of that dark green healthy hue which so much enhances their appearance when in flower.

#### Forcing Houses.

Keep these supplied with successions of *Lilacs*, *Spiræas*, *Deutzias*, and similar plants. Cuttings of *Coleus* struck early should be potted as they require it, pinched at the third joint, and the plants be kept near the light. Irregular form attractive summer objects in conservatories; therefore, treat them like *Coleuses*. The general stock of *Begonias* should now be potted and started into growth. *Caladiums* started in small pots should be shifted into larger ones before their roots become entangled. Continue to force *Lily of the Valley*; place the plants that have been forced under the stages of the greenhouse for a time, and after that plant them out, where, if they be well cared for, they will in two years make good plants for forcing again. Some plants of *Lilium auratum* should be introduced into this house for blooming in May. In making up baskets for suspending in the conservatory, keep them in a forcing house until they are in active growth, when they may be gradually hardened, so as to withstand the cooler temperature to which they are to be subjected. Keep up a young and healthy stock of *Fuchsias*, *Holotropes*, *Potunias*, and other plants for early blooming; those treated more hardily flower later.

#### Indoor Fruit Department.

**Pine-apples** that have not been already shifted should now be re-potted or transplanted into beds. Whether grown in pots or planted out in frames or pits, the heating material should be entirely or partially renewed. If fire-heat is used for protection, the greater care than would otherwise be necessary must be exercised in watering, as the bottom part of the soil frequently becomes dry when that on the surface is apparently quite moist. Now that the store plants are beginning to push, the atmosphere as well as the soil in which they grow must be kept moist. Ventilate a little during the heat of the day, and cover the frames with mats at night. Fig trees in pots will be swelling their fruits; therefore, some liquid manure given to them two or three times a week will be of great importance to the crop; mulchings of manure answer the same purpose. Those on walls or on front trellises should be started in succession, by closing up the house, syringing twice a day. Pot Vines, if liberally fed, will produce good crops; and, as they are frequently thrown away after bearing, as many bunches may be left on them as they can properly mature and colour. Thin Grapes in general, stop and rub off young shoots, encourage good foliage, and maintain a brisk, moist temperature, except in late Vinerias. All old Grapes yet on Vines should now be taken off and preserved. The dampness of the winter has been their productive of mouldiness amongst those kept in water-bottles. Regulate the growth of Peaches and Nectarines, and disturb and thin the shoots as necessary; thin out, also, all the smallest fruits, and syringe morning and evening. Keep Cherry houses well aired. Introduce successions of Strawberry plants, and place them on top shelves in Vinerias or Peach houses, or arrange them near the glass in pits or frames, when a little bottom-heat given by fermenting material is very beneficial to them. To plants whose fruit is colouring little or no water should be given, as it deteriorates the flavour. Sow the main crop of Melons and Cucumbers, and pot off those already up; such as are large enough may be transplanted permanently. Beds for the reception of the seedlings

should be formed completely of fresh soil, for from the plants raised now the greatest amount of fruit is commonly obtained.

#### Flower Garden.

**Auriculas**.—These are now making rapid growth—almost too fast for those intending to exhibit at the forthcoming show at the Crystal Palace. The trusses are showing up freely through the varied and beautifully powdered foliage. It is an anxious time, especially for the exhibitor, who has to get his flowers in perfection by a certain date, about the end of April, and unless he is well acquainted with the character of the different varieties, a mistake may easily be made. Not only do some varieties take much longer to perfect their trusses than others, but a great deal depends upon how the trusses come. Sometimes they can be seen deep in the centre of the plants in autumn. These take a long time to come to perfection; the flowers will probably not open until April. Another plant will have a large centre which will not show any signs of a truss until March, when, as if by magic, a leaf or two is unfolded, and lo! a fine truss is exposed to view, with the flowers almost expanded, and probably in advance of that formed in autumn. As a rule, the earliest-formed trusses produce the finest flowers. The plants must not now be allowed to suffer from want of water; but it must be applied without wetting the leaves; the fine, mealed foliage is easily injured, a shower of rain is most disastrous. The lights may be removed altogether in fine weather, but no rains or cold winds should have access to the plants. The small offsets potted in the autumn should now be shifted into a size larger pot; the little plants will make rapid growth, and form fine flowering plants by the next blooming time.

**Carnations and Picotees**.—I have shifted all our stock into their blooming pots, and placed the pots as far as possible under cover. If the present fine weather would continue it would be just as well to place the plants out-of-doors at once. I have done this and the plants have succeeded well, but if rain, snow, or sleet should come immediately after potting, or perhaps in the middle of it, the plants would be injured. The potting material, which is composed of turfy loam and leaf-mould, with a portion of rotting manure added to it, should be moderately dry, but not too dry; satisfactory potting cannot be done if the soil be either too dry or too wet. The size of the pots is a matter for consideration. I use 7-in. pots for single plants, 8-in. ones for a pair of weak plants, 9-in. ones for strong pairs, or three plants in a 10-in. pot. Probably these small pots would not answer for some growers, especially those who are absent from their plants all day long, as many of the most enthusiastic growers are. They would find larger pots answer better, containing, as they do, a large quantity of soil, which does not dry up so speedily. Growers for sale also find large pots best, because they are anxious to layer as many growths as they can, and sometimes the layers are uncomfortably crowded in a small pot. I am satisfied, however, that with care in watering one obtains the best blooms when the pots are of the size which I have named. Those who have not yet potted their stock should lose no time in doing so. The plants spindle for bloom in the south early in March, and the blooms will not be large or well marked if the plants be disturbed too late.

**Herbaceous Phloxes**.—These are cultivated in beds, borders, or in pots, for conservatory decoration. The Phlox is a gross feeder, and well manured; this ought to be done in the autumn, so that the frosts of winter may pulverise the soil, and it ought to be turned over two or three times. I have just now planted out a bed of plants that have been wintered in cold frames. Each plant is throwing up three or four strong shoots; the distance apart in the beds is 18 in. If all the cuttings have not yet been put in, see that they are inserted at once, as previously recommended. Cuttings put in early, and rooted in a gentle bottom-heat, are very useful for flowering in pots in the autumn. The plants must be potted on and carefully attended to, else they will not flower until the second year.

**Tulips**.—These are now above ground, and the mild weather is causing a strong, healthy growth; the surface of the beds has been covered over with some rotten frame-manure. Nearly all sorts of plants succeed well in soil when the surface of the ground is mulched; in that case water can be applied without causing a crust to form on the surface, and when water is applied it does not evaporate rapidly. Of course, it is not necessary to apply any water to the Tulip beds at present. I have not yet placed any covering over the beds. It used to be the practice of the old growers to cover their beds early in the spring, and it may be necessary to do so in cold, wet districts, but the plants do not sustain any injury from the weather in dry, well-drained districts south of the Trent.

**Pansies in Beds**.—The surface of the ground should now be stirred with a pointed stick, and all weeds should be carefully removed with the fingers. If there be sufficient space between the plants, it will be as well to run a Dutch hoe through amongst them. Mulch the surface of the beds with rotten manure.

**Pinks**.—These require treatment very similar to that given to Pansies. In our own beds perhaps a dozen plants have died during the winter, and the blank spaces will be filled in from a number of plants that have been saved in pots and wintered in a cold frame. There are a few varieties that will not die so well as the open ground during the winter, and if they should be scarce, it is better to save them all in pots, as in the case of Carnations.

**Gladioli**.—These should now be planted out for the main bloom. I

have generally succeeded best with those planted out about the middle of March or towards the end of that month. Directions for planting have already been given.

**Dahlias and Hollyhocks** that have been re-potted into 5-in. or 6-in. pots should be placed in frames and have plenty of ventilation, removing the lights altogether in fine weather. Hollyhocks will not suffer from frost, but the Dahlia is exceedingly susceptible to it. Dahlias are not often injured by insect pests, but thrips and red spider injure the Hollyhocks. Syringing and fumigating with Tobacco smoke is the best way to destroy them. Those who grow these useful autumnal flowers for exhibition will have by this time the ground in good condition ought to have been trenched and well manured in the autumn, and in fine weather the surface may be forked over to the depth of 3 in. or 4 in. Hollyhocks may be planted out in the course of a week or two. — J. DOUGLAS.

Sweep and roll lawns and walks as soon as the weather becomes favourable. Judiciously prune evergreen shrubs, such as Aucubas, Hollies, Bays, Box, Yews, Portugal and common Laurels, Junipers, Thujas, Cypresses, Ivies, &c., which may be out-growing the spaces allotted to them, keeping symmetry and gracefulness of form as much as possible in view. The knife is better than shears for such an operation, the latter being apt to mutilate the leaves.

**Herbaceous Borders.**—Most of the plants will be aboveground, and the mulching material put on early in the winter ought to be dug in. For this operation use a fork in preference to the spade. Should the Grass need edging it can be done at the same time, thereby imparting to the whole a neat appearance. Be very careful not to disturb the roots of any kind of Lilies, as they, more than most subjects, are impatient of any interference at this season. Summer and autumn-blooming herbaceous plants, such as Phloxes, Asters, or any flowers that exist in large masses when the season is considerably advanced, it will be well to divide at the present time, as by this means their roots will be placed within reach of fresh soil, which will strengthen them and enable them to bloom better. It is necessary to keep well back in the border all growing plants of this description; but, as far as possible, avoid planting them where the ground is occupied with the roots of deciduous trees, as herbaceous plants have but a very poor chance of success under these circumstances; yet, as in such situations it does not look well to have the ground bare, there is nothing better suited than the strongest tall-growing varieties of Michaelmas Daisies and Golden Rods, to assist which in such positions an extra liberal dressing of manure should be given every spring, digging the ground with the spade a full spit in depth, which will cut off the obtruding roots, and for a considerable portion of the summer spare the plants being affected by them. Any choice plants that are subject to the attacks of slugs will be benefited by 1 in. of coal-ashes being placed round the collar of the plants, which, though it will not altogether prevent the slugs from attacking them, will, in a great measure, hinder them from harbouring under the plants.

#### Kitchen Garden.

In this department a continuous supply of good vegetables through the season much depends upon the attention during the next few weeks in putting into the ground the numerous seeds that require it. The whole of the Potato planting should be brought to a close before the

end of the month. If the seed has been prepared as advised it will be in good order. In planting the general crop there are two courses to follow: either place the rows sufficiently far apart to admit the winter Broccoli, Cabbage, Brussels Sprouts, &c., being afterwards planted between the rows, or put the Potatoes for enough apart to ensure their well-being without anything else between them. In the former case the rows will require to be 3 ft. asunder; in the latter 2 ft. to 2 ft. 3 in. will be sufficient. I prefer the single-cropping system, as, when double-cropping is resorted to, the winter vegetables never do so well, and in many cases are too far apart when the Potatoes are removed. On the score of economising space, this double-cropping is evidently more loss than the gain.

**Sowing Seeds.**—Sowings should now also be made of Cocos-nut and Enfield market Cabbage, green Curled Savoy, Walcheren and Early Cauliflower, and Veitch's Autumn Giant Cauliflower. Prepare the seeds with red lead, to protect them from birds. Successional Broad Beans and Peas will now require putting in. Excepting where the vegetable ground is limited, and there is a difficulty in procuring Pea-sticks, there

is nothing to equal the tall Marrow kinds for furnishing a large and continuous supply, which does not come in altogether as the dwarf-growing varieties do. Where the tall sorts of Peas are grown, and the ground is rich and in good condition, they will require 5 ft. 6 in. space between the rows; this will be sufficient, and better than sowing farther apart with Broccoli or Celery between, as is sometimes done; such double cropping being here again no advantage, for the Celery, Broccoli, &c., so grown never has the necessary strength and vigour to withstand the winter that they have when grown by themselves. A row of Spinach can always be grown without any disadvantage between Peas so planted. Amongst winter vegetables there is nothing that is of more real use than Brussels Sprouts. To grow them well, the seed must be sown not later than the third week in March, so as to get the plants a good size early, planting them out where they are ultimately intended to grow as soon as they are large enough.

Celery sown in heat, as recommended some time since, will shortly be large enough for pricking out. Where it is required for use as early as obtainable, there should be prepared for it a slight hot bed, consisting of about 18 in. of fermenting manure and half-rotten leaves. On this place a two or three-light frame, with 10 in. of rich soil, into which put the plants 1 ft. apart each way, giving a little water, afterwards putting on the lights, which keep close for a few days, until the roots take hold of the soil; if the weather be sunny, shade in the middle of the day. As soon as growth has fairly commenced, give plenty of air, to prevent the plants drawing up weakly; and, if well attended to as regards water, they will progress rapidly. The lights should not be altogether dispensed with until all fear of frost is over; every alternate plant may then be removed with a good ball of earth and turned out into a well-prepared trench, leaving the remainder on the bed on which they have been grown, and when large enough earthing up with light soil brought in for the purpose. By this means those who want Celery very early can have it in good condition by midsummer, but, of course, not large. It will be succeeded by that which was planted out from the bed, which will be ready before the ground in the ordinary way. The principal portion of the plants from the same sowing should be pricked out 3 in. asunder in a frame, in which put 6 in. of good soil on a firm bottom composed of ashes well rammed, into which the roots will not penetrate far. For this purpose the soil should be of a



Vase of Roses by Mnisiat.

giving a little water, afterwards putting on the lights, which keep close for a few days, until the roots take hold of the soil; if the weather be sunny, shade in the middle of the day. As soon as growth has fairly commenced, give plenty of air, to prevent the plants drawing up weakly; and, if well attended to as regards water, they will progress rapidly. The lights should not be altogether dispensed with until all fear of frost is over; every alternate plant may then be removed with a good ball of earth and turned out into a well-prepared trench, leaving the remainder on the bed on which they have been grown, and when large enough earthing up with light soil brought in for the purpose. By this means those who want Celery very early can have it in good condition by midsummer, but, of course, not large. It will be succeeded by that which was planted out from the bed, which will be ready before the ground in the ordinary way. The principal portion of the plants from the same sowing should be pricked out 3 in. asunder in a frame, in which put 6 in. of good soil on a firm bottom composed of ashes well rammed, into which the roots will not penetrate far. For this purpose the soil should be of a

light sandy nature, to enable the plants, when moved for permanent planting, to be taken up with little breakage of the roots. Where Celery is desired late, say until April the following spring, a little seed should now be sown, as this will stand longer without running to seed than the earliest sowing.

#### Extracts from my Diary.

**March 18.**—Sowing Balsams, German and Ten-week Stocks. Putting in cuttings of Coleus, Fuchsias, and Verbenas. Potting off spring-struck Verbenas and Heliotropes. Levelling down Celery trenches, and getting the ground ready for Peas. Re-making Mint beds. Thinning out and cutting back Ivy on walls. Sticking early Peas, and giving them a little earthing up. Mending Box edgings.

**March 19.**—Sowing Long Pod and Windsor Broad Beans. Potting off Cucumbers and Melons. Putting in cuttings of Alternantheras and Mesembryanthemums. Watering forced Asparagus beds with warm manure water. Getting another batch of Strawberries into bottom-heat. Turning over manure for Celery, having previously mixed it with salt and soot. Giving the surface of the Carrot and Beet ground a dressing of soot, and preparing it for drilling.

**March 20.**—Sowing Snow's Winter White Broccoli, Brussels Sprouts, and Wallflowers. Shifting Tomatoes and Capsicums. Pricking out Celery and All the Year Round Lettuce. Planting the main crops of the following sorts of Potatoes: Snowflake, Carter's Breadfruit, Main Crop, Giant King, Model, Schoolmaster, Porter's Excelsior, Paterson's Victoria, King of Potatoes, and Perfection Kidney. Looking over Grapes in bottles, cutting out any bad berries, and filling up the bottles where required.

**March 21.**—Sowing Cucumbers and Melons; also Canadian Wonder French Beans in pots. Shifting a few stove plants. Planting out autumn-sown Cauliflower; also a few Brown Cos cabbages. Preparing ground for new Sea-kale beds, and also for Globe Artichokes. Earthing up Potatoes in frames. Looking over Pines and watering them. Forking over the ground amongst Cabbage plants.

**March 22.**—Thinning Grapes and tying down young shoots in early Vineries. Looking over Cucumbers. Getting netting and other coverings over Peach trees for protection. Looking over fruit room, and removing any fruits that are decaying. Tying in young shoots in Peach house. Renovating Limes round manure frames. Weeding Box edgings and gravel walks. Dividing and re-making herb beds. Getting a little more Chicory into the Mushroom house.

**March 23.**—Earthing up Beans in pots. Cleaning up the pleasure grounds, and rolling down all gravel walks that require it. Covering up Sea-kale beds. Looking over Pelargoniums; picking off all dead leaves and stopping the shoots where required. Clearing off borders, giving them a dressing of soot, and forking them up ready for seeds.

Dorsel.

W. G. P.

#### VASE OF ROSES BY MAISIAT.

It is a remarkable thing that with all the love which an Englishman has for the Rose, in the garden, or even when gathered and brought into the house, there are so few English artists who make the Rose a subject for a picture or an artistic study grouped with other flowers in a vase. Our walls in England are more commonly decorated with scenes from the hunting-field and racecourse than with refined groups such as these, which French artists paint so well. Perhaps there is something in the more genial climate of France which encourages a more abundant bloom, and causes the Roses to hang down over many a garden wall in festoons of flower, that suggests the overflowing abundance of floral beauty seen in the accompanying print. It is to be hoped that in time a taste for such subjects may grow up which will refine the too realistic and money-making spirit common in this and all ages.

E. W.

☞ **The Banksian Rose.**—If "J. G.'s" Banksian Rose (see p. 210) be a shy bloomer, he cannot have got the same variety which we have, unless it is planted on a very different aspect from the one we have, or is treated differently, as ours is exceedingly floriferous, so much so, indeed, as to be literally white with blossoms every year, unless, as was unfortunately the case last season, they get out off by frost. We spur it hard in as soon as the flowering is over, and then during the summer we cut out all the strong growth and thin that of medium size, so as to let in plenty of sun and air to thoroughly ripen it. The young shoots made under this treatment vary from 1 ft. to 1 ft. 6 in., and bloom at every bud, thus forming perfect wreaths of a length most serviceable for cutting. I ought to add that the plant referred to is on a south wall, where it covers a large space, and is now in a forward state. Anyone having these plants in similarly favoured situations may, by managing them in the same manner, have any quantity of flowers; and the same holds good with such Roses as *Maréchal Niel*, *Gloire de Dijon*, *Climbing Devonensis*, and most others of that class.—S. D.

#### KENSINGTON GARDENS.

LONDON has—perhaps it should rather be said had—the good fortune of possessing in Kensington Gardens a public park such as no foreign capital can show. The last few years have made this possession but the wreck of what it once was, and unless something can be done to arrest the decay the character of the place will soon be gone past restoration. It would be a strange misfortune if a garden which has given pleasure to so many generations of Londoners should be left to its fate in a time which professes—though, it must be admitted, without much success as regards practice—to care more for natural beauty than the generations that have gone before it. But this languid belief that we value a piece of ground for one reason is seldom strong enough to resist the precise convictions of those who know that they value it for another reason. Year after year something of the old aspect of Kensington Gardens goes, and by degrees there grow up new and mistaken conceptions of what their character should be. The first thing, therefore, to be done, if Kensington Gardens are to be saved for London, saved, that is, not merely as one among several open spaces—a Battersea Park without the sub-tropical plants, or a level Primrose Hill—is to realise clearly what this original aspect was. After that it will be easier to determine how far and why that original character has been departed from, and to what extent it is capable of restoration.

The essential charm of Kensington Gardens was its woodland scenery. It was like a piece cut out from Windsor Forest or Richmond Park and set down close to London. Indeed, the number of the trees in comparison with the space in which they stood, and the entire absence of underwood, gave singular importance to this feature. Scarcely anywhere was the effect of Grass and timber in conjunction more striking. There may still be some London-bred children who can remember that even a real forest seemed disappointing to expectations founded on recollections of Kensington Gardens. You passed at once from the bordering roads, or from Hyde Park, with its carriages and riders, into a sylvan solitude. No doubt it was necessary to manage your point of view a little, but with this precaution endless avenues of trees stretched away over indefinite distances of turf; and it was only here and there that a path recalled how near the boundary was, and to how many passers-by Kensington Gardens, at least on six days in the week, were nothing more than a convenient way home. Two things only went to make up this peculiar charm—trees and Grass. Deep shade and a green carpet underneath are precisely what the dweller in cities most wants and most seldom finds, and both were here to be found. These being the distinctive characteristics of Kensington Gardens, the principle on which they ought to have been managed was the maintenance of these distinctive characteristics. *Other purposes, such as the advantage of the neighbouring houses, or the provision of short cuts from one part of London to another, should have been kept strictly subordinate*—pursued, that is, when no injury to Kensington Gardens was involved, and left alone whenever any such injury was involved. Further than this, *all incongruous adornments, and all attempts to make Kensington Gardens more like other gardens, should have been carefully eschewed.* The convenience of those who are supposed to make use of the gardens has been consulted, in entire forgetfulness of the primary condition that the gardens should not be destroyed in the process of use. The causes which have made the Grass in Kensington Gardens the heart-breaking affair which a First Commissioner of Works once called it are three: unnecessary entrances, paths where they are not wanted, and the absence of paths where they are wanted. The objection to the multiplication of entrances is this, that from every new gate there spring not one but many new tracks across the turf; and the closer together the gates are the nearer to one another, and therefore the more conspicuous and disfiguring, these tracks become. There is a good instance of this in the south-west corner of the gardens. There is a gate at the bottom of the broad walk, and another a few yards further west. The consequence is that two tracks have been formed across the Grass to the gate at the corner of the palace; whereas, if there had been only one gate there would have been only one track. *The object of putting the second gate was the convenience of the dwellers in Prince of*

*Wales's Terrace.* That is to say, this part of the gardens has been injured in order to save a few nurserymaids the trouble of walking a stone's throw to the right or left before they can seclude themselves from the high road. The gate opposite Gloucester Road and the gate at the beginning of the Kensington High Street supply all the really needed means of entrance. This part of the gardens affords examples of the two other mistakes that have been mentioned. There is a great deal of passing to and fro between the gate at the bottom of the broad walk and the gate at the corner of Kensington Palace, but no path has been made to connect the two points. The result of this omission is seen in ugly footpaths across the Grass, which continually tend to become wider as those who use them take in more of the Grass in order to escape the central mud in rainy weather. It is not of the least use to assume that people will walk round two sides of a square when it is open to them to walk along the diagonal. If no path is made for them they will make one for themselves; and the path which they make for themselves will be much more injurious to the aspect of the turf than the path which is made for them. The edges of a gravel walk can be kept neat by railings or hurdles; and the colour of the gravel is not an unpleasant contrast with the colour of the Grass. In a foot-path along which many people walk the edges are always ragged, and the colour of the bare earth, especially in London, is neither in harmony nor in contrast with anything else. But, though there is no path from one of these gates to another, there are two close by which are of no use whatever: one running southward from the front of the palace and ending in nothing, the other running under the west wall of the gardens from the palace gate to the gate in the High Street. These paths are a survival from the old Dutch arrangement of the part of the gardens near the palace; and when this part was the quietest and the best cared for, and the avenue running southward from the palace was really an avenue and ended in that wonderful old summer-house which has now been removed to the head of the Serpentine, they were quite in place. Now, however, the object should be to have Grass where it has a chance of growing and paths where people are certain to walk. The chief sinner, however, in the way of unnecessary paths is the broad walk, which ran formerly in a straight, and now runs in a crooked, line from Lancaster Gate to the Albert Memorial. The walk was made long before the Albert Memorial existed, and was carried across what was then one of the most secluded parts of Kensington Gardens for no object apparently except to show that the Office of Works was not stingy of its gravel. No considerable number of persons ever want to pass between those two points. The entrance at each end is mainly used by the residents in the neighbouring houses, and they certainly do not need a walk as broad as the original broad walk at the Bayswater end of the gardens to enable them to visit one another. On the other hand, a path is really wanted between Porchester Gate and either the corner of the Rotten Row or the Serpentine Bridge; but it is left to the public to make one afresh every summer.

In the way of incongruous ornaments, the worst example, of course, is the hideous erection, like a section of a metropolitan railway station, and the equally hideous basins and water-spouts, which disfigure the head of the Serpentine. Probably something of the kind is necessary for the supply of water; but if so, the process should have been concealed instead of paraded. A reservoir might easily have been constructed on the other side of the road, and the Serpentine might at that end have been made to look like a lake, and not like a receptacle for the refuse water of some manufactory. As obelisks were not usually placed in woods, it is hard to see why Kensington Gardens should have been chosen as the site of the Speke monument; and even the Albert Memorial should have been allowed to appear over the trees, and not have had an avenue set awry in order to make it more conspicuous.

The practical deductions from all this fault-finding are simple enough. The management of the trees is, as has been said, a question for experts. Few probably of the older trees still standing can now be saved; but much may be done by give to future generations of Londoners the same kind if not the

same degree of pleasure which past generations have gained from Kensington Gardens as they have been. One portion after another should be selected for replanting; and though in the end the result might be that what is now open glade would be forest, and what is now forest would be open glade, yet the proportions of the two and the general character of the combination would be preserved. The Grass is a much easier matter. Here there can be no irreparable destruction. All that is needed is the breaking up of some useless paths, the addition of some new ones, and some attention to common sense in the details of their construction. Thus it is of very little avail to make a path in the full sun, if there is shade to be had on each side of it. In the winter a walker will keep to the gravel anyhow; but in summer he will only keep to it if it lies in shade. If it does not, there will be supplementary paths formed by the side of the gravel paths, and the object of making the gravel path will be lost. Nor should a path which runs along a line of trees be carried on one side only of them. As soon as the sun gets on the path, it is deserted for the Grass which is in shade. The path should be carried along both sides of the trees, as it now is on the north side of Rotten Row. Another point to be remembered is that there is a natural tendency in mankind to walk on the edges of a path, so as gradually to enlarge it. But this tendency, being instinctive rather than deliberate, can be checked by a low railing running along each side. Even though it is not too high to be stepped over, somehow it does not seem to be stepped over in practice. The only cure for incongruous ornaments is to take them away, and if the fountains at the end of the Serpentine could share the fate of the mounds which it was proposed to throw upon the northern bank, the Speke monument might bear an additional inscription to commemorate their removal, and might then be tolerated. The only other suggestion which need be made is that no part of Kensington Gardens ought to be treated as a nursery for young plants, whether those plants are to be used for the adornment of the gardens or for any other purpose. To the east of the Round Pond there is a hideous fence which apparently conceals some stunted promises of future timber; while near the corner of Rotten Row there is a plantation of stumpy Larrels which are so ugly where they are that it is only charitable to suppose that they are meant to be moved somewhere else. One of the few remnants of old Kensington is the brick ball-room to the west of the broad walk, and the gravelled terrace in front of this is now covered with gardener's frames, which suggest nothing but cuttings and bottom-heat. There can be no reason why all three excrescences should not be at once removed. The application of a little common sense to the problem how to make and keep Kensington Gardens as much like what they were a generation ago as change of circumstances will permit would still do much to remedy past blunders, and would ensure us against the commission of any new ones.—"Pall Mall Gazette."

[We italicise a few passages in the above article concerning matters to which we have at various times and in various ways called attention in THE GARDEN. Now that a general newspaper takes up the matter, perhaps more immediate good will come of it. The article is chiefly valuable for well pointing out the great folly of spoiling a noble park or garden by needless roads, walks, and entrances. The charms of the park would be greatly increased if entrances were only made at a few, and those the most essential points. Few people have the least idea of what harm is done to public gardens by the short-cut system.]

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**Camphor Water a Revivifier of Seeds.**—In THE GARDEN of the 9th inst. (see p. 212), camphor water is spoken of as being powerful in revivifying seeds or causing them to germinate. When ordinary treatment fails, kindly tell us how to get camphor water, and of what strength to use it. The ordinary camphor of commerce is not soluble in water, or very little so. I have some very old seed that I should like to try.—J. NORTON. [Camphor dissolves in water in the proportion of twenty-five grains to the pint. The following is the best way of preparing camphor water: Take rather more of the gum than is required, pound it finely in a mortar, sprinkling it with a few drops of strong brandy or whisky from time to time to assist the pulverisation. When finely powdered throw it into a bottle containing the necessary quantity of water, and shake up now and then. The reduction of the camphor to a fine powder is a difficult operation, and cannot be performed without the aid of the spirit. The bottle should be kept closely corked.—C. W. QUIN.]

## THE FRUIT GARDEN.

### QUINCUNX PLANTING.

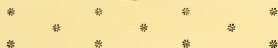
The planting originally known as quincunx consisted of four trees set in the form of a square, with the fifth one in the middle, thus:—



When this arrangement was extended, the rows of trees in the orchard stood as follows:—



The effect of this arrangement was that the trees were in squares running diagonally, and it possessed no particular advantage over common square planting. Any orchard planted with trees in rows running each way may be converted into quincunx by placing a fifth tree in the centre of each square, as shown in this diagram:—



The improved or modern quincunx, which is more properly termed the hexagonal form, has the centre tree surrounded by six other trees at equal distances from it, as represented by fig. 1. This arrange-



Fig. 1.

ment has a handsomer appearance, and it has the advantage that the orchard, if desired, may be cultivated in three different directions; it may also be adopted where small orchards are connected or form a part of the ornamental grounds, as in fig. 2. If a few symmetrical fruit trees are planted contiguously, they will serve to form a harmonising connection between the orchard and grounds. These

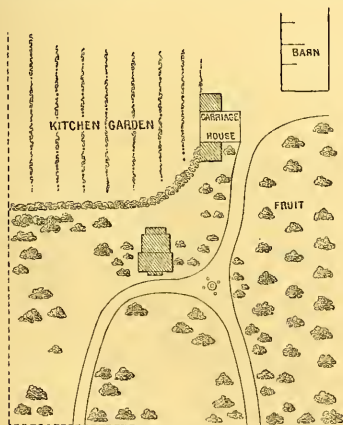


Fig. 2.

may consist of such vigorous growers as will succeed well when standing in Grass. Hexagonal planting would be oftener adopted if planters knew how to do it. True hexagonal planting consists of a series of equilateral triangles, six contiguous ones forming the hexagon.—“American Cultivator.”

dessert Apple with many varieties grown specially for that purpose, in this neighbourhood it forms a large tree, which does not suffer from canker, as in some localities. Its annual growth is tolerably strong, and although it can scarcely be called an abundant cropper, it bears a fair average crop in as many seasons as any other variety. And a most important fact in reference to it is this, that a small crop that will keep in good condition six months after gathering is of considerably more service than a heavy crop that must be used immediately to prevent its spoiling. I have never known a season when good sound London Pippins after Christmas were not worth a good price; for it frequently happens that the superabundance of Apples in autumn is confined exclusively to non-keeping kinds. This variety is familiar as the Five-crown Pippin, as the side ribs become very prominent at the crown.—“Field.”

### FRUIT TREES FROM AN ORNAMENTAL POINT OF VIEW.

In a letter addressed to the editor of the “Revue Horticole” by M. Charles Baltet, the claims of the Pear, the Apple, the Cherry, the Peach, the Plum, and their congeners to take a foremost place amongst ornamental trees are put forward with no common ability. The beauties of fruit trees in full bloom and in full bearing have been sung by poets and painted by artists in all ages, but, with few exceptions, these gifts of Nature have been hitherto strangely neglected by landscape gardeners. Even those which have been taken into favour seem to have been chosen because they do not bear fruit, as if a fruit-bearing tree ought to be looked upon as an intruder in an ornamental plantation. M. Baltet congratulates the editor of the “Revue Horticole” on his advocacy of the yellow-barked Peach (*Persica aurea*) as an ornamental tree, adding that fruit trees in general are too much neglected by landscape gardeners, or, as I regret to see, M. Baltet prefers to call them, “garden architects” (*architectes de jardins*). A little consideration and a visit to the Park Monceaux will, I think, show M. Baltet that it is the so-called “garden architects” who have done so much to make Nature ugly. I think the “garden architect” who placed that hideous pyramid in that otherwise pretty park would be horrified if M. Baltet were to propose to remove this erection and to replace it with a clump of Pear trees. But this by the way. Let us examine the Pear tree, says M. Baltet, and we shall find that its habit, its foliage, and its fruit leave nothing to be desired, no matter in what soil or climate it may be grown. It is true that a group of prolific, large-fruited varieties, such as Beurré de l’Assomption, Williams’ Bou Chrétien, Van Marum, and others, will always be a source of delight to the lover of fruit, but the artist will look for effect from the natural appearance of the trees. If he wishes for luxuriant growth, he will find it in the branches of the Pear known as the Curé, Louise Bonne d’Avranches, Conseiller de la Cour, and others. The Beurré Hardy, Vanquelin, and Duke de Nemours have long upright branches, while those of the Beurré d’Amanlis, Bon Chrétien, and Triomphe de Jodoigne spread out more or less horizontally, or even curve downwards. The latter tree is the type of hardness and vigour. *Arbre courbé*, *Nouvelle Fulvie*, and *Marie Louise* would not be out of place as drooping trees; while to rival the pyramidal varieties of the Robinia, the Oak, the Birch, and the Elm, we may admit a group of Pear trees which grow naturally in this shape, such as *Fondante du Panisel*, *Beurré de Nantes*, *Fondante de Noël*, *Beurré d’Angleterre*, and a number of others, including Charles Ernest, a new and excellent variety, which will be described and illustrated in the “Revue Horticole.” The “curious,” as they were called in the days of La Quintinie, have already borrowed from the domains of pomology such subjects as the Weeping Pear, the Mount Sinai Pear, the Sage, Willow, and Almond-leaved Pears, &c.; but their fruit is insignificant. The beautiful foliage of the *Sucrée* de Montluçon, *Delpierre*, *Triomphe de Jodoigne*, &c., is rivalled by that of the *Mikado* and *Daimyo* varieties, which are of Japanese origin, with large, thick, and somewhat cottony leaves. China furnishes us with two sorts, the thick, shuino, and ciliated leaves of which change to amaranth red in the autumn, like certain Maples and Sumachs. Amongst our own sorts we have the German *Kopertscher*, the Belgian *Délices de Jodoigne*, the American *Philadelphia*, and the French *Gil-ô-Gile*, which present the same character.

**London Pippin Apple.**—This is one of the justly popular fruits that still maintains its ground against all-comers. It is of great service as a Kitchen Apple during the first three months of the year; and at the present time, when fully ripe, it bears favourable comparison as a

The observer who takes notice of the particular characters of each variety will know that Marie Guisse, Monseigneur des Hons, and Royale d'Hiver are the first to show their buds in the spring, while Martin sec, Madame Loriot de Barny, and Herbin seem sorry to shed their leafy clothing in the autumn. Bonne d'Ézée and Doynenné d'Alençon are the earliest to flower, and Alexandrine Douillard, Sylvange, and Nouvelle Fulvie protect their clusters of flowers with a sheltering rosette of leaves as soon as they open. If we wish for Pear trees with double flowers, we may gratify our desire with Comte Lelieur and Beurré de Nagain, with their regular corolla, or the double-flowered Bergamotte and Calebasse Oberdeck, with their drooping petals, will satisfy us. Without being able to compete with the coloured barks of the Birch, the Golden Ash, the scarlet Dogberry, or the veined Maple, we may content ourselves for the present with the Ash-coloured bark of the Bési Dubost, the ochrey Passe Colmar, the violet Beurré Giffard, the purple Doynenné Flon aigle, the dark brown Bon Chrétien de Bruxelles, the bright-barked Fondante Thririot, the sombre Rousselet, and the yellow-green and pretty-veined and variegated varieties Beurré d'Hardenpont and d'Amanlis, Verte longue, Saint Germain, &c. Amongst our ornamental shrubs we have examples which have their bark curiously split, crannied, and galled, but we can match them with Van Mons, Deux-Scours, Angélique Leclerc, Beurré Lebrun, and others, the latter having a vigorous stem, which looks as if it had been sprinkled with carmine. Wildings will furnish us with prickly varieties, and the study of local fruit has provided us with the Poirier de Posse, which, in the department of the Aube, is as large and tall as an Oak. Finally, the dwarf Pear is not a myth, and growers are endeavouring to form it into a new series. Thus we have everything—the grand and the stunted, the beautiful and the ugly, the agreeable and the absurd. A plantation of Louise Bonne d'Avranches in a park or English garden would give as much pleasure as an isolated Plane or a clump of Pteleas. If we push our arguments as far as the neighbouring genera, for instance, the Apple, the Pear, the Peach, the Apricot, the Plum, without forgetting the Sweet Chestnut, the Walnut, the Almond, the Orange, the Fig, and the Kaki, we shall be convinced that the title of this paper is not so paradoxical as it appears to be.

C. W. QUIN.

**Pear Blossoms.**—In the general abundance of fruit-buds the Pear here forms an exception, and I also see, by notes from other localities, that the same rule holds good elsewhere. Wall trees with us are blooming more irregularly than espaliers or pyramids, which, for the most part, are fairly well covered; but on walls, where one tree has an abundance of fruit-buds, others as favourably situated have none. This cannot be attributed to the weight of crop last season, as those that had the best crops are, as a rule, the most promising.—JAMES GROOM, *Henham*.

**Newtown Pippins.**—I ordered a barrel of Newtown Pippins from Liverpool last year, and found them much undersized, and not of so rich and juicy a flavour as usual. Some of the fruit were very highly coloured, but had dark brownish specks in the flesh; and they had been loosely packed in the barrels, for more than one-fourth of them were bruised and had begun to rot. In opening barrels of Newtown Pippins in former years I always found the fruit bruised in some places, but they never rotted like those in 1877. The season must therefore have been bad for them in America last year, for there is no more delicious Apple grown than the Newtown Pippin when the season is favourable for it.—WILLIAM TILLEY, *Welbeck*.

**Winter Nells Pears not Ripening** (see p. 189).—What is the aspect? Winter Nells ought to ripen well in the neighbourhood of Cork, if the aspect be either south or west. On a north or east aspect it cannot be expected to ripen, or any other kind of Pear of the same season. If the tree is cut down and the wall faces either south or west, graft on it *Josephine de Malines*—W.

**Early Bloom on Apricots.**—In answer to "A. D.," (see p. 213) who wishes to know when the first blooms expanded on Apricots in different localities, allow me to say that on a south-west aspect a quantity were open on March 1. We have since experienced cold winds for a few days, but vegetation is very forward, which makes one feel anxious for our forthcoming crops.—N. FULLER, *Downton Castle, Ludlow*.

## THE LIBRARY.

### THE CORN AND CATTLE PRODUCING DISTRICTS OF FRANCE.\*

This is the only book on French farming which has appeared in English since Arthur Young's famous work on the subject, which was published as far back as 1789. Although treating mainly of farming proper and cattle breeding, the fruit and vegetable grower will find much to interest him. The accounts given by Mr. Gibson of this branch of cultivation are full of interest, the only fault to be found with them being that they are too short. The last returns with respect to French market gardening were made in 1873, and show that no less than 1,250,000 acres were devoted to the growth of green vegetable crops alone. Thoméry Grapes, Roscoff Broccoli, Argentanil Asparagus, Vancluse Melons, and all kinds of green and preserved fruits and vegetables from *La belle Touraine*, are to be found in every good greengrocer's shop in Western Europe at one season or another. According to the statistics given by Mr. Gibson there are over 6000 men, women, and children engaged in growing early Asparagus, Lettuces, Carrots, &c. in and around Paris. The rent of the land varies from £36 to £48 per acre, according to situation and irrigation plant. These market gardens are of comparatively small dimensions, and vary from 2½ acres to 1½ acres. Taking the smaller size, the plant necessary to carry on business costs nearly £500, including large and small cloches, straw mats, glazed lights, frames, tools, baskets, horse, cart, and harness and other necessary materials. The regular workmen, it is said, earn an average wage of 1s. 7d. per day with board and lodging all the year round. Extra men gain 3s. d. per hour, women 2s. d. Most of the men come from the Nivernais and Burgundy, not so much for the sake of the wages, which are low for France, but in order to learn a business which they can turn to profitable account when they return to their homes after two or three years' service.

Amiens claims to be one of the oldest market gardening towns in France, vegetables having been grown there in the twelfth century—hundreds of years before a Cabbage was grown in England. There are at present about 250 acres under cultivation, the yearly produce of which is estimated at about £130 per acre. The Cabbages often weigh from 40 lb. to 50 lb.; Beetroots, 20 lb. to 25 lb.; Black Radishes from 12 lb. to 20 lb., and the Turnips from 12 lb. to 15 lb. The business, both here and elsewhere, suffers greatly from the short-sighted policy of the French railway companies, who refuse to further lower their charges for perishable goods sent by express train, although the Rhensish railways charge only ordinary goods train rates. The minimum quantity which can claim a reduction on the French lines—half a ton—is too large. A reduction of 50 per cent. on the present rates for quantities of say 1 cwt. and upwards, and a proper provision for returning empties by goods train would enable French growers to supply all the towns from the Rhine to the Baltic with early vegetables. The traffic, too, is much too slow. Paris is nearer to Cologne than Cologne is to Berlin, yet the smaller distance takes five days to accomplish, the larger only two; the consequence of all this being that by the time a dozen Cauliflowers arrive at Berlin the exposures have doubled their Paris price, while at Königsberg they become trebled. Still the trade done with Northern Germany is by no means unimportant, although Italy is competing successfully with France in this respect. Mr. Gibson gives one interesting fact—that no less than 6,000,000 bunches of Violets, worth £25,000, are sold annually in Paris. The climate of parts of the coast of Brittany rivals that of Italy in mildness. Frost is scarcely known; the Fig, and even the Pomegranate, ripen their fruit out-of-doors, and the Camellias are in full bloom in February. A stretch of about 15 miles of the north coast, near Roscoff, is celebrated for its early Artichokes, Broccoli, Onions, Asparagus, and Potatoes. England takes every year about 500 tons of early vegetables and 2000 tons of Onions, being about one-third of the whole production; 4000 souls make a comfortable living, and even grow rich on the produce of some 2000 acres of land. Touraine would seem to be the Paradise of the fruit grower. With a climate which allows the culture of the Vine, but is not hot enough for the Orange—"the finest climate in the world," according to Arthur Young—a fertile soil, a steady, thrifty, industrious, and not overcrowded population, and with an excellent and cheap railway system, it would be surprising if Touraine and the neighbouring provinces of Maine and Anjou were not increasing daily in prosperity. The account of the multifarious vegetable productions of this favoured district will be read with pleasure by all interested in vegetable and fruit growing. Poitou, the neighbouring province, has given its

\* "The Corn and Cattle Producing Districts of France." By George Gibson Richardson. Illustrated. Cassell, Pottet, & Galpin, 1878.

name to a gigantic Cabbage much grown in Western France, and largely used for cattle feeding. The leaves are carefully picked off in the autumn and at the end of winter, the plants being cut down in the spring. Gathered in this way, the Poitou Cabbage will yield from 14 to 17 tons per acre. C. W. QUIN.

**Uncle Charlie's Illustrated Game of Botany.\***—This is one of those well-meant contrivances for teaching science to children which, from being conceived and carried out on a wrong principle, must necessarily end in failure. The game consists of sixty-six cards, one-half of which bear the drawings of the leaves of a particular plant, the other half the description of those plants. For instance, the cards being all dealt out, the first player says, "I have an exogen with petiolate, ex-stipulate, radiate-veined leaves which are palmately divided, parted, cleft and lobed, and dentate." The player, who is supposed to recognise the *Anemone japonica* in this description, puts down his illustrated card, takes up that of the first player, and counts a trick. Surely this is not the way to teach young children botany. No doubt at the end of a certain time they would have their heads crammed with a mass of such words as macronate, obovate, crenulate, spatulate, and so on, and possibly have a glimpse of their meaning, but they would know nothing of botany. The only way of teaching botany to children, and to grown-up people too, for that matter, is from the actual plants themselves, leading them by judicious questions and suggestions to find out as much as they can for themselves. Give a child 100 mixed seeds, such as Peas, Onions, Radishes, Horse Beans, Wheat, Oats, Maize, &c., and let him sow them in ordinary garden mould. Let him be made to pull them up from time to time, and describe in his own language the changes which take place in them from the bursting of the seed until the plant produces its fruit, and he will know more of the real meaning of the little word "plant" than if he could describe by rote the specific differences that exist between the members of the whole order of Cruciferae in the Græco-Latin jargon of the schools. It is nothing but "cramming" to teach a child to say acute for sharp, apex for point, dentate for toothed, and petlate for round. Mr. Seelys tells us that he intends to publish a similar set of games for flowers and fruit, the present game only relating to leaves. For the sake of our young American cousins, we sincerely hope that he will break his word.—C. W. QUIN.

**The Home Naturalist.\***—This is one of the plentiful crop of manuals of practical natural history which do so much to spread the love of Nature amongst the rising generation. It makes no claim to be original, but is allowed to be founded on a German work by Otto Klasing, a well-known German naturalist. The directions for forming a herbarium are excellent, and the manipulations are quite within the reach of every boy or girl who can spin a top or crochet a collar. The same remarks apply to the directions for the formation of a collection of woods in longitudinal and transverse sections, a profitable amusement, which we do not remember to have seen described in any similar manual.

**The Vegetist's Dietary and Manual of Vegetable Cookery.\***—Although designed as a guide to vegetists as to what they should eat, drink, and avoid, this little book contains a large number of receipts for cooking vegetables that will be found valuable to meat-eaters as well. The author seems to be a rather liberal vegetist, as she allows the use of butter, milk, cream, and cheese, but evidently somewhat against the grain. Tomato salad is omitted in the list of salads, and this now common fruit, which may be dressed in a hundred different ways, receives but scanty notice. Beet and Vegetable Marrow sandwiches are good ideas, which might be extended to numerous other fruits and vegetables. There are also several excellent receipts for preparing Indian Corn in various shapes. The list of fruits and vegetables in season in each month will be found useful.

**Grammaire Française.\***—This is a capital example of what a grammar for the juvenile population of the agricultural districts should be. Instead of pasturing the children by giving them moral maxims as examples of the application of the different rules of grammar, they are given sentences containing words and ideas with which their every day pursuits have already made them familiar. For instance, in the conjugation of the verbs, instead of the hackneyed words "love," "speak," &c., we have "cultivate"

"plough," "reap," and so on; and in the first rule of syntax we have an example which teaches something—"Oats and Beans are sown at the same season." At the end is a vocabulary of all the more common words used in agriculture. Such an excellent idea is surely worthy of being tried for the benefit of our own rural population, whose ideas of grammar are, as a rule, of the rudest possible order. An excellent companion to this little work has been issued in the form of a reading book, the subjects treated of being entirely agricultural or horticultural.

**Illustrations of Ferns for Amateurs.\***—This useful little work on Ferns, the first part of which is before us, is to be published by subscription, and cannot be carried on, the author asserts, unless he obtains sufficient orders to meet the expenses. This, let us hope, he may get, for it promises to become a valuable book. It is full of small woodcuts, that show the habit of the plants which they illustrate, and enlarged pinns are also given, by means of which living specimens may be more easily identified. The letterpress is brief but to the point.

**Anemone blanda and other Windflowers.**—I noticed in last week's GARDEN that Mr. Barr has two distinct varieties of this Anemone. I also have two varieties, one much earlier and larger than the other, the smaller one being darker in colour. My climate is very cold and ungenial, consequently I never get *A. blanda* in perfection. I also notice that it is much less vigorous than *A. apennina*. This is almost a weed with me and blooms splendidly, whilst *A. blanda*, a few feet away, either dies or does not increase. The snails also play sad havoc with it. I am very fond of the white variety of *A. apennina*; it is so delicately beautiful. *A. ranunculoides* is very pretty, but does not seem to take kindly to my garden. *A. trifoliata* is very far behind *A. nemorosa*. The so-called double red variety of the latter is an imposition; it is not double, and it is not red. When fading it has a red discolouration. The pale blue variety of *nemorosa* is very lovely.—JAY AYE.

**Sending Cocoa Seeds to the Fiji Islands.**—A friend has asked me to forward to you a small boxful of good Cocoa seed, to be sent on to New Zealand. In getting this from one of my friends, a Cocoa planter of some experience, I have been informed that it would be of no use to send the seed simply dried in the usual way, as it would either start into growth long before it reached England, or the germ in it would be destroyed altogether; and as he recommended as the best way to send the Cocoa pods unbroken, and has furnished me with a few of the best description of Cocoa, I have had them done up in a box well perforated with holes to admit air, and I hope, therefore, they will reach you in good order. This box I send by the Royal Mail cargo steamer "Essequibo," which leaves here (Trinidad, Feb. 5) to-day, and should arrive in Southampton in about twenty days. My friend told me that he would recommend that the pods should be broken in England, and the seeds taken out and put in earth in a Wardian case, in which they should be sent to New Zealand, the probability being that they would start on the way, and reach there as young plants ready to be put into the ground. I think, however, I would be inclined myself to send on the box just as it is, if it is to be forwarded by steamer to its destination, and let it take its chance; or which would, perhaps, be better, break and plant one half and send the other on in pod. I now find that these seeds are to go to the Fiji Islands via Sydney, and not to New Zealand. How can they best be sent there?—C. J. A. H. [Clean the pulp away from the seeds and sow them (in England) in Wardian cases in well-prepared soil, not too wet. Carefully batten down, so as to keep soil without moving and yet allow space for the quickly-germinating seeds to push up their stems between the battens. If anything like care has been bestowed on this operation and luck attends them, a good per-centage should arrive in excellent order in Fiji. After arrival there, however, some attention would be required before the seedlings could be fit to put out in the open ground; this should not be done before they had been gradually inured for some days to fuller light, air, &c. Examine the seeds well before sowing them, for if the pods have not been properly packed the chances are that not a single seed is alive. The pods should be sent to England by quickest route, packed in boxes with perforated sides. To prevent fermentation as much as possible do not allow them to touch each other, and use packing material that will not obstruct a current of air. Sawdust and charcoal, &c., of which West Indians are somewhat fond, are very bad media.]

**Alpine Plants.**—When should these be divided?—H. R., *Louthborough*. [Usually in the autumn or spring months, but those accustomed to these plants may divide them at almost any season.]

\* Published by the Author, C. Shaw, The Fernery, Finchfield, Wolverhampton.

\* "Uncle Charlie's Illustrated Game of Botany." Rochester, New York. C. W. Seelys, 1877.

\* "The Home Naturalist." With Practical Instructions for Collecting, Arranging, and Preserving Natural Objects. By Harland Coultas. The Religious Tract Society, London, 1878.

\* "The Vegetist's Dietary and Manual of Vegetable Cookery." By Domestica. Second edition. London: Tweedie & Co. 1877.

\* "Grammaire Française, Raisonnée avec exemples agricoles. Par Edm. Donay. Paris: 26, Rue Jacob.

## NOTES FROM GLASNEVIN.

The noble specimen of *Arbutus hybrida* which stands on the Grass lawn in front of the director's house is just now a beautiful object, every spray being terminated by a pendulous panicle of pale, waxy flowers. *Rhododendron præcox*, too, is a mass of flowers. The Tree Heath (*Erica arborea*) is also garlanded with pearly bells, and the lovely *E. carnea* and its white variety are in full flower. More interesting than any of these, perhaps, are bushes of Dr. Moore's remarkable *Erica* variety of *E. mediterranea*, which have been for weeks and weeks past in full bloom and exhaling an agreeable fragrance, whilst even now the typical form is far from being in flower. In the way of bulbous plants, besides the abounding white and gold of the "first pale blossom of the unripened year," and the yellow Crocus, the kindred, but far prettier, Snowflakes, of which we were gratified to see numerous patches in the borders, and the lovely *Iris reticulata*, are very attractive. Some of the Heliconias are still in good condition, notably *H. purpurascens* and the stately *H. orientalis*. White and purple patches of *Iberis*, *Arabia*, and *Aubrietia*, yellow bosses of *Alyssum olympicum*, and rosy-flowered cushions of *Saxifraga oppositifolia* serve to brighten up the herbaceous quarters. Leaving the outside ground, and turning into the cool conservatory which flanks the Palm house, we ("Irish Farmer's Gazette") found several Himalayan *Rhododendrons* in flower, notably two well-marked varieties of *R. argenteum*, the branches of which were crowned with heads of huge creamy white flowers; associated with these were the white-flowered variety of *R. arboreum* and *R. barbatum*, with flower-heads so remarkable for their compactness as for their dazzling brilliancy. In the Palm house the gigantic specimens which crowd its floor, and promise soon to force their way through its lofty and hideously ugly roof, have been retubed. In the Orchid house numerous plants were in flower, and a cool greenhouse, which forms the eastern division of the great curtilage range, was particularly gay with Epacris, *Ericas*, and other hard-wooded plants, associated with *Cyclamen*, a good strain of Chinese *Primulas*, and forced bulbs. The crimson fascicles of *Ilabrothamnus elegans* hung in profusion from roof and pillar, notwithstanding that it was cut in hard very late after flowering last year. In the stove conservatory that grand old plant *Astrapea Wallichii* had just done blooming, and its many pendant tassels, though no longer gleaming with colour, told that the bloom had been rather unusually profuse. We were much gratified here at meeting with a specimen of that fine myrtaceous tree, *Syzygium Moorei*, which, according to the director of the Melbourne Botanic Garden, affords when in full bloom "one of the most gorgeous spectacles imaginable, its every branch and even part of the stem being clothed with one mass of royal purple blossoms, having the appearance of rich pale velvet." This lovely tree is specifically named in honour of Mr. Charles Moore, director of the Botanic Garden, Sydney, from whom the specimen at Glasnevin was received. Dr. Moore has also got a supply of seeds of another beautiful myrtaceous tree, *Eucalyptus ficifolia*, of whose floral charm the Melbourne director, in his report for 1876, speaks in still more glowing terms.

**The Secateur.**—I agree with all that "J. S. W." says (see p. 202) respecting this useful French pruner, which I have used for several years. Last season I had occasion to lower two old Thorn hedges, which had been shorn for more than forty years. I fixed up a number of stakes, stretched a line at the required height, and employed a good workman to cut off the top in an even manner with the Secateur, lowering it 18 in. in order to bring a beautiful landscape into view. The work was done in a very even way, and in less than half the time the shears and saw would have taken, the stems being the size of a man's thumb. When such are bent by the hand the cut is then made much more easily, by one edge chiefly. I find the Secateur most useful for all kinds of shrub pruning. I have three in use, two of the largest 9 in. long, which I find the most useful, and which cost 4s. 6d. I have never found the spring of the large size to get out of order; the rivet should be kept oiled, and then the shears readily spring open. They can be had of the different seedmen in Exeter, and are illustrated in their catalogues. —JOHN GARLAND, Killerton, Exeter.

**The Phylloxera in Victoria.**—Owing to the appearance of the Phylloxera in the Vineyards in the colony of Victoria, the South Australian Government has prohibited the importation of Vines.

**Royal Botanic Garden, Edinburgh.**—The Regius keeper states that since last report the arrangements between Her Majesty's Government, the Estates trustees, and the Town Council of Edinburgh, with reference to the Arboretum, have been completed, and that the fencing of the ground has been commenced. He has still to complain of the want of funds for carrying on the ordinary work of the garden. The total sum allowed annually for this purpose is £1400. By the utmost economy, by dismissing efficient men during part of the winter months,

and by not giving an allowance to the curator to enable him to visit other gardens in order to procure plants, the expenditure has this year been kept with difficulty within the limit of the Government grant. An extra sum of at least £300 annually is required for the ordinary working expenses of the garden. There is no botanical garden of the same area, and used to the same extent for teaching purposes, which is kept up at such a small outlay. The accommodation for the students who attend the lectures on botany is still in the same insufficient state as it has been for some years. The class-room can only at the utmost accommodate 230, and last summer the number attending the class was 389. A plan has been transmitted to the Office of Works for a new class-room and a laboratory-room, which will fulfil all the conditions required for the accommodation of the students. It may be observed that additions to the plants in the garden are only effected by voluntary contributions. No funds are allowed by Government for the purchase of plants, or for the curatorship of the Museum, Herbarium, and Library. The Regius Keeper has therefore been compelled to beg for pecuniary assistance from other sources, and to expend part of his own garden salary, which is only £120 per annum. Government has determined to take away this small salary when the house for the Regius keeper is completed. In place of withdrawing this sum, the Government might add to it the allowance for the garden, more especially for payment of a Curator of the Herbarium and Library. The garden, as formerly reported, stands in need of an Aquarium and a Fern house, in order to complete its means of teaching. The garden continues to supply fresh specimens for the Government School of Design. The Arboretum Society of Scotland has been allowed to hold its annual meeting in, and the Botanical Society uses it for its monthly summer meetings. The Cryptogamic Society of Scotland will also hold its meeting in the garden next October. The number of visitors during the year 1877 amounted to 79,703.

## NOTES AND QUESTIONS—VARIOUS.

**Daphne Mezereum in Masses.**—The beauty of this *Daphne* is lost when planted singly, while when seen in masses it is most effective. I am led to make these remarks through observing a bed consisting of about 100 fine plants of it in flower in the grounds of Mr. Herridge, florist, in the Fulham Road, Hammersmith, the other day. The plants are about 4 ft. high, and being well backed up by evergreen shrubs, have a most charming effect.—J. CAOROSA, Sudbury House, Hammersmith.

**Sisyrinchium striatum.**—This little grown, and far from showy old plant I grow for the sake of its odour mainly. It deserves a nook in a fringe of dwarf American shrubs.—P. BAN.

**Grass for Game Cover.**—What is the best Grass for sowing in young plantations as a covert for game?—S. H. R. [Tufted Hair Grass (*Aira caespitosa*), in damp, marshy soils, makes a thick covert in a very short time, and in dry soils does tolerably well; it is the best of all the Grasses for coverts.—W.]

**Lilium auratum.**—For the information of "Amateur" (see p. 197) I write to say that from the first appearance of the flower buds, I watered my *Lilium auratum* almost daily until the flowers expanded, with liquid manure made from horse-droppings soaked in water, and afterwards with pure water only. W. J. T.

**The Gilbert Cultivator.**—Will some one be so kind as to tell me where I can purchase the Gilbert Cultivator, and the probable cost of it?—L. C. J.

**United Horticultural Benefit and Provident Society.**—At the monthly meeting of this society, held at the Caledonian Hotel, Robert Street, Adelphi, on Monday evening, March 11, the chairman of the meeting, on behalf of the committee and members, presented Mr. J. F. McElroy with a handsome silver watch and chain in recognition of his past services as honorary secretary.—R. H. B.

**Mushrooms in March.**—Is it not very unusual to gather Mushrooms in the open air at this time of the year? Yesterday I found eight good-sized ones on the Fernery, and this morning they were highly approved of at breakfast.—H. R., Tunbridge Wells.

**The Paris Exhibition.**—On the occasion of the visit of the Prince of Wales to the British section of the Paris Exhibition, His Royal Highness examined two workmen's cottages formed of concrete slabs, now being erected in the grounds of the Exhibition by Mr. Lascelles, the well-known horticultural builder, who explained to the Prince the advantages of this system both as respects price and construction.

**Procuring Trees and Shrubs.**—I shall feel grateful if you will say at what nursery we are most likely to procure the following:—*Ficus Banksiana*, P. Boursieri, P. Mugus vel. Pumblo, *Juniperus prostrata*, *Juniperus sabinoides*, *Philæa busifolia* (Witch & Son), *Pieris japonica* (rare, probably only as yet in Continental gardens), *Pieris formosa*, *Andromeda floribunda* (in any nursery), *A. polifolia*, *A. pulvulenta*, *Sambucus Ebulus* (a British plant, ought to be in every botanic garden); also the various *Hypericum* which have been so highly recommended of late in THE GARDEN (through the growers of herbaceous plants). I have failed at more than one of our nurseries in finding most of these plants.—L. C. J. [You should consult the catalogues of the more important nurseries growing good collections of trees, shrubs, and herbaceous plants; also our advertisement columns. It is impossible for us to recommend particular firms, except in cases where the stock of a plant is in the hands of one house.]

No. 331.] SATURDAY, MARCH 23, 1878. [Vol. XIII.]

"This is an art  
Which does mend Nature: change it rather: but  
THE ART ITSELF IS NATURE."—*Shakespeare.*

## A GARDEN IN SOUTHERN FRANCE.

At Mentone, on the borders of France and Italy, there is a garden particularly interesting to the many visitors who frequent that favoured winter resort, for there, in the open air, may be seen growing, and flourishing too, many plants which in Britain are only to be found in conservatories, and even stoves. By the kindness of the owner, Dr. Bennet, visitors are admitted until one o'clock each week-day. On approaching it one can have no idea of the treat in store for the horticulturist, or imagine that such a wealth of beauty could be assembled on a few terraces of an Olive grove. The situation, with the blue Mediterranean lying far beneath, and an amphitheatre of magnificent mountains surrounding it, is one of striking beauty, commanding one of the finest views on the celebrated Corniche Road. There can be seen here, besides many species of Palms, the stately Wigandia, assuming the proportions of a large shrub, and producing its huge terminal heads of pale violet blooms in profusion. Some specimens of this may be seen in Mentone 15 ft. in height, and considerably more in diameter. There is also here the *Araucaria excelsa*, with its symmetrical but graceful growth, rapidly growing upwards; likewise the *Musa Busseti*, spreading its massive tropical foliage in all directions, forming a marked feature in the scene; and the *Ficus elastica*, so well known as a window plant in London. One of the most striking plants here is the *Bougainvillea spectabilis*, which under the powerful sunlight of Mentone produces its floral bracts of a depth and brilliancy of colour unknown in our gardens. A variety of *Bignonia* (*Tecoma*), almost hiding a False Pepper Tree which supports it, and now covered with its pendulous masses of small whitish purple-throated blooms, is an object of great beauty. Several varieties of that graceful twining shrub *Kennedyia* (*Hardenbergia*) are laden with their delicate Pea-shaped blooms of various tints. *Abutilons* of different varieties, but chiefly the *A. Darwini*, are remarkable for the size and richness of tint of their blooms. *Linum trigynum*, here laden with rich golden blooms, quite surpasses all our ideas of it as a pot plant. *Justicia arborea* also attains a large size and blooms abundantly. An extensive collection of *Agaves*, *Aloes*, and various succulents may also be found here, where the climate seems especially suited for such plants. *Pelargoniums*, *Primulas*, *Hyaecinth*s, *Salvias* of most brilliant colours, *Narcissi*, and many other plants too numerous to name abound in great numbers. A species of shrubby *Cineraria* named *platanifolia* attracts attention on account of its massive and imposing appearance. It has large handsome foliage, produces immense heads of pale yellow blooms, and its buds and stems are of a rich chocolate colour. Another shrub remarkable for its profuse, rich golden bloom is the *Osteospermum moniliferum*, a Composite, which I have never seen except along the Mediterranean coast. The purple-flowered *Polygala grandiflora* also assumes the form of a shrub, and grows to a considerable size. There are several small plant houses and pits, but it is the out-of-doors vegetation which is most striking in this charming spot where winter is unknown. I should have mentioned amongst plants remarkable for their fine foliage that the *Aralia papyrifera* rears its handsome spreading head in pleasant contrast with the growth around it. The above constitute only a small portion of the contents of this interesting garden. J. T. P.

Mentone, March 14.

**Christmas Roses.**—All varieties of *Hellebores*, it seems to me, are interesting and valuable. The specific names are, however, I confess, confused; our *Helleborus atro-rubens* we think much of, although your correspondent (see p. 160) despises a variety so named. Where is the semi-double Scotch variety *H. niger* to be met with? It is not known about Edinburgh, as far as I can make out.

In the last week of February we had eleven sorts of *Hellebores* in flower, and not one of these would we dream of casting away, although the flowers, or what are called the flowers, of some are slate-coloured, bright green, or greenish white. Even *H. foetidus* should have a place somewhere; its leaves are the only ones that are useful for cutting, and very good they are for many purposes. It is perhaps the only *Hellebore* that does not suffer from deprivation of leaves. The sharp weather which we have had has checked *H. colchicene*, but *H. guttatus* was in flower by March 2. Mr. Hooke's (of Bradford) bed of nearly fifty species and varieties of *Hellebore* will be a sight worth going any distance to see, and I have often thought what a charming bed for the end of February would be a centre group of *Rhododendron præcox* and *superbum*, surrounded with white *H. olympicus* or *orientalis*. The two make a most pleasing combination in our spring border, both in colour (ilac and white), height, and shape of foliage. *Narcissus obvallaris*, true, would brighten up the group and make it perfect, and it is sure to be in flower at the same time. One prizes that *Narcissus* most highly, as it is decidedly the earliest to flower. We got our stock of it from Mr. Harpur Crews and Mr. Fox, and we intend to increase it as much as we can. A bed is much easier protected than a line, or portions of a border, but the sudden frost which occurred in the early morning of March 8 made all protection useless for this season, as far as the *Rhododendron* flowers are concerned; the bushes were a mass of perfect bloom on the evening of the 7th, and the blossom was gone by the morning of the 8th. Spring borders are like skating and curling—highly prized, never to be depended on, and decidedly a slippery pursuit.—F. J. Hope, *Wardie Lodge, Edinburgh*.

**Daffodils on Grass.**—Conspicuous amongst hardy spring-blooming plants capable of defying the withering influence of an English March stand the Daffodils, the bright yellow flowers of which bend but do not break before the gales that sweep across our meadows. In this district the latter are just now quite yellow with them, large heads thus having been allowed to grow undisturbed for years, as, beyond some of the flowers being gathered for indoor decoration by those who have no means of procuring forced exotics for such purposes, the plants are allowed to mature their foliage, as neither cattle nor game ever molest them. Where it is desirable to naturalise Daffodils, good bulbs of them should be procured as early after their foliage has disappeared as possible, and planted in clumps on banks or in semi-wild portions of the grounds where the mowing machine is not an early visitor. Under such conditions they will give unflinching satisfaction; the only essential point needing attention in order to ensure success is that of allowing them to remain undisturbed for years.—JAMES GROOM, *Henham*.

**Polyanthuses and Primroses.**—These are more plentiful this season than usual. The common or wild one is now abundant in shrubberies and woodlands, where it is a welcome visitor at any time, whether early or late; the single white variety is also blooming well this season, and is useful in shrubby borders. One is surprised that these "harbingers of spring" have not been more cultivated than they are; now there is no excuse for not growing them, as a shilling packet of seeds will yield endless varieties, and furnish interesting employment for amateurs and cottage gardeners. Some twelve or fifteen years ago I began by planting Polyanthees, Primroses, and Cowslips together, and left them for the bees to fertilise. By saving seed from this mixture I obtained a great variety of colours, but principally Cowslips and a few very good Primroses. After a few years, however, I gave up the Cowslip tribe and kept to Polyanthees and Primroses, and by weeding out all the bad ones I soon got a good collection of both. I have now a good strain, and many varieties which do useful service in many capacities as cut flowers. Some of the plants have been gathered from continuously since before Christmas.—W. DIVERS, *Wierton, near Maidstone*.

**The Winter Heliotrope** (*Tussilago fragrans*).—We are making a new plantation of this. Can any of your correspondents tell me what portion of the roots is best to select, so as to ensure flowers next winter, this being a plant so erratic as regards blooming. The season does not seem to affect it, but one never knows where flowers will be produced. Sometimes they appear on the young runners, and again on what one would think were old hard crowns. We want to make certain of having a quantity of flowers; one spike in the little bunches of sweet green Thyme, Rosemary, Gum Cistus, &c., which we give weekly to the Blind Asylum would be a great delight in the months of January and February. We grow it in sundry situations, but never have sufficient flowers.—F. J. Hope, *Wardie Lodge, Edinburgh*.

**Linum trigynum.**—Everyone, I should think, who is acquainted with this *Linum* will allow it to be one of the most useful of winter and spring-flowering plants. Although of easy culture, it is not known so much as its merits deserve, for no better plant can be found

to brighten the winter months either early in the warm house or later on in the conservatory. Its blooms, of a rich golden tint and resembling a miniature *Allamanda*, are produced in the greatest abundance, and those who are not yet in the possession of it would do well to get it, and propagate it now for next winter's display in the conservatory or stove.—J. T. P.

### NOTES OF THE WEEK.

**The Soldanelias.**—It is quite refreshing to read from time to time in THE GARDEN the accounts of the various beautiful plants that are flowering in different parts of the country. Nothing can so much tend to create a love for such things as these notices cropping up, as they seem to do to the surface now and then, like strata charged with precious metals. Somebody in last week's issue gave a word or two of praise to the Soldanelias. It may not be exaggerating to say that they are the very rubies and diamonds of Alpine vegetation. There are about ten or twelve species and varieties of them, and they now and then manifest that tendency which most blue flowers possess of passing into the albino state. *S. Wheeleri* I consider to be the gem of the family. I have had some pots of it in a cold frame attractive enough to bring a man down on his knees. Their very look seems to have something of the glacial about them—something at once declaring them to be children of the mountains.—THOS. WILLIAMS, *Ormskirik*.

**The First Rose of the Year.**—I have had the pleasure, it seems, of plucking the first Rose of the year, or, at least, a Rose much nearer the beginning of the new year than the one which was sent to Canon Hole, of which you gave an account (see p. 199). I gathered some very good *Maréchal Niel* Roses the last week in January; one flower in particular was very fine, but pale in colour. They grew on the south end of a plant stove. I may add that we had Roses of different varieties up to Christmas, and, indeed, many unopened buds have been cut off in pruning since that time. We have never been without a Rose for a button-hole for many months; a few plants of *Madame Falcot* indoors have flowered all the winter with little or no heat. Roses generally are most forward here, most of them showing buds, on which I look with some anxiety. I have pruned very late this year; what I have done has been this week, and I have not yet nearly finished. Shoots with say a dozen healthy Rose buds on them are cut off with reluctance. To-night (March 15) we are having a sharp frost, the first for the last few weeks.—JOHN TAYLOR, *Hardwick Grange, Shrewsbury*.

**Rhododendron Nuttallii.**—I have forwarded for your inspection a truss of this fine *Rhododendron*, cut from a plant which is from 4 ft. to 5 ft. in height, and which has at the present time twelve fine heads of bloom in all, each consisting of from six to nine flowers. It bore fourteen heads, but two of them were, unfortunately, broken off. In order to flower this *Rhododendron* successfully, an early growth is indispensable; the plant which we have is brought on in an early Peach house until its growth is complete, when it is gradually introduced to a cooler place, and finally placed out of doors in June in rather a shaded situation. There it remains until the end of September, when it is again brought into the Peach house, where it remains until the house is started. Its buds then begin to expand in abundance.—R. OILEY, *gardener to R. Nicholl Byass, Esq., Daylesford House*. [The head of bloom sent was the finest of the kind which we have ever seen. It was 13½ in. in diameter; each bloom measured 6 in. across the mouth, 5½ in. long without the footstalk, and held as nearly as possible half a pint of water. The blossoms, too, are sweet scented, white, and of great substance. A plant with fourteen heads of such flowers as those just described must be a sight worth travelling miles to see.]

**Camellias at Waltham.**—There is just now a fine display of *Camellias* in Mr. Wm. Paul's nursery, at Waltham Cross. The plants, which are grown in pots, are arranged in a large span-roofed house over 100 ft. long, and form literally banks of flower. All the kinds worthy of culture are here represented, and ever since last October a good supply of blossom has been secured. Among the many fine kinds to be found here may be mentioned *Niuta Egeria*, a white variety, possessing a neat and compact habit of growth, glossy green leaves, and producing abundance of blossoms, equal in every respect (except in size) to those of the well-known *Double White*. Another good white kind is *Cap of Beauty*, the flowers of which are very large and the base of the petals of a rich cream colour. Among crimson kinds *imbricata*, which still ranks as one of the best, is here represented by large and healthy specimens. *Manara* is a good sort with well-formed, smooth-petalled flowers of a rich crimson. We also noted a kind with flowers of a slate colour. The plants are all grown in pots and subjected in every way to the same kind of treat-

ment; therefore the true habit of each variety can be seen as well as its flowers, and anyone desirous of gaining information as to culture or what to grow in the way of *Camellias* cannot do better than see this collection.

**Acacia lophantha in Windows.**—This plant may now be noticed here and there in London windows clad in its fresh green and graceful foliage, and looking like a beautiful Fern in the form of a bush. It is easily raised from seeds, and it is useful in the flower garden as well as in the house.

**Adiantum palmatum.**—When better known this *Adiantum* will doubtless be extensively grown on account of the long, elegant fronds which it produces. Its pinnae, which are larger than those of *A. Farloyense*, are palmate and gracefully set on slender, wire-like stalks, and for floral decorations will be found to be of the most useful description. Established plants of it in Mr. Williams' nursery, at Holloway, are producing fronds which will ultimately be at least 2 ft. in length.

**Scilla bifolia taurica.**—A good display of this fine form of *S. bifolia* may now be seen in Mr. Ware's nursery, at Tottenham. Its flowers, which are of a bright blue colour, are produced on stout stalks for many weeks in succession; and, either for borders or pot culture, this variety may be considered to be one of the best.

**Begonia Froebelii.**—Grown in pots in a greenhouse, this beautiful *Begonia* is now flowering freely in Messrs. Carter & Co.'s nursery, at Sydenham. The plants are furnished with large, *Cineraria*-like leaves, and their large, bright scarlet flowers form a striking contrast to blue or light-coloured *Cinerarias*, of which there is also here a good display.

**Rock Plants at Weybridge.**—Amongst plants now in good bloom in our rock garden are *Soldanella Wheeleri*, *Epigae repens*, *Polygala Chamæbuxus purpurea*, *Primula nivalis*, and *P. marginata*. The late severe frosts have done but little injury to flowers. *Rhododendron præcox asperum* in different aspects has, indeed, lost all its beauty, but *Primula denticulata* and its hybrid *P. concolor*, in several situations, and *Scilla sibirica* are unscathed; even *Hyacinths* look hardly the worse.—GEORGE F. WILSON, *Heatherbank, Weybridge Heath*.

**Seedling Irises and Squills.**—I have had some good seedling varieties of *Irises reticulata* in bloom; one, which I particularly admire, is all of a dark purple, except the orange marking on the falls. I have also a very pretty pale seedling *Scilla bifolia* quite distinct in colour from that of any of the kinds usually grown.—J. G. N.

**Lælia flava.**—A good plant of this charming *Lælia* is now in bloom in Messrs. Rollissons' nursery, at Tooting. Its flowers, which are of a bright golden colour, are produced on long, slender stalks; and the whole plant is so distinct from other *Lælias*, that it is almost indispensable in every good collection of Orchids.

**Allium neapolitanum.**—Cat blossoms of this, one of the most useful and beautiful of the *Alliums*, are now being used in quantity for bouquet making in Covent Garden market. The trusses of flowers are large and fresh, and last for a long time in a cut state. They are principally imported from the south of France, but in warm, sheltered places in England, under good culture, flowers of it might be had much earlier than is at present the case. They are devoid of all unpleasant smell unless they happen to get braised.

**Lælia Veitchii.**—This fine hybrid *Lælia*, raised by Mr. Dominy some years ago, is now beautifully in flower in Messrs. Veitch's nursery, at Chelsea. It is bearing two flower-spikes, one of which is furnished with seven massive blossoms, having long, delicate, violet sepals and petals, which are effectively set off by a lemon-coloured lip deeply tipped with rich velvety-purple. Altogether, this plant, on account of its clearly-defined, gorgeous blossoms, will hold a foremost place among large-flowered *Cattleyas* and *Lælias*.

**Tropical Plants at Naples.**—We are indebted to the Marquis Valle de Casanova for photographs showing the fine development of plants in Prince Sigliano-Colonna's well-stored garden, at Naples. He mentions the following as obtaining great perfection in the open air there, viz.: *Eugenia australis* (17 ft.), *Araucaria Cunninghamii glauca* (20 ft.), *Piconectitia tuberculata* (in flower), *Lantana horbonica* (beautiful specimen), *Corypha australis*, *Mahonia chilensis*, *Phoenix pumila*, *Strelitzia Augustæ*, *Musa sapientum* (ripening fruit in the open air), and *Alseophila australis*. Among the photographs one shows the *Faracorya gigantea* in flower measuring to the summit of the flowering stem 39 ft. 4 in.

**Primula denticulata.**—This is being grown at Gunnersbury Park for cutting from, and it is found most useful for the purpose. A well-established plant will throw up a number of flower-stems, and the delicate, silvery-lliac hue of the flowers makes them very accept-

able in vases, &c. The natural tenderness on the part of this plant subjects it to the chances of injury when grown in the open air without protection; and therefore, as it does remarkably well in the open ground during the summer and autumn, the plants should be so arranged that an ordinary garden frame can be placed over them to afford the protection needed. Strong plants can be lifted in November and potted, taking care to use a pot only sufficiently large to contain the roots; then put them into a cold frame to bloom. After the flowers are gathered the plants should be divided a little and returned to the open ground, planting them in deeply-dug, well-manured soil, top-dressing with manure and leaf-mould during the summer, and watering freely in dry weather.—D.

**Tea Roses at Lord Rosebery's Wedding.**—Mr. Wills used nearly 3000 Tea Roses in the floral decorations on this occasion; the wedding presents were surrounded by Roses. There was some difficulty in getting so many blooms, nearly all the Rose growers and many private cultivators contributing. There were also many beautiful Phalenopsis and Odontoglossums.

**Hardy Plants in Bloom at Edinburgh.**—At the meeting of the Botanical Society of Edinburgh, held on the 14th inst., Mr. McNab laid on the table flowering specimens of 118 species and varieties of hardy herbaceous and Alpine plants, all picked in the open air that day—a larger number than ever was yet in perfection at the same date during former years.

**Two good Chinese Primulas.**—Among single-flowered Chinese Primulas we have seen none so good as two now in flower in Messrs. Carters' nursery, at Sydenham. One has scarlet flowers with a rich yellow eye, and is called Carters' Scarlet, the other, named marginata, bears flowers of a bright mauve colour. The foliage of both plants is remarkably compact.—S.

**Polyanthuses.**—Mr. Caudwell, of Wantage, has shown us blooms of named Polyanthuses, including George IV., William IV., and other handsome laeod kinds, the colours of which are rich and varied. The plants which produced them were grown in bog soil in an open situation, thus showing that neither cold frames nor shady borders are absolutely necessary for the perfect culture of even the best kinds of Polyanthuses. As conservatory plants, many of them if grown well in pots would be very handsome.

**Tuberous-rooted Begonias.**—Greatly as these have been improved of late years, new kinds continue to be raised in abundance. Mr. Laing, of Forest Hill, who has devoted much attention to such work, has this season thousands of seedlings raised from seed obtained from crosses of the best known kinds. These plants are now being grown on for flowering in summer, when they will doubtless make a fine display, and out of so many, some good new sorts may reasonably be expected.

**Laurels in Ireland** (see p. 225).—These generally bloom well here, but I have never seen them so loaded with blossom as they are this year; some of them are over 30 ft. high. When living in the West Riding of Yorkshire, twelve years ago, I remember *Lærole* being killed by frost. I cannot recollect ever seeing one in flower there, and I had no idea that they grew to such an immense size as they do until I came to Ireland. No one who has not seen them in perfection can imagine how beautiful they are.—JOHN CLARKE, *Cork*.

**Bertolonia Van Houttei.**—Few of the Bertolonias are more justly prized than this, its hairy, attractive, pink-veined leaves rendering it one of the most desirable of stove plants. Though generally found growing under bell-glasses, these are not absolutely necessary for its successful culture, for some of the healthiest plants of it we have lately seen are now to be found in Messrs. Laing & Co.'s nursery, at Forest Hill, without bell-glasses. They are grown in 4-in. and 5-in. pots in sandy peat, and the pots are placed on Cocoa-nut fibre. They are kept well syringed and watered, and under such conditions they develop large and perfect leaves very rapidly.

**The Spring Snowflake.**—I fully concur in the opinion expressed (see p. 225) concerning this plant, viz., that it is only not more grown because it is generally seen in a weak state, for its beauty far surpasses that of even the delicately-formed single Snowdrop; and if its culture were as easy, I am sure it would in time take its place. Those who venture to try it must not be easily discouraged, as I find it requires to be perfectly established before it blooms freely. In the autumn of 1875 I planted several patches of it in my borders, which in the following spring were scarcely visible, leading me to suppose that the clay soil and cold situation of my garden did not suit them; but I was wrong in my conjecture, as time has proved, for a fortnight since those same plants were full of bloom, several of their stems producing, as at Hoatherbank, two flowers.—E. F., *Swaffham*.

## NOTES FROM KEW.

**Outdoor Plants.**—Severe frosty nights and cutting winds have, for the last week or so, much retarded many spring flowers, and have totally ruined the blossoms of several specimens of *Rhododendron Thomsoni* (in the pleasure grounds), which were one sheet of brilliant crimson-scarlet. It is much to be regretted that this magnificent Himalayan *Rhododendron* is so very subject to have its flowers and young growth cut off by the inclement weather of early spring. Few fresh hardy flowers are to be seen this week, the following being all that are deserving of more than passing mention: The Alpine Barrenwort (*Epidemium alpinum*) attracts attention on account of its panicles of dull reddish, drooping flowers. *E. pinnatum* var. *olegans*, from Persia, is a very handsome plant, with bold leaves and upright racemes of large, bright yellow blooms; the pinnate, ever-green leaves consist of three or more long-stalked, heart-shaped, dark green, leathery leaflets; the plant altogether much surpasses its European relation in beauty and effect. The rose-coloured Rock Cress (*Arabis rosea*), from Calabria, is a pretty little rock plant, with glossy leaves and panicles of showy flowers. The handsomest of all the perennial *Candytufts* is the South European *Iberis semperforens*; this makes a good pot plant, and, if allowed the shelter of a cool frame during winter, comes in really useful for greenhouse decoration in spring. *Iberis Garrochiana*, from Piedmont, and *I. collina*, from France, are species of similar habit to, but with much less conspicuous flowers and smaller foliage than, *I. semperforens*. *Polygala Chamæbuxus*—a coloured plate of a purple variety of which was issued with THE GARDEN for January 12 of the present year—is very charming, with its neat, glossy, box-like leaves, and its numerous, somewhat Pea-shaped, large, yellow flowers. A white variety of *Orubus veronis* is well worth a place in any flower border; indeed, all the varieties of this beautiful dwarf Vetch are well worth growing. *Psoschinia ecilloides*, a bulbous, liliaceous plant, has charming, blue, Scilla-like flowers. A white variety of this is also a decided acquisition. Next come two varieties of the beautiful *Scilla bifolia*, the one with reddish or rose-coloured flowers, the other with white flowers; both varieties are of the same size, and exactly resemble the type in everything except colour.

**Stove Plants.**—In No. 1 House there is at present in flower a most brilliant stove tree from Caracas, Brownea grandiceps. The fine, pinnate leaves and very large *Rhododendron*-like heads of scarlet flowers make a very attractive combination. The other stove plants worthy of notice are all to be seen in the New Range, with the exception of the last two, which we saw in the Palm House. *Siphocampylus Humboldtii*, from tropical America, is a low shrub with dark green leaves and bright scarlet, tubular flowers. *Sociodaclyx digitaliflora* is a remarkable Gesneriad, with long-stalked flowers borne in couples; the swollen, hairy tube is red and the limb is greenish spotted with maroon. *Marica Northiana* is a very beautiful, free-flowering Irid from Brazil; the flowers, which are very fragrant, have white outer leaflets, whilst in the inner blue, brown, and yellow are represented. *Macleania speciosissima*, from New Granada, is a showy Vacciniaceous shrub, with long, tubular, red, wax-like flowers. *Nidularium fulgens* is not remarkable for a showy inflorescence, but the bright colouration of the leaves lining the nest-like centre of the dense rosette, which contains the very shortly-stalked head of flowers, makes up for any deficiency in these latter, and renders this *Bromeliad* a very desirable stove plant. The Rose Apple (*Jambosa vulgaris*), from the East Indies, has good-sized flowers with four whitish petals; the brush-like mass of stamens, the filaments of which are very long, cause the plant to be very conspicuous. It flowers freely in a tolerably small state. Of the tropical American *Thyracanthus Schomburgkianus*, Lindley wrote just twenty-three years ago that it should be in every collection, as it really is one of the handsomest plants that has been introduced for years. It produces great quantities of brilliant crimson, tubular flowers, attached near the ends of long, branched, drooping flower-stems, which, when tied out a little, so as to fully expose the blossoms to view, render the plant very effective. The flowers also remain a long time in perfection, a desirable property at all times, and especially at this time of the year.

**Greenhouse Plants.**—Amongst these there are few to note, but the following in interest and beauty make up for lack of number.—*Senecio Ghiesbreghtii*, about 2 ft. high, has a stout stem with noble leaves and a large, Canthiower-like head of small, golden-yellow blossoms; this is a very striking and handsome plant. *Rhododendron virgatum*, one of the interesting discoveries of the present Director of Kew, is a neat-habited little bush, with small leaves and Azalea-like flowers—white with a faint suspicion of rose. In a wild state it skirts the Pine forests in the ravines of the Lachen Valley, in Sikkim-Himalaya, at elevations of from 8000 ft. to 9000 ft. *Thibaidia palmifera* is an evergreen shrub which will do well planted out in any

cool house; the veined and chequered red flowers, about 1 in. in length, are produced in clusters along one side only of the old wood.

**Succulent House.**—Some of the Cacti will soon be making a fine show. At present the best is *Cereus McDonaldii*, from Honduras. A large plant of this species, trained along one of the iron girders of the roof of the Succulent House, is producing its large and handsome flowers. According to the light in which these are seen, they seem glowing purplish-crimson, flaming scarlet, or an indescribable mixture of several colours. *C. flagelliformis*, from Peru, is also very showy, its pendulous stems being covered with bright pink flowers. This is of interest, too, on account of its being one of the very first of the Cacti introduced into this country. *Sempervivum aureum*, from the Canary Islands, has a dense rosette of glaucous, Echeveria-like leaves, and a short, bracteate peduncle, bearing a head of star-like, golden-yellow flowers.

**Orchids.**—*Spiranthes grandiflora*, a magnified edition of the Lady's-tresses of our English pastures, has a stout scape, bearing several creamy-white flowers, for the delicious fragrance of which the plant is well worth cultivating. *S. Smithi*, a companion terrestrial Orchid, has yellow and green flowers similar in size to those of the last-named, but lacking the perfume which renders them so pleasing. *Lycaste aromatica*, a Mexican Epiphyte, has numerous, orange-yellow flowers, which exhale a very pleasing, aromatic odour. *Oncidium Harrisonianum*, from Brazil, has a short scape, bearing a short, branched panicle of small, very pretty, yellow flowers, spotted with brown. *Vanda coerulescens* has charming blue flowers, the lip being two shades darker than the other dorsal organs. *Dendrobium luteolum* has long, spurred, whitish flowers, the lip being tinged with yellow at the base, and faintly lined with red. *Isochilus linearis* is a Trinidad species, with short, slender stems, bearing little, Grass-like leaves, and short terminal spikes of small, rose-coloured flowers.—†

### LILIES AND THEIR REPRODUCTION.

I QUITE agree with "Amateur" that my "only object is to increase our knowledge of such matters," and I also agree with him that "the main questions to be decided are, whether or not the bulb after flowering decays; and secondly, whence springs the flower-stem or stems of the succeeding year." But I cannot agree with him that in departing from the study of the organization of the Lily bulbs themselves, and arguing on the faith of certain appearances in bulbs and combs of other plants (the "speculation" to which I alluded in my paper (see p. 185), and which he now again indulges in), he can enlighten us with respect to the organic structure of the Lily. Nor can I admit that, by the pot-growing experiment which he describes and proposes to carry out, "he will settle," as he says, "the question beyond dispute." He further tells us that he has *Lilium giganteum* "now shooting up from the precise centre of the bulb, as previously." Now, the initiated might be content with this as a proof that it is the same bulb that shoots up year after year. But surely "Amateur" can hardly expect an experimenter, who examines the interior of the bulb every month during the year, to be content with such a theory. If he will look at the woodcut on page 143 he will see that, originally, the new flower-stem B sprang up from the very side of the stem A that bloomed last summer, and quite as close to that stem as the young seed-bud C is now springing up by the side of the new flower-stem B. This being so, we may ask what appearance had these bulbs before the scales were picked off so as to expose the interior? I answer, they were exactly as "Amateur" describes the outward appearance of his bulbs; for when I lifted them out of the ground on January 1 the young stems were shooting up about 4 in. above the precise centre of each bulb, and I might add in "Amateur's" own words, "as previously"; but I must also add, in my own words, "not from the same identical bulb." Thus it will be seen that if we desire to ascertain the nature and organization of Lily bulbs, it is not by merely examining the outside alone, but by lifting and dissecting several bulbs, month by month, during a period of two years, and by carefully and minutely examining the interior of each bulb as soon as they are lifted out of the ground. If "Amateur" had done this, I venture to think that his present remarks would have been very much modified. I have to thank him, however, for his kind offer to show me, in October or November, the results of his experiments with different bulbs; but I may mention, possibly for his information, that in those months with different bulbs, though the germ or seed-bud is actually in existence, it cannot be discerned by the naked eye, so that a proper examination would be incomplete.

Assizes, Western Circuit.

DUNEDIN.

— In the few remarks which I made on transplanting Lilies (see p. 83) I avoided the question concerning the reproduction of Lilies, so ably advocated by "Dunedin," and confined myself to cultural observations that I have proved to yield satisfactory results

years before this question was brought under discussion. The only point to which I took exception was that of cutting down the flower-stems before the leaves had faded. "Dunedin" will himself see that there is a wide difference between cutting the stems down in full and fresh bloom and waiting until ten days after the bloom has fallen to perform that operation. I cannot, however, understand in what way a Lily bulb is so totally distinct from all other bulbs as to be able to dispense with the services of the leaves, even if we take for granted that the connection existing between them and the new bulb is not direct, as "Dunedin" would imply. Under such circumstances the new bulb must perfect itself solely by the aid of its own roots. If "Dunedin" will illustrate the totally distinct character of Lily bulbs in such a manner as to prove that neither "directly nor indirectly" is the succeeding year's flower-stem affected by cutting down the leaves while they are yet green, he will confer a boon on many cultivators who up to the present time have attached great importance to retaining the foliage in health as long as possible. Bulbs of all kinds are generally treated well up to the period at which they flower, but the lack of attention to perfecting the foliage afterwards often leads to wholesale destruction. Those in pots are, as a rule, from want of space, thrust into out-of-the-way corners; while those in beds are lifted and laid in by the heels to ripen off as best they can. Anyone who has treated bulbs after flowering equally well as in their early stage can need no confirmation of the value of leaves in perfecting the succeeding year's flower-spikes. JAMES GROOM.

— I have followed with much interest the discussion about Lily growth, but for various reasons I have not taken part in that discussion. As, however, my name has been mentioned in relation to L. Thomsonianum, I am obliged to come forward in order to avoid misunderstanding. Lilies of various sorts form their bulbs very differently; therefore no general theory can be applied to every species. As to L. Thomsonianum, now classed amongst Fritillarias, I have already said that the old bulb annually dies, and this is certainly the case, as I know from having carefully experimented upon it; on the other hand, allow me to state that L. Thomsonianum has no side bud at all, but merely a central one. The leaves growing from that central bud form each a scale of the newly-forming bulb; the scales outside are of a very watery consistence, and, decaying, help to nourish the newly forming bulb. As to L. giganteum and cordifolium, I must openly say that I have made no dissections in regard to them, but from studying these plants in the shape of hundreds of bulbs, as far as growth is visible, it seems obvious to me that these species do not produce annually a new bulb from a side bud, but that the old bulb is enlarged annually by the scales growing larger through the growth accumulating from a central bud; and that during summer, when vegetation is active, another central bud is developed to grow next year. This goes on during five or six years, when the bulb arrives at mature age; it then flowers and "clearly dies," as Mr. Wilson rightly states, the entire bulb being exhausted by the flower-stem which it has formed. In the meantime the growth of the first and second year's existence of the bulb has decayed, either through pressure from the stronger scales of succeeding year's growth, or through general weakness. The year before flowering one or more offsets make their appearance, which apparently spring from the root stool, and not from side buds in the interior base of the old bulb. If "Dunedin" has a correspondent in California, and can have sent to him a large bulb of L. Washingtonianum carefully taken out, he will observe that his theory cannot be applied to that species, for he will find inserted in one long sideward-growing bulb the accumulated growth of eight or ten years. As to the majority, or perhaps as to all Lilies of the old world, "Dunedin's" theory seems to apply exactly as far as the formation of the next year's bulb from side buds is concerned, but not in relation to the entire decay of the old bulb. Every year some scales decay; not those of last year's growth, but those of three or four years of age. I am of opinion that "Amateur" (see p. 198) is right in his views, and that he will certainly be able to prove that the old bulb does not decay every year. I cannot now, from want of careful investigation, say much about the mode of vegetation of the rhizomatous group, but I may state that even among these a different mode of vegetation takes place.

MAX LEICHTLIN, Baden-Baden.

— I did not see "Amateur's" remarks on L. auratum in time to reply in last week's GARDEN. I have always believed it to be an acknowledged fact that when L. giganteum flowered its bulb decayed, leaving a circle of root-buds to carry on the race. With all these Lilies which we have bloomed both in and out-of-doors this has been the case. If "Amateur" can flower L. giganteum twice from the same bulb, he is a fortunate man. One objection to the experiment suggested by him of growing Lily bulbs close to the surface is, that some Lilies grown naturally root so freely from the base of the stem, that they have almost as much root above the bulb as below it.

GEORGE F. WILSON, Heatherbank, Weybridge Heath.

## THE FRUIT GARDEN.

### BLEEDING IN VINES.

MORE Vines are ruined through bleeding than growers suspect, and I have little doubt that many of those who so often complain about their Vines breaking and growing weakly would find, on stricter investigation, that bleeding was the cause. Experienced cultivators realise fully the disastrous consequences of bleeding when it goes on for any length of time; but there are hundreds of amateurs and others who would never suspect that anything was going wrong when, in fact, their Vines were perhaps bleeding almost to death, for the bleeding itself is hardly observable, and would scarcely attract the notice of any but those who know when and where to look for it. Hence the evil is not observed till the mischief is done and the Vine shows it by its feeble growth, by which time bleeding has ceased.

Whenever drops of water are observed hanging at the points of the Vine shoots where they have been pruned, and before the buds begin to swell, or contemporaneously with their swelling, bleeding is going on, and means should at once be taken to arrest it. If the Vine be watched, the moisture will be seen dropping at intervals from the wound, or running down the bark, not in great quantity, perhaps, but still sufficient to partially ruin the Vine if allowed to continue. I remember an experiment being made upon a very vigorous Vine in the way of bleeding. When the sap began to ascend naturally about the month of April an incision was made in the leading shoot, from which the sap at once began to flow copiously—not

actually running, of course, but dropping steadily at the rate of about a teacupful in twenty-four hours. The Vines were started at the same time, and the bleeding continued for a considerable period—about a fortnight, so far as I can recollect—till the Vines came into leaf, which they do not take very long to do late in the season. The effect upon the Vine was disastrous. It broke very feebly, made shoots like straws, with small leaves, and but little growth generally during the season, compared with the others. The bunches which it showed never spread out freely, and were cut away to relieve the Vine for that year. The following season it made a stronger but still weak growth, and during the next few years it gradually recovered; but the effects of the bleeding were distinctly visible for four years, the wood being weaker and the bunches smaller than in the case of the other Vines. Bleeding is always sure to occur in Vines that are started within a month from the time of pruning, and some-

times after a considerably longer period, much depending upon the maturity of the wood. Ill-ripened Vines are most liable to bleed, and *vice versa*. Though many preventives of bleeding have been suggested, it is well known that it cannot be effectually stopped, when once it has fairly commenced, by the application of styptics, unless the flow of sap can be completely arrested and the wounds allowed to become dry, when styptics will adhere; and if they have time to harden before the sap flows again, styptics like Thomson's or Joiner's Patent Knotting will stop bleeding. I have also seen collodion tried with good effect, but the two first named are most trustworthy. The only way of stopping the sap is by lowering the temperature to as near the freezing point as possible, and this is generally a difficult thing to do in a Vinery in March or April. Early in the season it can be done by simply throwing the house open. On one occasion I had a quantity of pot Vines that began to bleed badly after they had been subjected about

a fortnight to a moderate temperature in order to start them. The wounds had not been painted with styptic, as they had been pruned six weeks before starting; so our only alternative was to carry the Vines out of the house into a cold, dry shed where the pots were protected by litter and the canes left exposed. The sap very soon ceased to rise, the cuts were wiped with a cloth, and when quite dry painted well with styptic, and when thus hardened the Vines were moved back into the Vinery again, and no more bleeding resulted. This is the only plan I can suggest in such cases; those who have Vines bleeding at this season should open their Vineries to the utmost, and use the styptic at the earliest moment, applying it twice, first going over the

cuts and rubbing it into the pores of the wood with the point of the finger right up to the outer edge of the bark, and then going over again and putting another coating on each wound by way of a finish.

J. S. W.



Peach Tree with 20 vertical branches (Candelabrum form) in full bearing; variety, Chevreuse-Tardive; 10 years of age, 33 ft. long, 10 ft. high; average crop, 400 Peaches of the first quality and size.

**Peach Tree.**—The noble Peach tree here figured is from M. Jamin's garden at Bourg-la-Reine, where it grows on the outer side of the garden wall—a model of health and perfect training. There is no better evidence of intelligent culture than a fine Peach tree on a wall in a northern country. Trees in the most favoured parts of California or the south of Europe could not produce a better result than is here attained in spite of a less favoured climate.

**Baking Pears.**—I want a good baking Pear; will you kindly recommend me one?—A. [There is no baking Pear that can surpass the Catillac; it should be cultivated as a bush on the Quince stock. In spring, its flowers are very ornamental; and in autumn, the beauty of its fruit is equally remarkable.—R.]

## FRUIT TREE PROTECTION.

To glass copings, both permanent and removable, I have a decided objection, as I consider they do more harm than good. The annexed illustration shows a cheap glass coping that was in permanent use here several years previous to my coming to the place, and I believe the results were satisfactory for a few years, so far as fruit was concerned, but not as regards the growth and health of the trees. The coping was of rough plate glass, in pieces 3 ft. long by 18 in. The two ends rested on the brackets, and the glass was kept in its place in front by a hook attached to the bracket, and at the back by means of small wedges of wood inserted between the upper side of the glass and the under side of the coping. The brackets any ordinary blacksmith can make, and any joiner can put them up at the proper distances apart. The glass is placed in position by beginning at the one end, each piece being pushed through the hook on the bracket as the work proceeds. From the front of this coping was hung a kind of cotton or elastic netting about 3-16ths-in. mesh. This is a very excellent shading, but it does not keep off more than 6° or 8° of frost; therefore it is of little value against 10° or 20° of frost, as I have experienced. It may now be asked what are my objections to glass copings; they are these. From their being fitted close to the wall there are no means of ventilation. Some may be amused when I speak of ventilation in connection with a glass coping, but during bright sunshine the heat accumulates under the glass to a far greater degree than is generally imagined; in fact, its roasting effects may be plainly seen on the tops of the trees, from 4 ft. to 5 ft. down the wall.

In the case of permanent copings they keep off both the winter and summer rains to a very considerable extent, which is a great mistake as regards the health of the trees. Those here have barely escaped with their lives from the roasting process to which they have been subjected. Apricots have suffered most, and are so weak, that no crops have been gathered from them for the last three years. Temporary copings of wood, straw mats, or Spruce branches would not have the same evil effects as glass has, being more non-conductors of heat, and they have not the effect of keeping the tops of the trees in one temperature and their bottoms in another at the same time. I have used a coping of Spruce branches, as proposed by Mr. Knight (see p. 213), in Ross-shire with satisfactory results, and I have also fastened Spruce branches all over the face of the trees with equally good effects. If, however, I were to choose my own protecting materials for fruit trees, other than being wholly protected by glass, I would use cotton or elastic netting already referred to, and let it remain in position until all danger from frost is over. It equalises the temperature and guards against both cold winds and very bright sunshine. We often have in the months of March and April sudden transitions of temperature, which are in themselves a great evil to fruit trees that are

exposed to them; therefore I should let the netting remain in position night and day. It does not exclude too much light, air, and warmth for the securing of a good "set" of fruit as some may suppose, as I have tested over and over again, but, as I said before, it will not exclude beyond 6° or 8° of frost, unless everything be very dry. Therefore I would use along with the netting at night a thick kind of cloth that is made of wool and hair, an excellent protecting medium from frost; of course it could be used during the day as well, if required. Some may say that this might prove an expensive mode of protection, which perhaps it may be, but the material will last for years if taken care of, and if regular crops be secured by its use should not be a consideration. Of course there might be the loss of a crop now and then, as much depends upon well-ripened wood in the autumn, a condition in our uncertain climate not

always obtainable, without an entire covering of glass, a want greatly felt by all cultivators of tender fruits.

*Halston.*

JAMES FAIRWEATHER.

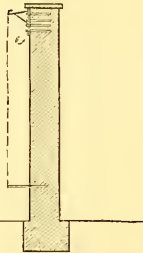
— As late and as little as possible should be the rule in regard to protecting fruit tree blossoms. Nothing suffers so much from coddling as wall trees; it not only enfeebles, but renders them liable to attacks from insects. There seems some hidden law that links insects on to weakness. Allow a plant to fall into ill health and insect pests gather around it. Now nearly all protectors, not even excluding glass, tend to weaken trees. They keep out more than cold—dews, rains, air, and light are reduced in volume or weakened in energy by our protectors, which, in so far as they conserve warmth, in a sense weaken. Heat is far from being in all times and places an advantage to plants; on the contrary, much of the heat of our springs is a direct injury to wall trees. It brings the buds out before their proper time, quickens the sap into dangerous precocity, and what may be termed killing energy. Glass protectors, admirable in most respects, collect, conserve, and thus add to the measure of this spring-tide heat, and, as far as they do so, endanger the safety of the trees. But opaque protectors, while useful in reducing rather than adding to the local wall temperature, weaken the trees by reducing the light. Light rather than warmth is the very basis of strength, and we cannot afford to lose any of it on our walls. It is too often forgotten that of necessity, perhaps, fully a fourth of the wood of our wall trees is deprived of light. Backed against opaque bricks, the wood and bark are in semi-darkness; consequently there is the greater need to fully expose Peaches and Nectarines to all the light possible consistent with their safety from spring frosts. A good way of limiting the time during which protection is necessary is to remove these trees from the wall and tie them to stakes 3 ft. or so in front of it as soon as the leaves drop in the autumn; the trees are thus fully exposed to atmospheric and solar influences all the winter. Trees thus treated lose that green and delicate look so common to Peach trees on walls and get browned all round. The cool quarters in front of the wall also keep the trees much later than they otherwise would be, so that they need not be placed in position till the middle or end of March. The change being so great, and the air more genial, the trees rapidly pass through their flowering and setting periods, and the season of danger, when protection is needful, is thus reduced to the shortest duration. Of course the labour is considerable, but few horticultural operations pay better. The annual removal of the trees affords rare facilities for cleaning the wall. The weather may be said to clean as well as harden the trees, and more, and best of all, this mode of retarding the blooming period and shortening it mostly results in the securing of a crop of fruit.

D. T. FISHER.

## POMOLOGICAL DICTIONARY.\*

THE student of Nature and the lover of Art united (as they often are) in the person of the man of science, may be congratulated in living in an age when nothing is suffered to stand still. "Many run to and fro, and knowledge is increased." In the science of horticulture especially great progress is being made. In a former paper I said that I believe the art to be yet in its infancy: this childhood, however, is strong and vigorous, and gives promise of a glorious maturity. A great future lies before us, and we English horticulturists ought thankfully to stretch out our hands to our fellow-workers on the Continent, receiving from them the fruits of their patient study, and making them, in our turn, partakers of our intellectual gains. The good which accrues to mankind from the triumphs of war is, at the best, doubtful. Victories which appeared important and splendid in the eyes of one generation are often almost forgotten in the next, or remembered but as some tale of an outlived past, while difficulties vanquished in the pursuit of knowledge, and victories achieved in the great Kingdom of Nature, are distinct benefits to the race; they depart not with the "passed time," but remain a stable pos-

\* "Pomological Dictionary." Containing the History, Description, and Outlines of Ancient and Modern Fruit most generally known and Cultivated. By André Leroy, Angers, France. [Published by the Author.]



session, the inheritance of people yet unborn. And here (if I may be allowed a short digression) I would urge on the attention of the gardening public the great necessity for an improved system of education for gardeners. Taking them as a class, they are doubtless much better instructed than the generality of persons in their own rank of life, but this is not enough. They are too often taken away from school when mere boys, and placed in large establishments to begin at the lowest round of the ladder of their profession. True, they acquire in time a competent knowledge of its practical branches, but unless they are very industrious, and resolutely devote their leisure hours to self-culture and patient study, they may even attain the rank of head gardeners without having become possessed of that theoretical and scientific knowledge which every day's experience shows to be imperatively necessary. I do not think we shall do much in the way of forwarding this "consummation devoutly to be wished" until we have schools and colleges instituted expressly for gardeners, in which the science shall be properly and systematically taught by competent professors. None of these, as far as I know, exist in England. We must not forget to mention with honour the pains bestowed on the training of gardeners at Kew. I am likewise informed that an attempt was made at Messrs. Veitch's nursery to carry on lectures on botany, but I am not aware if these are continued. Nurserymen whose establishments are on a large scale, like those of Messrs. Veitch and others, would do much to raise the tone of their profession if they devoted some time and thought to this matter. These, however, are isolated cases. I plead for a proper system, and one which shall embrace the whole of this country. The schools and colleges I advocate should be founded in every large town. The courses should include (among other important matters) botany and at least the elements of Latin and French. The expense should be moderate, so as to place these advantages within the reach of the many. Examinations should take place and degrees be conferred. I point to the establishment of the late M. Louis Van Houtte, at Ghent, as an example of a great gardening school. This is partly upheld by the government, and the education acquired there is (as I know) most thorough. If schools like this were founded in this country and well supported, we might hope that a dead level of mediocrity would not any longer be the rule among our working gardeners. Their standard would be greatly raised, and their attention having been awakened and their ambition excited, we might expect our efforts to be rewarded by fresh discoveries in the region of horticultural science. This matter should be taken in hand by the Government. We have a Chamber of Agriculture, why not a Chamber of Horticulture, with ministers for each of these departments? I may have another opportunity of referring to this subject. These thoughts were uppermost in my mind as I read the introduction to M. André Leroy's "Pomological Dictionary." The appearance of this remarkable work may be said to mark an epoch in the history of fruits, as we know that even in this day of increased interest in their culture the diffusion of accurate technical knowledge on the subject is very far behind the requirements of the age. The existing Manuals, that of Dr. Hogg, with Scott's excellent "Orchardist" (the former the product of scientific observation, the latter the result of practical experience), together with the nurserymen's catalogues, have hitherto been the only modern text-books. Our neighbours across the Atlantic are fortunate in possessing Downing's valuable treatise on the "Fruits and Fruit Trees of America," as, though in many respects incomplete and disappointing, this book may be regarded (from a pomological point of view) as the herald of a brighter day. Leroy's scholarly and exhaustive work was then greatly needed. Nothing at all resembling it in its thorough and masterly treatment of the subject has ever appeared before. To it the author has devoted by far the greater part of his life, for he says that he began to conceive the plan of his book in 1830 (the first volume was published in 1867), and during the thirty-seven years which elapsed before it was given to the world, he devoted all his time on the one hand to practical experiments in his fruit school, and on the other to the patient study of ancient and modern works on the subject; not, of course, confining his reading to those in his own language, but causing

to be translated into French all the principal writings on Pomology in Latin, German, English, Italian, and Dutch which have appeared since the introduction of printing, besides causing to be made, under his direction, the most careful and minute researches in Paris among rare books and manuscripts. Leroy describes himself as impelled to this laborious undertaking partly by his love for his profession, which he follows under the most favourable circumstances at the head of large and extensive nurseries situated in the garden of France, the fair province of Anjou, and partly by his wish to render a tribute of affection to the memory of his ancestors, who have been gardeners for more than 150 years. He dedicates the dictionary to the memory of his old master, André Thouin, formerly Professor of Culture in the Museum of Natural History in Paris; and also to his friend and co-labourer, Oscar Leclerc Thouin, formerly Professor of Agriculture in the Conservatory of Arts and Manufactures in Paris.

Leroy opens his introduction by dividing his argument (so to speak) into three parts. 1. The necessity for a more extensive and less costly Pomology. 2. Examination of the principal existing Pomological treatises. 3. Explanation of the plan of the dictionary.

2. "All our fruit trees are but the product of human invention, and as such unworthy the attention of the botanist," was the arbitrary dictum of Linnaeus; but he would probably have modified it could he have lived until our day, and have witnessed the publication of numerous treatises, as well as the formation of learned societies for the study of fruit. For some years, says Leroy, the want has been felt for a more complete work on this interesting subject, for many new varieties of Apples, Pears, and Grapes are not to be found at all in existing Manuals, and perhaps more exact and scientific knowledge would help to do away with the plague of synonyms—often the result of ignorance or error, and not unfrequently of tricks of trade.

2. M. Leroy gives under this head a short account of the principal French works on Fruit Culture, beginning with that of Jean Merlet, 1687, and going down through a succession of writers to Antoine Poiteau, whose valuable and elaborate book appeared in 1846. He regrets that this painstaking writer should have deferred its publication until he had entered on his seventy-ninth year. The work shows marks of the sort of intellectual paralysis, which is caused by the frosts of age. Though a treatise of great merit, and, by reason of its beautifully-coloured plates, occupying a distinguished rank among the artistic publications of this century, yet is it in some places provokingly incomplete. Many modern varieties of fruits are omitted, and the high price of the work (600 francs) places it quite beyond the reach of persons of moderate means. Most of the Pomological books cited by M. Leroy are more interesting to the French than to the English reader. Few, if any of them, have been translated into our language: I will, therefore, content myself with this brief mention, and pass to the third head—the plan of the Dictionary. Vols. i. and ii. describe Pears, vols. iii. and iv. treat of Apples, and vol. v. of stone fruits. The volume which is to describe Grapes has not yet appeared. The different species comprised in each volume are classed alphabetically, and the description of each forms a chapter to itself, where the varieties and its synonyms are also classed alphabetically. This classification explains the title "Dictionary." As to the prefix "Pomological," we must allow that our author never transgresses the limits comprised in this word. Here are to be found no principles, no rules of gardening, and but little advice on the management of orchards. These subjects are properly handled in treatises on other branches of horticulture. But with regard to fruits nothing has been neglected; every variety has been accurately described; even those confessedly inferior have not been overlooked. The reason for not omitting these is that a number of fruits which are quite unsuited to one locality succeed well under different conditions of soil, climate, and treatment, a fact not always sufficiently considered. Each description is divided into six heads:—(1) Name generally adopted; (2) Synonyms; (3) Description of the tree; (4) Figure and description of the fruit; (5) History; (6) Observations. It will only be necessary for me to touch upon one or two of these

heads. First, then, let me mention the "Description of the tree." This has been, for the most part, left out of Pomological catalogues. Leroy says if you wish to become acquainted with the true physiognomy of a tree in its primitive and natural form, you must select from a nursery a plant which has been grafted for two or three years. It has not, then, undergone the transformations at the hand of the pruner which are the products of caprice, fashion, or necessity. All the descriptions of trees given in his book have been taken from examples in his nurseries, and from specimens of two or three years old. He touches but lightly on their culture, as his work is not a Gardening Manual; it is a Pomology. He speaks of their fertility from records of his own experience, and not from those of others. Not wishing to make this treatise too expensive to be generally useful, he has resisted the temptation to adorn it with coloured plates, contenting himself with very exact outlines from drawings the size of life. All these drawings have been carefully prepared from examples taken from his fruit school, with the exception of varieties which have not hitherto fruited there. The remarks on the period of their maturity, as well as on their good qualities and defects, are likewise the result of observations made in his nurseries. Thanks to the exertions of the horticultural societies, the nationality of most of the fruits cultivated in France since the Revolution is pretty well known. There remains, however, a good deal to clear up on this important subject; among other things the origin of the ancient fruits is, for the most part, unknown. It would be interesting if we could answer these questions about every fruit tree. Is it indigenous, or foreign? Did it grow spontaneously, or from seeds? When was it produced? By whom? Where? How did it obtain its name? M. Leroy has anxiously striven to satisfy himself on these points, and in most cases with success. He has given great attention to four points. (1) The false synonyms attributed to any given variety. (2) The names which are likely to be confounded from their greater or less similarity with other of their species. (3) The merits, the defects, the exceptional habits of each variety, and also the imperfect or inadequate descriptions which have been applied to it. (4) Advice as to the best methods of cultivation, so as to bring out the finest qualities of fruits, and to prolong the duration of their maturity. It will be seen that the author has spared no pains in the preparation of his book. It not only deserves a place in every horticultural library, but the information it affords is communicated in so agreeable and intelligent a manner, that it may furnish a pleasant hour's amusement to the ordinary reader. I will give three examples which will fully illustrate the author's manner of dealing with his subject. I have to this end selected his description of the Pear Olivier de Serres, and the Apples Calville blanche d'Hiver and Reinette de Caux. I have been guided in my selection of the Apples by the fact that the Calvilles and Reinettes form each a distinct type, including many varieties. There are 90 Calvilles and 120 Reinettes.

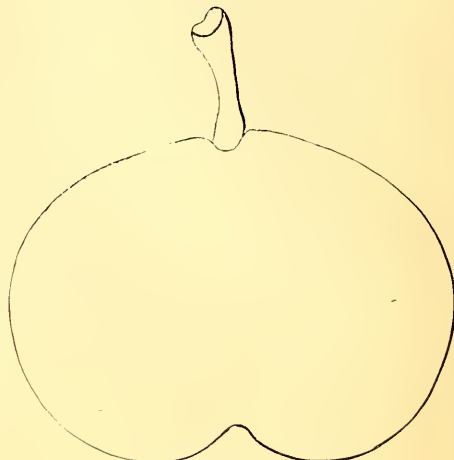
#### Pear.—Olivier de Serres.

**DESCRIPTION OF THE TREE.**—Wood, strong; branches, very numerous, almost erect, large, not very long, jointed, a light brownish-green, finely and abundantly dotted with marked bosses; eyes, voluminous, ovoid, pointed, well separated from the wood, the scales well apart; leaves, oval, or elongated oval, middle-sized, flat or slightly arched, deeply out, attached to a long and stout stalk. Culture: Its vigour is perfect either on a Pear or Quince stock; it grows splendidly in pyramids.

**DESCRIPTION OF THE FRUIT.**—Size, ordinary; form, spherical, flattened at the extremities, and often much bossed on the surface; stalk, short, curved, thick in the middle, enlarged at the extremities, inserted in a cavity whose depth varies, the sides of which are mostly ribbed; eye, large, regular, seldom open, not very deeply set; skin fine, of an olive-yellow, covered with fawn-coloured spots, coloured with the same at the top, and slightly reddened on the side exposed to the sun; flesh, whitish, melting, rather fine, and sweet scented, somewhat gritty at the core; juice, abundant, sugary, rather acid, and perfumed; maturity, from the beginning of February to the end of March; quality, the first.

**HISTORY.**—It was in 1861, and not in 1859 (as has been incorrectly stated), that stock of this variety, the product of Pippins of Fontaine d'Angers, produced its first fruits at Ronen, in the nurseries of M. Boisbunel, its grower. Offered for the inspection of the Horticultural

Society of Paris Feb. 27 and March 13, 1862, the Pear Olivier de Serres was justly pronounced a very good keeping fruit. In 1867 it received the medal (see the journal of the Society, vol. viii., p. 293, and vol. i of the 2nd series, p. 166). M. Boisbunel has wisely named his Pear after the illustrious man who well merits the surname of the "Father of Agriculture" in France, Olivier de Serres,



Olivier de Serres.

who died in 1619. He was a native of Ardèche, and the inhabitants of that Department have raised a statue to him at Villeneuve-de-Berg, the town where he was born in 1539.

#### Calville blanche d'Hiver (White Winter Calville).\*

The synonyms are very numerous, viz., White Zurich, Great Zurich, Admirable White, &c., besides twenty-seven others.

**DESCRIPTION OF THE TREE.**—Wood, moderately strong; branches, somewhat numerous, spreading, large and long, jointed, thinly covered with down, brownish-grey, spotted with red; lenticelles, large, thinly spread, more or less rounded; bosses, not prominent; eyes, small, egg-shaped, flattened, very downy, and strongly attached to the bark; leaves, large, tough, elongated oval, bright green above, a greyish-brown below, with a tapering point, and deeply indented edges; petiole (foot-stalk) long, thick, reddish, with the groove well marked; stipules short and thick; fertility, abundant.

**CULTURE.**—The prolific nature of this Apple renders it a good subject for either Paradise or Denon stock; it is suitable for pyramids, espaliers, cordons, or bushes. If it be grown as a standard, it must be grafted at the top. This sometimes causes the branches to become cankered, and the loss of the trees is then certain.

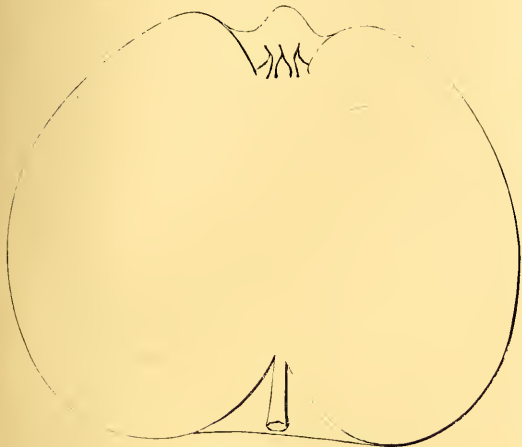
**DESCRIPTION OF THE FRUIT.**—Size, very large; form, irregular, sometimes conically bossed, sometimes conically elongated, the sides more or less unequal. This crookedness occasionally causes the fruit to become triangular, or even quadrangular. Peduncle, short, or of middle size, slender, generally deeply sunk in a hollow or cavity of variable dimensions; eye, large, half or entirely closed, with a very irregular cavity, large, and often deep and wrinkled; skin, unctuous, fine, glossy, of a straw-coloured yellow, streaked with greyish-white, and spotted with dark red, very scaly in the peduncular cavity, sometimes covered (particularly at the base) with a light downy coating of milky white—sometimes also shaded or striped with pale rose on the side exposed to the sun; flesh, yellowish, fine, and firm; juice, abundant, very sugary, with a pleasant acidity, and a most delicate perfume; maturity, December to May; quality, the first.

**HISTORY.**—Four conflicting assertions have been published with regard to the origin of the White Winter Calville. We will proceed to examine them before giving our own opinion; and this shall be done with great care, as this variety occupies among Apples the same position as the Bon Chrétien among Pears.

1. As is the case with the oldest fruits, it is said that the Romans

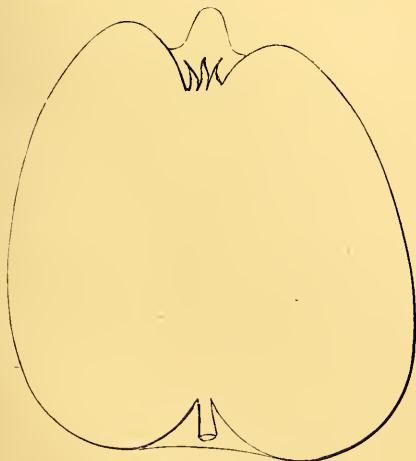
\* The price of this Apple a month ago in Coven Garden was 30s. a dozen, or 2s. 6d. each.

(Pliny among others) knew this Apple, and that this author called it Calvatium. To this I reply that Pliny never mentioned an Apple by the name Calvatium. I refer the disputants to the historical chapter at the beginning of this volume. They will find, under the heading "Varieties cultivated among the Romans," the authentic and com-



White Winter Calville—First Type.

plete nomenclature of all the Apples mentioned in the "Historia Naturalis" of this celebrated savant. 2. Dr. Jacques Daléchamp, who published in 1856 a voluminous history of plants in Latin, assures us that the Apples called Taponnes, then well known, are identical with the Orthomastia, whose name Pliny has transmitted to us. Now as these Taponnes have been identified by various esteemed



White Winter Calville—Second Type.

Pomologists with our White Calville, it remains then to demonstrate that the Orthomastia cannot be assimilated with them, or else this variety, by means of the synonym, must be carried back to the age of Pliny. Since the time of Daléchamp, then, what has become of the Taponnes? They had already disappeared in the seventeenth century, as Le Lectier and Claude St. Etienne (1670) alone mention them.

After their time I lose all trace of them on our soil; they must have been either re-named or entirely abandoned. You meet with the name only of this variety by consulting the German authors Mayer and Manger, who insert them as synonyms in their "Pomologies" in 1776 and 1780. They are not, however, agreed, as Manger, after having (p. 68) appeared to share the opinion of Mayer (vol. iii., p. 76), who identifies the Taponne with the White Calville declares further on (p. 24) that this Apple is the same as the "Gause" (Goose-apple), or with the "Maiden zizchen" (Maiden's breast). This last name would seem to harmonize with the idea of Daléchamp, who thinks he sees in the "Taponne" the "Orthomastia" of the Romans, if Pliny had given us any other possible point of resemblance than these three words, "Mammaram Effigie Orthomastia," Orthomastia resembling the breast. It is, therefore, impossible to compare the species. As to the opinion of the German Pomologists that "Taponne" is the synonym of the "White Winter Calville," I accept the dictum without contradiction, but remark that this name of Calville appeared for the first time in 1628 (see pp. 166-167, in the article

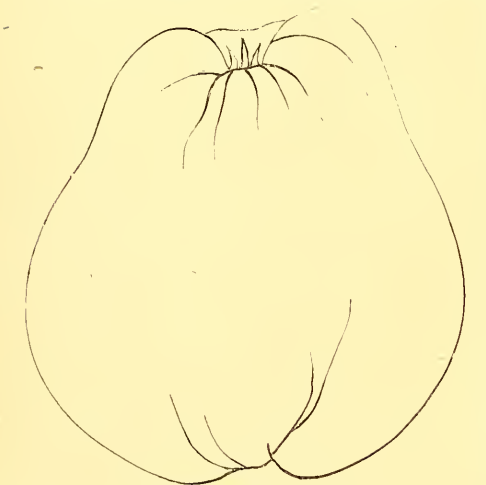


Admirable White—First Type.

where I establish this), and is, therefore, less ancient than the name "Taponne." This last, well known (as we have said) at the time of Daléchamp, 1510-1587, became a century later the "Taponnelle," or "Taponnelle" of Le Lectier and of Claude St. Etienne, who quote this Apple concurrently with the White Winter Calville. At any rate we must not conclude that these fruits are unlike, as our ancient Pomologists (the proofs are legion) register these names without a previous examination of the identity of the varieties. 3. In 1862, M. Eugene Forney, Professor of Arboriculture in Paris, thinking he had discovered the origin of the White Calville, announced it thus in the "Jardinier Fruitier," which he was then publishing. "We have," he says, "long sought for the origin of this Apple. It was Boyceau de la Baranderie, the director of the Tuilleries Gardens under Henry IV., who first made it known in his 'Traite des Jardins.'" He does not say where he found it, but this was probably in his garden of the Tuilleries, which was then a vast orchard. After reading the passage in which Boyceau de la Baranderie speaks of having discovered a new Apple, I am bound to reject the opinion expressed above; there is nothing, as far as I can see, relating in this passage to the Calville any more than to any other variety. The author, in treating of seeds, only calls attention to a fact in vegetable physiology which he considers absolute, and in support of which he says that certain seeds of the Red Calville produced a shoot which bore white Apples, then some seeds of "Pavie" jaune, which bore fruits with the skin and flesh white. Here is the text of La Baranderie:—"If you sow pippins or kernels of a fruit which has been grafted on a wild stock, the fruit which will be produced from this seed will partly resemble the wild

stock and partly the other parent. In this manner I have seen a pippin of a Calville Apple, which is red within and without, produce a plant which has borne before being grafted and transplanted. The form of the fruit was that of the Calville, long, wrinkled at the head, but white within and without, having only a few spots on its shining skin. In taste and smell, and in the nature and in the quality of its flesh, it partly resembled the Calville and partly the Reinette, which is a white Apple. The pippin possessed the qualities of both of these. I have seen a kernel of 'Pavie,' the fruit of which is yellow with the kernel red, produce a tree which bore without being grafted, in its third and fourth years, a fruit white within and without" ("Traité du Jardinage," 1638, pp. 39-40). Now for those who persist in discovering in this passage the account of the origin of the White Winter Calville we will add a decisive fact. Boyceau de la Barauderie died in 1635 or 1636; and this Calville was growing at Orleans, in Le Lectier's garden, in 1600, as we find on p. 230 of the Fruit Catalogue of this author, printed Dec. 20, 1628. Besides this, I can prove that this Apple has been cultivated in Franche-Comté, in Switzerland, and in Wurtemberg, ever since the middle of the sixteenth century, nearly 100 years before La Barauderie was born.

One last assertion—that of Louis du Bois—remains to be noticed. This learned writer, who was thoroughly acquainted with the fruit trees of his native province of Normandy, says that "the Calvilles,



Admirable White—Second Type.

white as well as red, take their name from the village Calville, Department of Eure." He makes this statement in his translation on the works of the Roman agriculturalist Columella, vol. ii., p. 461. It is generally believed in Normandy, where these two varieties have been grown from time immemorial, particularly in the departments of Eure and Calvados, but if I search further into the origin of the generic name of these Apples, I cannot admit that they are derived from the village Calville. Nobody before the time of Le Lectier (1628) had distinguished between the different kinds of Calvilles, red, white, and yellow; Olivier de Serres (1600) did not know them, nor did Dalschamp (1586). It is, then, evident that the date of the appearance in the nomenclature of this word Calville was the middle of the 16th century, at the very earliest; nevertheless the White Calville had long been grown (under another appellation) in Switzerland, Germany, and Franche-Comté; and that the Red Calville was equally well known in France, as I shall prove in my article on this Apple. The naturalist, Jean Bauhin, the author of the first illustrated Pomology, furnishes us with the proof that the White Calville derives nothing from the village of Calville but its name. He has described it twice. In 1598, in his "Historia fontis et Cateci Admirabilis" (p. 83); then about the year 1600, in a "Historia Plantarum Universalis," which was not published until 1650, thirty-seven years after Bauhin's

death. This work, being more complete, more exact, and fuller in details than the other, besides being adorned with exact outlines of the types represented, we will, therefore, borrow his historical and descriptive account of the subject. The Apple Admirable White, or large White Apple (says this naturalist), comes originally from the Fountain Admirable in the Duchy of Wurtemberg. Its form is uncertain; I have therefore caused to be outlined two types to prove this variability. It is an irregular fruit, rounded or turbinate, of a whitish colour, the flesh acidulated, and the sides very pronounced. It is a good keeper, and is identical with the Back Apfel (cooking Apple), so called because it is delicious when roasted. It is cultivated at Zell, from whence I have received two large specimens, whose skin is of a yellowish-white covered with milky spots. The height of each Apple exceeded 3 in.; its breadth was about 3 in. There exist, no doubt, much finer examples. I could easily have kept it sound and good until the middle of May. I cultivated this variety at Montbéliard (in the Grand-Ducal garden, at the head of which Bauhin was placed by the Prince of Wurtemberg—Montbéliard—whose doctor he was. Vol. i., pp. 12 and 13).

This demonstration, in my opinion, could hardly be more convincing. Here is our White Winter Calville, and Bauhin described it, we must remember, in 1598 for the first time. It is, however, impossible to indicate with certainty the exact origin of this Apple, because it appears at the same period under different names in Wurtemberg, then at Montbéliard (Doubs), as well as at Zell, a Swiss town in the Canton of Zurich. I must also add that Bauhin—p. 15 in a small treatise which followed the one I transplanted above—states that the "White Apple of Zurich" is identical with the "Admirable White" of the Wurtembergers. After this, it is difficult to contest the following conclusions:—

1. The White Calville appears to have been cultivated very early in Normandy, especially in the environs of Erreux, at Calville, from whence in 1600 it took its name.

2. Well-known even before 1598, under different local denominations in the Duchy of Wurtemberg, and at Montbéliard, then belonging to the Duchy, and also at Zell, near Zurich. This variety has originated in one or other of these territories. Wurtemberg on some grounds, may claim the honour of its birth, as Bauhin, says that the "Admirable White" comes from that country, which has always been celebrated for the number and excellence of its Apples.

3. With regard to the importation into France of this exquisite fruit, it is easy to imagine that from the district of Montbéliard, which is partly included in Franche-Comté, the "Great White Apple" of the Wurtembergers might easily have been brought into Normandy.

OBSERVATIONS.—Noisette in 1839 pretends in his "Jardinier Frutier," p. 181, that the "White Winter Calville" has been called "Blandureau d'Anvergne." I am ignorant of the source from whence he derived this synonym, which is mentioned by no other Pomologist. The "Blandureau" (I have described it p. 134) is certainly one of the most ancient Apples; but it resembles the "White Calville" in no one single point, and no one has ever heard of another "Blandureau" said to be of Anvergne. "Paris's Apple" is not identical with this variety, as may be easily seen by consulting my description of it under the heading p. The name Strawberry figures among the synonyms of the White Calville; it is therefore needful to state that this bears no resemblance to the "Winter Strawberry Apple" grown in England, but little cultivated by our nurserymen. The Germans possess a "White Winter Italian Calville" which is unknown to us, but their Pomologists declare it is quite different to ours. We are careful to state this, as it is very easy to make a mistake here. In Germany the true "White Calville" bears in some provinces the name of "Quince Apple." It is necessary to remember that this must not be confused with the "Winter Quince Apple," which I shall describe p. 228. I close this long article by recommending to epicures the compute of the White Calville, the most excellent compute that can be eaten. La Varenne (1655) mentions it in his "Cuisinier Française" (p. 350).

#### Reinette de Caux.

The name Reinette has been derived, according to some etymologists, from Rana (a frog), on account of the green spots which mark the fruit, and which are supposed to resemble those on the body of a frog; others suppose that this name was given to the Apple on account of its goodness (La Reine des Pommes)—hence, Reinette. Charles Etienne was the first French writer on horticulture who mentioned it in the Latin work which he published in 1540. There were but three varieties in 1667, there are now at least 150 sorts known in France, though of these eighty-four are alone described in M. Leroy's work; these are the best kinds. We will confine ourselves to his excellent description of the Reinette de Caux:—

SYNONYMS.—1. Grosse Reinette Rouge Tiqueté; 2. Dutch Mig-nonne; 3. De Laak; 4. Paternoster; 5. Copmantorpe Crab;

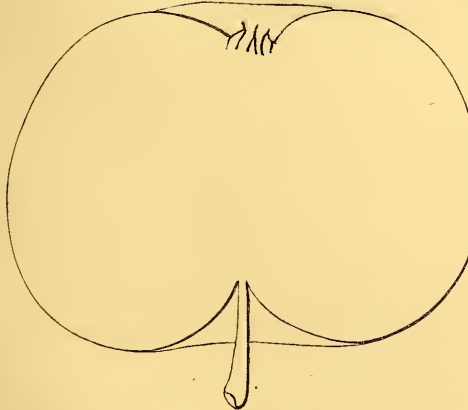
6. Stettin Pippin; 7. Vermilion d'Andalusée; 8. Dentoch Mignonne; 9. Reinette Impératrice.

DESCRIPTION OF THE TREE.—Wood, strong; branches, numerous, erect or slightly extended, large, long, very much knotted, downy, of a dark reddish-brown; lenticles, large, rounded, and very abundant, bosses prominent; eyes, middle-sized, rounded, and egg-shaped, attached to the wood, and very downy; leaves, middle-sized, rounded,



Reinette de Caux—First Type.

pale green on the outside, a greenish-white inside, generally pointed, flat, with indented edges; petiole, long, very large, grooved; stipules, middle-sized; fertility, remarkable. Culture: This variety is as valuable for its beauty as a tree as for its fertility. In order to obtain a fine-shaped tree M. Leroy recommends its being grafted at the top. It is equally suitable for cordons, pyramids, standards, and espaliers, particularly when grown on Paradise stock.



Reinette de Caux—Second Type.

DESCRIPTION OF THE FRUIT.—Size, large, sometimes remarkably so; form, uncertain, most often, however, rounded, sides globular, but flattened at the poles; peduncle, middle size, sometimes long, thick at the point where it is attached to the tree, straight, sometimes curved, deeply inserted in a cavity of variable size; eye, large, open or half closed, with long and large sepals, cavity large, with the edges sometimes slightly undulated; skin, glossy, of a golden yellow, washed or streaked here and there with carmine more or less dark, spotted with russet near the stalk, dotted with pale grey or

brown; flesh, fine, firm, and crisp; juice, abundant, sugary, pleasantly acidulated and perfumed; maturity, October to April; quality, the first.

HISTORY.—For a long time (says Leroy) I shared the belief of our principal Pomologists that the Reinette de Caux, Seine-Inférieure, was a French variety, but I must now acknowledge that I am convinced that it has positively no right to its present name, having been produced in Holland more than a century ago. "Dutch Mignonne" is (if not its primitive denomination) at any rate the most ancient one that we know, and as such I have frequently procured it from different parts, and then, in common with many of my contemporaries, multiplied it and sold it without suspecting its identity with the Reinette de Caux. Now, indeed, our principal nurserymen, instructed by Pomological collections, are aware that one of these appellations is synonymous with the other. This Apple was brought from Holland to Norwich in 1771 by an Englishman. The botanist, George Lindley, stated this fact on the 4th of January, 1820, before the Horticultural Society of London, of which he was then a corresponding member. "The 'Dutch Mignonne,'" says he, "comes originally from Holland, having been carried to the village of Catton, near Norwich, by a person now dead; but the Dutch name is forgotten in England." ("Transactions of the Horticultural Society of London.") Eleven years later, in 1831, Lindley, referring to this fact in his remarkable "Pomology," adds new details. "The Catton Pear," he writes, "comes from Holland. The late Thomas Harvey imported it, together with the Apple Dutch Mignonne, sixty years ago at least, and planted them both in his garden at Catton, near Norwich." ("Guide to the Orchard and Kitchen Garden.")

The name Reinette de Caux, which originated with us, made its first appearance in the "Jardinier Fruitier" of Louis Noisette, not, however, accompanied by any description. However, at that date our horticulturists had already known it for some time. I was induced to verify it at the request of some Englishmen. This passage occurs in the "Proceedings of the London Horticultural Society," with the signature of W. Hooker. "Reinette de Caux, the Grosse Reinette, spotted red, of Poiteau and Turpin, is called Reinette de Caux by many gardeners. Although the outline which these two authors give us is much larger than any of the so-called Reinette, I believe it to be the same variety."—Transactions of the Horticultural Society of London. This Grosse Reinette, with red spots, which is entirely identical with the Reinette du Caux, was described and outlined by Turpin and Poiteau in a work entitled "Traité des Arbres Fruitières de Duhamel, Augmente d'un Grand Nombre de Nouvelles Espèces," a magnificent publication in folio, the first volume of which appeared in 1807, and the sixth, and last, in 1835.

OBSERVATIONS.—The Grosse Reinette de Cassel, the Reinette de Caux, and the Reinette Dorée (Golden Reinette), have been often mistaken for each other, but if anyone will compare the description of these different Apples in this dictionary, with regard to both tree and fruit, they will see in how many respects they differ. It appears there exists a Reinette Grise de Caux, which the Pomological Congress of 1869 declared not worth cultivation. Not being acquainted with this variety, I mention this fact in order to show that it has nothing in common with its Dutch relation, the old Dutch Mignonne. In 1831 George Lindley (before mentioned in this article) thought he was able to identify the Dutch Mignonne or the Reinette de Caux with the Reinette Dorée of Mayer, which is also that of Duhamel. He was deceived, as we shall see later on in the article on this fruit. In 1848, and also 1860, two Apples were sent to me, accompanied by grafts, the first bearing the name Vermillon d'Andalusée, the second entitled Reinette Impératrice. I propagated them both, and admired their great beauty; but later on, being certain they were identical with the Reinette de Caux, I omitted them in my catalogues.

These examples will give some idea of the manner in which our author has treated his subject. It was impossible for me (within the limits of a short article) to do more than glance at so exhaustive a work, but I shall be satisfied if I have induced some of the readers of THE GARDEN to study the "Pomological Dictionary" for themselves. They will find it full of most interesting information. It contains an admirable description of a fruit house, with excellent advice for the gathering, storing, and keeping of fruit, a subject sadly too little understood, but one which is, nevertheless, of great importance. W. NEWTON.

Hillside, Newark-on-Trent.

Cherry Plum.—A fine specimen of this has for some time been in flower in Messrs. Osborn's nursery at Fulham—the home of old trees. This Plum, recommended by Mr. Ewing, of Norwich, in THE GARDEN (see p. 100) as a hedge plant, is also of great value as an early spring-flowering tree.—F.

## PLATE CXX.

## THE DWARF FLAXES.

(WITH A COLOURED FIGURE OF THE WHITE ROCK FLAX.)

Drawn by H. HYDE.

One predominant character which the genus *Linum* presents is a lightness and elegance of contour, to which the usually narrow leaves, slender stems, and delicate peduncles which support the individual flowers, all tend to contribute. This speciality is equally patent to those who are familiar with our commercial Flax (*Linum usitatissimum*), whose cultivation extends over large fields in some parts of the country, and where, when in full blossom, such fields can be compared to nothing more appropriate than an azure sea, varied only in its lights and shades as it is gently rippled by the summer's breeze, or in the condition with which most people are familiar, as cultivated in its perennial or Siberian form (*L. perenne* and *L. sibiricum*) as a border plant, possessing with neatness of

habit a long continued blooming season, and when that is over still retaining sufficient elegance of appearance to justify its retention as an occupant of the border till the November frosts decide the necessity of a clearance for the winter. Amongst our herbaceous Flaxes few will be found to rival the one here illustrated. *Linum salsoloides* obtains its specific title from some little resemblance there is between it and the Salt-wort (*Salsola Kali*) in its peculiar procumbent and irregularly branching habit of growth. With the general aspect however, the similarity ends, as on close examination all the parts of the plant are

found to possess a slenderness and delicacy of character, as well as beauty of blossom, to which its seaside sponsor cannot lay claim. Although we have called it an herbaceous plant, the term is scarcely correct, as it is really semi-shrubby—a character which applies equally to many other plants belonging to the genus—and all the trimming required is to cut away the flowering twigs of the preceding summer, leaving all the undergrowth, as the floral basis of the next summer's beauty.

The **White Rock Flax**, as we have already said, and as, indeed, is simply exemplified in the accompanying illustration, is a plant of essentially procumbent habit; its branches, freely crossing and intercrossing one another, are clothed with a dense arrangement of linear lanceolate leaves, of a greyish-green—the colour not arising, as is usually the case, from a cuticular exudation, but from a roughness in the epidermal cells, and more especially from the acariose margins of the leaves themselves. Its flowers are white, with a purplish eye in the centre, and are produced in short, cymose corymba. When abundant, as presented in the figure, the plant reminds one of some of our creeping white Phloxes. It is essentially a rock plant, being found on the mountains of Provence and Gascony,

and, indeed, it occurs pretty abundantly throughout the mountain districts of the south of France and north of Spain. I have, however, seen it thrive well in a border on the chalk; but that is exceptional, my own experience being against its adaptability to ordinary border culture. On the rockery, however, in a well-exposed sunny nook, it is perfectly hardy, and will trail freely over the surface of adjacent stones—conditions under which it will flower abundantly. It produces seeds but rarely, so that increase must be obtained by cuttings of the short shoots taken off with a heel about midsummer, just as they are hardening off; at that time they will be found to strike freely, and to make vigorous plants when potted off the following spring. It is considered by some to be a mere variety of *L. tenuifolium*, to which it is, indeed, closely related, but from which my experience leads me to consider it as a simply distinct. Another close ally is the *L. viscosum*, but in it the entire plant is more or less hairy, those on the stem and cauline leaves being of a glandulose, exstary character—hence originates the sticky nature to which it owes its specific title; its flowers are purplish, and the whole plant is considerably more erect in habit than the White Rock Flax. Although tolerably plentiful in South Europe, I have only once met with it in cultivation.



A Small Garden Landscape with fringe from the banks of Streamlet in foreground, and Group of Fine-leaved Plants in the distance.

Southern Europe, and grows freely as a rock plant, but we do not often meet with it true.

The **Mountain Flax** (*L. montanum*) is described by some authors as a distinct species, but we suspect it to be little more than a variation of the foregoing of somewhat stronger growth. Its flowers are a shade deeper tinted with blue, taking in point of fact an intermediate position between the Alpines and Perennial Flaxes.

The **Dotted-leaved Flax** (*L. punctatum*) is an exceedingly slender-growing plant, in aspect and habit like *L. perenne*. Its branches are more erect, and its flowers of a lovely blue not gracefully on their delicate foot stalks. Its specific title originates in the abundance of pellucid dots with which its small leaves are suffused. It blossoms in June, July, and August, and, seeding freely, may thus be easily increased. As a border plant, it possesses good lasting properties; but, like all the Flaxes, its beauty is always most appreciable in the forenoon, when its flowers are fully expanded.

The **Narbonne Flax** (*L. narbonnense*), one of the most distinct and well-defined species belonging to this section of the genus possesses a more decidedly herbaceous character than any of the foregoing. Its leaves are long, lanceolate, sharply acuminate, and sparsely arranged along the stems. The flowers are remarkable for the length of the

The **Dwarf Alpine Flax** (*L. alpinum*), while bearing some resemblance to our more common perennial plant, is a much more compact grower, rarely attaining a height of over 6 in. or 8 in. The stems, branching horizontally from the neck of the plant, are clothed with a dense arrangement of small leaves, the lower ones having a markedly deflexed character. The flowers are a very light delicate blue, usually solitary or in threes, and produced somewhat spasmodically through the summer. There is a tendency in this species to increase by adventitious buds from any portion of the roots that have become exposed, and in this way a ready increase may be obtained. It is a native of the mountainous regions of



THE WHITE ROCK FLAX (LINUM VISCOSUM. L.)



sepals, whose mucronate points form collectively a sort of beak like process to the flower-bud. The flowers are twice the size of any others of the blue species, of a darker colour suffused with a slightly slaty tint; they are erect, and when expanded fully each petal reflexes backwards in such a way that the defined marginal outline is almost lost. This is certainly one of the most desirable species for border culture; it is perfectly hardy, and although it does not seed abundantly, a sufficient number may always be collected, whereby increase may be obtained. In light soils it also produces offsets from root buds, as before explained. It is a native of Southern and Central Europe, and flowers in June and July.

*L. candidissimum* and *L. monogynum* may well be bracketed together under the title of white-flowering corymbose Flaxes, though claiming widely distant homes, the former being a South European, the latter a New Zealand plant; they are so closely related that for all cultural purposes we may consider them alike. In habit their growth is erect, about 12 in. high, the stems and foliage being of a light green colour; the flowers are distinctly corymbose, large, and pure white, and produced not only in June and July, but supplemented by a second set of flowering stems in the autumn. Both the species seed freely, and are remarkable for the size of their capsules; neither are dependable as absolutely hardy plants, although occasionally they may be found to stand two or three consecutive winters. It is always advisable to have some young plants reserved in a cold frame, in case of any exceptional severity.

**The Shrubby Yellow Flax** (*L. arborescens*).—This and the two following species belong to a very distinct section of the genus, wherein the slender leaves and graceful habit disappear, and a somewhat rigid and shrubby character of growth takes their place. The present species is remarkable for its blunt-pointed, broadly cuneate leaves, suffused with a greyish glaucous hue, from amongst which its large, bright, canary-coloured flowers are produced in great abundance from early summer to autumn; rarely is the plant, which in dry, sheltered localities assumes quite an arborescent character, devoid of blossom. We have seen it even in Yorkshire planted on the top of a snick fence, forming bushes upwards of 2 ft. high and fully 3 ft. across, perfectly golden with blossoms, but in ordinary border culture, especially on a damp subsoil, its hardness is something more than questionable. This will be readily understood when we say that it is a native of Crete, the extreme south of Italy and Sicily, where it is generally found in proximity to the seacoast.

**The Taurian Yellow Flax** (*L. flavum*).—For many years the previous plant was known by this specific name, and so generally had the misnomer become established, that even at the present day the mistake is frequently perpetuated; nevertheless, the two plants are amply distinct. This species is an herbaceous plant in the strictest sense of the word, dying down annually to a short, woody, subterranean rootstock, from which year by year arise several erect-flowering stems, sharply angled and clothed with dark, olive-green foliage, broad, ovate, slightly cordate at the base and gradually narrowing upwards; each stem is terminated with a somewhat dense dichotomous inflorescence; and the flowers, which are produced in August, are of a rich golden-yellow. It is perfectly hardy, and forms a handsome and long-lived herbaceous plant, and should certainly receive a larger meed of attention than it has hitherto done. By some authors it is named *L. tauricum*, being abundant in the Taurian mountains, and, in fact, is generally met with in the upland meadows in Eastern Europe.

**The Bell-shaped Yellow Flax** (*L. campanulatum*) occupies an intermediate position between the two previous species, not on the one hand so decidedly shrubby as the former, nor on the other so decidedly herbaceous as the latter; it nevertheless possesses a distinct individuality of its own. Dwarf and compact, not exceeding 8 in. or 9 in. in height, it may be botanically distinguished by its horny narrow sepals, which much exceed the ovary in length, and its olive-green broadly obovate spatulate leaves. Culturally speaking, by its dense habit of growth, for, when well established on the rockery, and enlivened, as it is, through the greater part of the summer by a succession of golden blossoms, it forms a most desirable plant, almost as hardy as the Taurian species. It is a native of Mount Gargaous and the Pyrenean range.

In the foregoing I have enumerated those species which possess the greatest cultural value; were I to add such as are of purely botanical interest the list might be trebled. I cannot, however, bring this brief article on the Flaxes to a close without a passing allusion to the annual species. *L. grandiflorum*, a native of North Africa, and which has now for years taken its place amongst the most showy of our much-neglected annuals; the colour produced by it, grown *en masse*, in its full

expanded mid-day beauty, is such as few flowers possess, and to my mind it appears to embody a happy blending of chocolate, claret, and crimson, in such proportions as to make its colour specially its own and distinct from that of any other flower that I can call to mind. Nor must we omit mention of the East Indian *L. trigynum*—when properly treated one of our gayest winter flowering plants, alike adapted for the stove and the warm conservatory, and remarkable for the large deep yellow blossoms which it produces freely at the duldest season of the year. As its cultural treatment has been several times detailed in the columns of *THE GARDEN*, I will content myself with giving it its due recognition amongst the valuable cultural species of the genus *Linum*. JAS. C. NIVEN.

*Hull Botanic Gardens.*

[Our figure of the White Rock Flax was prepared from a plant furnished by Messrs. Backhouse, of York.]

## GARDEN BOTANY.

(Continued from p. 236.)

**PRESERVATION OF THE GERMINATIVE FORCE.**—The proper storage of valuable seeds, in order to preserve their vitality for one or more seasons, is a question of no little importance. Even those seeds most tenacious of life quickly lose it if subjected to unfavourable conditions. The first precaution to take is thorough harvesting, and the next is to avoid dampness. A humid atmosphere promotes decay and favours the ravages of insects, and will ultimately destroy the vitality of seeds having the best natural protection in the form of testa or pericarp. In a climate like our own the air usually holds a considerable amount of aqueous vapour in suspension, and a sudden lowering of the temperature causes a certain portion, sometimes a relatively large quantity, to be precipitated. The evil of this may be counteracted by efficient ventilation, for under any circumstances stagnant air, like stagnant water, soon becomes impure, because it favours the growth and propagation of microscopic animal and vegetable organisms, which prey upon organic matter in a state of incipient decay, and hasten it forward to complete destruction. Seed thoroughly cleaned will keep better than when stored without separating it from the rubbish, because the latter more readily absorbs moisture from the atmosphere. These indispensable conditions in seed-storing are not difficult of attainment in most parts of this country, but there are other countries in which the atmosphere is much more heavily laden with moisture, and where it is almost impossible to keep seeds for a few months without constant attention. As a protection against the moisture practically air-tight tin boxes and canisters are used; but they act as a preservative in one sense only, because even thoroughly ripe dry seeds gradually vitiate the air. The best way to preserve seeds in transit from distant countries and passing through dissimilar climates is to pack them in close, nearly dry, earth, and for such seeds as quickly lose their germinative force, the additional precaution should be taken of soldering them down in the cases, filled to the brim.

**GERMINATION ON THE PLANT.**—The seeds of plants growing in very moist climates occasionally germinate in the fruit whilst this is still on the plant; and sometimes an unusually wet season will cause it to happen on a large scale. The seeds, too, of many plants with pulpy or fleshy fruits occasionally germinate in the fruit, but there is nothing particularly remarkable in this fact. There are few grown-up people who cannot remember a year or two during which it was difficult to obtain Wheaten flour from which good bread or pastry could be made; but comparatively few know what has deteriorated its quality. Continuous rain after the grain is ripe stimulates the germination of the embryo, and sprouts, from 1 in. to 6 in. in length for every grain in an ear, are not rare in such seasons. Grown or sprouted Wheat, as it is called, is bad in quality in proportion to the extent of the sprouting; and, be the sprouting ever so slight, it spoils the flour, because the contents of the grain have begun to undergo a chemical change incidental to germination. Fig. 75 represents a seed-vessel of a Lily with two protruding radicles at the base. The seeds of the "Sâl" (*Shorea robusta*), a valuable Indian timber tree, germinate normally while on the tree, and therefore require sowing

as soon as they are collected. And there is a small family of trees called Mangroves, which inhabit the muddy sea-shores of tropical countries, characterised by the seeds invariably germinating before falling to the ground. Only one seed comes to maturity, and the radicle of this grows out at the apex of the



Fig. 75.—Seed-vessel of a Lily, with the radicles of two seeds protruding at the base.



Fig. 76.—Fruit of Brugneria, with the club-shaped radicle projecting from its apex. The whole of the part above the calyx is radicle.

fruit, as in fig. 76. This radicle grows stout and heavy, causing the fruit to become pendulous, with the radicle downwards. In some species, *Rhizophora Mangle*, for example, the radicle often continues lengthening until it reaches the ground before the fruit is detached from the tree, attaining 3 ft. or more in length; or if it falls to the ground, its own weight causes it to penetrate the soft mud, and thus often secures itself from being carried away by the tide. As soon as it reaches the ground the plumule begins to grow, and throws off the pericarp. There is also one familiar native plant, the Mistletoe, whose seeds often germinate in the viscous fruit. Germination in the fruit is also said to be normal in *Secchium edule*, a cucurbitaceous plant, commonly cultivated in the West Indies, which has a one-seeded fruit.

**GERMINATION OF UNRIPE SEEDS.**—It has already been shown that some seeds must be sown almost directly after they are ripe, or they lose their germinative force, whilst others, without any special protection, retain it for years, though it gradually decreases in energy. Seeds that are to be kept, even for a short time, before sowing must be perfectly mature or ripe, but it is not necessary, in many instances, at least, that seeds should be absolutely ripe in order to be able to germinate. Many instances have been put on record by different observers of unripe seeds germinating, and several botanists have conducted extensive series of experiments in raising plants from seeds in different stages of development. At first it seems somewhat surprising that an imperfectly-formed embryo should grow into as vigorous a plant as a mature one; but, when we understand the general plan of growth in plants, this phenomenon is intelligible. Thus, Ferns actually develop from a single detached cell. This property of premature germination may be taken advantage of in practice in propagating plants that do not fully ripen their seeds in our climate. It is recorded that *Sophora japonica* does not ripen seeds at Breslau, in Germany, but they are so far formed that if taken and sown at once they grow. A rather longer period elapses before unripe seeds actually germinate, but frequently the progeny is equal to the best from mature seed. Indeed, it is stated that

the Brazilians always employ unripe seeds to propagate *Hancornia speciosa*, a valuable fruit tree, believing that the fruit borne by trees raised from immature seeds is of a superior quality. Formerly it was supposed that only exalbuminous seeds, or such in which the embryo fills the greater part of the seed, would germinate when unripe, but M. Sagot, a Frenchman, succeeded in germinating green grain of Wheat in which the albumen was soft, semi-liquid, and milky, and several other experimentalists have raised different cereals from grain collected a fortnight to three weeks before the crops from which it was taken were ripe. The gentleman named also records having raised Peas from seeds weighing one-half, one-fifth, and even one-twelfth of their normal weight. The half-weight seeds germinated rapidly, and produced plants hardly different as seedlings and afterwards from those sprung from fully ripe seeds. Those one-fifth of the normal weight germinated less quickly, and the seedlings were slender, and grew slowly at first; but in course of time they acquired strength, and produced flowers and fruit. Of the seeds sown when only one-twelfth of their normal weight, many did not germinate, and some died after the commencement of their development; and those which survived were very feeble, and grew very slowly. Although the practice of sowing unripe seeds is not likely to become general, and would not be profitable under ordinary circumstances, it might be useful to know, in the case of a rare plant suddenly dying before its seeds were mature, that there was a possibility of their germinating, and thus preventing the loss of, may be, a valuable plant.

**GERMINATION OF THE SPORES OF FERNS.**—In another paragraph the spore is described, and some phases of its development into a plant briefly examined. Being a microscopic



Fig. 77.—A seedling of *Salisburia aliantifolia*, showing the mode of germination, cotyledons remaining within the testa.

body, and its germination presenting no visible modifications, except of an anatomical character, there is little more to be said on this point. The spores of some Ferns possess the remarkable property of retaining their vitality or power of vegetating for a considerable number of years if kept dry,

several species having been raised from spores taken from dried specimens which had long been lying in herbaria. This is all the more wonderful when we consider that they are exceedingly minute, one-celled bodies; and furnishes us with a striking illustration of what an occult thing the principle of life must be. Most spores lie several weeks before germinating, and some of them for months, but those of *Osmunda* begin to grow in a few days after they are shed or sown; and the spores of the Hymenophyllum should be sown when collected, or they are likely to fail, though failure may possibly often be due to unisexual prothallia.

GERMINATION OF CONIFERS AND CYCADS.—Conifers have albuminous seeds, and the straight embryo lies in the axis of copious, usually oily, albumen. The seeds vary much in size and form. The cone-shaped seeds of *Araucaria Bidwilli* are from 2 in. to 2½ in. in length, and 1 in. to 1½ in. in their greatest diameter; whilst those of the *Cypresses* are small and nearly spherical, many of them not larger than quite small shot-corns. The Pines have flattened seeds, often with an oblique appendage at one end. In *Abies* alba the seeds themselves are not more than one-sixteenth of an inch long, and the delicate membranous appendage about three-sixteenths. The number of cotyledons varies from two to fifteen, the true Pines always having more than two. *Salisburia adiantifolia* (fig. 77) has two opposite cotyledons. By studying the germination of this species one may obtain an idea of the general plan. On

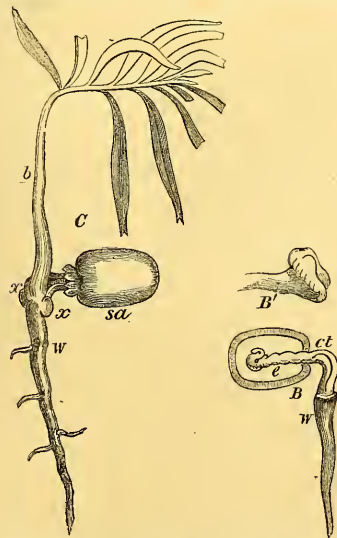


Fig. 78.—Germination of *Zamia spiralis*. B, commencement of germination; ct, the cotyledons cohering above their elongated base, one of them being at its apex a lobed (magnified as B) expansion indicating the pinnate leaves which follow; c, seedling, six months old; ca, seed; w, primary root; d, the first pinnate leaf; x, x, rudiments of adventitious roots which afterwards grow out. (After Sachs, reduced.)

the absorption of moisture the testa splits open at one end, whence the radicle emerges, as well as the lower part of the cotyledons. The radicle grows rapidly downwards, and soon the plumule appears between the bases of the cotyledons, the upper part of the cotyledons remaining within the testa until the albumen is absorbed. In *Salisburia* the cotyledons are never withdrawn from the testa, but the cotyledons of Pines, &c., eventually appear above ground and change green, often bearing the testa, which they ultimately cast off. Cycads present a similar kind of germination to that of *Salisburia* (see fig. 78). The radicle first emerges, and afterwards, from interstitial growth, the bases of the two cotyledons are pushed forth. The cotyledons are unequal in size, and coherent by their faces in the upper part, the larger one exhibiting some

indication of the future pinnate leaves (fig. 78, B'). They remain in the testa, gradually developing a spongy tissue, which acts as an absorbent of the albumen until the whole of it, or as much as the seedling requires, has been conveyed through the bases of the cotyledons into the growing plantlet. When the albumen is exhausted, or as soon as the seedling is able to assimilate food for itself, the cotyledons decay and detach themselves from the plant. The beginning of the germination of *Zamia spiralis* will be understood on reference to the section of a seed (fig. 78, B).

GERMINATION OF MONOCOTYLEDONOUS SEEDS.—The different families belonging to the class of plants whose seeds have only one cotyledon offer several very distinct types of germination. The individual seeds of some of the Orchids are almost invisible to the naked eye, whilst the seed of the double Cocoa-nut (*Lodoicea sechellarum*) is upwards of 1 ft. in diameter. Albuminous and exalbuminous seeds occur, but the latter are usually small. Two or three of the principal types may be described here. There is no universal plan of germination of monocotyledonous embryos as distinguished from dicotyledonous embryos, but the radicle or radicular end of the monocotyledonous embryo perhaps never forms a permanent tap root. But it is very misleading to state, as it does in some text-books, that the posterior or lower extremity of the axis of monocotyledonous embryos is never developed, as we shall presently see. There is, however, a very common mode of germination in monocotyledons, though not peculiar to them. The radicle, or primary root, instead of being a direct prolongation of the posterior end of the embryo, arises within a sheath or integument, which it bursts and protrudes through in germination. W. B. HEMSLEY.

Gum Ladanum-Gathering in Cyprus and Crete.—Gum ladanum, or labdanum, formerly largely used for incense and plasters, has become a very rare product in the East. A very small quantity is gathered in Crete and Cyprus from the twigs of the *Cistus roseus*, *C. villosus*, *C. salvifolius*, *C. creticus*, and *C. ladaniferus*. It is collected by means of a curious instrument, called by the natives of these islands a "lavhanostirion." It consists of a long handle surmounted by a hemisphere of wood, to which a number of leather thongs are attached. The instrument is drawn backwards and forwards amongst the bushes, and the thongs become speedily covered with the gum, which is scraped off from time to time. It has been figured by Joseph Detrich in his work on this subject. The so-called Gum ladanum, which is at present used in pharmacy and perfumery, is a fœtitious compound of mastic, olibanum, and styrax. The real gum is collected by allowing a herd of goats to graze amongst the *Cistus* bushes for a certain time. Their heads and tufts on their tails are then cut off and the gum melted out. The monks on these islands are in the habit of lending their herds of goats to the ladanum gatherers on condition of receiving a percentage of their profits.—X. LANDREER.

*Grevillea filicifolia*.—The habit and general appearance of this *Grevillea* are greatly superior to those of the well-known *G. robusta*. Its leaves, which are light green, are finely cut, and are produced in a gracefully drooping manner, rendering the plant either for table or greenhouse decoration one of the most desirable which we possess.—S.

*Vriesea tessellata*.—For furnishing vases in rooms this plant is well worth attention. It succeeds well under ordinary warm greenhouse culture, and the yellow and green tessellated markings of its leaves have at all times a pleasing appearance, and when in spring the plants begin to make new growth the delicate yellow leaves produced from their hearts, slightly veined with green, render them equal in appearance to the best of the *Pandanus*.—C. S.

*Festuca ovina curulea*.—This beautiful hardy plant, commonly called the Blue Grass, has a charming appearance when grown in small pots in the plant stove during winter. It contrasts well with *Isolepis gracilis*, and requires exactly the same treatment. I find, too, that in strong heat its colour becomes brighter than it otherwise would be. For mixing in bouquets and table decorations it is invaluable, giving them, as it does, such a light appearance. I have often been surprised that it is not more used for such purposes.—H. HARRIS, *Denne Park, Larkham*.

*Dracena Rothiana*.—Amongst the thousands of decorative plants grown by Mr. Wills, of South Kensington, this forms one of the most important. It is a plant of free vigorous growth, and its broad, gracefully-drooping, deep green leaves, associated with flowering plants under gas-light, are strikingly effective. For room and window decoration it forms a good companion to *D. terminalis*, both of which are easily cleared of dust, and they will last for a long time in good condition without much attention.—C. S.

## THE LIBRARY.

## THE "CHALLENGER" EXPEDITION.\*

ALTHOUGH put forward as being only a preliminary account of the work done by H.M.S. "Challenger" in the Atlantic in 1873 and part of 1876, this is a truly splendid work, and does honour to all concerned in its production. There is much in it that will interest the botanist and horticulturist, although the lion's share of the writer's attention has been given to the zoological departments of natural history. It may serve as a specimen of the entertaining style in which the book is written if we give an extract from Sir Wyville Thomson's account of the Monastery at Belem, near Lisbon:—"The interior of the church is even more pleasing than the exterior. Here there is no

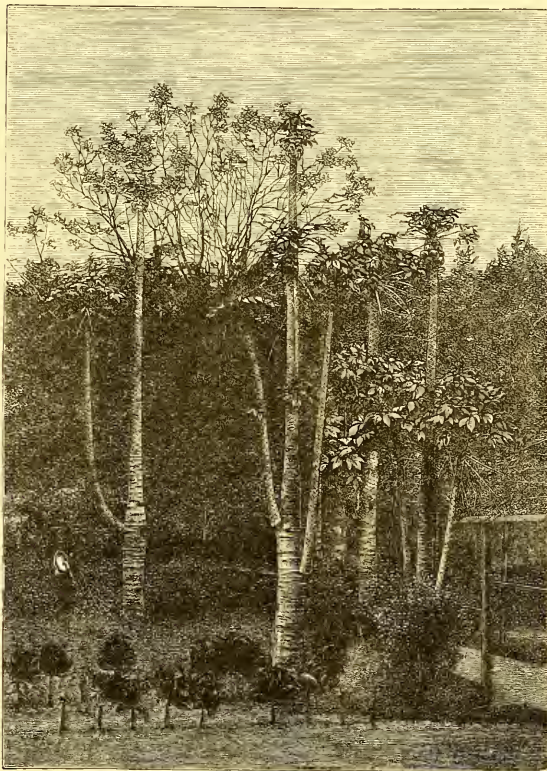
excess of ornament, but simple, delicate shafts of pale grey marble support, with all the airiness of effect of Moorish architecture, a wonderfully carved and fretted Gothic roof. Service was going on when we were there. The church was cool and dim, and the clear sweet voices of the choristers rose and fell along the aisle, and seemed to linger in the roof among the sculptured Palm leaves. The high altar, with its lighted candles and vases of flowers, and the rich robes of the officiating priests, formed a warm patch of colour strongly in contrast with the cold simplicity of the grey marble. A small flock of worshippers, whose strongly-marked olive faces and picturesque attire had, to us, all the interest of novelty, made up for their small number by the apparent earnestness of their devotion. The whole scene struck us as being wonderfully harmonious and pleasant. The Monastery of Santa Maria of Belem, commonly called the Monastery of St. Jeronymo, from its having been occupied by monks of that order, is in connection with the church, and, with it, was founded in 1499 by King Manoel the Fortunate in commemoration of the discovery of the Indies, on the spot where Vasco da Gama embarked on his first eastern voyage. The monastery is now used as a State asylum for upwards of a thousand poor children. Visitors are ad-

mitted to the cloisters at three o'clock; and as that hour had not arrived, we were turning away from the door, when a servant opened it and invited us to enter. We passed through an archway into a large quadrangle with the sun shining brightly into it. Flower-beds occupied the centre of the square, cut out in various shapes, and separated by neat, trimly-kept gravel walks. The beds were planted with Oranges and Bananas, and clumps of Aloes, with their rich crimson spikes, alternated with the cool, white cups of the Calla; while Heliotrope and Jasmine, and many aromatic flowering shrubs and herbs sent up an almost oppressive fragrance into the warm

still air. While we were there several beautiful hawk-moths were hovering over the flowers, and dipping their long trunks into their bells."

The description of a Spanish Cork forest is very interesting. The trees are planted at some distance apart, with the green turf beneath and between, like the Oaks in an English park. The foliage of the Cork tree is dark and grey, and somewhat scanty, but the sombre-coloured trunks and branches were beautifully relieved here and there by the furry tawny rhizomes and bright green fronds of a Davallia growing in the clefts of the branches or the deep grooves of the split Cork. The account of the wonderful profusion of flowers in Madeira almost makes a person dissatisfied with one's own home. Even in the town of Funchal itself green flowering creepers hang across the streets in festoons and garlands, and clothe the walls and

trellises with gorgeous masses of colour. The climate of the suburbs of Funchal seems to be particularly favourable to the Bougainvillea, which is found everywhere in every shade of colour, from brick-red through crimson and violet, to delicate mauve. From its brilliancy, depending on its bracts and not on the flower, it lasts a long time, changing its appearance but little from early December to the middle of August. The *Bignonia*s, too, are singularly luxuriant in the capital of this favoured island. *B. venusta* runs into long wreaths, clustering round every projection, and throwing out countless trusses of orange bells. An interesting account is given of the preparation of true Bermuda arrowroot—the starch of the *Maranta arundinacea*. The superstition that arrowroot must necessarily be better than any other kind of fecula seems to be dying out, for Sir Wyville Thomson tells us that the quantity produced has been steadily decreasing for the last few years. West India arrowroot, which is cheaper and just as good, has nearly driven it out of the market, and the Bermudans are now turning their attention to growing the easily-cultivated and profitable Potato instead of the troublesome Maranta. Bermudans were formerly celebrated for its Oranges, but in 1854 a *Coccus* suddenly made its appearance, and destroyed the whole of the cultivated trees. Wild, self-sown Oranges, Lemons, and Limes still continue to perfume the air in the thickets of the island, but the cultivated varieties had disappeared from the gardens. Two of the best woodcuts in the book—and that is saying a great deal, for they are all super-excellent—are the natural swamp vegetation, Bermudas, and the Papaw trees in a garden in the same island. An *Altingia excelsa* and a *Cryptomeria* in the garden of M. do Canto at St. Michaels, in the Azores, are also beautifully drawn and engraved. A most interesting account is given of the culture of the Orange in St. Michaels. The mode of manuring the Orange gardens is a singular one, said to have been introduced by the Romans into our own island in the old days. Lupines, which grow rapidly and luxuriantly, and produce a large quantity of highly nitrogenous seed, are sown thickly in the hard soil, and when full grown are dug into the



Papaw trees (*Carica papaya*) in the Garden at Clarence Hill. From a Photograph.

\* "The Voyage of the 'Challenger.' The Atlantic: a preliminary account of the general results of the exploring voyage of H.M.S. 'Challenger,' &c. By Sir C. Wyville Thomson, Knt. In two volumes. London: Macmillan & Co., 1877.

ground—roots, stem, leaves, pods, and seeds. No other manure seems necessary. There is a beautiful little cut of the Orange groves near Ponta Delgado, St. Michael's, which reminds one strongly of the glorious Concha O'bro outside Palermo. The comic element is not neglected. The cut of the penguins at home in a bower of reeds is irresistibly ludicrous. It is rarely that we have the privilege of reviewing a book in which everything is executed in so perfect a manner—matter, cuts, and index, printing, paper, and binding—as Sir Wyville Thomson's delightful volumes.

"The Voyage of the 'Challenger'" will doubtless shortly appear in a French dress, but in this instance the publisher will have no need to have the illustrations re-engraved, as has been the case with too many of our recent illustrated books of travel or research.

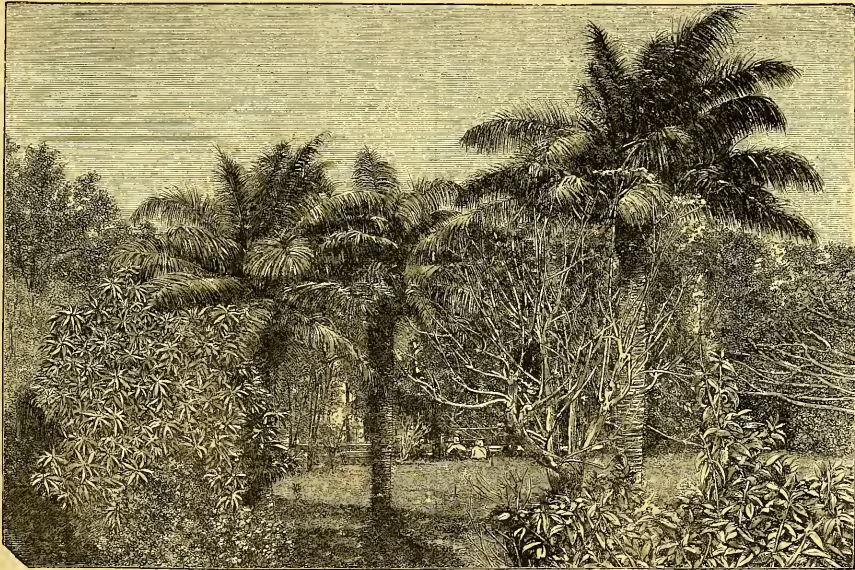
C. W. QUIN.

**Carbolic Soap v. Mice.**—If your correspondent (see p. 207) who has failed in saving his Crocuses from the deprivations of mice will try carbolic soap, I think he will be more successful, as all vermin

## GARDENING FOR THE WEEK.

### Indoor Plant Department.

**Orchids that require exceptional treatment.**—In any considerable collection of Orchids there will necessarily be some found that are not naturally so free in flowering as others; and some still further, that, although they grow well, can rarely be induced to flower at all. In the latter case it will generally be found that there are some conditions under which they grow naturally, so far absent in the cultivated state they exist under as to prevent their flowering altogether. At one time there was an idea prevalent amongst Orchid growers, and by those of limited experience is even yet entertained, that if plants which make free growth are subjected to an extreme drying process, carried on for a length of time after growth is complete, they may be what I may term forced to flower; but wherever a flowering condition is brought about by such treatment as this it is generally of the most meagre and unsatisfactory description, usually causing a loss of leaf and permanent injury to the plants, such as is indifferently compensated for by the insufficient character of the bloom. I have long observed that the requisite disposition in Orchids to produce flowers freely is much more dependent upon the course of treatment to



Group of Gru-gru Palms on the Croquet lawn, Mount Langton.

have a decidedly strong objection to its taste. In this district it is in great favour with farmers for dressing seed corn, and so well does it answer the purpose in the case of Wheat and Barley, as to render the aid of a boy to keep off rooks unnecessary. This is an immense saving, as these birds do a large amount of damage in a short time, and it is a well-known fact that the work of scaring them off is often badly performed, and causes much anxiety to those most interested. Although an effectual safeguard when applied to the above-named grain, it is not found to be so in the case of Beans and Peas, which, as they begin to germinate, cast their skins readily, and of this the rooks take advantage by devouring the middle and leaving the husks with the carbolic soap adhering to them. For garden seeds, such as Radishes and all the Brassica tribe, it will be found most valuable, as in most gardens finches and linnets are so troublesome that it is impossible, except under close netting, to keep them off, and it often occurs that a whole bed is destroyed in a few hours. This is a great loss, as there is not only the seed gone, but the crop is thrown behind in such a way as to interfere with a regular supply being kept up—S. D.

which they are subjected, particularly to light, air, and a more or less moist condition of the atmosphere through the whole period of their growth, than to any long-continued drying ordeal they may be subjected to when at rest. Moisture more or less in the atmosphere is an indispensable essential to far the greater number of Orchids, consequent upon the presence of such in their natural habitats; but although they will not thrive without it, still there can be no question that more should never be used than is found necessary to insure a fairly free development. In a collection of Orchids where more atmospheric moisture is kept up continuously during the growing season than the plants absolutely require growth is generally rapid, the plants have a luxuriant green appearance with large foliage very taking to the eye, yet not bearing close examination, as it is invariably weak and watery; and, despite all the severe punishing treatment by excessive drying up to which the plants are subjected when at rest, they will never flower satisfactorily, and the leaves produced under these over-moist conditions are short-lived. To illustrate what I have said in reference to the conditions under which growth is made, having such an influence on the flowering, it is only necessary to point to newly-imported plants of such things as Vandas, Saccolabiums, and Aerides; with these it will almost invariably be found on examination that they have produced

bloom-stems at every leaf, which I have no doubt it is natural for them to do, and which it is possible to get in cultivated plants, evidence of which I have frequently had; but in every case it has been where the plants had been grown without more atmospheric moisture than was absolutely requisite.

**Renanthera coccoinea.**—There are some fine varieties of Orchids that rarely flower under ordinary Orchid house treatment. Take, for instance, the Chinese *Renanthera coccoinea*, one of the finest and most distinct plants in both form and colour of flower that we possess, producing, as it does, when treated as it requires, immense branching sprays of reddish-scarlet flowers, that have few equals in their persistency, as when kept, whilst in flower, under favourable conditions, they will last from eight to ten weeks. Anyone who has a couple of Vineries, one started about the beginning of the year, another some three weeks later, wherein the first Vines are pushed on freely with fire-heat, and the second with as much artificial warmth and a system of early sifting in the afternoons, so as to run the temperature up high by closing with plenty of solar heat, hastening the crop to maturity in a way that is practised by many good Grape growers, will find this just the situation in which to grow the *Renanthera*, moving it from the first to the second Vinery as soon as the crop in the first, from approaching maturity, needs the atmosphere keeping dry. By the time the second house wants a like reduction in atmospheric moisture the *Renanthera* will have made sufficient growth, and may be then kept dry and in a temperature of about 45° at the time, after which, if put into a warmer and moderately moist atmosphere, it will flower. During the whole time, both when making growth and at rest, the plant should be kept as near the light as possible. Close to the upright glass at the end of the house is the best position, as here the shade from the Vines overhead will not keep it too dark. The reason that this, one of the finest and most desirable of Orchids, will succeed under such treatment is, that in a position like this it receives the requisite amount of heat with a much drier condition of the atmosphere, consequent upon more air being given, than it could have amongst the majority of other Orchids without their being treated in a way that would injure them.

**Schomburgkias and Senticarias.**—Amongst other plants that require less moisture than the majority of Orchids are *Schomburgkias* and *Senticarias*. The *Demarcia* species of the latter (S. Steell), when well grown, makes its perfectly round, whip-like-shaped leaves from 3 ft. to 4 ft. long, and produces large, thick, leathery, yellow-spotted flowers. I have found this to succeed much better under such treatment as the above during the growing season than that necessary for the generality of Orchids. The plants just named are remarkable for their distinct, handsome habit, and on this account alone deserve a place in all good collections.—T. B.

**Hybrid Perpetual Roses,** started in heat some time back, will now be progressing, but under no consideration should they be hurried, for, if subjected to too much heat, not only will the flowers be deficient in size and substance, but some of the weaker sorts will likely not bloom at all. In the case of such plants as have been annually forced for some years, they will be much benefited by the application of liquid stimulants. This will not only be of assistance to the flowers at present in course of formation, but it will materially increase the strength of the plants—a matter of equal importance, for the object in view in cultivating pot Roses should not merely be to secure the present season's crop of bloom, but to treat the plants in such a way that instead of deteriorating they may go on improving. For this class of plants I have found nothing better than about this time giving them a dressing of Standen's Manure, using about a table-spoonful to each plant occupying a 10-in or 12-in. pot. This, repeated twice through the season, will be found to produce a marked effect. The increasing sun's power will render it necessary now to give more air to prevent the temperature from rising too high. The pipes should have little heat in them from early morning, when the weather promises to be sunny. Give plenty of air in the roof of the house by opening the lights sufficiently, but be very cautious about its admission at the sides, for the sake of a few plants the young growth of which is more tender than that of the forced Roses, and is extremely liable to be checked if cold external air comes in direct contact with it, even on a bright sunny day. Syringe freely in the afternoons, and by that means endeavour to keep down aphides; but should these make their appearance, I have found it better to syringe with, or dip the affected shoots in, Tobacco or Quassia water than to resort to fumigating thus early in the season, for unless it be done very slightly, injury is almost certain to occur.

**Tea Roses.**—Strong plants of these that have already produced flowers will go on pushing up strong growths that in turn will bloom; and to still further assist them, give manure water once a week, and an occasional dressing of "Standen" similar to that recommended for the Hybrid Perpetuals. Do not allow the plants to get too much crowded. When a house is first devoted to Rose culture a large number of small plants are generally prepared to fill it, and then go on requiring more space, unless such is at command, or the numbers grown are proportionately reduced, they become crowded to an extent that does not admit of their getting sufficient light, a condition that with Roses more than most things is fatal to their well-being. Should worms be found to exist in the soil (which Roses in pots, by being set or plunged out in the summer time, are more subject to than most plants), means should at once be taken to remove them, for not only is their presence fatal to an efficient position of the roots, but they also reduce the whole body of the soil to a dusty state unsuitable for the roots; so much so, that wherever the earth in the pot is found containing worms there will always be a

deficiency of feeding root-fibres. I have found nothing better to expel them than water in which soil to the extent of two or three handfuls to a gallon has been added, and kept stirred for two or three days, and then applied in a clear state.—T. B.

**Stove.**—The temperature of the stove should now be raised, keeping it 70° in the night, with a corresponding rise by day; but in the mornings of apparent sunny days, reduce the fire-heat sufficiently early, so as to avoid the necessity of admitting much of the cold cutting air we get at this time of the year. Shade such plants as require it when the sun shines clear, as its effects on the young tender foliage is at this season calculated to do more harm than later on, when the leaves are more fully developed. Supply all the free-rooting, quick-growing subjects here with a sufficiency of water at the root. Syringe the plants with tepid water early every afternoon, to keep down thrips and red spider, which the higher temperature will cause to increase apace, if not kept in check by this means. In general, however, more water will be required, especially with soft-wooded plants. Here, also, do not admit side air except in small quantities, when the winds are cold and piercing; but ventilate freely at the root during the middle of the day. Pot Lilies of all kinds, the moment they show above the soil, should be brought into a light, airy situation; keeping them even a very short time after they appear above ground in a dark or only partially lighted place appears to have two effects—it draws the shoots in a way that spoils their appearance, and seems also to curtail the root-forming capabilities of the plants; these weaknesses I have sometimes better noticed in surface roots than in the roots from the stems above the bulbs, which these plants, when well grown, throw out in quantity.

**Conservatories.**—These should now be gay with *Camellias*, *Heaths*, *Azaleas*, *Acacias*, *Cytisus*, *Daphnes*, *Euphrasias*, *Hya-cinthus*, and other bulbs, *Cyclamens*, *Primulas*, *Mignonettes*, *Cinerarias*, *Violets*, *Callas*, *Bouvardias*, and many other things, the whole being intermixed with fine-foliated plants, which serve to set those in flower off to good advantage. The temperature of these structures may be kept at 45° or 50° at night, allowing a rise of 10° by sun-heat. To plants started into growth give more liberal supplies of water, and keep the atmosphere moist by sprinkling from the syringe. Introduce flowering plants from the forcing pit to take the place of those done flowering. Give air plentifully in the morning, slanting up early in the afternoon. Such as intend to exhibit their plants must now be busy training, accelerating, or retarding them. Shade a little from bright sunshine *Azaleas* and *Camellias* that are in flower, and such as have done lowering place in an intermediate temperature, and encourage them to make growth.

**Greenhouses.**—From these and other houses it may now be necessary to remove *Pelargoniums* into frames, in which they will keep perfectly well until bedding-out time. By keeping them in warm quarters, however, better supplies of cuttings are obtained. Proceed with the propagation of different subjects from seeds, cuttings, or divisions as speedily as possible, for the stronger the plants are before they are planted out the better will they flower. Prick off from the seed-pans into other pans or boxes *Camellias*, *Wiganellas*, *Petunias*, *Golden Everlets*, *French and African Marigolds*, *Amarantuses*, *Begonias*, *Chrysantheums*, *Antennaria*, *Un-cloaked Beet*, for flower garden purposes, in a very gentle heat or close pit. Pot off cuttings of all sorts as they become rooted, and after they have yielded up their tops for cuttings they may be placed in a position a little cooler than the propagating pit, unless a further supply is required. Re-pot autumn-propagated *Pelargoniums*, and place them in a close pit or frame for a time. Give them plenty of water, but do not allow them to be saturated so much as to generate damp. Prick into boxes of light soil seedlings and leaf-cuttings of succulents, and keep them in a position near the glass. Put into frames 6 in. or 8 in. in depth of light soil, pack it firmly, and into it transplant the autumn cuttings of *Verbenas*, *Ageratum*, *Lobelias*, *Calceolarias*, *Salvias*, &c.; from such a position they transplant with excellent roots. Similar frames are also extremely useful for *Dahlias*, for the roots, after being divided, may be planted in them 6 in. apart, or the roots may be started in a propagating pit or frame and transplanted to these cold frames. Sweet Peas sown in pots and boxes should be removed to cold frames after they have germinated. Stocks, *Asters*, *Argemones*, &c., may be sown in very gentle beds that are ventilated a little day and night and shaded from the sun, for after the plants have appeared they are extremely susceptible of damp. When large enough for being pricked out singly prepare another frame in the same way for them, prick them thereon, shade well for a few days, and eventually completely expose them, but replace the sashes in showery weather or at night, when they may be tilted up. Instead of transplanting the Stocks and *Asters* in frames, a wall border with a south aspect will do equally well if a few sprigs of Broom or evergreen branches are stuck in front of them; indeed, seeds of these plants may be sown out-of-doors in April with satisfactory results.

**Pits and Frames.**—In such as are heated, give no more fire-heat than is absolutely necessary to expel the frost, and give the air as early in the morning as the state of the atmosphere will admit. Towards the middle of the month the stock of bedding plants should be looked over; and soft-wooded plants, of which there is a scarcity, should at once be placed in a growing temperature to produce cuttings for propagation. The *Heliotrope* is well deserving of extended cultivation, and is very desirable in mixed arrangements. The finest varieties for bedding are *Etoile de Marseille*—a star, indeed—*Surprise*, and *Jersey Beauty*, the last very dwarf, and one of the best for bedding. As regards *Geraniums*, boxes and sashes, a portion of the variegated sorts may be placed in boxes when cuttings are required, but we would warn the inexperienced not to

be in undue haste, as the loss of a week or two is often more than regained by the superiority of the cuttings put in later. Water carefully but effectually, so as to thoroughly moisten the ball. Cold frames containing comparatively hardy plants, such as Gazanias, Centaureas, Echeverias, and Veronicas, &c., must be attended to as regards covering when the weather is frosty.

### Flower Garden.

By means of neatness and order endeavour to render all ornamental grounds as enjoyable as possible. Walks and Grass must be frequently rolled when there is no frost, and no greater improvement could be desired than to have the verges and lawns perfectly level. We do not mean like a billiard-table or croquet-ground, but where the ground naturally slopes, the fall should be uniform and regular. Where verges are irregular it is easy to turn back the turf and to make the ground quite level, and then re-turf, beating firmly with iron rammers; but do not give the edges the final trimming until such time as the Grass has taken root, and all danger from hard frost is over. Smoothness, we need scarcely remark, is one of the main constituents of beauty; therefore, a lawn that is not tolerably smooth can never please. Turn up vacant flower-beds, and renew the soil in such a way as may require that being done, and lay Box edgings. Frequently examine half-hardy plants protected during severe weather, and endeavour to render their covering efficient by giving additional protection when necessary; also protect bulbs during severe frost. Stir the soil occasionally amongst spring-blooming plants, and if slugs are troublesome scatter some air-slaked lime around the outsides of the beds in which they are growing. Edgings of *Stachys lanata*, *Cerastium*, variegated *Thyme*, *Gnaphalium lanatum*, variegated *Arabis*, variegated *Queen of the Meadow*, *Antennaria*, *leaved Daisies*, crimson-leaved *Ajuga*, the dwarf *Pampasius*, *Scabellaria*, and a few other compact-growing plants, may now be lifted, divided, and transplanted. Two-year-old edgings are generally better than one, so that, unless they exceed that age, they are better left undisturbed. The variegated *Polemonium œruleum* makes one of our finest hardy edgings; the best way of treating it is to lift the roots and pot them in October or November, to keep them during the winter in a frame or cool Peach house, and to transplant them in spring when they begin to grow. Transplant from frames, greenhouses, or pits into beds in the flower garden *Pinks* and *Carnations* wintered in pots, or autumn layers planted in light soil in frames in winter. Bulbs of *Iliza* yet in stock should be planted as speedily as possible. *Pansies* and other spring blooming plants may yet be transplanted as occasion requires; indeed, few plants are more useful at any season than *Pansies*. *Gladioli* for blooming in beds or shrubbery borders may be planted at once 3 in. or 4 in. deep, and a sprinkling of sand should be strewed under and over the bulbs. It is a prevalent idea that *Gladioli* should not be transplanted till April for fear of spring frosts; but that is too late, unless the plants are required for late flowering. Sow *Mignonette* where it is required to bloom, and hardy annuals not sown last September here and there in beds or borders for transplanting. Sow also a good stock of *Sweet Peas*, *Nasturtiums*, *Tropæolums*, and *Scarlet Runners*, either where they are to bloom or in sheltered beds or corners for transplanting hereafter to their permanent quarters. Autumn-saved roots of *Scarlet Runners* throw up shoots freely, and bloom earlier than seedlings; the roots require treatment similar to that usually given to *Dahlia*s. Divide and transplant roots of herbaceous plants of various sorts.

**Shrubberies.**—The pruning of evergreens should be finished at once, if not already done. Shrubbery borders should be lightly pointed over, taking care not to injure the roots in the operation, or to disturb any bulbous plants that may be growing amongst the shrubs. Isolated specimens of newly-planted trees, especially if large, are much benefited by a few shrubs being planted around them for a year or two, to act as a protection from wind, frost, and drought; after the trees get established the shrubs may be removed. Prune, where necessary, *Vines* on walls, and fasten any in danger of falling away from them. Uncover *Myrtles*, *Magnolias*, *Fremontias*, *Stauptonias*, *Clematises*, and other half-hardy plants on walls, and otherwise put them in order for the summer. Plant and re-arrange flowering deciduous shrubs, keeping in view ultimate effect, and so dispose of the stronger-growing varieties as not to overgrow the more delicate kinds. Even *Hawthorns*, beautiful and desirable though they be, frequently occupy the wrong rank of mixed shrubberies when they would have been better placed further back, or in groups; but all the stronger-growing kinds are in better keeping as park ornaments. The best for dress grounds are the different varieties of *Crætagus Oxyacantha*, as, for example, *Paul's New Double Scarlet*. This is a splendid variety that merits extensive cultivation. *C. O. multiplex* (the best double white), *C. O. punicea* (the finest single scarlet), and *C. O. rosea superba* may be accepted as fair types of the kinds that will give most satisfaction. The double varieties just named are splendid subjects for pot culture. If not already done, much of newly-planted trees with leaf-soil dung, or spent tan; top-dress *Hollies*, *Rhododendrons*, and such plants as may require stimulating with rotten manure and soil.

### Indoor Fruits.

**Vineries.**—As soon as the shoots are sufficiently advanced to show which are the best placed, and which are likely to produce fruit, remove such others as are unnecessary. As they advance, mark the best of the wires in the places which they ought to occupy, bringing them into their exact positions by degrees, for if bent too much at once they are liable to break. Close the house early every afternoon, and syringe overhead freely with tepid water. See that inside *Vine* borders are sufficiently moist all the way down; through inattention to this, *Vines* suffer more frequently

and seriously than from any other cause. The appearance of the surface of the soil through daily syringing is very deceptive, as the top will often seem wet enough when below it is much too dry. Naturally there is a disinclination to disturb the soil in which the roots ought to be thickly interspersed by using a fork or other implement to examine what is the actual condition of the bottom portion of the border, but it is very easy to ascertain the exact state as to moisture from the surface down to the drainage by the use of the little implement which I have before mentioned. It consists of a hollow tube of thin iron open at both ends, in diameter something like an ordinary gun barrel; this, thrust down as far as the drainage, of course comes out charged with the soil, when, by pushing it out with a stick something like that used in the case of a boy's pegging, the condition of the soil may be seen at a glance. By using the implement in different parts of the border, the state of the whole can be ascertained with the slightest possible injury to the roots; it will involve little cost and equally little labour, and is much better than remaining in doubt as to the condition of the soil.

**Peaches** under glass, in houses closed a short time ago, will now be in full bloom; go over them daily, and strike the trellis to which they are trained with the hand; the vibration thus produced, if done in the middle of the day when the pollen is dry, will help to disperse it and assist the setting of the fruit. Always examine the soil to see that it is sufficiently moist right through the border as far as the roots penetrate; the Peach is a water-loving plant, and will not succeed if the soil be at all dry. Give air more or less every day, according to the state of the weather, but avoid cold draughts coming in contact with the young and tender foliage. Be careful not to allow anything like overheating, as *Peaches* cannot bear, especially in their early stages, being buried; a temperature of 46° or 45° is quite enough at night, and it should not be allowed, even on sunny mornings, to rise more than 16° above that without giving air.

### Hardy Fruits.

**Peaches and Nectarines.**—All Peach walls should be furnished with movable copings, the best of which undoubtedly are the permanent iron brackets with movable sheets of glass, the only objection to this being its first cost. A very efficient and inexpensive coping may be made of  $\frac{1}{2}$ -in. Spruce boards; the brackets to support these should be flat wrought iron, 1 1/2 in. wide by  $\frac{3}{4}$ -in. thick; these should pass immediately under the stone coping of the wall, and, to render them more secure, ought to be bent down 2 in., so as to clip the bricks at the back of the wall. Supposing that the permanent stone coping overlies the front of the wall 3 in., these iron brackets should extend 1 1/2 in. from the wall, and be turned up at their outer extremity  $\frac{1}{2}$ -in., that is, the thickness of the boards. In the middle of this turned-up there ought to be a hole that will admit a small screw, which must be screwed into the front edge of the board to secure it there. The brackets should be bent from the wall at an angle of 35°; the boards used should be 1 1/2 in. in width, which will allow of their slipping under the stone coping to a distance of 1 in., the angle to which the brackets are bent leaving room for this. The light or heavy character of the shading material used will determine the distance apart of the brackets. In moderately high-lying dry localities, where, in addition to the boards, a light material will be sufficient, the brackets may be 3 ft. or 10 ft. apart. In situations of this description, old fishing-nets, which can be had in most parts of the country at 1d. or 1 1/2 p. per yard, and which, further on in the season, are very useful in protecting *Strawberries*, *Cherries*, &c., from birds, will be ample. These should be tacked to the front edge of the boards sufficiently close to leave no openings, and to prevent the wind blowing them against the trees, which would only do serious harm. They must be secured at the bottom; this can be done by inserting in the ground, 6 ft. apart, stakes of the strength of a broom-handle, to which the nets are tied. This protection may, without injury to the trees, remain on from the first opening of the bloom until the fruit is fully set. For situations that are not exceptionally low, damp, and under the influence of more than an ordinary amount of spring frost, it will be found all that is requisite. I have had under such covering a full crop of *Peaches* and *Nectarines* during a season when we had 16° of frost whilst the trees were in bloom, the atmosphere and the trees being quite dry at the time. There are some places so unfavourably situated as to require thicker protecting material than the above, such as stout canvas. When this is necessary should be made in lengths of 25 ft. or 30 ft., fastened with strong tacks to the front of the coping boards, and securely tied to stout stakes driven in the ground at the bottom. A thick covering of this sort, of course, must be removed in the daytime. This can be done by folding it up from the bottom, and laying it on the top of the coping board, where it must be secured by cords, at intervals of 8 ft. or 10 ft., passing round the boards, to which they are nailed back and front; with these cords the canvas must be tied, to prevent its blowing about. A handy man, with a light ladder will, in a short time, cover and uncover in this way a wall of considerable length. Heavy coverings of this sort are frequently fixed with rings on wires, top and bottom, to slide as curtains, the objection to which is that, however tight the wires are fixed, even when in short lengths, the weight of the curtains causes them to dip at the top, leaving an opening, through which the wind rushes on to the trees. Heavy coverings of this description will necessitate the supporting brackets being nearer together.

### Kitchen Garden.

**Asparagus.**—Established beds of *Asparagus* should now have a portion of the surface-soil removed into the alleys, where it should be dug in, while the surface of the beds themselves should have fresh soil, a dressing which should be followed by a liberal application of salt. Besides being a suitable manure for *Asparagus*, salt also, to some extent,

prevents the growth of weeds, and destroys or drives away slugs and other depredators. Where fresh plantations of this esculent are intended to be made, the beds for the reception of the roots should by this time have been duly prepared, and the planting should be done as soon as the plants have commenced to grow, or when they have made shoots of about 1 in. in length. Plants one year old are generally found to be best for this purpose, and one-year-old plants of the variety known as Conover's Colossal will be found to be in all respects equal to two two-year-old plants of the common kind. Some prefer sowing seeds upon the prepared beds at once, and afterwards thinning out the plants to the proper distances apart, which should be 18 in. Remove the littery matter which may have been placed around the stools of Globe Artichokes for protection, and thin out the offsets, or suckers, which may be used, if required, to form fresh plantations.

**Peas** now in turves or boxes should now be planted out; give them a sheltered situation in the driest part of the garden, and choose a day when the soil is tolerably dry. Where it is so moist as to become compressed by treading upon, boards should be used. The little extra labour thereby involved will be well repaid by the better condition in which the ground will be left, as when trodden solid through this and the following month, and dry weather ensues, it becomes so hard and impervious to the roots that even the strongest-growing plants fail to succeed in it, if they otherwise would do. As soon as the Peas are planted draw a little soil to them, and at once stake them with small sticks, placing outside these a few branches of evergreens to protect them from cold winds. Keep a daily look-out that sparrows do not molest them. I have seen these birds attack early Peas even up to the time that the flowers were formed, nipping out the extreme points, after which the plants make but slight progress, for although they make an attempt to break out lower down, yet the produce of the early sowings that have suffered is never more than half a crop. Except in very light soils, ground that was dug and ridged up in the autumn from the excessive wet and absence of frost to pulverise it will this season require more stirring before cropping than the ridges being levelled in the usual way, as where the soil is heavy it has become as close and solid as it would be in ordinary seasons if not dug at all, and it will be necessary to re-dig it, after which, so far as possible, let it remain for a short time before cropping. In all cases the fork will be a better implement than the spade for this work. Leave the surface as light and open as possible, thoroughly breaking up pieces all hard lumps of soil. Hoing the surface on fine days will do much to dry the soil and thereby benefit the crop.

#### Extracts from my Diary.

**March 25.**—Sowing Veitch's autumn Giant Cauliflower; also Veitch's autumn self-protecting Broccoli (the last-named I consider a great boon to cultivators; we had it in use from the middle of August to the end of February). Putting in cuttings of *Santolina* under hand-lights. Potting on young *Fuchsias* in 6-in. pots. Dividing and re-earthing. Thinning out the autumn-sown Lettuce, and forking over the ground amongst the plants.

**March 26.**—Sowing two rows each of the following sorts of Peas:—James's Prolific Marrow, G. F. Wilson, Carter's Commander-in-Chief, and Giant Emerald Marrow; also Cucumbers and Melons. Putting in cuttings of *Coleus* and *Alternantheras*. Cutting back some old Apple and Pear trees, and grafting them with better sorts. Renovating the living round frames. Getting Green Gage and other Plum trees covered with double netting for protection.

**March 27.**—Sowing Carter's Dwarf Crimson Celery, Sweet Basil, and Sweet and Pot Marjoram. Pricking off *Petunias* and *Lobelias*.

Looking over all the Strawberries that have set their fruit, and removing all that are deformed; also late flowers. Raking down the Asparagus beds, forking over the surface of them, and giving them a light top dressing of salt. Breaking up and turning over gravel walks to give them a fresh appearance.

**March 28.**—Sowing Canadian Wonder French Beans in pots; also Mustard and Cress. Putting in cuttings of herbs of sorts; also *Iresine*, *Dahlia*, and *Mesembryanthemums*. Potting off *Tomatoes* and Sweet Basil. Planting out autumn-sown Red Cabbage plants. Digging up the alleys between Asparagus beds and planting them with Cauliflower plants. Looking over *Battles* in bottles, cutting out any berries that are bad, and filling up the bottles where required.

**March 29.**—Sowing the main crop of Parsley, Early Savoys, Brussels Sprouts, and Snow's Early White Winter Broccoli. Potting off *Iresine*, *Coleus*, and *Alternantheras*. Getting all Broccoli into the store shed as fast as it becomes fit for use. Planting Globe Artichoke suckers and Sea-kale plants in well prepared ground. Clearing off Savoy stumps. Manuring the ground and getting it dug up.

**March 30.**—Pricking out Celery and Brussels Sprouts; also Veitch's Autumn Giant Cauliflower (sown in January). Thinning out *Mignonette* in pots. Lifting some large clumps of *Lily of the Valley* and putting them into gentle heat. Looking over the Pines and giving them water where required. Lifting up *Petunias* in frames. Thinning Grapes, and tying down the young shoots in early Vinery. Tying in young shoots in early Peach house. Cleaning up the pleasure grounds and rolling down all gravel and turf that require it. Fruit in use for dessert:—Pines, Grapes, Peas, and Apples.—W. G. P., Dorset.



A Weeping *Gleditsia*.

*Spiraea palmata* elegant.—This new *Spiraea* is a grand acquisition for our collections of hardy plants. Its inflorescence is light and elegant, the crimson stamens contrasting well with the white petals. M. E. Pynaert, of Ghent, believes that there is a great future before this plant, which is described as a hybrid between two parents, which both occupy an eminent position in the horticultural world, namely, *Spiraea palmata* and *Astibe japonica*; and that it will be propagated and cultivated extensively for the ornamentation of greenhouses and apartments as a forced plant. From this point of view the new *Spiraea* is superior to the original *S. palmata*, since it is said to bear a high temperature better than this latter, whose flowering sometimes miscarries when it is urged on too rapidly.

Whether or not this novelty is really a hybrid, as is supposed, or only a seedling variation of *S. palmata*, as seems possible, it will be recognised as a hardy herbaceous plant of great and delicate beauty, and one which is likely to be freely grown for market and for decorative purposes. *S. p.* elegans most nearly resembles *palmata* in its foliage, but its inflorescence is of an intermediate character, and more branched than that of its female parent, which is terminal. The individual flowers have pure white petals, and in their centre a tuft of red stamens, which by-and-by spread out over the petals, these flowers being crowded upon the branches of the panicles. A peculiar and distinctive character is found in the increased number of leaflets in the foliage, which are twice as many as those of *S. palmata* itself. It is a vigorous plant, attains 2 ft. or more in height, and is perfectly hardy, growing freely in any good garden soil and eligible situation, and propagating easily, so that it may be expected, says M. Pynaert, "promptly to make the tour of the world." It is certainly a very fine subject for decoration, and a welcome addition to our hardy flower gardens.—"Florist."

**A Weeping *Gleditsia* (*G. Bojoti*).**—Among the various Weeping Trees now in the gardens of Europe we know of none more graceful than this, which is supposed to be a variety of that fine tree *G. triacanthos*. We have noticed several good specimens of it in

Paris gardens of late years. The trees "weep" in a picturesque manner, though not perpendicularly, and the form of the tree is broken and graceful in outline, the leaves elegant, and the shadow as light as that of a Grass. There is a good specimen in the Garden of Plants, but the best we have seen is in Baroness Rothschild's gardens, at Boulogne. We fear this tree is as yet rare in our nurseries, though it is deserving of general culture.

OPEN AIR VEGETATION IN FEBRUARY, 1878.\*

FEBRUARY, upon the whole, has been a very enjoyable month; there was little wind, and the sun was frequently seen. East wind was only experienced for two successive days; there was also very little rain and no snow fell. During the month vegetation made rapid progress, but in most instances not very robust. With the exception of *Rhododendron atrovirens*, *R. dahuricum*, and *R. præcox superbum*, which were particularly fine this season, the buds of the early scarlet *Rhododendrons* are very scarce, and far from strong. The forcing of many of the plants of the *Rhododendron Noëleanum* has been very precarious, when compared with the forcing of the same kinds whose buds were ripened during former years and after a fine summer. The same remark holds good this year with the forcing of many plants of *Deutzia gracilis*, *D. crenata*, *Astilbe japonica*, *Lilacæ*, &c. Fruit trees were far advanced during February, particularly *Jargonelle* Pears on walls, the buds of many being expanded. Buds are also far advanced on standard Apples, Pears, and Gooseberry bushes. The Scotch or Witch Elm is in flower, and leaves are also forward on many deciduous trees, such as *Thorus*, *Lilacæ*, *Ribes sanguineum*, *Nuttallia cerasiformis*, *Willows*, *Elder*, &c., and even the Larch trees have a greenish tinge over their branches. Numerous herbaceous plants have already made growth several inches long; of these may be mentioned the *Crown Imperial*, 10 in.; *Papaver orientale*, 8 in.; *Symphytum tauricum* and *caucasicum*, each 18 in.; *Hemerocallis fulva*, 12 in.; *Orobis elegans*, 6 in.; *Verbascum longifolium*, 10 in.; *Ferulas*, 12 in.; and the *Bunch Grass* (*Elymus condensatus*), 14 in. Many of the *Brassicæ* or *Cabbage* tribe are rapidly running to flower, kinds which ought now to be useful for culinary purposes; *Grass lawns* are very beautiful and green, as well as the foliage of all evergreen trees and shrubs. The *Biota elegantissima* and *B. aurea* have already assumed their green or spring phase, the brown or winter hue having entirely disappeared.

The dryness of the ground without frost, along with the comparative mild weather which we have had recently, has been the means of causing many herbaceous plants to flower, a larger number being in that condition this year than is usually observed during the month of February. Many kinds of bulbous plants were in flower during the month, while others were later, in consequence of the bulbs having been injured, and some having rotted in the ground, from previous excess of moisture.

Of the forty-two plants whose time of flowering has been recorded for these last twenty-eight years, the following twenty-one flowered during February:—

	1878.	1877.
<i>Eranthis hymalis</i> . . . . .	Feb. 2	Jan. 26
<i>Galanthus nivalis</i> . . . . .	" 4	" 16
<i>Crocus susianus</i> . . . . .	" 6	" 20
<i>Galanthus plicatus</i> . . . . .	" 7	" 26
<i>Leucjum vernum</i> . . . . .	" 8	" 18
<i>Rhododendron atrovirens</i> . . . . .	" 8	" 25
<i>Dondia Epipactis</i> . . . . .	" 9	Feb. 11
<i>Tussilago fragrans</i> . . . . .	" 9	Jan. 3
<i>Corylus Avellana</i> . . . . .	" 10	" 1
<i>Sisyrinchium grandiflorum album</i> . . . . .	" 10	Feb. 17
<i>Aubrietia grandiflora</i> . . . . .	" 13	Jan. 17
<i>Nordmannia cordifolia</i> . . . . .	" 15	Feb. 16
<i>Tussilago alba</i> . . . . .	" 15	Mar. 8
<i>Crocus vernus</i> , and varieties . . . . .	" 17	Jan. 28
<i>Scilla sibirica</i> . . . . .	" 18	Feb. 20
<i>Sisyrinchium grandiflorum</i> . . . . .	" 19	" 20
<i>Draba aizoides</i> . . . . .	" 19	Mar. 11
<i>Daphne Mezereum</i> . . . . .	" 22	Jan. 26
<i>Scilla præcox</i> . . . . .	" 22	Feb. 16
<i>Scilla bifolia</i> . . . . .	" 28	" 24
<i>Tussilago nivea</i> . . . . .	" 28	Mar. 18

On Feb. 26 the first open flower was seen on *Aponogeton distachyon* in the pond. In the rock garden the most interesting plants in bloom during February were *Hepaticas* of different sorts, which were particularly fine and flowering profusely between the crevices of the rockwork stones having a northern aspect. In similar situations we have also numerous plants of *Primula vulgaris rubra*, now in exquisite beauty, where they have been flowering since November last.

*Primula denticulata*, *P. purpurea*, *Rhododendron præcox superbum*, *Daphne Mezereum*, *Erica carnea alba*, and *Andromeda forficuuda* are also flowering freely. Besides these we have specimens in bloom in larger and smaller quantities of *Crocus Imperati*, *C. Etruscæ*, *C. nivalis*, *C. biflorus*, *C. annulatus*, and *C. suaveolens*, *Leucjum vernum*, *Galanthus nivalis*, *G. plicatus*, *G. Elwesi*, *Sisyrinchium grandiflorum album*, *Dondia epipactis*, *Helleborus colchicus*, and several other varieties, also *Aubrietia grandiflora*, *Veronica rupestris*, and *Lithospermum fruticosum*, &c. In no instance up to this time (Feb. 28) has open air vegetation suffered from frost, and in consequence slugs and other vermin are beginning to make their appearance.

The thermometer during February was eight times at or below the freezing point, indicating collectively 35°. The lowest markings being on the mornings of the 2nd, 3rd, 9th, 11th, 12th, and 13th, indicating 23°, 25°, 27°, 28°, 27°, and 25°, while the six highest morning temperatures were on the 16th, 17th, 20th, 21st, 22nd, and 28th, indicating 41°, 44°, 42°, 41°, 45°, and 42°. For the last twenty-four years the united frosts during the months of February amounted to 1517°. I have already stated that 35° were experienced during February this year, 36° being observed during Feb., 1577, 113° during Feb., 1876, 123° during Feb., 1878, 165° during Feb., 1864, 125° during Feb., 1860, and 220° during Feb., 1855; while the lowest February markings were during 1869, when 6° only were recorded, but in that year much damage was done to vegetation by frost before the end of March.

**Primroses in Kent.**—There is a wonderful wealth of these charming flowers in hedgerows in Kent. In the neighbourhood of the Romney Marshes the roadsides, woods, and dells abound with them; the plants are generally robust in growth, and the flowers very large. In the cottage gardens there are some pretty coloured varieties; and, indeed, the cottagers in the particular district in Kent to which reference has been made vie with each other in setting forth pretty spring displays in their forecourt gardens. I saw some pretty white, red, and lilac Primroses, and in one garden an old lady was so conservative of a bright maroon-coloured variety as to be insensible to any entreaties of mine to purchase a root. It was a possession, apparently, belonging only to herself, and probably that was the reason why she so stoutly stood by it. Where the common Primroses were finest I looked carefully for a double form of the wild Primrose, but could not find one. I have heard that they have been occasionally met with, but no one to whom I applied for information had observed it. I secured one plant having a large flower containing two pistils; it was perhaps a fasciated blossom, but I will save the seed from it, and see what it produces. Another peculiarity was noticeable, that of the absence of a scape; but the Primroses were only coming into flower, and a scape would probably appear with the latest blossoms.—D.

**Dividing Irises.**—We have had to break up many old clumps of *Iris germanica* this spring that have grown out of all bounds, and formed a ring around a bare island of soil. I want to re-plant portions of them that are certain to produce flowers—no chance work. Good strong pieces do not always flower, although that is the only answer one gets to such an inquiry as this. As we grow these Irises in groups of three colours it is mortifying when anyone fails, thus spoiling the effect intended to be produced. *Iris tuberosa* has not flowered for several years; plenty of Grass comes up. What should we do? Leaving it alone, the best plan with *Iris reticulata*, does not seem to suit *I. tuberosa*.—F. J. Hope, *Wardie Lodge, Edinburgh*.

**Myosotis rupeola.**—This is said to be "the most glorious blue of all the Forget-me-nots, and quite a gem for pot culture." Where can seed of it be obtained? I have applied to various firms for it in vain.—C. F. [Try some of the large dealers in herbaceous plants.]

**A Turk's-cap Cactus.**—I have sent you a singular specimen belonging to a friend of mine who is very desirous to learn to what family it belongs and what treatment is best suited to it. My friend grows it in a shaft in a window of his house, and all the nourishment which it gets is from the atmosphere.—M. CUMBERSON, *Rothesay*. [The plant, or part of one, is the cephalum of *Melocactus communis*, a native of the island of St. Thomas. It grows best in sandy soil in a brick heat without much moisture.—J. C.]

**Golden-leaved Dead-Nettles.**—I have a hybrid *Lamium*, the seed parent of which was *L. purpureum*, planted near *L. maculatum aureum*. A number of seedlings made their appearance all having golden leaves, but one, which I call *L. purpureum hybridum*, has bright golden foliage. It is a compact-growing plant, and flowers a month earlier than *L. maculatum aureum*. We shall use it largely this year for bedding purposes. Its colour late in spring and summer is a clear tawny-yellow, sobering down to a greenish-yellow in winter, during which time it is best propagated in a cold frame.—WILLIAM ELLIOTT, *Stapleford Hall, Notts*.

\*Read by Mr. McNab before the Botanical Society of Edinburgh, March 14, 1878.

## THE KITCHEN GARDEN.

## EARLY TURNIPS.

With a gentle bottom-heat, from a couple of feet or so in depth of stable manure and tree leaves, and a few old lights fixed temporarily over the bed, Turnips may be brought forward as easily, and in much the same way, as Carrots, Potatoes, Radishes, or any other vegetables that are commonly forced. Let a trench be opened at the foot of a south wall (or, failing that, a temporary screen of boards or reeds could be fixed); in the bottom put 18 in. or 2 ft. in depth of warm manure lightly trampled down, and on that 8 in. or 10 in. of light rich soil made moderately firm, and we have a bed that will in due course, if rightly managed, produce not only early Turnips, but all other kinds of early vegetables. The Turnips should be sown in drills 8 in. apart, as the roots are fit for use when young, and they need not be severely thinned, as by drawing the largest first the later plants will have space to grow. If, when the seeds are sown, a little superphosphate mixed with wood-ashes be sown in the drills, the young plants will grow with greater rapidity, and come in quicker. About 2 lb. to the rod of land will be sufficient, and if mixed with ashes or any other substance the mixing must be done thoroughly, so as to have it equally distributed. The quickest-growing Turnip is the Strap-leaved Stone, and, as it makes but little top, it is well adapted for early work. The early white Dutch Stone is also good, and it has a rather less tendency to run to seed if by any chance a check should be given, either through early drought or any other cause. Weak soot-water, in which a handful of salt to six gallons of water has been dissolved, will be very beneficial as the season advances if dry weather set in. Turnips, like Radishes, unless quickly and freely grown, are not of much use; hence the importance of keeping the soil regularly moist, especially when the roots are forming. If we had the making of a new garden, we should reserve a snug corner, with a full southern exposure, for the purpose of forming beds for early vegetables. It should be warmly fenced in, and laid out in beds 8 ft. or 10 ft. wide, with a good slope to the south. Each bed should have a temporary backing of straw or reeds, neatly woven between laths. We should not, of course, object to anything of a more permanent character. For instance, we have seen very good fences made by splitting Larch poles through the centre, keeping the flat surfaces to one face. Where Larch was plentiful and cheap, a boarded fence would not be a very expensive one; and fences of this kind might be used for training cordon fruit trees on. A temporary coping fixed to the top, and one or two thicknesses of ordinary fishing-net stretched from the coping to the front of the border, at an angle of 45° or so, would forward the early crops of vegetables immensely, and at the same time protect the blossoms on the trees. None but those who have had experience in such matters can form an idea of the amount of shelter that can be had from a single covering of netting; and the larger the space it incloses, the less is the danger of injury to the crops inclosed. The beds in a sheltered spot of this kind should never be idle. What opportunities would be furnished for Tomato culture, or Capsicums, New Zealand Spinach, or anything else that required a sunny spot in summer; and what a scope there would be for the production of autumn and winter salads!—"Field."

**Principal Vegetable Products of Greece.**—The following are the principal vegetable products of Greece and their annual value:—Quercus Ægilops, the Oak which yields the Vallones Acorn largely used as a tanning material, from 3 to 4 million drachmas (£120,000 to £160,000). Olea europæa, which produces oil of the annual value of from 80 to 100 million drachmas (£3,200,000 to £4,000,000). Ficus Carica (Figs, green and dry), 80 to 100 million drachmas (£3,200,000 to £4,000,000). Grapes and Raisins, 50 million drachmas (£2,000,000). Wine, consumed at home and exported, 100 million drachmas, £4,000,000. Rabia tinctorum (Madder-root), 500,000 drachmas (£20,000). Rhus Coriaria and Rhamnus infectoria (Yellow Berries), 50,000 drachmas (£2,000). Turpentine, Spirits of Turpentine and Resin, 250,000 drachmas (£10,000). By good management this branch of industry might be increased tenfold.—X. LAN-DENER.

**Turnips and Salsify as Salads.**—A writer in the "Nord-Est" mentions a vegetable as salad, which, as such, is little known. This is the young leaves of the Turnip. In Italy and France they cultivate them in a special way for the purpose. The Turnips, after cutting off the leaves, are placed in sand close together in dark cellars, and occasionally watered. As soon as the leaves develop themselves they are out. Of course, this will take place all the sooner if there be a little warmth in the cellar. The leaves are white, or of a pale yellowish colour, and very tender. Either mixed

with Beetroot or alone, as a salad they form a vegetable when little is obtainable from the garden. The herbaceous parts of the shoots of Scorzonera and Salsify, which are often of no use, make a very good salad when blanched, which can be done without injuring the roots. The shoots must be covered with fine earth or leaf-mould to about 6 in. deep. A fortnight after, in taking up the roots, the blanched tops are cut off, to be served with Corn Salad, Celery, Red Cabbage or Beetroot, constituting a salad greatly appreciated by many.

**Ventilating Pits.**—At this season of the year, when Radishes, Potatoes, and similar vegetables are being grown in pits, it is often impossible to give them as much air as they require, owing to the fierce March winds blowing off the lights when propped up or pushed down. In order to get over this difficulty Mr. Woodbridge, of Syon, has constructed at the back and front of his pits a row of narrow wooden shutters which can be opened or shut in an instant; a free current of air can thus be allowed to circulate through the pit, if necessary, and at the same time the lights can be pegged down without any fear of danger from wind or rain.—C. S.

## CRIMPED DANDELION.

This, according to M. Vilmorin, is a valuable variety. It forms very full rosettes, and is distinguished by short, close foliage, curiously



crimped and having a tendency to become white. Like all other varieties, this Dandelion is perfectly hardy, and is fit for use during the greater part of the year.

**Mice Eating Peas, &c.**—Some of your correspondents complain that mice eat their Peas. My advice is, catch and kill them, and the best way to do this is as follows: Procure a few common bricks and a few bits of galvanised wire 2 in. long. On each bit of wire put a Pea about  $\frac{1}{2}$  in. from the bottom end. Two bricks are required for each trap and one piece of wire. The accompanying diagrams show how

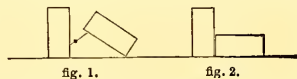


fig. 1.

fig. 2.

the trap is set, fig. 1 being set, fig. 2 the trap down and the victim dead underneath it. "G. T." (see p. 207) says he has caught three or four in steel traps. I have caught hundreds by the plan just described. In spring I have often caught five or six every morning, and as many sparrows during the day. It is an old plan, but one that never fails. It costs next to nothing, lasts a lifetime, and will work equally well in all weathers. When set on loose ground a firm bottom must be made for it, or a piece of slate or board placed underneath it. When set inside buildings one brick only is required for each trap, this being placed alongside the wall. I have caught numbers in that way. If "G. T." will try this plan, I will guarantee that he will find it to answer his purpose; and a little experience will soon enable him to set it to the best advantage.—H. HARRIS.

**Transplanting Onions.**—If not already done, no time should be lost in getting a good breadth of Onions planted in good rich soil, 1 ft. apart each way, for summer and autumn consumption. In lifting the plants, care must be taken to get the roots up as perfect as possible by loosening the soil with a fork as deep as their extremities, and holes also should be made deep enough to drop them into full length. Thus treated, they will start at once into active growth from the feeding rootlets being secured against the withering influence of parching winds, and at this early date applications of water to outdoor crops are more liable to check than encourage root action. The most popular sorts for autumn sowing are the Giant Rocca and Globe and Flat Tripoli, but the mild flavour for which they are esteemed depends very much on their culture. The rapid growth and succulence that render them so liable to decay rapidly is one of their chief merits.—JAMES GROOM, *Henham*.

## OPENING KEW GARDENS.

THE plea set up by the Kew authorities for keeping the garden closed until the afternoon on the allegation that its uses for scientific purposes would be interfered with may have weight with those who have not discrimination enough to see through such a flimsy pretext, but it only serves to exhibit the shifts to which those who object to earlier opening are put. The reasons for and against the opening, when fairly stated, are easily got at. Kew is kept up by means of the public money; the first object in doing so is to maintain it as an educational establishment, not alone for the use of those who are studying in the schools of medicine, but for those possessing more or less botanical knowledge, and who are desirous for an opportunity of seeing and observing living examples of the plants in which they are interested, and of which Kew has so many not to be found elsewhere. To the above must be added another and far more numerous, although possibly it may be said less important, class of individuals: these are the thousands connected with horticulture throughout the length and breadth of the land, and who visit Kew with a view to learn something of the immense number of plants that elsewhere are inaccessible. Plant cultivators who periodically visit London, and as regularly visit Kew, suffer more inconvenience through the garden being closed than all others put together. It is all very well to say that such visitors can gain access in the morning by complying with the requisite regulations in proof of their being *bonâ fide* botanists or horticulturists; but people do not care to have to establish proofs of their identity in this way, and it is monstrous to ask for them. It is persistently urged that earlier opening of the gardens would necessitate an increased expenditure. Those who urge this calculate upon the sensibility of the British taxpayer when any allusion is made about touching his pocket. But anyone who has visited Kew as often as I have done, and is as well acquainted with the routine work connected with a garden, can see the utter hollowness of such a pretext. No one wants, or needs, to walk on the exact spot where mowing, sweeping, rolling, or watering is going on—and these comprise nearly the whole of the operations that are carried on in the gardens in summer. As to the houses, the watering in all well-regulated establishments is finished before breakfast-time. Any attempt to make it appear that the staff engaged in the cultivation of the plants would (in the event of the gardens being opened say by nine o'clock) have more work thrown upon them, is as complete a fabrication as it is to say that those who visit the gardens either receive or require looking after by the gardeners employed on the place. The insinuation that those residing in the immediate neighbourhood want the gardens opened merely as a place of recreation to satisfy their own requirements is on a par with many other statements that have been made with regard to this matter. There is unlimited space in the neighbourhood accessible—Richmond Park in particular—where those who only want to lounge about can do so without the restrictions under which they must be put in any garden; and of these restrictions the class in question are fully aware, and act in accordance by betaking themselves where they can be without restraint. For twenty years, when living 200 miles from London, I scarcely ever missed a season in which I did not visit Kew; and if during my short stay in town I could, as opportunity presented itself, have run down when I had a few hours to spare morning or afternoon, it would have been of the greatest convenience; and I scarcely ever visited the place without meeting with others, similarly engaged as myself, who expressed themselves to be alike incommoded by the restrictions as to admission. This is a view of the subject that the residents in and about London, in this as in some other matters of a similar nature, appear to forget—that there are any other people in the world besides themselves. The fact that other establishments of a similar character existing here and elsewhere are open morning and afternoon, and which are kept up more for local use than Kew, which should be regulated to meet as far as possible the convenience of everyone far and near, is sufficient evidence of the necessity for its being open, as they are, at all times of the day.

*Southgate.*

THOMAS BAINES.

We reprint here a portion of the memorial lately published in THE GARDEN—a memorial of which the aim is to prevent

the opening of the Royal Gardens at Kew throughout the day:—

We venture, moreover, to point out that if the general public be admitted at an earlier hour than at present, the means now afforded by the unrivalled collections at Kew of meeting the wants of teachers, &c., which they supply to them, will be rendered practically nugatory; for neither in the open ground, nor in the museums and plant houses can instruction be given when these are thronged by visitors of all classes from a great metropolis. On the other hand, the TEACHER AND HIS PUPILS WILL IMPROBE THE PASSAGE OF THE PUBLIC; while of the visitors themselves, some from curiosity, others from a desire to be informed, would mix with the students, when oral instruction on the teacher's part would be difficult, and the reception of it by the pupils impossible; nor could examinations of any sort be conducted under such circumstances.

We question if anything lately seen in print will be more surprising to those who know Kew Gardens than the above passages. If all the botanical pupils and all the botanical teachers throughout the world were in the extensive gardens at Kew at the same time, it is probable that it would not "impede the passage" of a single being. It might be implied by the above passages that the gardens of Kew were crowded with students in the morning before the time of opening, whereas they are really deserted at those hours, except by the people employed about the place, and perhaps a few of those who take the trouble to get in by some back way. That the means now afforded at Kew of meeting the wants of teachers will be "rendered practically nugatory" by opening the gardens at such hours, as are the rule at all other important botanic gardens, that is to say, at such hours as the convenience of the horticultural and general public demands, is too amusing to require refutation; on the other hand, we have never yet seen the gardens at Kew on the most crowded occasions otherwise than in a condition when any number of men could 'study' to their heart's content. Anybody can verify this who goes on the most crowded days to the parts where the students most profitably work. As a matter of fact, the work that Kew actually does in teaching botany to students is much less in proportion to its means and extent than is done in many very small botanic gardens in cities. In these gardens, owing to their proximity to crowded streets, both the public and students are more numerous, and the grounds small as compared with those at Kew. The sketch of the visitors who from "curiosity" or a "desire to be informed" would mix with the students, making the reception of "oral instruction" "impossible," is so quaint in its way, that it would be interesting to know the author of it. We have all seen interesting sights at Kew, but few the professor and the class who would be incommoded in the above manner.

It is intolerable that the word "science" should be used in any way to justify such narrow-mindedness and such feeble attempts to justify a wrong to the public in a great establishment supported so liberally by the public purse. If this opposition to so just a demand be persevered in, we shall be compelled to enquire a little more closely into the management of the gardens, and the herbarium at Kew, with a view to proving whether the work therein carried out is of such kind and value that the public, in addition to paying for it, must also be shut out of the gardens during the best part of the day.

The "Journal of Horticulture," after having published recently a strongly-worded article against the opening of Kew Gardens, publishes in its number for March 14th reasons for opening them—such as every impartial person must believe to be just such as we have ourselves more than once expressed.

"We have ourselves," says the journal in question, "often found it hard when we required to visit the Botanic Garden, either for the purposes of investigation or to show them to a foreign visitor, that we were obliged to contrive some way of occupying the early part of the day till admission could be gained to Kew at one o'clock; and especially in the short days the inconvenience was aggravated, for before one gained admission at one o'clock there was not time to do what was to be done before the gates closed."

A correspondent of this journal also writes:—

"To country gardeners residing long distances from the metropolis it (Kew) is practically a closed book, because they have simply not time to visit the gardens and examine and investigate in any satisfactory manner without losing their night trains home. That, I submit, is not a sentimental, but a real grievance. I have more than

one hung about Kew Green waiting for the opening of the gates, and have thus wasted valuable time, simply because it could not be utilised sufficiently near for me to have entered the gardens at the moment the gates are opened.

The remedy which the "Journal" proposes is—

*That botanists, students of science, professional gardeners, and others wishing to make a legitimate use of the gardens might be furnished with tickets, available and renewable for six months, to be issued by the director upon application, certified by two householders that the applicant is a properly qualified person to receive the privilege.*

The "remedy" is so good a joke as to merit reprinting. "Hanging about Kew Green" does not appear to be very amusing to the correspondent of the "Journal" any more than to our own, but looking for the "two householders" does not brighten the prospect much.

The "Gardeners' Chronicle" wavers between what is just in the matter and that friendship to the director which makes it attempt to justify the present state of things, but in a half-hearted sort of way. It reasons thus—

"Ought we to consent to put Kew on the footing of High Park for instance, possibly to sacrifice its scientific utility, its charms of beauty and of quiet retirement, for the sake of pleasure-seekers pure and simple, or it may be of a band of "patriots," such as those who trampled down the flower-beds in the park on Sunday, rough-hewed the trees and playfully cast dead cats one at the other? Before unlimited right of entry be conceded there ought to be some assurance that this sort of desecration should not occur. It is unreasonable to ask for any concession which would be detrimental to the administration of the garden or the interests of students. We lay stress on the interests of students because we think it preposterous that local residents, who are the chief agitators in the matter, should bring their claims in preference to those of students. And let us not be misunderstood. Under students we include any person who can show that he has any bona fide business in the garden apart from pleasure-seeking.

In this it is assumed that the interest of the students are not identical with those of the public. But we who write entirely from the point of view of the student of horticulture complain because he cannot get into the gardens to study throughout the best hours of the day, while every other national garden of any importance is open throughout the day. We are told that he can get it by "applying to the director," "proving that he has business in the garden," &c., but we are mistaken if the system will be considered in any way satisfactory to those immediately concerned. As to the comparison with Hyde Park, it is very far-fetched. The Americans have got over similar troubles by making a regular meeting place near their parks, and we might do the same with advantage.

The "Gardeners' Magazine" says:—

The rule of admitting those who apply and state reasons does not meet the demand that is made for the admission of the general public at an earlier hour. We cannot but believe a compromise might be affected between the requirements of the scientific and the requirements of the pleasure-seekers. The Royal Gardens are sufficiently extensive to afford agreeable promenades to all sorts and conditions of men without disturbance of the scientific work, provided suitable tracts were opened to the public at an early hour and certain of the houses and nurseries were rendered inaccessible until the hour of 1 p.m. It might be better to yield with grace and reserve with power than, under the compulsion of a strong tide of public opinion, to yield inelegantly and too completely for the right use of the gardens."

**Primroses and Polyanthuses.**—I have just gathered a Polyanthus-formed head of bloom off what I have always supposed to be a Primrose plant. My stock originated from one, and this is the first, though I have had them for several years, which has ever sent up a Polyanthus bloom. I make mention of this as I see there is some discussion as to whether Primroses and Polyanthuses are one and the same plant.—E. PARKER, *Petyardes Hall, Swaffham, Norfolk.*

**Berberis Aquifolium for Spring Beds.**—We find this to be a most useful plant with which to furnish the centres of large beds in winter and spring, and when edged with spring-flowering plants, margined with Centaureas, the effect is all that can be desired. At the present time even the smallest plants are producing fine heads of yellow flowers, and the check on their growth, induced by removal, has caused nearly all the leaves to assume a bright red colour.—J. G.

## SOCIETIES AND EXHIBITIONS.

### ROYAL HORTICULTURAL SOCIETY.

MARCH 19.

AMONGST subjects shown at this meeting those which created most interest were the collections of Hyacinths and Tulips, furnished by several of the leading nurserymen, and a group of Amaryllids from Mr. B. S. Williams, of Holloway.

First-class Certificates were awarded as follows:—

**Odontoglossum pardium** (Mill).—Exhibited in flower on this occasion for the first time. It produces strong, branching spikes of bright golden-brown spotted blossoms, and forms a striking contrast to the light-flowered kinds.

**Magnolia Halleana** (Veitch).—A new, white-flowered, hardy Japanese species, flowering freely in a small state, and deliciously scented.

**Hyacinth Grand Master** (Cutbush).—A strong-growing, pale blue kind, with stout, compact flower-spikes.

**Hyacinth King of the Blacks** (Veitch).—A variety bearing symmetrical spikes of glossy black blossoms.

**Narcissus incomparabilis aureo tinctus Leedsii** (Barr & Suggden).—A sort remarkable for its perfectly formed flowers, which have pale yellow petals and crimson-edged cup.

**Bollea Palini** (Veitch).—A kind with large, waxy flowers, the petals being of a delicate mauve colour, conspicuously tipped with violet-purple.

A Botanical Certificate was awarded to *Dendrobium linguiforme*, from the Horticultural Society's gardens. It bears white, narrow-petalled flowers of a pleasing character.

**Hyacinths and Tulips.**—Extensive collections of these came from Messrs. Veitch, Carter, Cutbush, and Osborn. The flower-spikes, though not so large, as a rule, as could have been desired, were fairly good, and the colours excellent. In the collection of Hyacinths from Messrs. Veitch, the best were—**BLUES**—King of the Blues, Fineman, Baron Van Tuyl, and Princess Mary of Cambridge. **WHITE**—also superbissima, *Mit Blanc*, and *Les Grandesse*. **REDS**—Prince Albert Victor and Von Schiller. Many other colours were also well represented. Messrs. Cutbush and Sons had likewise well-grown plants of similar kinds. The Tulips from Messrs. Veitch embraced both single and double kinds of the brightest colours, and, being associated with Narcissi in pots, they made a good display.

**Amaryllids.**—Amongst Mr. Williams' group of these were large and well-formed flowers of *A. expansa*, the brilliant scarlet *A. mirabilis*, the white *A. virginialis*, *Prince Teck* (a rich crimson kind), and bicolor (crimson, striped with white). Messrs. Veitch & Sons also showed Amaryllids of an attractive description.

**Miscellaneous Subjects.**—Mr. Wills, South Kensington, furnished tastefully arranged groups of Palms, Ferns, Clnb Mosses, Orchids, and Lilies; also *Anthurium Scherzerianum*, *Phalenopsis*, and *Cyclamen*. Messrs. Cutbush & Sons showed an attractive collection of hard-wooded plants, including Indian and Ghent Azaleas, *Brietas*, and *Epaerices*. Amongst the *Erics* were noticeable profusely flowered plants of the beautiful white *E. colomans* and *E. gracilis vernalis*; several large pansful of *Lily of the Valley* also came from the same firm. Messrs. Laing & Co. exhibited three new *Caladiums*, one of which has delicate transparent leaves resembling white tissue paper, traversed with brown and green veins; it was named *La Perle de Brazil*. The other varieties, though not so distinct, were also well worth attention. Messrs. Veitch & Sons sent a basket of cut sprays of hardy plants, amongst which were *Daphne Mezereum* and its white variety, *Erica hercacea*, and *E. mediterranea alba*; also branches of *Azara microphylla*, the under sides of which were laden with yellow inflorescence. Mr. Williams sent a fine specimen of *Imantophyllum minimum* bearing nearly twenty trusses of blossoms; also good plants of *Sarracenia purpurea major*, *Draecenas*, and *Cycads*. Mr. Cannell, Swanley, contributed flowering plants of *Petalogonium Salmon Vesuvius*; also cut blooms of *New Life and White Vesuvius* all in excellent condition. Messrs. Garaway & Co., Clifton, sent a variety of their white-flowered *Mignonettes*, which was admired for its effective bloom and delicious fragrance. Messrs. Rollisson & Sons furnished a flowering specimen of *Azalea Rollissonii*, a Japanese kind, to which allusion was made last week (see p. 224). Mr. G. F. Wilson exhibited *Krythronium grandiflorum* in a pot, and Mr. Parker, Tooting, sent flowering plants of *Megacasa*, *Dog-footed Violets*, and *Iberis*. Messrs. Cutbush & Son sent a *Draecena* with long, narrow, graceful, bronze foliage, excellent for table decoration. Mr. R. Dean, Ealing, sent an interesting collection of hardy plants, consisting of *Primroses*, amongst which were *P. denticulata*, the pure white *P. rivalis*, and *P. amoena* (Pink Beauty); along with these also came *Myosotis*, *Cheiranthus mutabilis*, and was followed by *Polyanthuses*. A collection of cut flowers of *Polyanthuses*, including a finely-colored kind, also came from Mr. Candwell, Wantage, Berks. Messrs. Osborn & Sons showed a group of ornamental-leaved plants, consisting of *Palms*, *Yuccas*, *Crotons*, &c., intermixed with well-grown plants of *Imantophyllum minimum*. Mr. Aldous, South Kensington, sent a group of decorative plants, amongst which were beautifully-flowered examples of *Solomon's Seal*, *Mignonette*, *Lily of the Valley*, *Spiraea*, and similar plants. From the

Society's garden came a group of *Eucharis amazonica*, *Imantophyllum* Lady's slippers, and *Habenaria lauchiana*, the last a useful winter-flowering stove plant, not so much grown as it ought to be. Mr. Parr, The Gardens, Harrow Weald Park, sent well-grown plants of *Begonia glaucifolia* in baskets, a purpose for which it is admirably adapted. Mr. Mill, gardener to Lord Rendlesham, furnished out flowers of *Cattleya Skinneri* unusually well coloured. Mr. Iguldren, gardener to R. B. Wingfield Baker, Esq., Romford, contributed large trusses of flowers of *Spargannia africana*; also a dish of Tomatoes, which, considering the earliness of the season, were of first-rate quality.

**Manchester Horticultural Society.**—The first floral meeting for the year of the Royal Manchester Botanical and Horticultural Society was held on Wednesday last in the Town Hall, and, from every point of view, may be pronounced to have been a decided success. The principal flowering plants exhibited were Hyacinths, Primroses, Lilies of the Valley, Azaleas, and more especially a fine collection of Orchids. Chief amongst exhibitors was Mr. W. Leech, of Fallfield, who obtained the Society's gold medal for a miscellaneous collection of Orchids, in which a lovely specimen of *Dendrobium Wardianum* figured very conspicuously. The silver medal was awarded to Mr. J. Broome, of Didsbury, whose collection of decorative plants and Orchids attracted universal attention. Mr. B. S. Williams, of London, contributed a large and fine collection of Cyclamens (for which he received a special certificate) and a number of new and rare decorative plants, chiefly *Draconas* and Palms.

**IMPROVED FUMIGATING PAN.**

ALLOW me to direct attention to this fumigator, which has given me great satisfaction. I find that the saving of Tobacco which it effects more than pays its cost in a very short time. The Tobacco, too, is not so liable to break out into a flame as it does in some fumigators, which I have used, and it does not need the same amount of attention, as it keeps burning steadily till every particle is consumed. This fumigator I obtained from Messrs. James Dickson, of Chester, along with a sample of their Medicated Tobacco Paper, which I find to be far the best article I have yet met with for the destruction of thrips, greenfly, and other troublesome insects of a similar character. Indeed, both the paper and fumigator can thoroughly recommend. *Enville.* Geo. H. GREEN.



**Reed Mats for Protection.**—Mr. Barr uses these large and excellent mats for protecting his beds of seedling and half-hardy bulbs, and they seem to be the most efficient things in use for this purpose. They are made of the stems of the common Reed sewn together with strong tarred twine. They are between 7 ft. and 8 ft. wide and very strong. They must be very useful for throwing off hail or snow, being so strong, and they may also serve for shading. They are much in use in Holland, whence they were imported by Mr. Barr. They could of course be made in England from the same materials, which are abundant in many districts.—V.

**FLORA'S ANATHEMA.**

BLUFF March, may your Boreas bow cusses,  
 Confounding the legions of low cusses,  
 Who swarm in the Parks  
 For political larks,  
 And tread down my Tulips and Croucesses!  
 Rude Roughs! of respect have they got any?  
 Of patriot feeling they've not any,  
 Of taste they've no little,  
 And care just as little,  
 For Britain's true blessings as botany.  
 My turf they would ruin by stamping on,  
 My blossoms they glory in jumping on;  
 Each ead, coster, clown,  
 May Aquarius drown—  
 The brutes are fit only for pumping on!

Punch."

**HOW TO GET RID OF SLUGS.**

The long continuance of unusually mild weather has made slugs very active and destructive. I receive many enquiries from horticultural friends as to how they are to get rid of the slug pest, and could only advise the following our own practice of putting a collar of pierced zinc round especial favourites while in bloom, and spreading Cabbage leaves about, so as to present a powerful counter-attraction, and in the morning killing the slugs found still feeding. An old horticultural friend from Australia, while looking over my plants, described a plan followed by him with great success. It seemed so promising and desirable, that I asked him to give it me in writing, that it might be published for the benefit of the gardening world. I now send you his interesting letter, and should state that Mr. Carson was formerly President of the Horticultural Society of Victoria, and is a practical man, as well as an enthusiastic and successful horticulturist.

*Heatherbank, Weybridge Heath.* GEORGE F. WILSON.

The following is the letter alluded to:—  
*London, March 11th, 1878.*

To G. F. WILSON, Esq.

Dear Sir,—I have much pleasure in giving you the details of how we managed to overcome the slug pest. You can well imagine that when once introduced in the warm, moist autumn and winter of Victoria they became a plague that you can have nothing like in this climate. This, following on a perfect immunity from pests of all kinds, vegetable or animal (owing to our virgin soil), set many minds to work to try to overcome the new difficulties attending on horticultural pursuits. I well remember, when in the year 1849 a slug was brought to me in the house one evening, found in my small garden plot in town, that we were as pleased to see it as if it had been an old friend. It was carefully placed back at its feeding ground; but the following season matters had changed, and it was every night's work to pick them up in the house of Mr. Scott, nurseryman, found also of his garden, but whose nights were taken up with his duties in Parliament, offered his sons 3d. per dozen to gather and destroy them; he soon, however, reduced the price to that rate per hundred, but afterwards told me that it would ruin a bank to keep it going—so gave it up. Seedling plants of all sorts were eaten as soon as they appeared above ground; young trees round the collars, grafts at the junction, buds and young growths from them, especially of the Orange, were all eaten. This was the state of the slug nuisance, when, with a few others, I was engaged till far in a winter night in the house of Mr. Scott, nurseryman. He, without preparing a schedule for our spring show. Our work over and enjoying the hospitality of our friend, the slug question came in for discussion, when Mr. Scott said, "There is no difficulty in the matter; I soon dispose of them. Get some unslaked lime, let it slake by the air in a dry place, put a shovelful in a bag; take this in one hand and a stick in the other at nine to ten o'clock at night, walk round your garden paths, beating the bag, when the lime will come out and spread like a fine mist all over. A few nights of this work and you will not find many slugs, practice in a garden of 4 acres with complete success." In the Vine, fruit, and vegetable borders the ground was gone over twice the same evening, about half-an-hour apart, and used more freely than in the shrubbery and flower borders, a warm, moist night being preferred. In the beginning of the wet season the liming was done twice a week. Of course, care has to be taken not to make the cure worse than the disease. Tender plants, and those that dislike lime, must have none or only a homeopathic dose, and this is sufficient, as it is not the slug the length of the finger that is to be got rid of so much as the thousands only starting into existence. I have counted dozens on one leaf not one of them over 1 in. long. My mode of operation was to walk round before the men (who some nights buttoned old coats over themselves) with a good bright lantern, facing the wind. If we saw any large slugs on the path, the foot was put on them; and as they are great cannibals, if there were any more large ones near when we came round that night, or in the early morning after liming, numbers would be found unable to get away, or still eating their fallen companions. After a few operations of this kind, only the boundary and moist corners required an occasional dusting. An hour sufficed to get carefully over each acre. There should be no trace of lime seen in the morning, unless in places where it would not be objected to. I trust I have made the matter clear to you; the operation is simple, the results certain.

JOHN CARSON.

**Show Pelargoniums at Clapton.**—The thousands of Pelargoniums to be seen in Messrs. Low's nursery at Clapton, besides being interesting to look on, suggest many useful cultural hints. In many private establishments plants of what are termed show Pelargoniums struck from cuttings in summer are considered to be of little value as decorative subjects until late in the autumn of the following year, or in many cases until they have made two seasons growth. August-struck cuttings, grown on in the following March, make the handsome bushy specimens which may now be found here loaded with bloom-buds. The cuttings are struck in small pots, and when they have attained a height of 6 in. or so they are stopped, but not by merely nipping out the growing points; on the contrary, some 2 in. or more of the tops are cut off, which induces the plants to throw out three, four, and sometimes five strong and vigor-

ous shoots, which, as they grow, never fail to produce abundance of side branches, all of which yield clusters of blossom. After being stopped and again started into growth, they are potted into 5-in. or 6-in. pots, in which they are allowed to flower. The soil in which they are grown consists of ordinary turfy loam and manure, and stimulants in the way of liquid manure are applied. Their fine growth is, however, not so much due to these as to strict attention in giving them air, light, and water when most required. Grown in the way just described, Messrs. Low have thousands of plants of all varieties, dwarf and bushy, furnished with large green leaves, completely hiding the pots, and studded with plump clusters of bloom buds.—C. S.

**Caccinia glauca.**—This is a dwarf hardy perennial belonging to the Boraginaceae, from the highlands of Persia. It grows about 9 in. high, with sparingly branched, somewhat succulent stems clothed with ovate-oblong glaucous leaves, somewhat rough to the touch from stiff hairs, and bearing short terminal racemes of flowers, each about  $\frac{1}{2}$  in. in diameter with a rotate corolla, resembling in form that of *Borage*, pinkish when first expanding, but changing to blue. It is a neat border plant, which will interest the botanist and general lover of plants, but can hardly be termed a showy plant. The seeds, or to speak more correctly, the nuts are remarkable for their large size, being of flattened roundish form, nearly  $\frac{1}{2}$  in. across, and are studded at the margin with a double row of minute whitish tubercles.—W. THOMPSON, *Ipswich*.

**heasants Eating Yellow Crocuses.**—I can confirm what Mr. Haunbury states (see p. 228) respecting this matter from repeated observation. I made a new very long border of Crocuses, yellow, white, and blue. The yellow ones never progressed, and we thought that they were eaten by slugs. One day, however, we observed from the window one or two pheasants commence at one end of the "ribbon" and almost destroy the yellows, leaving the others untouched. What connection there is between colour and taste in such a case I know not, but there must be one, or the same thing would not take place season after season. Other birds are addicted to fruits and flowers of a certain colour, and abstain from all others.—JACKSON GILLBANKS.

— I see that one of your readers complains that pheasants destroy his Crocuses. The best way to preserve the roots is to plant them from 6 in. to 8 in. deep. This defies mice and pheasants, but the latter, besides taking the roots, eat off the flowers as fast as they appear above ground. This year the Crocuses were at first very beautiful in our wild garden, but when the pheasants discovered them they were very soon all eaten off. They seem to like yellow flowers best. For this evil there is no remedy but to net, and this is unightly and inconvenient, or to destroy or banish the birds from the place, and not allow them to breed near where the wild garden exists. Where pheasants are kept Dog's-tooth Violets also suffer. Any other flowers in the wild garden I am not yet aware they touch. Could they only be driven off by some one appointed to watch early in the mornings (for this is the time when most mischief is done) while the Crocuses last? I see no reason why pheasants should be banished from the wild garden, as I like to see them marching stately amongst the bushes and occasionally crossing one's path.—A. MACFARLANE, *Great Tew, Enstone*.

**Begonias as Basket Plants.**—At South Kensington, on Tuesday last, Mr. Parr, of Harrow Weald Park, Stanmore, showed a pair of handsome plants of *Begonia glaucifolia* grown in wire baskets. They were the produce of cuttings struck last spring, potted into 5-in. pots in peat and leaf-soil, and afterwards turned out of the pots into the baskets. The shoots were stopped several times to induce them to branch and grow closely, and being pegged round the baskets the young shoots took root, and being kept well supplied with water and occasional doses of Stauden's manure, they became balls of glossy green leaves, interspersed with a profusion of salmon-coloured blossoms. Thus grown, they are desirable objects for either room or conservatory decoration. Other kinds of Begonias might doubtless be used in a similar way with equally good results, and now there are so many fine kinds in cultivation, effective basket plants may easily be secured.—C. S.

**Camellias in the Open Air.**—I am obliged to "A. D." for his observations (see p. 197) on Camellias in the open air, but I think he must have misapprehended my meaning, which I fear was somewhat obscure. What I intended to convey was, that although the Camellia will, in all respects, thrive in the open air, yet our variable spring climate often so damages the bloom that it is only in an exceptionally fine season that the flowers are enabled to assume and retain that perfection which a glass roof insures them. There is hardly a flower so delicate in texture and so susceptible of injury as that of the Camellia, and, as "Cambrian" says (p. 239), "rain blanches the blossoms," a fact which exactly coincides with my experience. I have seen a large collection in full flower which in a

few hours were so bruised by a heavy shower, that not a single perfect flower remained. It is owing to this uncertainty that I have hitherto considered the Camellia to be an unsatisfactory flowering shrub for outdoor culture. I speak, however, only from my own experience, and should be sorry to damp the ardour of those who might like to experimentise thereon. If planted in sheltered situations, where they could be insured protection from high winds and driving rain during the flowering period (and all engaged in horticultural pursuits know how seldom we escape such visitations in the spring time), there would be a better prospect of preserving their blooms in perfection, but planting in open, exposed situations I consider a mistake.—J. CORNHILL, *Byfleet*.

**The Poet's Narcissus.**—The beautiful Pheasant's-eye Narcissus so sweetly scented and useful for bouquets, is now being used in quantities in Covent Garden market. They come chiefly from the Channel Islands. Few places in England would produce flowers so early out-of-doors, but if grown in large pots and placed in a cool house they would make charming plants for the conservatory, or a good supply of cut bloom might be had from bulbs planted in a frame. If light, rich, sandy soil be used for them, and they receive plenty of light and air, stout well-formed blossoms will be the result.

**Popularity of the Auricula.**—A short time since a sale by auction of the extensive collection of Auriculas belonging to the late Mr. Samuel Cooper took place in Manchester, and the prices realised were something remarkable. The large plants were put up in lots of sixes, and the smaller ones in lots of twelve, and those that contained a crack flower induced a vigorous competition. One lot, containing a plant of that fine and scarce, and yet imperfect green edge, Prince of Greens, imperfect because of the want of life in the tube, and five others of ordinary reputation, fetched £2 10s., so great was the desire to obtain this particular plant. The desire to obtain the finest flowers was manifested by young beginners as well as by veterans, thus showing that the desire to grow this fine flower is spreading. One result of the sale has been to induce a Manchester Auricula dealer to advance his prices "all along the line." Those who possess a few fine and scarce varieties can bear testimony to the fact that they are constantly receiving applications for them, applications which cannot be entertained for some time to come.—D.

## ANSWERS TO CORRESPONDENTS.

**Blight and Insects on Rose Trees.**—What is the best thing I can do in order to get rid of blight and insects on Rose trees under glass? I have tried Tobacco cloth burnt, but with poor results.—J. K. T. [Thorough fumigation with Tobacco paper is the most effectual remedy for aphides, which are the insects that generally attack Roses, they should be fumigated two or three nights in succession, as one dose only supplies them. We presume the blight you mention is mildew; if, indeed, flowers of sulphur sprinkled over the affected parts will arrest it; but if badly affected, dip them in a strong solution of soft-soap water and repeat the application if necessary.—W.]

**Weeds on Lawns.**—Can you recommend me any mode of killing Plantains on a lawn?—F. T. [By far the most effectual way of clearing lawns of Plantains is to uproot them with a sharp-pointed knife. An active boy will soon clear a large piece of ground. After that fill up the holes with soil in which lawn Grass seeds have been mixed. If the operation be done at once, a fine turf will be insured by the end of May. Sulphuric acid is also a good remedy; a drop applied to the crown of each plant soon withers them up; then fill up the holes with Grass seeds as just recommended.—H.]

**Heating Small Greenhouses.**—I have a small greenhouse, 14 ft. by 10 ft. 10 in., which I wish to keep just free from frost, and I would like to use a terra cotta stove, to burn paraffin oil, for this purpose. What sized stove would be best?—E. [One of Roberts' 50s. Terra-Cotta Stoves would furnish heat enough for your purpose.]

**Lichen-cover'd Apple Trees.**—I have just taken a house where the Apple and Pear trees are covered to the tips of the smallest branches with Lichen. Is there any new mode of treating them? or new dressing which will remove this pest? They are too bad for scraping.—B. A. F. [Try sulphur, softsoap, and quicklime all well mixed together and heated in a boiler. When cooled to a temperature to be handled, distribute it all over the trees and branches with a garden engine or syringe. This mixture keeps mildew on Peach and Nectarine trees on walls in check, and doubtless it would help to destroy Lichen on Pear and Apple trees. If newly elsked quicklime were likewise dusted over the trees before vegetation commenced, it might have some effect in destroying the Lichen.—W. T.]

**Moss on Lawns.**—What is the best way of clearing Moss from lawn tennis grounds? I have heard heavily manuring is a good plan, but have not tried it.—T. B. A. [With a sharp-pointed rake loosen the surface of the lawn, scratching out all the Moss that will come off without destroying the turf; then spread over the surface the following compost:—Two one cart-load of loam, or ordinary garden soil, add 3 bushels of soot, 6 bushels of wood-ashes, and  $\frac{1}{2}$  a bushel of bone-dust; mix with the whole about 4 lbs. of lawn Grass seeds, roll the lawn frequently and especially after rain; a fine turf without Moss will be the result.—W.]

No. 332.]

SATURDAY, MARCH 30, 1876.

[Vol. XLII.]

"This is an art  
Which does mend Nature: change it rather: but  
THE ART ITSELF IS NATURE."—*Shakespeare.*

### AMONGST THE DISAS.

BEFORE leaving England I determined that one of the first things to be done on reaching Capetown was to see *Disa grandiflora* in its native habitat, and on arriving my desire was intensified by seeing a bunch of its blooms, thus showing that it was the season for seeing it in flower. I immediately made inquiries about the ascent of Table Mountain, but experienced some difficulty in finding a guide, and what with business preventing me some days, and the weather being unsuitable on others, as it is dangerous to go up when the cloud, called here the Tablecloth, is hanging on the mountain, nearly three weeks passed by before my wish was gratified. The party I had expected to go up with failed me, but I was fortunate enough to make the acquaintance of Mr. Charles Ayres, who used to be in the gardens at Cliveden, but who is now established here in the nursery business. When he heard my wishes he most kindly offered, although at considerable inconvenience to himself, to accompany me, an offer which I readily accepted. As the weather looked promising, one Friday night we arranged to go up the next day, and accordingly at four o'clock on the Saturday morning I was at his garden, when we soon had everything ready, not forgetting a supply of Grapes, and a few minutes before five found us on our way. We crossed the Kloof, which is a spur of the mountain, the ocean below us, dotted with fishing-boats, looking glorious in the early daylight, and ascended by Kastell Berg, passing on our way a large number of *Amaryllis Belladonna*, which were just throwing up their flower-spikes. About two hours and a quarter brought us to the plateau in rear of Table Mountain proper, and my aneroid barometer showed that we had attained an altitude of 2700 ft. We had not proceeded 300 ft. before we perceived the bright-red spikes of *Disa ferruginea*, and almost at the same moment that charming flower, *Herschelia celestis*, called here the Blue *Disa*, met our view. Less than a quarter of a mile brought us amongst quantities of *Disa grandiflora*, and well may Harvey term it "the pride of Table Mountain," for it would be difficult to find a handsomer or showier flower, and when you see a dozen or fifteen of its brilliant-coloured blooms clustered together it is a sight not readily to be forgotten. The intensity of colour exceeds that of any wild flower I have ever seen, the Snow Plant of California, with its rich colour contrasting with the spotless snow, excepted. *D. grandiflora* grows most plentifully on the sides of the narrow watercourses which intersect the plateau, the sides, as a rule, being nearly upright, although we saw numbers on the face of large rocks where water was trickling down. The soil it grows in is a sandy peat, and it may almost be said to grow in the water, the soil being so wet; and as this is the driest month here, it is clear that the roots are always in wet soil, and I believe they never rest, as examination showed that even now they were pushing forth new growth. *D. ferruginea* and *H. celestis* both like damp spots, but not so wet as *D. grandiflora*; these two species do not appear to grow in masses as *D. grandiflora* does. There were several other terrestrial Orchids in bloom, and also that parasitical plant, *Harveya capensis*, the bloom of which is both large and handsome. The showiest flower was *Crassula coccinea*, some of the blooms we gathered being of an immense size. *Watsonia humilis* was very plentiful, but the blooms had passed; indeed, the seed was ripe, but of a tall species some blooms were left. A fortnight ago they must have been well worth seeing, as the flower is very handsome, and it grows in great profusion. *Agapanthus minor* was plentiful, and I saw one root which must have been *A. umbellatus*. Heaths and Geraniums were not in season, although occasionally we came across a flower. Having decided to return down the front of the mountain by way of Table Poort, we struck across, ascending to 3450 ft., when we came on the Table, and found we had been fortu-

nate enough to steer exactly to the Poort, and Capetown and Table Bay were stretched out right below us. The descent was by a worse path than the one we had ascended by, being steeper, and there being much loose stones to go over; but a little over two hours took us down, and we reached the town a little after three o'clock, after a thoroughly enjoyable day. I had thought of going up without a guide, but with my present knowledge I would recommend no one to attempt it, for even if he was fortunate, as we were, and had no cloud come over (when you cannot see a yard before you, and sometimes the cloud remains for days), he would find it difficult to traverse that large, dreary wild with but little by which to get his bearings.

HENRY BUCKLEY.

*Capetown.*

### HOW TO GET RID OF SLUGS.

I HOPE the plan of destroying these, recommended by Mr. G. F. Wilson (see p. 273), will be fairly tried and found successful, but I very much doubt if it will in this country, as the following instance will show. The worst garden for slugs which I ever saw or heard of was Dramlanrig. It was hardly possible to get annuals and young crops through the ground for them, so destructive were they. I have seen several long beds of newly-planted Lettuces and such like nearly destroyed in one or two nights, in spite of liming. Liming was a great institution about that time, and they were provided with long gowns made of sackcloth (!) that buttoned up to their necks and came down to their heels, like a modern "Ulster." The lime was elaked in the way Mr. Wilson recommends, but was scattered by the hand, and it was distributed in sufficient quantity not only to produce "a fine mist all over," but to whiten the ground, and the work was done quite frequently throughout the summer, and sometimes every evening, and the practice had been continued for many years, but only with this result, that it checked the ravages of the slugs at the time, if persistently continued, and that was all. If a night or two was missed they were just as bad as ever. I am afraid to state how much lime was spent on that garden, but I know there was always a shed kept full for the purpose, and it was used annually. The fact of the matter is, the lime must reach the slug if it is to kill it, and this it cannot do, dust as you may, in a garden where there is a variety of crops under which the slugs can shelter from the lime. The least little bit of a clod or a leaf is quite sufficient to protect the enemy till the lime storm settles and the lime gets moistened by lying on the ground, and then the slugs tramp over it with impunity.

J. S. W.

— The first garden of which I took charge was an old one fairly overrun with slugs and worms; all kinds of green vegetables were so much eaten, as to be almost unfit for use, and Potatoes were full of worm holes. In order to get rid of such pests I proposed to turn in some young ducks, to which at first some objection was made, but afterwards that plan was tried. Early in February I procured some duck's eggs and three Cochon-China hens, and by the end of March I had some twenty young ducks. I at once turned them into the garden, with one hen to take care of them for the first week or so, after which the hen was dispensed with, and arrangements were made for the ducks to get into the garden as early as they thought fit to turn out. The result was that they soon cleared every corner from both slugs and worms, for as soon as the men began to dig, they watched every spadeful that was turned over for worms, and by the time the first Peas were ready for table the ducks were already ready, and not a slug was to be seen.

JAMES SMITH.

*Waterdale.*

— Mr. Wilson's recommendation in reference to destroying slugs reads wonderfully like a good joke. Take, for example, the four acres carefully gone over in an hour. Why, it takes a man and two horses a good working day to plough an acre of ground; and to have the slightest chance of puffing lime into the eyes, mouth, or on to the backs of slugs, large or small, when feeding it would be necessary to walk over the ground pretty closely, rendering four acres an hour utterly out of the question. But there are other practical objections to the lime-puff cure which will occur to those most familiar with such matters. Unfortunately, quicklime beaten through a bag with a stick has almost as strong a tendency to rise into the air as to fall to the ground, and the result of the ascent of fine lime dust into the mouth and nostrils would, to say the least of it, be unpleasant. The Victorian slugs must be much more thin-skinned than ours if they can be cleared off by any such easy and simple process as that described by Mr. Carson. Lime will undoubtedly kill slugs, but an hour for a square pole under crop is more like the true time needful than an hour for four acres. Several

applications are also needed; and though the lime, to be effective, can neither be too hot, too fine, nor too dry, and the mere quantity is of less moment than these qualities, yet something more than a fine mist is needed to deal death to British slugs, as I can testify after a thirty years' war against them, and the expensiveness of not a few childrens of the hottest lime upon them.

D. T. FISHER.

— Mr. Wilson's Australian friend's method of destroying slugs by shaking slaked lime on them through a bag is only a roundabout and less effectual way than that which I have practised for a very long time, details of which appeared in *THE GARDEN* some time ago in the series of papers I contributed upon the destruction of insect pests. My method simply consists of sowing by hand air-slaked lime broadcast over the ground and whatever crops are on it. I have resorted to the bag-beating plan, it would have occupied four times the amount of time—an operation which is by no means so pleasant as to lead anyone to wish to prolong it longer than could be avoided; and, unless the material of which the bag is made is so open as to let the lime through it too fast, it would require an immense amount of beating with the stick to distribute enough to kill the pests is question, as anyone trying it will soon discover, for if only a slight dusting reaches them, they will in two or three minutes throw off their slinky jackets slightly dusted. When I first set about the work I converted a large tin canister into a dredging-box by perforating it with small holes, but I very soon found that I could distribute the lime by hand much more effectually, and get over the ground four times as quickly with much more certainty of the remedy being thoroughly applied. One good dressing given at a well-chosen time will effect the destruction of more slugs than trapping and hand-picking daily for months. It is, however, necessary for those who try such work to be well acquainted with the habits of the slugs, and the kind of weather that brings them out in the greatest numbers. T. BAINES.

#### IRIS RETICULATA, KRELAGEI, AND HISTRIO.

ALLOW me to make a few remarks about these beautiful Irises, to which allusion has lately been made in *THE GARDEN*. Here in Holland was first known, under the name of *I. reticulata*, the form which is now registered as *I. Krelagei*. This Iris, being cultivated only on a small scale, was lost from collections; in later years small quantities of bulbs were re-introduced. This form was figured as *I. reticulata* in the "Botanical Cabinet," in Sweet's "British Flower Garden," in the "Journal of the Horticultural Society," and in the "Gartenflora," but it is quite different from the original *I. reticulata*, as described by Marschal von Bieberstein. This true form was grown in a few places in Europe from seed, and some years ago our firm got a large stock of it and sent many thousands of it to England. I drew Prof. Regel's attention to the difference between the two forms, and sent him plants of both for examination. Prof. Regel kept the name *I. reticulata* for the original form of Bieberstein, and had the courtesy to affix my name to the other form, erroneously described as *I. reticulata*. A third form was described by Prof. Regel as *I. reticulata cyanea*, which is the well-known *I. Histrio*. All these Irises are exceedingly ornamental. As to their time of flowering, however, with us, the first is *I. Histrio*, then *I. reticulata*, and lastly *Krelagei*. We cultivate all three forms in the open ground in a well-protected position, and in winter we cover them with leaves. M. Max Leichtlin, in the last number of *THE GARDEN*, describes *I. Krelagei* as being a fortnight earlier than the typical form. Here, where it is cultivated in abundance in our garden for several years, just the opposite is the case; but as there are different strains of *Krelagei* as well as of the typical form, and as with newly-introduced bulbs the time of flowering is influenced by their removal to a new country, the difference of time of flowering of *Krelagei* at Baden-Baden and Haarlem may be occasioned by such circumstances. Newly-introduced bulbs here usually flower earlier than those cultivated some years. *I. Histrio* blossomed in our garden for the first time on January 17, 1874, just when it was in bloom at Kew, but it never flowered again so early. In the present very early season it was only in flower at the latter end of January. *I. reticulata* at present is nearly over, while *I. Krelagei* is yet in full bloom. *I. Krelagei* grows much dwarfer than *reticulata*. *I. Histrio*, although with us not so tall as when first introduced, grows like the typical form of *reticulata*. If bulbs remain undisturbed in the ground their growth the second year may be taller and their flowering earlier than when they are taken up annually. For horticultural purposes the type and *I. Histrio* are the best. The type, with its fine blue colour and delicious scent, cannot fail to be valuable as a winter-flowering bulb for indoor decoration. *I. Histrio*, which has a very delicate scent, would be equally useful, but it is yet too scarce for ordinary purposes. If good bulbs be planted their growth in pots is not difficult, but to grow

them in masses in the garden seems not to be so easy; at least, several growers have lost in one year large stocks of it through disease. This must be considered the only reason that these plants are not more generally cultivated than they are. Among varieties of *Krelagei* there are several very fine ones, while in others there is less beauty; but of these the stock here, at least, is very limited. Sowing and re-sowing all the forms of *I. reticulata* would be highly desirable, as a greater number of varieties would be very acceptable. There is a striking difference in the form of the bulbs of the three sorts just adverted to.

J. H. KRELAGE.

Haarlem, Holland.

#### CAMPANULA MEDIUM AND ITS VARIETIES.

NOW is the best time to sow seed of this biennial if it be desired to secure large massive plants that will produce several spikes of flowers, and display the beauties of one of our finest hardy border plants to the best advantage. The seed is small, and may, if plentiful, be sown in a warm spot in the open ground, but it is much safer to sow it in shallow pans or boxes placed in a frame or on a shelf in the greenhouse, as in the latter case all the seed will probably germinate and an abundance of plants be secured. When these are large enough to handle conveniently, prick them out into some shady spot, and keep them watered until the plants are well rooted. From that time they may safely be left to take care of themselves until September, when they should be transplanted into their permanent places in the flower borders, and so treated will not only get well established before the winter arrives, but will also develop their blooming crowns for the next year. This constitutes nearly all that it is needful to say as to the raising of a seedling stock of these Campanulas, better known as Canterbury Bells. They may be classed into three sections—single flowers, as seen in the old-fashioned single Bells; doubles, as found in the stout massive flowers in which two, three, and even four bells seem to be compressed into the outer one; and duplex flowers, as seen in the calycanthems forms, in which one bell grows in the other, and the combined two resemble a cup standing in a saucer. The single varieties, as of old, are still to be had, but no one would care to be dependent upon these only who have once seen the beautiful products of a fine modern double and semi-double strain, and which will also produce some single flowers. Whilst the old single strains comprised only white and blue colours, the modern strains include nearly a score of hues, inclusive of white, lavender, mauve, several shades of purple, pink, rose, salmon, and also blue. The duplex strains have hitherto been chiefly confined to white and blue, but other colours are now being introduced. It is a curious fact in relation to this section that whilst the seed of the white form is of a pale hue and the seed of the blue form is of a dark tint, the seed of the double and semi-double forms of all colours is the same, viz., a glossy brown. The habit of the latter section is compact and good, the plants when in bloom ranging from 18 in. to 24 in. in height, forming perfect pyramids of flowers. From frequent experience I have found that these may be lifted and placed in pots even when in full bloom without injury, and as they invariably flower from the middle of June to the middle of July, according to place and season, it would be possible, in the shape of a large group of these in pots, to introduce to some of the midsummer shows a very novel and interesting feature. If so required, or if to be used for corridor, house, or conservatory decoration, it would be best to lift the plants and pot them into 6 in. pots early in May; this would enable them to get well established before the blooming period. The calycanthema section usually exhibits both a taller and a looser growth, and should be planted in borders behind the double and single kinds.

A. D.

**Myosotis rupicola.**—This is undoubtedly a gem on rockwork, but it must not be regarded as useful for spring bedding. It is deciduous, and, unless its place be carefully marked, it is in danger of being destroyed during the winter. It is hardy, but can hardly be termed robust. Its flower-stalks reach to an height of from 3 in. to 4 in.; its flowers are small, but of a deep rich blue. I have grown it here in pots, but cannot get it to winter well. *Myosotis distillifera* has been in flower in the open ground for the past three weeks; when raised from seed it is, without exception, the earliest and most effective of all the Forget-me-nots.—A. D., Bedford.

**Machine-made Seed Boxes.**—A machine for constructing boxes, made of strong paper, exhibited at the United States Centennial Exhibition, is estimated by the United States Commissioner of Agriculture as able to save from £1000 to £1400 a year in the cost of putting up seeds for distribution from his department.

## NOTES OF THE WEEK.

**A Dublin Square.**—We regret to learn that the plans for Stephen's Green include a "geometrical parterre," "fontaine," and "a sheet of water," all of which are wholly needless in such a position, and can only tend to make all simple and beautiful design impossible in the square—already very fine, and wanting no "design" of the kind above specified.

**New Arctic Saxifrage.**—The Whipcord Saxifrage (*S. flagellaris*), a native of Arctic America, is now in bloom at the York Nurseries. It forms dense rosettes, resembling those of *Draba cuspidata*, of obovate, glaucous leaves of thick texture, beautifully ciliated with spiny teeth, or strong, viscid, glandular hairs. The whole surface looks "frosted" to a larger or smaller extent. Flowers solitary at present (sp. bears one to five flowers on the stalk), rather large, bright yellow, spotted at the base of the petals with orange, in the style of *S. Hirculus*. From the axils of the leaves slender stolons, 1½ in. to 2½ in. long, are emitted in all directions, which root again at the extremities and produce fresh rosettes. An interesting addition to our Alpine rarities.—J. BACKHOUSE, York.

**Puschkinias.**—These very beautiful hardy bulbs flower in February and March. *P. scilloides* is the earliest, being generally in bloom before the others show themselves above ground. It is much weaker in its style of growth than *P. libanotica* and *P. libanotica compacta*, and produces fewer flowers on a spike. *P. libanotica* is the next to bloom, and is a very pretty plant; but the most showy is *P. libanotica compacta*, which, when plentiful enough, will be in every garden; it is, I think, the most fascinating of all the spring bulbs. They all seed pretty freely, and arrive at blooming size in about four years. Those who grow them should look carefully after the seeds, and sow them as soon as ripe, either in pots or in the open border.—J. G. N.

**Tropaeolum Screens.**—A very effective way of growing *Tropaeolum* is practised in Messrs. Henderson's nursery, at Pine-apple Place. The plants are grown in pots placed against iron pillars on each side of the pathway; two wires are fixed across the rafters behind the pillars close to the glass, and along these the plants are trained, their lateral shoots being allowed to droop down, and thus form curtains of greenery intermixed with brilliant scarlet blossoms. When these shoots get too long they are looped up to the wires, and are thus kept within bounds. Besides forming an effective feature during the winter months, such plants afford abundance of bloom for cutting. The plants must, however, be grown in pots (the roots being allowed to run through the bottom if desirable) or rank growth and few flowers will be the result. The kinds grown here are *T. Lobbianum* and *T. Lobbianum splendendum*. The latter is considered the best; its flowers are much brighter, and are produced, if possible, in greater profusion than those of *Lobbianum*.

**Anthuriums at Anserley.**—When grown in small pots the scarlet-flowered *Anthurium Scherzerianum* is much more useful for decorative purposes than in the shape of large plants. Grown in 4-in. pots, there are just now hundreds of plants in flower in Mr. Wills' nursery, at Anserley, where, arranged on the side stage of one of the houses, they form quite a bank of bright scarlet spathes. The flowers do not, of course, come so large on plants grown in small pots, but they are more useful and quite as effective. In order to get small plants to flower freely, they require to be kept in a moderately cool temperature, and rather dry at the roots in autumn; and when introduced into a brisk heat in winter, and well supplied with water, small plants, such as we find here, bear four, five, and sometimes six waxy, scarlet spathes. Soil of a very sandy character is used for them, and for decorative purposes they rank among the most important of small-flowering plants grown at this nursery.

**The International Exhibition at Ghent.**—This begins to-day (March 30), and will, it is expected, prove a very interesting exhibition, though of a type of which we have already had many examples. It is a great mistake to hold these international exhibitions at this inclement time of year, simply because a few families of pot *Azaleas* and other plants are in flower, and when neither kitchen garden, market garden, fruit or flower garden, park, or even the country itself, can be seen with profit. So far as this country is concerned, the weather at so early a date is always such as to deter private growers from contributing in such a way (if at all) as to reflect the horticultural capabilities of this country. Such is not, however, the case with nurserymen, whose enterprise prompts them, even in such pinching cold as we are now having, to subject the most rare and valuable plants to the uncertainty of a long journey. Mr. Bull is sending a fine collection of his newest introductions, many of which have attained a size sufficient to exemplify their natural beauties. Mr. Williams also furnishes a miscellaneous collection, comprising his six new *Dracaenas*, shortly to be offered to the public,

including the very handsome *D. Bausei*; half-a-dozen new *Crotons*; numerous scarce new *Palms* and *Cycads*; numbers of *Orchids* in flower, consisting of *Odontoglossums*—amongst which is the beautiful *O. cirrhosum*, bearing six spikes—numerous *Dendrobiums* (comprising the lovely *D. crassinode* and *D. Wardianum*), *Cypripediums*, and *Masdevallias*. Along with these are also the exquisite blue-flowered *Tillandsia Lindeni*, and 100 beautifully-bloomed plants of *Cyclamen giganteum*, than which nothing, we predict, in the whole exhibition will have a more chaste or effective appearance.—B.

**Cinerarias at Dulwich.**—The *Cinerarias*, of which there is a large collection in Messrs. F. & A. Smith's nursery, at Dulwich, are now at their best. In size and form the flowers are perfect, and while some are self-coloured, varying from rich purple to the most delicate lavender or violet, others have dark centres encircled with white, and beautifully edged with purple, magenta, or rose. Such results are only obtained through careful annual selection of the best kinds for seed and hybridization.

**Cereus MacDonaldis.**—Last week we called attention to a fine crimson-flowered *Cereus* at Kew under the above name. That, however, is not correct, for *C. MacDonaldis* is a night-flowering species, with very large white flowers. The red one is the plant known in gardens under the name of *C. Mallisoni*.

**The Green Park.**—A considerable depth of soil is now being heaped over a portion of the Green Park where there are many trees. As a good many trees died in the Regent's Park some time ago from a similar deposit of soil, this is, perhaps, a doubtful practice. From a landscape point of view, it is also very doubtful if it be well to interfere with such natural and not unpleasing undulations as occur in the Green Park near Piccadilly.

**Dracena Mrs. Wills.**—For decorative purposes generally this is one of the best of the many *Dracaenas* which have been raised during the last few years. It is dwarf and graceful in habit, its leaves are green, elegantly striped with creamy-yellow, and, in point of hardiness, it is unequalled. As a companion to it *Elizabethi* may be used with advantage; its habit is similar, and its leaves are bronze and scarlet or crimson.

**Cycas circinalis glauca.**—This is one of the best of the *Cycads* for conservatory decoration. It has upright, glaucous fronds, which are easily kept free from insects, and at all times of the year, either in large or small plants, possess a lively and ornamental appearance. We saw specimens of it in Mr. Ley's nursery, at Croydon, furnished with fronds from 8 ft. to 9 ft. long.

**Dendrobium Ainsworthianum.**—This, one of the rarest and most beautiful of the family to which it belongs, is now in flower in Mr. Bull's nursery, at Chelsea. Its blossoms, which are borne on well-matured pseudo-bulbs, have petals and sepals of the purest white, forming a striking contrast to the lively purple lip, which has a distinct margin of soft cream colour.

**Aletis fragrans.**—The value of this plant for purposes of decoration is well understood by Mr. Wills, who grows as many plants of it as can be secured. Its broad, soft green leaves, which have a gracefully drooping habit, render it one of the best plants which can be used for room or dinner-table decoration. When in flower its value is increased, for the small, white blossoms, which are produced in whorls on stiff stalks, possess a strong scent, one small plant being sufficient in the evening to scent a large house. The flowers open in succession, and its period of blooming is thereby considerably prolonged.

**Orchids at Chelsea.**—There is just now a good display of *Orchids* in flower in Mr. Bull's nursery, at Chelsea. Conspicuous among them are well-flowered plants of the hardy *Lady's-slipper* (*Cypripedium spectabile* and *C. aculeatum*). When grown in heat the former variety bears flowers with snow-white petals, and the lip is much more delicate in colour than in the case of flowers produced in the open air. Associated with these are finely-flowered examples of *Dendrobium Devonianum*, *D. nobile Wallichi*, some fine varieties of *D. Wardianum* and *D. crassinode Barberianum*. The beautiful *Cattleya citrina* bears large, drooping, sweetly-scented, golden blossoms, which form an effective contrast to the showy flowers of *C. Trianae splendens*, *Odontoglossum Roezli* and its white variety. A plant of the curious chocolate-coloured *Masdevallia trochilus* is also in flower here, likewise a brilliant purple-flowered *Masdevallia* named *Harryana caruleascens*. *Oncidium sarodes* bears branching spikes of showy, crimson-golden edged blossoms, and *Ada aurantiaca* is furnished with graceful racemes of orange-scarlet, wax-like flowers.

**The Blue Polyanthus.**—Mr. Ambrose Balfie sends us a good specimen of this interesting plant from Dublin. It occurs, he says, in Irish gardens occasionally, but is far from common. "The 'blue,'" like that of other flowers to which the term is applied "by courtesy," is not quite true, but yet almost enough so to justify the name.

## NOTES FROM KEW.

**Hardy Shrubs and Herbaceous Plants.**—Foremost in beauty amongst trees and shrubs in the open air is the Yulan, *Magnolia conspicua*, which is covered with its large white flowers. Although rarely deserving to be called a tree in this country, in its native one—China—it attains a height of from 40 ft. to 50 ft. *Prunus (Amygdalopsis) triloba*, from Japan, makes a very handsome wall plant and produces flowers much more abundantly, larger, and richer in colour than when treated as a bush in the ordinary shrubbery; the buds are deep red, the fully expanded flowers rose coloured. If the wood be well ripened this forces well. A Chinese Quince, *Cydonia sinensis*, has fine large pink flowers, which are, however, not produced in sufficient numbers to warrant a recommendation of the species for general cultivation. *Discaria longispina* is a very remarkable and peculiar Rhamnaceous bush from Monte Video. The leaves (when present) are small and inconspicuous; the opposite, secondary branches are abortive and reduced to smooth, strong spines about 2 in. in length; the small, white tubular flowers, which present no special attraction, are produced in short racemes. *Xiphon caucasicum*, from the Caucasus and Northern Persia, is a pretty dwarf Iris with yellow flowers. A relation of this, more curious, perhaps, than pretty, but still worth a place in any flower border, is the Snake's-head Iris, *Hemodactylus tuberosus*, or, as it is sometimes called, *Iris tuberosa*, from Southern Europe; the long, four-angled, somewhat glaucous leaves considerably overtop the flowering stems with their strange black and green velvety flowers. *Mossari Heldreichi*, from Greece, is one of the most beautiful of the Grape Hyacinths; just the tips of its short, bell-shaped flowers are white, the remaining portions being a most brilliant blue. *Primula viscosa*, a very handsome Auricula-like Primrose, has purplish-red flowers and green—not nearly—leaves. A variety of the European *Corydalis tuberosa*, with its prettily-cut leaves and bold white flowers, is very striking; this has long been an inmate of our English gardens, as it is recorded to have been introduced in 1596. *Hypoxis orientalis*, from the Caucasus, is a very desirable perennial Herbaceous, with short stems and lilac-purple flowers. *Physoclaina physaloides*, a native of Siberia, is a near ally of the last-named, which it much resembles. Both are well worth growing because of their flowering so early in the season. *Leucium pulchellum* is a pretty Snowflake, with long, dark green, shining leaves and tall scapes, bearing couples of fine Snowdrop-like flowers. *Fritillaria tenella*, from Eastern Europe, has graceful, narrow, glaucous leaves and drooping flowers, purplish-red on the outer surface, veined and splashed with green and yellow on the inner. *F. glaucescens* has broader leaves and dull flowers, somewhat similar to those of the preceding species. *Anemone apennina* is one of the best of the Windflowers for general cultivation, as it seems to thrive and freely produce its charming blue flowers in any soil or situation. *Puschkinia scicula* is larger in all its parts than the pretty little *P. scilloides* mentioned in last week's "Notes from Kew"; the flowers are borne in racemes and are white, faintly veined with blue. With the exception of the common Daffodil—*Narcissus pseudo-Narcissus*—and some species which have been previously noted, the only *Narcissi* at present in flower in the Kew collection are *N. odorus* and its variety *latus* from Southern Europe.

**Greenhouse Plants.**—*Acacia pubescens* is a very graceful Australian species with light green bi-pinnate leaves and panicles of light yellow flowers. *Babianna stricta*, a bulbous Irid from the Cape of Good Hope, is a charming little plant with lavender-blue flowers, the basal portion of the six floral leaflets forming an eye which is two or three shades deeper than the blue of the other parts of the flower. *Eutaxia myrtifolia*, from Australia, is a very pleasing member of the Pea family; its slender stems are thickly covered with its orange-yellow flowers. *Gnidia pinifolia* makes a very pretty bush with its slight stems clothed with small Pine-like leaves and terminal heads of yellowish-white, fragrant flowers. *Adenandra fragrans* makes a very neat pot plant; its flowers are somewhat smaller than those of *A. umbellata* noted in THE GARDEN a week or two ago, but their beautiful rosy-pink colour more than makes up for lack of size.

**Stove Plants.**—*Rudges macrophylla*, a native of the neighbourhood of Rio de Janeiro, is a magnificent Rubiaceoens shrub with large, leathery, glossy leaves, and dense, nearly globular, heads of large, wax-like, white flowers; it deserves to be grown in every collection of choice stove plants. One of the most desirable of stove twiners is *Petraea volubilis*, from Vera Cruz; the large flowers of a peculiar purple colour are borne on long graceful racemes. For a coloured plate of this handsome shrub, and for full cultural details, see THE GARDEN for July 14, 1877. *Cyclonema myricoides* is a pretty bush from Abyssinia; its blue and white flowers are produced in abundance, but the disagreeable odour exhaled by the foliage—

very similar to the fetid smell given off by the bruised leaves of the Hedge Woundwort (*Stachys sylvatica*) of our own woods and copses—tends to confine this Verbenaceous purple to the botanic garden. A very lovely climber is *Bignonia purpurea*, from Tropical America; the upper part of the throat of the large trumpet-shaped flowers is white, the other portion, and all the limb, being suffused with rose, veined and striped with reddish-violet. *Burchellia capensis*, from South Africa, is a neat-habited little bush belonging to the same family as the first-named of this week's stove plants; the handsome scarlet flowers are borne in clusters at the ends of the short branches. An East Indian herbaceous perennial, *Monolophus elegans*, has large showy white and purple flowers borne on short stalks; the leaves develop some weeks after the flowers have withered. It is a member of the Ginger family, and an uncommon-looking and pretty plant.

**Orchids.**—There are but few noteworthy Orchids this week that *Cypripedium spectabile*, a hardy species from North America, forces well is evident from the fine pan now in flower at Kew; the light green leaves set off splendidly the large white and rose-coloured flowers. *Dendrobium Jenkensi* is a most charming Orchid; the creeping stems and short one-leaved pseudo-bulbs closely embrace the piece of wood on which it grows; the large yellow flowers are borne in panicles on rather long drooping stalks. It is a native of the East Indies. *D. litiflorum* belongs to the same section as *D. nobile*, and differs from it in its decided somewhat trumpet-shaped lip; the coloration of both is very similar.—†.

## RAISING CINERARIAS.

CINERARIAS are now in full flower. The new strains originated by Messrs. Standish & Co., James, and others possess one or two good qualities, viz., a dwarf, close, robust habit, and fine, symmetrical heads of bloom; the flowers also are large, bold, and striking in colour. Plenty of air is now necessary, except when the wind is cold; then it must not be allowed to play directly on the plants. If it be in the south or south-west, air may be given abundantly. The great disadvantage of growing *Cinerarias* in a close atmosphere is, that they become drawn and infested with green fly; and if the latter be allowed to make headway, the plants suffer materially. Shading from the midday sun is also necessary. The plants may be said to delight in shade when they are in flower. Water must be freely given in drying weather, and a little weak liquid manure is of great advantage to them.

Though named *Cinerarias* are still offered in catalogues, their culture is the exception rather than the rule. Seed of good strains is now so generally sold that the necessity for growing named varieties, in order to have flowers of good quality, is practically obviated. By careful seeding a batch of good flowers can always be secured. Therefore, the grower should select a few of the best varieties for seed-bearing purposes, and in doing this choose plants having the following points, viz., good form and substance, robust, close growth, and brilliant colours. The best plan is to isolate such plants, and, if possible, cover them with a netting, to cut them off from bees and other insects, which often spoil a strain; some netting does not exclude light and air, and it does not cost much. Then when some really good flowers are produced by seedling plants a few can be propagated by means of cuttings. The plan adopted is a simple one. When the seed is gathered the plants should be set out in a cool, shady place on a north aspect, kept watered during sunshine, and top-dressed with some good soil. In July and August shoots will be thrown up round the base of the flowering-stems, and from these cuttings can be made, struck in a slight bottom-heat, and then grown on through the autumn and winter to bloom in spring. Sometimes cuttings are taken in spring, as soon as young growths appear at the bottom of the stems; and if these be struck at once, and grown on during the summer, so as not to become pot-bound, the plants will flower in the autumn.

Some *Cineraris* seed may now be sown for a batch of early-flowering plants, potting off and growing on into size to bloom in October. D.

**Harrison's New Musk.**—This is a decided improvement on the old variety, and its scent is equally strong. It makes an excellent vase or basket plant, and at this season may be readily increased by division of the roots, or by means of cuttings.—J. GROOM.

**A New Mouse Trap.**—Permit me to thank Mr. H. Harris for his description and illustration (see p.270) of what he terms "an old plan of catching mice." It is, however, new to me, though I thought I knew most of the best methods of dealing with these most troublesome pests. We have never been so pestered with them as this winter, and though no end of figure 4 and other traps have been at work for months, and mice have been caught by the score, more and yet more seem to come. We shall therefore double brink the place over until an end is made of them.—D. T. FRAZ.

## TASMANIAN VEGETATION.

WHAT a happy provision of Nature it is that attractions of all kinds are seldom or never combined in any one place! Take, for instance, the world-famed shores of the Mediterranean, with its Palms, Orange gardens, terraced Lemon grounds, and acres of Violets, Roses, Tuberoses, and Jasmine; its mountains capped with snow, its blue waters, and, above all, its never-dying historical and actual interest. If to all this were added

the wealth and gigantic stature of forest trees, Ferns, and flowering shrubs that Mount Wellington in particular, and Tasmania in general, affords, how poor and tame, how wanting in interest, would any other part of the globe seem! A feeling akin to what has just been expressed certainly comes uppermost in the mind when visiting this far-off island, where a century ago the white man had not yet set foot, whose history is but a record of butchery of, or by, the aborigines, or a chronicle of details of brutalised convict life in the past; where now people and towns are few and far between; where, instead of hanging terraced gardens, the still burning ashes of a primal forest, set on fire to clear the ground, may be found; where no snowy peaks reflect the blue waters of an inland sea, but, for all that, a place where present people and prospects are as happy and prosperous as can well be found; where an artist can find never-ending beauty for his pencil; and where the botanist and gardener will find on the mountain sides, densely clad in virgin forest, that slope down to the stormy Antarctic seas, such trees, Ferns, and vegetation as were never imagined in the Old World. The accompanying engraving, from a sketch made

on the spot, may serve in some measure to indicate the majestic growth of the Tree Fern (*Dicksonia antarctica*) when in its native forest, but it does not attempt to show the countless numbers of similar or finer specimens that crowd the sides of each mountain valley, where some clear stream leaps down, buried perhaps 30 ft. deep by prostrate trunks of mighty trees fallen long ago, and now affording foothold for Tree Ferns, Ferns, and Filmy Ferns of a growth that astonishes anyone who has hitherto seen nothing more than

the puny attempts we can make under glass in England to reproduce their beauty. In such a valley Eucalyptus trees reach commonly 200 ft. in height, and sometimes attain 350 ft., with a girth of only from 30 ft. to 40 ft., their smooth columnar trunks, French grey or pale apricot in colour, towering up like pillars full 100 ft. to the first branch. Under the partial shade and shelter of such trees comes next the deep green *Sassafras* tree (*Atherosperma moschata*), which just reaches the lowest branches of the Eucalyptus with its topmost spray. This is a most noble pyramidal evergreen tree, with small dark-green leaves, and pretty white flowers, said to be confined to this part of the world, as it will not succeed, except under similar circumstances, when transplanted. Among and between these trees comes next a dense growth of evergreen bushes, such as the native Myrtle, with its shining leaves and upright growth, or the beautiful *Prostanthera lasianthus*, with aromatic-smelling panicles of white and lavender flowers; or again the native Laurel (*Anopterus glandulosa*), now well known in English greenhouses, with its pinky-white blossom (not in bloom at this time) and large leaves. All these give such a dressed appearance to the roadside as to remind a spectator of a well-kept gentleman's pleasure ground, more particularly as there are no familiar weeds to destroy the illusion. Where the shade is deepest and the moisture greatest, the *Dicksonias* actually arch over the highroad itself, as will be easily understood when told that the fronds vary in fine specimens from 8 ft. to 9 ft. in length; but what is most surprising is the quantity and substance of the fronds, numbering

often as many as from forty to fifty on one head, and all green and rich in colour. The trunks seldom reach more than 15 ft. in height before the fronds begin to make the head, and they are clothed with various *Hymenophyllums* and climbing Ferns, notably the ubiquitous *Polypodium rugulosum*. Feathery *Clematisses* hang in festoons from trunk to trunk, and *Lomaria proserpa*, with its bold, dark fronds and bright red young growths, carpets the ground, in company with a *Davallia* and many other Ferns, till conviction



Tree Ferns and Forests; Trees in Tasmania. (From a Sketch by E. H. Woodall.)

seizes the mind that no beauty is so great as that shown by Nature, unassisted by any art but that of the road-maker (for without that art it would be impossible to penetrate more than a few hundred yards without being utterly lost), as, once in the forest, vegetation prevents all view. A turn in the road brings us out into the bright sunshine as we round a shoulder of the mountain from whence a view of the sea is gained, which runs far inland, up creeks which bear some analogy to a Norwegian fiord on a small scale. Here an entirely fresh type of vegetation greets the eye, almost sated with shades of green, but rarely relieved by colour, and startles the most unobservant. An open, heathy space, covered with scarlet, pink, salmon, and pure white *Epacris* in fullest beauty, starred over with the delicate green paravols of *Geichenia dicarpa*, a Fern that delights in the fullest sunshine even on a dry hillside, is a sight no lover of flowers can ever forget, and which Tasmania boasts can be seen to greater beauty on her shores than elsewhere. Here also one of the *Leptospermums* (Tea trees or May Bough, as they are generally called) is in great beauty, its graceful drooping sprays of white flowers and brown-red berries contrasting with the stiff and sturdy *Epacris*. How strange it seems that so few of the beautiful shrubs and trees from this cool island will bear our English climate even in the most genial spots! Perhaps it is that our summers are at times as much too hot for them as our winters are too cold, and the additional evil of a changeable and cold spring is the last straw that crushes the spark of life out of many a beautiful shrub or plant that should ere this have been abundant in our gardens had conditions been more favourable. It is easy to see how sensitive on this point much of the vegetation is here. Tree Ferns, for instance, do not begin to grow until an altitude of 700 ft. is reached, and at 1200 ft. they reach their fullest development; below this elevation summer heat and drought are too great for them, above it becomes too cold; shrubs follow the same line, as in summer at an elevation of 3000 ft. the mountain is enveloped in cloud and mist when the prevailing S.W. wind blows, and but few can stand the cold and moisture that here prevails. *Eucalyptus Gunnii*, a Gum tree that reaches a height of 70 ft., grows under these conditions, and at a still greater elevation is replaced by *Eucalyptus coriacea*, a very distinct small tree, so these two species should be able to withstand anything but the damp cold of low-lying sites in England. It seems a pity that so much praise has been lavished on *Eucalyptus globulus*, which can never make a fine tree in our climate. It grows here in warm and sheltered valleys where the soil is rich and the rainfall very small; it also makes much of its growth in the rainy winter season, a fact that explains its unsatisfactoriness with us. On the summit of the mountain grows the *Waratah* (*Telopea truncata*), whose flower is so prized by Tasmanian belles that it is disappearing somewhat rapidly. A straggling shrub, it nestles among the great boulders that cover the "Col" leading to the highest point, and flowers at Christmas, when it is sought after by all. Too late to see it in flower myself, report says it is far superior to the *Telopea speciosissima* of the Blue Mountains; and if ever successfully introduced into this country would well repay any efforts made to establish it on rockwork. So much attention has been given to the China-Japan flora, that many beautiful plants may still be in store for us from our own colonies. E. H. WOODALL.

## THE FRUIT GARDEN.

### APPLE TREES FROM CUTTINGS.

This mode of propagation is never likely to supersede the one now commonly practised of grafting on a vigorous, free-growing stock when large, fully-developed trees are required; but the plan might be usefully employed for producing free-bearing trees of a limited size for small gardens. Its chief merit consists in the wonderfully dense, fibrous root growth which stout cuttings of well-ripened branches produce. I have lately lifted a number of little fruit-bearing trees, raised from cuttings about four or five years ago, and the thick, mop-like tufts of roots close to the surface fully explain their early and free-bearing habit, as well as the comparatively small amount of annual growth which they make. Some kinds of Apples, especially the Codlins, may be increased from cuttings with the greatest certainty; and, as these varieties are known to be good bearers everywhere, and have a hardy, vigorous constitution, my impression is that they will make excellent stocks on which to graft. Of course this grafting upon stocks raised from cuttings will have a dwarfing effect, but such trees will be useful for planting on bad fruit-growing soils. Anyone who has a large overgrown tree or two of the Codlin varieties—I have rooted other kinds, but the Codlins are the best for the purpose I have suggested—may spare any number of cuttings without doing much injury to the tree. The best branches for this purpose are those about  $\frac{1}{2}$  in. or a little more in diameter, and they should be cut off just under a joint. Larger pieces will root equally well, but they are hardly so well adapted for stocks, although they soon make little fruitful trees. Autumn is the best time to take off the cuttings, as during the winter the wound undergoes the necessary healing and callusing, and is ready in spring to push forth roots before the increased temperature starts the buds into growth. If the cuttings be not taken off till spring the only chance of rooting them is to plant them in a shady, moist border. H.

### PERFECT FERTILISATION NEEDED IN FORCING STRAWBERRIES.

It has been stated that a high temperature so acts upon the fructifying organs of the Strawberry as to render them powerless for their allotted task, and that, consequently, though to all appearance the flowers are right enough, they produce nothing in the way of fruit—only mere "tufts of abortions." This explanation, of course, means that, if we are to have crops of Strawberries, we must practise low temperatures while the flowers are setting; and the figure usually recommended by writers is from 50° or from 55° to 60° day and night respectively, till the fruit is set and swelling, and after that, according to Mr. Thompson, who bases his instructions upon Lindley's "Theory," it may be raised to 65° towards the ripening period, and occasionally to 75° by sun-heat. Now, as a matter of fact, Strawberries could not be ripened in anything like a reasonable time by such slow treatment, though we admit that, if these temperatures were much exceeded, the results as regards the setting of the fruit would be simply "tufts of abortions," unless artificial fertilisation was resorted to. Provided the flowers are gone over with a camel's-hair pencil about twice a week, the Strawberry may safely be subjected to a night temperature of from 60° to 75° or 80° by day when in flower, with every prospect of a good crop of fruit. I have, indeed, set the fruit of every successive batch in a position where the night temperature was as often above 60° as below it, and the day temperature proportionately high. It was under such circumstances that I first satisfied myself that artificial fertilisation is a necessity, when the plants were subjected to an unusually high temperature, by actual experiment. On different occasions part of a shelf of plants was left unfertilised, and they, as a rule, produced no fruit, or if they did, they were but few, and always deformed. It must not be forgotten that the Strawberry does not, properly speaking, consist of one fruit, but many. Every perfect pip of a Strawberry contains a seed, and must be fertilised separately. If this be not done, the pip, like the pip of a Pine-apple, goes blind, and the result is a small deformed fruit, just according to the number of pips that have missed fertilisation. The camel's-hair pencil, if used intelligently, insures the fertilisation of the whole ball, and an even, large, and well-swelled fruit is the result. As has already been said, the flowers should be gone over two or three times a week, particularly in dull weather when the ventilation is reduced. The work should be done early in the afternoon, when the pollen is dry. The brush should have a

**Road Making.**—Herr Weber, of Himmels-Redeck, near Lübben (Prussia), is reported to have constructed a simple machine for levelling roads, which for working requires only two horses, a driver, and a labourer, and renders it possible to make such improvements in a road in a short time as could otherwise be accomplished only by fifty or sixty workmen. The machine works equally well upon gravel or clay soil, and its cost is only forty-five marks (shillings). The whole machine works much in the same way as an ordinary carpenter's plane does upon wood.

**A Relic of the Temple.**—Archæologists have much deplored the disappearance of the venerable tree which for ages occupied a prominent place in the garden of the Middle Temple, and about which there are many interesting traditions. Among these is one that the tree was a favourite tryst of Henry VIII. and Anne Boleyn. We are informed that its timbers have been used in the construction of a cabinet of antique pattern, which is a valuable addition to the art treasures in the corridor of the Middle Temple Hall. The old tree was removed at the time when the ground was cleared for the continuation of Plowden Buildings, facing the Embankment.

broad point, and each fresh flower should get a touch with it over the yellow ball of stamens. The brush soon gathers abundance of pollen, and if kept dry will do its work well; and going over a hundred or two of plants is the work of only a few minutes, so that the labour is nothing to speak of. We have never omitted the practice once for many years, and have never missed a good crop of fruit, though we have always subjected our plants to a temperature 10° or more higher than is recommended at the setting period. At the present time we have some three hundred plants all set and swelling fine even fruit, among which not a sterile plant has been found that produced flowers.—"Field."

### LATE PEARS.

FEW English-grown Pears are fit for dessert longer than the month of March, though there are several varieties which keep well, and are



Fig. 1.—Prince Albert.

excellent for culinary purposes till quite the end of May. Amongst them, Prince Albert (fig. 1) is a good late kind for this purpose. After a very hot autumn, I have known it passable as a dessert fruit;

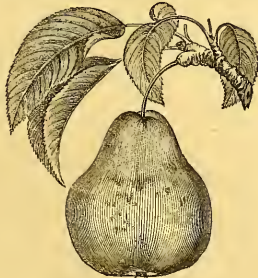


Fig. 2.—Bon Chrétien d'Hiver.

but it should not be planted with this view, as the flesh, though juicy, is coarse. It is a handsome-looking fruit, and will keep well till May. The tree is a free grower, and unusually fruitful. Bon



Fig. 3.—Beurré Bretonnean.

Chrétien d'Hiver (fig. 2) is one of the few late Pears that are good either for dessert or for culinary purposes; it is equally prolific as the preceding, and will keep in good condition till April. To do it justice it should be grown on a south or west wall, and may then be

depended on as a late dessert fruit of good quality, with size and fine appearance combined. Usually the fruit is more perfectly pyriform, and sometimes more uneven than is shown in the illustration. Beurré Bretonnean (fig. 3) is one of the latest of all late Pears, keeping sometimes till midautumn, and generally till May; when it ripens well, which is only after a hot summer and autumn, it is first-rate for table, but it is so uncertain that it should only be grown in the largest collections, as when it does not ripen it is hard and woody, and not even fit for stewing. The following are also amongst the best late Pears, viz., Best Mai, March Bergamotte, and Marie Guiseo. W. W. H.

### THE CULTIVATION OF FRUIT TREES IN POTS.

M. FIRMIN CHAPPELLIER, of the Avenue Daumesnil, Paris, having at recent exhibitions shown some excellent specimens of the Doyenné d'Hiver Pear grown on an unwall'd piece of ground, the French Société Centrale d'Horticulture appointed a Commission to inquire into the method of culture adopted by him. The results of their labours are published in the December number of the journal of the Society, from which are extracted the following details:—The Commission visited M. Chappellier's establishment at various times from the beginning of December, 1876, to October, 1877. On their first visit the members of the Commission were struck with the peculiar appearance of M. Chappellier's garden. They looked in vain for Pear trees grown as espaliers, palmettes, pyramids, or spindles; in fact, all the ordinary forms of fruit trees were absent. The whole of the ground was divided into squares planted with trees trained in the spiral cordon form, some in the ground and others in pots. It was these latter to which the Commission more especially directed their attention. The trees planted in the ground were in lines 6 ft. 6 in. apart, and were uniformly 6 ft. 6 in. in height. Those in pots were no more than 3 ft. 3 in. high, but, on account of being trained spirally, their single central stem was 6 ft. 6 in. in length, those of the trees planted in the ground being 13 ft. in length. This low form has the advantage of facilitating every operation connected with the trees. They can also be more readily sheltered from the cold when it is found advisable. The Pear trees in pots were prepared for passing through the winter. Some of these were arranged in squares of twenty-five, the pots touching each other, and surrounded by boards forming a kind of box about 18 in. high, something like a garden frame, and filled with dead leaves, which entirely covered the pots, filling up all vacant spaces. At the angles of the box were four uprights, joined to each other by cross pieces, which rested on and were fastened to the iron wire spirals to which the trees were trained. This framework was shortly to be covered with straw mats or cloth, to act as a shelter during the winter and early spring. Others, again, had been taken out of their pots and arranged in squares, and their roots covered with earth. They would remain thus "laid in by the heels" until the end of the winter, when they would be re-potted. The whole of the trees had been pruned, and the raw surfaces covered with composition. Nearly the whole of the trees, which were three years old, had their bases covered with fruit buds. In the middle of April the Commission paid a second visit to M. Chappellier's garden, and found all the trees in pots in full bloom. The planks and leaves which had sheltered them during the winter had been removed, but the framework, which has already been described, still bore the necessary sheltering materials. On the top rested a light frame, on which was stretched a piece of calico, another piece, about 1½ ft. deep, hanging from the horizontal pieces of the framework, and entirely surrounding the square like the top valance of an old-fashioned four-post bedstead. These different coverings are very simple in character, and can be taken away or replaced with the greatest ease and celerity. The third visit took place on August 18, at which period the Pears had attained their full size. The trees in pots bore an average of seven Pears each, mostly of excellent quality. The whole of the fruit, especially the Doyenné d'Hiver, looked very healthy, and were without specks or other blemishes. Amongst trees in pots the varieties singled out for high approval were a Passe Colmar with 10 fruits; a Baronne de Mallo with 9; a Beurré Diel with 10, of excellent quality; and a group of 10 Doyenné d'Hiver, bearing altogether 72 fruits. The whole of the fruit of the trees grown in pots, as well as the trees themselves, were much finer than those grown in the open ground in the same garden, notwithstanding they had been grown under the same conditions and trained in the same spiral form. The fourth and last visit of the Commission was paid on the 6th of Oct., that they might see for themselves that the fruit which was ready for gathering was in perfectly good condition. For this mode of culture M. Chappellier uses pots of 16 in. in diameter, pierced with five holes at the bottom, and containing about 150 cubic in. of soil composed of good garden mould and rotten manure well sifted. Dur-

ing the summer the bases of the trees are surrounded by straw to keep them cool and damp. Two waterings of liquid-manure are given during the season, at the rate of about five pints to each pot, waterings with plain water being given as occasion may require. The liquid manure used by M. Chappellier is composed of one part of night soil mixed with four parts of water. The cost of the pots is 2s. in Paris, and the training wire are about 1s. a piece. The cost of the trees and the expense of attending to them is not mentioned. For tying the young trees to the wire cordons woolen list, torn in two, is used, so that the young shoots may take the spiral form. Later on the list is replaced by Willow bark in the usual way. The pots are not sunk in the ground, but simply placed on the surface of the soil of the garden, which should be properly prepared and manured in case the young rootlets should push through the holes in the bottom of the pots in search of additional nourishment. Every year after the fall of the leaf the trees are taken out of their pots, the ball of earth gently shaken, and the space which was occupied in the pot by the earth thus got rid of filled up with fresh mould prepared as above directed. The fruit grower must not wait until the stem has grown beyond the spiral cordon, but must cut back as soon as it is necessary. The Commission sums up by giving its opinion that the method of culture adopted by M. Chappellier is a good one, and has been intelligently carried out, but that the different operations of pruning, pinching back, &c., are performed with so much care, that a similar good result may be looked for at the end of the present and every other year. For growing fruit commercially, or for home use on a large scale, this mode of cultivation would of course be rejected in favour of the ordinary system of open ground orchards, but it ought to be of great use to a large number of amateurs, who are often prevented from growing fine kinds of Pears either through the ground at their disposal not being suited for the purpose, or through not having sufficient room to grow trees as espaliers. By following this system of culture in pots, it will be easy to grow fruit without any garden, as a flat roof or even a paved courtyard may be used.

C. W. QUIN.

**Scarcity of Pear Blossoms this Season.**—Is this general or only local? I should like to have the opinions of your correspondents on this point. Last year we had a good bloom cruelly wrecked. This season we have the thinnest bloom, especially on pyramids, that I have seen for many years. It is somewhat difficult to account for it; true, the summer was wet, but I have seen seasons equally wet, and perhaps colder, succeeded by a fair bloom, as regards Pears. Apples promise well, not, however, an extraordinary crop, but a good medium one, which is far more satisfactory, as little thinning will be needed, and the fruit is always finer on trees not over-burdened. However, this may seem somewhat like counting our chickens before they are hatched, for March, April, and May frosts may yet blight all our Apple prospects. They are, however, late, and have a good chance of escaping; but as for Pears, their fate is sealed already.—D. T. FISK.

**Espalier Apple Buds Killed on Galvanized Wire.**—I have had trained on galvanized wire espaliers for five years some good growing sorts of Apples; at least, they do very well indeed on a wooden espalier within ten paces of the galvanized wire, and the same sorts do equally well as standards. I have watched these trees very closely, and the selection was carefully made when purchased as regards healthy clean trees. They did well after being planted, but every spring since I have had whole branches to cut out, as their buds were all dead. I had them lifted in November, 1876, and replanted in good fresh loam, adding some ½ in. bones, but no improvement has been made. The buds all seem to die, and I have now come to the conclusion that the wire, being a condenser of lightning, has killed the buds. I should, however, like to have the experience of others on this point.—D. LAMOND, *Arthursstone, N.B.*

**The Mume of Japan (Prunus Mume).**—This, which is only to be found in a few botanical gardens, bears fruit in abundance and of excellent flavour. It is a species which ought to be valuable, not only on account of its fruit, but because of its ornamental appearance as a shrub. Its foliage is large and abundant, and is borne on long pendent branches, which flower profusely, besides which it has the additional recommendation of being very hardy. The Mume is generally eaten in a cooked state in the far East, where it is greatly relished. Its kernel closely resembles that of an Apricot; in fact, as a fruit, it is half-way between an Apricot and a Plum in most of its characteristics. In Siebold and Zuccarini's "Flora Japonica" we find a plate which represents Prunus Mume with a round, speckled fruit, closely resembling that of a Plum, with rose-coloured flowers in one variety, and white ones in another. Possibly the latter is a wild variety. M. Lavallée exhibited to the Horticultural Society of France, the other day, a good figure of it which had been drawn

from a specimen grown in his arboretum, which differed in many respects from the one in the "Flora Japonica." M. Hodiard mentioned that he often received consignments of Kaki Plum in connection with his business as a foreign fruit merchant, and that they were greatly sought after by Creoles residing in Paris.—C. W. QUIN.

**The Fight for Fruit.**—March has now (23rd) set in earnest. This morning the thermometer registered from 9° to 14° of frost, according to locality and altitude. The frost was accompanied by a biting north-west wind, that made the air more like December than the latter end of March. To-night the frost threatens to be still more severe, with the wind in the same quarter. Apricots on wall have been in full flower for a week, Peaches and Nectarines are more than half open, and a few Plums are wholly expanded. Apples and Cherries are quite closed, the buds having as yet moved but little. Pears, alike on walls and in the form of pyramids and standards, are in a dangerous condition, though no buds are open. In addition to portable glass and wooden copings, we have half smothered our walls with boughs, and also tied quantities of these over all our Pear blossoms. From the copings all the nets in the place have also been suspended, and should the cold increase every mat and yard of bunting will also be called into requisition. Still, should the cold continue long or increase a few degrees, the chances are terribly against the cultivator. March severities of late years are provokingly prone to run into and through May. I have known blankets taken off the bed to save a crop of Cucumbers. Possibly all our blankets could hardly insure a good crop of wall fruit this year. Those who were wholly unprepared for the frost of last night have already lost their Apricots, and have had their Peaches severely thinned. Neither of these crops will bear 10° of frost when in flower. Unless our winters and springs revert to their original character all our superior stone fruit will have to be grown under glass and our open walls devoted to Pears, and these will also need protection to carry them through the severities of spring frosts.—D. T. FISK, *Hardwicke House, Burg St. Edmunds.*

#### NOTES AND QUESTIONS ON THE FRUIT GARDEN.

**Best Baking Pear.**—I cannot agree with the statement (see p. 253) that the *Cailliac* is the best baking Pear. *Uvedale's St. Germain* is by far the greater favourite. True, it needs a wall in most parts of the country to grow it to perfection, while the *Cailliac* succeeds well as a pyramid or a bush. But the size and quality of the *St. Germain* are unrivalled. The custom, however, of using the finer dessert Pears for stewing is so rapidly extending, that stewing Pears of any kind are less grown than they used to be.—D. T. FISK.

**Painting Fruit Trees.**—Many advocate the use of whitewash upon fruit trees. Several are convinced that it will prevent and even cure Pear blight, but many object to whitewashing trees because it renders them unsightly. This need not be. A certain quantity of lamp-black and red mineral paint-powder may be mixed with the whitewash, imparting the colour of the bark so closely that it is not apparent to the casual observer that the trees have been washed at all.—"Moore's Rural."

**Fruit Tree Protection.**—A correspondent of the "Gardeners' Record" recommends the following plan for protecting the bloom of Peach, Apricot, and Nectarine trees from spring frosts:—Procure some paling wire, cut it into lengths of 10 in., drive them into the wall beneath the coping 3 ft. apart, and 5 ft. lower down drive another row the same distance apart. Then procure a quantity of Spruce Fir branches of the required length, and well furnished with leaves. Hang them on the wires top down. They will lie close to the wall and effectually protect the bloom and young fruit from frost. They should be hung on every night when there is appearance of frost, and taken off in the morning, except the weather is severe, when they may remain on while the frost continues.

**The Best Peaches.**—The varieties of new Peaches of American and English origin have become so numerous, that amateurs and others who very much like to do well to add the fine early melting *A Bee* Peach to their stock. The tree is hardy, a good grower, very prolific, and one of the finest and best for forcing, as it ripens about a fortnight later than the *Early Grosse Mignonne*. Flowers large; fruit equal in size, colour, and quality to *Royal George*, which it resembles, except in point of earliness and freedom from mildew. I have grown it in an early house, also as a pot-tree, and on walls, since 1860, and although I have tested many of the new varieties of more recent introduction, I still look upon this fine Peach as one of the best, either for general use or exhibition. It will probably be useful to many fruit growers if I here add a list of eighteen of the very best early, mid-season, and late varieties.—*Early Grosse Mignonne*, *Halle's Early*, *A Bee*, *Dr. Hogg*, *Grosse Mignonne*, and *Crimson Galande*. Mid-season varieties.—*Alexandra Noblese*, *Dymond*, *Noblese*, *Royal George*, *Violette Hâtive*, and *Bellegrade*. Late varieties.—*Belle Baucé*, *Barrington*, *Prince of Wales*, *Stirling Castle*, *Nectarine Peach*, *Walburton Admirable*, *Crawford's Early* is large, handsome, fine for exhibition, and decidedly the best of the yellow-fleshed section.—W. COLEMAN, in "Florist."

## THE FLOWER GARDEN.

### FUCHSIAS ON OLD WALLS.

ALTHOUGH we have not such fine specimens of *Fuchsia Riccartoni* in this neighbourhood as the Knight of Kerry possesses in Ireland (see p. 327, Vol. X.), yet with us this variety of *Fuchsia* is perfectly at home as a deciduous shrub in the open air, and grows to a large size, frequently reaching 10 ft. high, with stems from 5 in. to 6 in. in diameter. The accompanying sketch shows a remarkable plant of this *Fuchsia* growing on the top of an old garden wall. It is in perfect health, and measures 6 ft. high and 10 ft. through. The wall, which is built of stone, is 2 ft. 6 in. thick, and 7 ft. 4 in. above the ground on one side, and 8 ft. 6 in. on the other. The plant has been growing in its present situation, uninjured by frost, for at least ten years. It is supposed to be a seedling, as no one is known to have planted it there. The modern



*Fuchsia* on an old wall.

racers of *Fuchsias* do not appear to be so hardy as *Riccartoni*, although many varieties with us make considerable wood, the tips only being liable to be cut back by frost.

Falmouth.

J. D. MITCHELL.

### ASTERS IN MASSES.

AMONG the many annuals now in cultivation *Asters* stand pre-eminent, and, when well grown and cared for, do more, at a small cost, in rendering a garden gay and effective during summer and autumn than any other plant with which I am acquainted. To see *Asters* in their full beauty, however, they must be grown in masses of mixed colours—a way in which they show themselves off to great advantage, and produce a most striking effect. This being the case, the best way is to grow them in beds, and as the season will soon have arrived for sowing and planting them out, it is high time these were being prepared. *Asters* like a deep, rich soil, and it is only under such conditions that really fine flowers can be obtained and the plants induced to hold out should dry weather set in. Planted in the ordinary way they are mere weeds compared with such as are well fed and can get their roots deep down in search of moisture; and when they can do this, the hotter the weather is the better it suits them. Confined to the top shallow crust of earth, they are soon dried up and the blooms starved, and this is why we so frequently see the poor, puny plants that are to be found in borders, where, instead of being able to grow and develop themselves, all they can do is to struggle on for existence. I find the best way to manage them is to dig and cast off the top spit to one side handy to be

returned to its place again, and then trench or break up the soil below, working in with it at the same time plenty of short, decomposed manure, which will have the double effect of attracting the roots and affording them ample assistance just as they most require it, when expanding and perfecting their bloom. Trenching, as usually done, brings the crude earth to the surface and buries that which has been exposed to the ameliorating influence of the atmosphere—a fact that should be borne in mind, as it takes years to get in the condition in which plants will lay hold of it and start away freely. In very light dry soils, a few barrowloads of clay chopped up finely and mixed well in has a capital and lasting effect on all future crops, and will do more in producing fine *Asters* than any other help that can be afforded. The thing to aim at is to keep the bottom cool and moist, and, this done, all else is clear sailing, as then, if the weather is anything like favourable, the plants will take care of themselves.

When grown in groups of three in a border, similar preparations are required, or the roots of other plants already in possession are sure to rob them and cut short their beauty long before the autumn sets in. *Asters*, like most other flowers, have been greatly improved of late both in size and general appearance, and are now so large and beautifully symmetrical as to leave nothing to be desired. A few years ago they much resembled the wild *Chrysanthemum leucanthemum*, or the common form of *Pyrethrum*, having only a single row of petals around the outer part of the flower, while those of the present day have layer on layer, and so perfectly arranged that they are faultless in shape, and of the most exquisite colours imaginable. The best of the many varieties now grown is the *Victoria*, which has large globular flowers borne on stout branching stems that are strong enough to stand with but slight extra support. Next to these in point of beauty, or quite equal to them in the eyes of many, are the French *Pæony*-flowered, which are almost as round as a ball, and have elegantly-reflexed petals that give them a richly finished appearance. No one can fail to be satisfied with the above two kinds, as they are far ahead of all others in every respect; but if plants of less height are required, there are the Dwarf Bouquet, which only grow to about 6 in. or so, and are very suitable for small beds or pot culture. The so-called German *Asters* are stiff and formal-looking, as the flowers appear as if clipped into shape; but for all this they are favourites with many, and are certainly very rich and varied in colour.

There is a general idea that *Asters* to be good must be raised from imported seed, but that is a mistake, for, if care be taken in selecting the best to save from, English-grown seed is in every respect equally good. Continental growers certainly have the advantage in point of climate, as it often occurs that wet spoils the whole in a few days, and to get well-ripened seed requires a fine autumn, unless the plants are raised and got out unusually early. Being so exceedingly useful for cut bloom and for greenhouse or other decorative purposes, it is a good plan to grow a few in large pots, as then they may have had much later after fogs and damp nights have destroyed those out-of-doors. When required for such uses, the end of April is quite time enough to sow, and this should be done under handlights, or in pans of light rich soil, and then covered with pieces of glass and stood in a cold frame in the shade till they germinate. To have fine masses they are best grown three in an 8-in. pot, in which they should be placed triangularly a little way from the sides. A rich compost, consisting principally of loam and old hotbed manure, is the proper thing for them, and in this they should be potted somewhat firmly and then plunged in coal-ashes or other material in an open sunny spot till they begin to show flower, when it will be time to remove them under cover of a cold pit or frame. Being gross feeders, they will take and enjoy plenty of manure water if properly diluted before it is used. For growing in beds, seed should be sown at once, and if it can be afforded a very gentle heat, it will germinate the more readily; but directly they are up they should be kept near the glass, with plenty of air, in order to get them strong and robust by planting-out time, which may take place the beginning of May if the weather is then sufficiently favourable. A distance of about 15 in. apart will afford ample room, unless the object is to get extra-sized flowers for exhibition, when, in that case,

more space will be necessary, and if the beds are mulched over and heavy waterings given occasionally the blooms will be all the finer for the attention bestowed. S. D.

#### GROWING PLANTS FOR SEED PRODUCING.

In the same way that those who grow their own seeds of some of the better kinds of vegetables usually possess the finest and purest strains, so also they who grow their own seeds of the more popular sorts of annuals and biennials will find it advantageous to do so, as well as derive a great deal of pleasure from the operation, inasmuch, as with many of these, it is not simply a question of retaining individual varieties in the exact form and colour that a good strain possesses when first purchased, but marked improvement in both the general habit of the plants and individual character of the flowers may usually be secured by a little observation and attention in selecting such plants as from time to time make their appearance, and that are something in advance of the rest.

**Asters.**—Take, for instance, the many and markedly distinct varieties of *Asters* that at the present day exist, distinct not alone in the form and general character of their flowers, but also in size and habit of the plants, these, in a great measure, resulting from careful selection. Speaking of *Asters*, many are under the impression that the seeds of these cannot be successfully grown and ripened in this country, than which there cannot be a greater mistake. My first essay with them was unsuccessful, for the simple reason that, although I raised the plants in the spring on a slight hotbed, and afterwards planted them out in the ordinary way, I found they were not early enough, the cold autumn weather being upon them before they had time to ripen. After that I sowed a little of the varieties I wished to seed about the middle of February in pans in a little warmth, and as soon as large enough, pricked them off singly into 3-in. pots, gradually injuring them to the temperature of an ordinary greenhouse, keeping them on a shelf over the path close to the roof. They were not allowed to remain in the pots, so as to let their roots get matted, but as soon as they had fairly taken possession of the soil they received a shift into others 4 in. or 5 in. in diameter, according to the weaker or stronger-growing habit of the variety. It is essential to mind this, as if the roots in the first stages of the plant's existence get cramped, it induces a hard, stunted condition of the plant, which prevents its ever after growing freely. From the time of shifting them into these pots until planted out, an ordinary garden frame will answer for them. The principal things to be observed are, at the time of planting out to see that they are perfectly free from aphides; if any trace of these exist, the whole should be dipped in Tobacco water. It is essential, also, that they be kept free from these insects afterwards, otherwise the leaves curl, and the plants quickly get so injured that they never recover. Plant in an open situation, and allow the seeds to get quite ripe before gathering. They are free seeders, and a few plants of a kind will produce sufficient for the requirements of an ordinary garden.

**Stocks.**—In the case of annual *Stocks*, when seed was to be saved, I have always retained a few of the plants from autumn sowings in pots, moving them, as soon as their flower-buds gave evidence of their being single, into others 6 in. or 7 in. in diameter, and keeping them in a frame or pit during the season of their blooming and until the seeds were ripe, always selecting plants from strains that were remarkable for habit, colour, and a disposition to produce a large per-centage of double flowers. With the biennial varieties the course followed was similar. In both cases it is well to retain more plants of the single kinds than are required, for amongst them will be found some that produce to each individual flower one or sometimes two petals more than the usual number—four; from these, if sufficient in quantity, it is better to save the seed required, as this inclination to increase the petals evinces their tendency to become double; and from such I have invariably found the produce to comprise a greater number of plants bearing double flowers. With *Stocks* again, as with *Asters*, a large number of plants of each kind are not needed for a private garden.

**Zinnias.**—With both the double and single *Zinnias*, especially the former, so effective either for cutting or border decoration, it is essential, as with *Asters*, to sow early, treating the plants in the same way, so as to get the seeds fully developed and matured before the cold weather sets in.

**Double Helichrysums.**—Except in the southern and more favoured parts of the kingdom, it is necessary to sow the seeds of these under glass, so as to have the plants somewhat advanced and ready to turn out as soon as danger from frost is over or the wet

autumn weather overtakes them before the seed is ripe. They should be sown at the beginning of March in a little warmth, or this failing, a cold frame. At the time of blooming I marked the best-formed flowers of most distinct and decided colours, keeping an eye also on a dwarf, bushy habit of the plant.

**Phlox Drummondii.**—Of these, than which it would be difficult to imagine anything more beautiful than the best strains of self-coloured as well as striped flowers, the seed should be sown about the beginning of March in a pit or greenhouse, and kept on growing, where they will not get drawn up weakly, until the time for planting out. These, like all the plants under consideration, should occupy a good open situation, where they will be fully exposed to the sun away from trees and walls, and not allowed to be too close to the ground, for upon the strength of the plants will depend their ability to mature seed freely. When in full bloom, the plants bearing the handsomest-striped and most decided self-coloured flowers should be marked.

**Dianthus einensis of the Heddeewigi Section.**—There is nothing more beautiful cultivated in gardens at the present day than the splendidly flaked and coloured lacinate-petalled forms of this flower, the character of which is such as to render them completely devoid of all formality in shape, an objection which often exists in flowers that have undergone a process of improvement under cultivation, according to the views entertained by florists. I feel persuaded, if these *Pinks* were more generally known, there are few people who have a garden but would grow them; but in their case, as with all plants so variable in the colours and markings of their flowers, to keep the strain up to the high standard which has been reached, it is necessary to select the best marked plants to gather seed from. They should be sown at the beginning of March in slight heat or a cold frame, turning the plants out singly 1 ft. apart, where they will be fully exposed to sun and air, which is requisite to produce good seeds.

**Marigolds (French and African).**—To preserve the form of the flowers of the former kind, it is necessary to grow them apart from the large-flowered, orange-yellow African variety, otherwise the offspring becomes a confused mass in both colour and form. I have found that to get the beautiful striped and edged flowers in quantity in the French variety, this can be best done by occasionally introducing a few plants of the African kind into the bed where the French are grown; but, except by doing this once in four or five years, as I have already said, unless the Africans are kept at some considerable distance from the French, they destroy the character of the latter. The seeds of these vegetate very quickly. Sow in a cold frame the beginning or middle of March, planting out in patches two or three together, 12 in. or 18 in. asunder, about the middle of May. As they come into flower all the plants that produce single or semi-double flowers, which will be the case with a considerable portion of the French variety, should be cut out, leaving nothing but the best double forms, from which alone save seed. The only objection to these beautifully-marked flowers is their small, which is disagreeable to some people; yet others do not dislike it. The African varieties usually produce a greater number of double flowers. In the case of both the most dwarf, compact-habited plants should be selected to gather seeds from. There are some strains of the French varieties now much dwarfier than others, but none of these that I have seen produce the beautifully-striped flowers of the taller-growing kinds so much grown in the north of England, more particularly Yorkshire.

**Larkspurs.**—The taller-branching *Larkspurs* are much more useful than the dwarf *Rocket* and *Hyacinth*-flowered kinds more generally grown. They are amongst the most beautiful and effective outdoor-grown flowers that can be used for cutting. Some of the blue and violet shades are unsurpassable; they last long in water, and harmonise with almost anything else with which they may be associated. Sow in pans on a slight hotbed or in a cold frame about the beginning of March, and plant out the middle of May, marking at the time of blooming the plants that produce the most distinct and best-coloured flowers.

**Wallflowers.**—The darkest self-coloured flowers are the most prized, for although some of the striped-petalled kinds are pretty enough, still my endeavours were always directed to a selection of the darkest coloured kinds possessing a dwarf, compact, branching habit. In even the best strains, such as the growers for the London flower market have, some will be found at the time of blooming with much higher colours than others. It is well to mark such plants and save seed from them only.

**Sweet Williams.**—The *Auricula*-eyed strains of this plant are well deserving of a little extra care in seed saving; they should be sown about the beginning or middle of June for blooming the year following, and as soon as large enough pricked off into nursery beds. If

allowed to remain in the seed bed, unless sown very thin, they usually become drawn up so weak, as to possess little of the character of a well-grown plant. When in flower, the dwarfest, most compact-habited plants with the best marked flowers, in all cases possessing the Auricula-coloured eyes with as much diversity of colour as can be got, otherwise these generally get too great a preponderance of the dark ones, should be marked, and the seeds gathered as soon as ripe, or they are apt to drop.

The above are only a very few out of the many out-door plants which will well repay a little trouble in the selection for seed growing; but by pursuing a similar course with the large numbers of out-door decorative subjects, improvement in both the habit of the plants and colour and form of the flowers may be gradually effected. Where the seeds of all these spring-sown plants are raised in a hot-bed, or in a house or pit supplied with heat, care must be taken that they are removed sufficiently early to prevent their being drawn up weak, otherwise they had better be confined altogether to cold frames. As I have already said, the number of plants in each case required to select for seeds purposes need not be large; a couple of two-light frames thus occupied for eight or ten weeks in the spring will, for most places, raise enough to be sufficient. The labour involved is little as compared with the satisfaction derivable from a knowledge that the plants of these things grown are not likely to disappoint; and there is a good deal of interest attached to the marked improvement that from time to time will show itself in the colours and forms of individual plants amongst those thus grown by careful selection, for, as will be easily understood by what I have said, this is simply a work of selection, and has nothing to do with the more complicated manipulation and advanced horticultural knowledge required by those who essay the raising of new and distinct forms by hybridisation.

There are also a few of the more generally grown plants for decoration under glass either of an annual character, or such that are the most satisfactorily managed by being annually or biennially raised from seed. Amongst these the Chinese *Primula* holds the first place.

**Primulas.**—Very great improvement has been effected in these of late years, yet anyone who obtains seeds of a good strain may, with a little care and attention, still further improve them. Plants to produce seed should not be sown too early, or at all events not be allowed to bloom early, that is, through the winter, as the flowers which open at this time will not seed near so freely as those produced later on, say in March, or April, neither will plants that have been allowed to become exhausted by blooming through the winter produce seeds freely from any flowers which they may throw up later on in the spring. Such plants as are intended to be grown for producing seed will be early enough if sown at the beginning of June, growing them on under conditions conducive to a sturdy robust stout habit, and pinching out any flower-spikes they may throw up during the autumn or early part of winter, always selecting those, and only those, that have the best shaped and best coloured flowers; in whites it is desirable to have them as pure as possible without any of the pink tinge, which makes them not so effective for greenhouse decoration, and still less so when used for cutting. In the dark-coloured flowers those possessing the deepest shade will generally be found preferable to those of lighter hue, but with these more than most plants, being, as they are, of a somewhat delicate nature, and liable to damp off through the winter if subject to treatment at all at variance with their requirements, it is essential to choose plants that evince a natural strong disposition. At the time of their flowering they should be stood as near the glass as possible, as plenty of light more than anything else tends to a fertile disposition. As the sun gets strong the plants will be better for occupying a position less exposed to it, but still where they will get plenty of light. I have found that weak liquid manure through the time of their flowering still further assists the production of seeds.

**Cinerarias.**—These, more than almost any other popular plant, if not carefully managed as to the selection of the varieties, and equal care bestowed upon them in keeping the different colours separate when flowering, are subject to deteriorate until the greater portion of the produce becomes such an indescribable jumble of shades and colours, many of them the reverse of attractive, as to make them useless. In this deservedly popular flower for general purposes there is nothing equal to the strains possessed by the best growers for Covent Garden market; they confine themselves principally to flowers that may be classed under three heads as to colour, the various shades of red, or deep crimson self; blues, also different shades; and the ringed, or tipped flowers, consisting of more or less of each petal being pure white, with broad or narrow tips well defined of red or crimson, in all cases with the disc of the flower

almost black, or as nearly so as it can be. The individual flowers should be slightly cupped, not disposed to recurve, and with all the petals as evenly arranged as possible. Flowers possessing the above character are found to be held by the generality of buyers in the greatest estimation, and seed from them can with the most certainty be relied upon, if, as already stated, sufficient care be taken with the plants at the time of flowering. The plants should likewise possess a naturally vigorous, dwarf, bushy habit, with a disposition to produce large, healthy foliage at the base, so as to almost cover the pots, and without which half their effect for decorative purposes is wanting. The seed-bearing plants of these also should not be sown early—the middle of June will be soon enough—keeping them dwarf and strong through cool treatment during the summer and autumn until danger from frost is over, when they should receive plenty of light, air, and moisture, without being exposed to the full influence of the sun, and kept clear from insects. Winter in a temperature a few degrees above freezing point and near the light, but away from dry currents of air, which would quickly injure the leaves, and proportionately reduce their seed-bearing capabilities. If the plants come into flower by the end of March and through April, they will be quite early enough. To accommodate them whilst in bloom, they will need three six light frames; these need not be large, as if each will hold six good-sized plants, they will be ample for a large private supply. As the plants begin to open their flowers, they should be frequently looked over, and the best of their respective colours named, chosen, and placed in each frame, the frames themselves standing as far apart in the garden as they can be got, as there is no flower more susceptible of crossing through the agency of bees. All the pips on each plant that have expanded before they were thus isolated should be pinched off. Where the precaution is not taken of keeping *Cinerarias* separate whilst flowering, the produce of the very best strain in existence will, in one or two years, become useless, the blues greatly preponderating, and these also losing their character so far, as a great portion being of almost every shade of lavender and a dirty plum colour, or intermediate between that and crimson. Gather the seed as soon as it is ripe, and store in paper bags, keeping each colour separate. The whole operation involves little trouble, and by following it scarcely an inferior coloured flower or indifferent habited plant will be found, even if thousands be grown.

**Cyclamens.**—Those who obtain a good strain of these long, continuous-flowering plants will find no difficulty in keeping them up to the requisite standard by each year selecting some of the strongest, best-flowered kinds for seed. They are best sown towards the end of summer, in a temperature slightly above that of an ordinary greenhouse, with plenty of light, but not much exposed to the full influence of the sun. Those intended to produce seed the spring following, some eighteen months after sown, or equally as well from older and larger plants, should be discouraged as much as possible from flowering through the autumn and winter, as they will produce little or no seed during this time; whereas no difficulty will be found in getting the flowers to set later on in the spring. With these, likewise, select plants that produce the largest flowers with broad petals in the most distinct colours, marking them and keeping them separate before the blooming is over, gathering the seed when ripe.

**Balsams.**—These favourite greenhouse annuals are very liable to deteriorate unless careful selection be carried out. The large double-flowered or, as they are often called, *Camellia*-flowered kinds, can only be kept up to their proper standard by selecting the best forms and colours to produce seed. With these, as with many other plants, the best forms seed very sparingly as compared with the single or inferior. Those intended to select from for seed should be sown about the beginning of March, that is, sufficiently early as to be under the influence of the full summer's sun when blooming, as upon this very much depends their fertility. The largest, best-shaped double flowers are usually produced from the main stem, from which little seed is got; it is the lowest part of the side branches, which generally bear flowers less double, that the seeds are to be got from. Care must be taken to gather them as soon as ripe, or the pods will open and they will fall out.

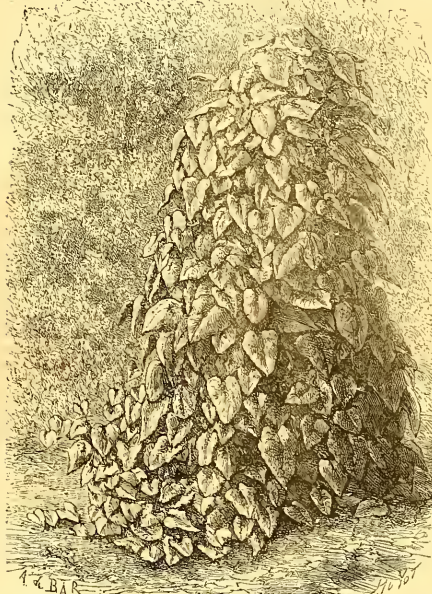
**Herbaceous Calceolarias.**—With these, when once a good strain is procured, I have found less difficulty in keeping it up to the mark than with some things. Plants sown at the usual time, in August, grown on through the autumn and winter, with enough pot-room to insure sufficient strength, and not in any way hurried on so as to bloom too early in the spring, will produce and ripen seed, simply selecting the best-shaped, best-marked flowers, with a dwarf bushy habit, and, above all, evincing a disposition to carry plenty of stout, healthy foliage, for, without this, however fine the individual flowers, the strain is useless; and I may here observe that many of the most perfectly formed and beautifully-marked individual flowers

ars produced by plants so weak as to be unattractive and worthless. The seed is very fine and produced in small quantities, and requires care in gathering and preserving.

These are the principal families of greenhouse plants that are annually raised from seeds, and, holding as they do, a position as the most esteemed soft-wooded subjects for general purposes, are well deserving a little care in keeping up their character by those desirous of possessing good flowers according to their kind; which, it may be observed, occupy no more room than the mixed inferior rubbish often met with.

T. BAINES.

**Ivies on Stakes.**—This fine free young plant of Algerian Ivy, so happy on its two rustic posts, suggests a very simple and effective way of arranging some of the many valuable kinds of Ivy now in our gardens. One can fancy nothing more beautiful than a group of distinct kinds of Ivy trained up stout pieces of branches and grouped in a quiet corner of the lawn or pleasure ground. Such training has various advantages over training on walls—the kinds, one to each



branch or stump, are more easily kept distinct; the Ivy seems to thrive and look better than on walls, and that the effect is much more picturesque may be judged from our illustration, which is from a photograph taken last summer.

White variety of *Viola hirta*.—I have a white-flowered variety of this seldom, which I found here last year; unlike all the white forms of *V. odorata*, it is without the slightest stain of purple either on the petals or spurs, the entire flower being of the purest white.—*J. M., Axminster.*

**Leopard's-bane.**—In "Notes from Kew" (see p. 226) this plant is mentioned as a desirable one for cultivation, but, according to "Pratt," it is very poisonous; and such plants can well be spared from the pleasure garden, where the Corn Marigold would prove a brighter and safer substitute.—*LONDON STONE.*

**Popularity of the Auricula.**—In reply to "D.'s" remarks under this heading (see p. 274), allow me to say that I hope Auricula dealers will not advance their prices because of the supposed great sums paid for plants at Mr. Cooper's sale. In my opinion the prices were low. I bought 210 plants at an average of 10d. each, and secured 97 sorts, and amongst them the very best, such as Smiling Beauty, A. Meiklejohn, Chas. Perry, Lancashire Hero, &c. It is seldom so good an opportunity offers, as was the case at this sale; and any beginners who have to seek out the plants will find it very difficult, indeed, to obtain a good collection of them; prices are high enough already.—*BLACK-TRUSS.*

## PLATE CXXI.

### THREE NEW PERPETUAL ROSES.

Drawn by J. N. FITCH, JUNR.

**MAY QUENNEL** is a very fine, deep-petalled Rose, producing in abundance till late in autumn its flowers of rosy-magenta. As an exhibition Rose it possesses to a high degree the necessary qualifications of large size, fullness, and substance of petal; whilst as a garden Rose its fragrance, vigour of growth, and freedom of flowering will ultimately bring it into wide repute. It was raised from seed by Mr. Postans, of Brentwood, already well known in the horticultural world by his numerous and beautiful additions to our variegated and other Geraniums. May Quennell will be, we believe, the first of Mr. Postans' seedling Roses introduced to the public, but, judging from its excellent qualities, we trust that there will be many more to follow from the same raiser. For the information of those who have not seen it exhibited we may state that it received a first-class certificate from the Royal Horticultural Society last summer.

**La Rosière** is one of two good Roses which reached this country in the autumn of 1874, having been distributed by M. Damaizin, of Lyons. By reason of its free-flowering and fairly vigorous habit, we look upon it as a valuable addition to our dark Roses, now happily increasing in number. It has every appearance of being a hardy Rose, and is very effective in the flower garden. Bearing these good qualities in mind, we can overlook any little deficiency in point of size; and, having as we believe the exhibitors with us on account of its rich velvety appearance, we think we may pronounce it one of the most desirable of recent introductions. The other variety, alluded to above as having emanated from the same establishment and at the same time as *La Rosière*, is *Villaret de Joyeuse*, a rose-coloured flower, probably a seedling from Victor Verdier.

It is to the establishment at Lyons, so long presided over by Mr. Joseph Schwartz, and now bearing his name, that we owe some of our best Roses, and amongst them *Duchesse de Vallombrosa* occupies a foremost place. It had already obtained a reputation more than local when sent out from Lyons in the autumn of 1875, and we have now proved that the changeable climate of this country adds to rather than detracts from its many charms; and the frequency with which it was found in the prize stands at the Rose shows of last year is a sure proof that its value is being recognised as an exhibition flower. M. Schwartz describes it as a seedling from Jules Margottin, and in colour it stands midway between Captain Christy and *Mdlle. Eugénie Verdier*. It would seem to belong to the class of robust rather than vigorous growers, but the foliage is abundant and handsome, and the habit of the plant upright and sturdy. The flower is large and full, with good petals and of elegant shape, in this respect being a desirable deviation from the too rigid and formal style of florist flower now coming into vogue with Rose growers. As a light-coloured forcing Rose, *Duchesse de Vallombrosa* is equal to any variety we possess.

*Waltham Cross.*

ARTHUR W. PAUL.

[For the blooms from which the annexed plate was prepared we were indebted to Messrs. Wilmex Paul & Son, of Waltham Cross.]

**Remedy for Mildew on Roses.**—The following method of destroying mildew on Roses is described by M. Eugène Verdier in the "Cultivateur de la Région Lyonnaise": "Take an iron pot or an earthen pipkin and put into it 1 lb. of flowers of sulphur and the same quantity of freshly-slaked lime. Pour on the mixture 6 pints of water, and, when well mixed, place the pot on the fire and boil for ten minutes, taking care to stir all the time. Allow the resulting liquor to cool down, and when settled pour off the clear liquid into bottles, which must be kept well corked and in a dark place. For use, a pint of this solution is mixed with 12 gallons of water, which immediately becomes milk, and the trees attacked are well syringed with it. The remedy may be applied early in the morning, but preferably late in the evening. The best time of the year is the spring, when the young shoots are about 2 in. long. The solution should be used before any signs of the malady appear. If, however, it has made its appearance, two or three syringings will be sufficient to get rid of it thoroughly. It may be used for any other plant attacked by mildew. Its efficacy is due to the compound formed by the lime and sulphur.—*C. W. QUIN.*



ROSES. MAY QUENNEL DUCHESSE DE VALLOMBROSA. AND LA ROSIÈRE.



GARDEN BOTANY.

(Continued from p. 263.)

**GERMINATION OF GRASSES.**—All Grasses have albuminous seeds, with a small, or often very minute, embryo lying on the outside of the albumen at the base. While still dormant there is a distinct plumule to the embryo, but botanists differ as to what part is the cotyledon. Some regard the first or outer sheath of the plumule as the cotyledon, whilst others, and perhaps more correctly, consider that part of the embryo which remains within the seed during germination as the true cotyledon. This will be better understood on reference to figs. 79 and 80. Fig. 79 is a very much enlarged representation of a germinating embryo of Oat, the dotted line indicating the seed from which it proceeds. Before germination it consists of the cotyledon (sometimes called scutellum) and the part lettered *col*. This encloses the plumule, which emerges through a chink at the top, and from the basal portion several rootlets protrude simultaneously; not a solitary rootlet, as from most embryos. This is the general plan of the germination of Grasses. The cotyledon, or scutellum, remains within the seed, and absorbs and conveys the albumen to the growing plantlet. As the young plant grows other

plumule, which only begin to develop when they reach favourable conditions, and the plumule eventually breaks through some point in the partially hollow petiole of the cotyledon.

**GERMINATION OF ORCHIDS.**—The seeds of most Orchids are very minute, having to the naked eye more the appearance of Fern spores than seeds, and they are invested in a loose netted skin or testa. In some species, as *Cyrtosia erythrorchis*, the seeds are larger, though still very small, and the testa is expanded into a relatively broad membranous circular wing surrounding the seed. The seeds are exalbuminous; the embryo therefore occupies the whole of the interior of the seed.

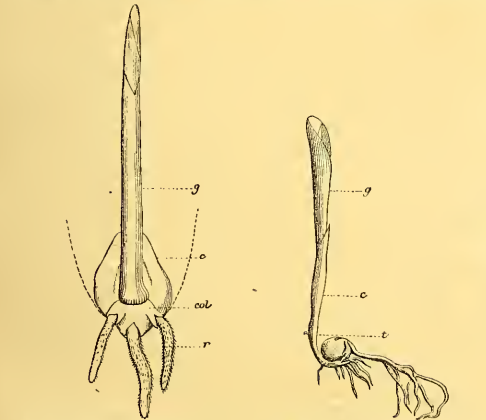


Fig. 79.—Germinating embryo of Oat. *g*, plumule; *c*, cotyledon; *col*, ligellus, or radicle; *r*, rootlets. The dotted line indicates the relative size of the seed from which it is springing. (Very much enlarged.)

Fig. 80.—Maize germinating. *g*, plumule; *c*, cotyledon or first sheathing leaf of the plumule; *t*, ligellus.

roots are produced above the original ones, and the result is the densely-tufted fibrous roots of Grasses. Fig. 80, representing germinating Maize, shows successive roots appearing above the first or primary root, which in this plant is very strongly developed for a short period, though it subsequently disappears. The first sheathing leaf is here marked as a cotyledon, but it is of the same nature as in the Oat, and there is also a similar shield-like body within the seed to absorb the albumen.

**GERMINATION OF ISMENE.**—The development of these bulbous plants from seed appears to be very singular. I am informed by Mr. Elwes that when the seed germinates in a pot it throws out a kind of descending shoot to the bottom of the pot, where a small bulb is formed the first season; and the following season a stem proceeds from this bulb.

**GERMINATION OF CRINUM.**—Many will be familiar with the large fleshy seeds of some species of Crinum. Respecting these seeds Robert Brown states that no visible formation of the embryo takes place until after the seed drops, and even not until after the seed is discharged from the pericarp. In germination the lower part of the cotyledon elongates very considerably, carrying with it out of the seed the radicle and

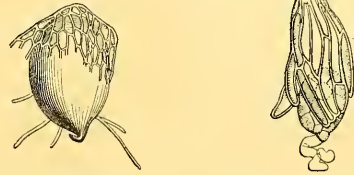


Fig. 81.—Germinating seed of *Miltaria*. Fig. 82.—Germinating seed of *Pleurothallis*. (Highly magnified.)

The embryo is not differentiated into radicle and plumule, &c., but it is a solid homogeneous mass of tissue. When germination begins the nucleus enlarges and throws off the loose testa, and emits rootlets from various parts of its body (fig. 81); and subsequently a plumule is formed at the apex. Fig. 82 is a more highly magnified figure in which the embryo has not quite cast its coat; a rootlet is emerging from the base.

**GERMINATION OF BLACK BRYONY.**—This plant has albuminous seeds with a small embryo, and the germination of this embryo



Fig. 83.—Germinating seed of Black Bryony (*Tamus communis*), the plumule comparatively undeveloped. (Enlarged.)

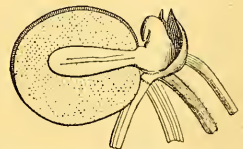


Fig. 84.—Section of a germinating seed of Black Bryony (*Tamus communis*), showing the enlarged apex of the cotyledon in the albumen.

commences by the intercalary growth of the basal part of the cotyledon, which pushes its axis outside of the seed, whilst the upper end of the cotyledon remains within the seed. From the lower part of the axis of the now exerted embryo a number of rootlets are quickly developed, growing to a considerable length before the plumule starts into growth. The upper end

of the cotyledon in the seed (fig. 84) gradually enlarges into a spongy kind of tissue, which absorbs the whole or a portion of the albumen, and ultimately fills its place.

**GERMINATION OF CALADIUMS.**—Respecting this Robert Brown says: "In these the nucleus of the seed is not properly a monocotyledonous embryo, but has an appearance and economy more nearly resembling those of the tuber of a root; for instead of being distinguishable into a cotyledon, plumule, and radicle, and of germinating in a determinate manner, and from a single point, it is composed of a mass whose internal structure is uniform, and on the surface of which frequently more than one germinating point is observable." It is probable that this is a case of polyembryony, that is, the existence of several embryos in the same seed.

**GERMINATION OF PALMS.**—The plan of germination in Palms

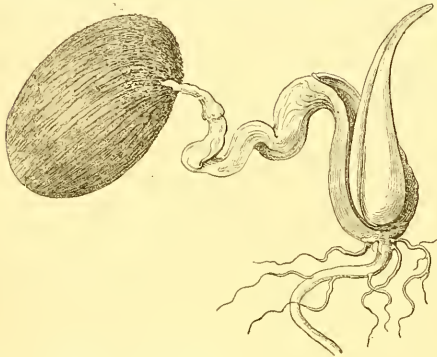


Fig. 65.—Germinating seed of *Borassus*, about a quarter natural size, all the parts very stout and fleshy.

is essentially the same as in Black Bryony, but there are many interesting modifications, especially in the subsequent development of the roots and stems. The seeds are usually large

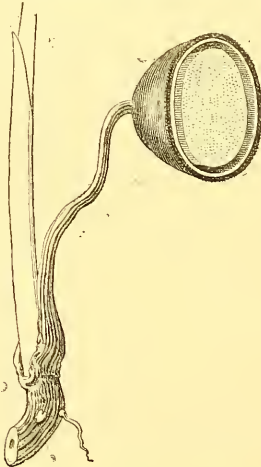


Fig. 66.—Portion of a seedling Palm, with a section of the seed showing the cavity nearly filled with the spongy tissue of the enlarged apex of the cotyledon.

sometimes very large, as the Cocoa-nut, and the embryo is comparatively very small, and situated somewhere near the surface of the usually very abundant and dense and sometimes excessively hard albumen. In some Palms the lower part of

the cotyledon is only just sufficiently elongated in germination to push the axis of the embryo outside of the seed, as in Bryony, whereas in others (figs. 85—88) it grows to a considerable length, varying apparently in this respect according to the nature of the soil upon which it may be lying, or in which it may be partially embedded. In the double Cocoa-

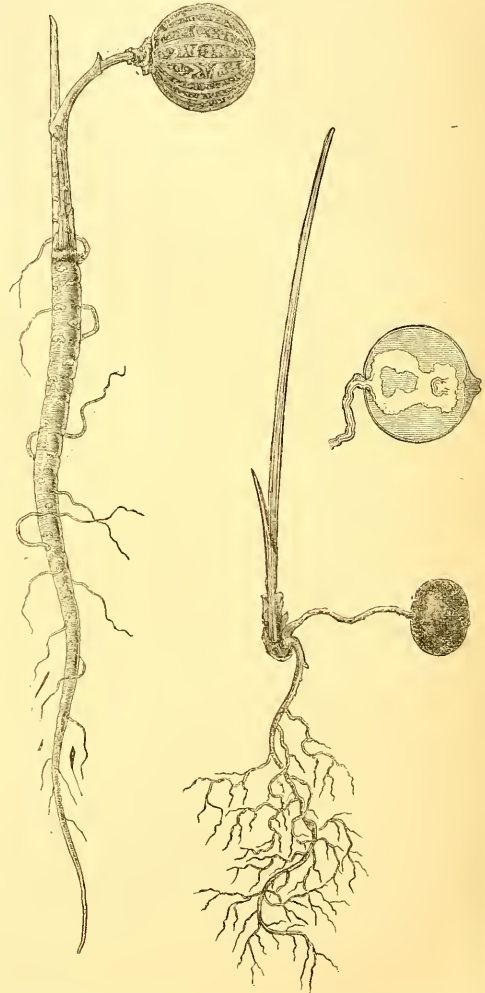


Fig. 68.—Germinating seed of *Corypha*, the root very strongly developed before the plumule hardly makes a start.

Fig. 67.—Seedling of *Sabal umbraculifera*, and section of the seed (enlarged) showing the spongy tissue of the upper end of the cotyledon, which enlarges and absorbs the albumen, and eventually fills the whole cavity of the seed.

nut it sometimes attains a length of 1 ft. or 1½ ft. Sometimes the root and plumule grow at a nearly equal pace, as in *Sabal* (fig. 87); in other cases the root is strongly developed, penetrating the soil to a great depth before the plumule starts, as in *Corypha* (fig. 88). The radicle or primary root is often very vigorous in seedlings, but it is stated that it is soon replaced

by succeeding roots which appear above its apex through the sheathing bases of the leaves. Whether this is invariably the case may be uncertain; that it often occurs there is no doubt. In *Borassus* (fig. 85), for example, although the primary root is very stout and strong at first, and if only the tip be broken off the plant will die, soon other roots pierce the sheathing bases of the leaves and the tap root gradually perishes. New roots are successively formed above the older ones, which, in their turn it would seem, cease to be the channels through which the plant obtains its nourishment. A very remarkable illustration of this kind of development is exhibited in the museum at Kew. It is a large, bowl-shaped, or hemispherical body pierced with numerous circular holes, which appear on the outside as tubular projections. This is what is found at the base of the trunk of the double Cocoa-nut (*Lodoicea sechellarum*), and it consists of the hardened bases of the leaves perforated by the roots, the less durable tissue of which has decayed, leaving the almost imperishable shell. Like some other Palms, this is many years—15 to 25, it is stated—before it begins to form a trunk, and the successive, closely-packed, sheathing bases of the leaves form this singular bowl, in which the lower part of the stem is said to be free. The bowl is of such a durable nature, that perfect specimens have been taken out of the ground sixty years after the trees were cut down. The double Cocoa-nut, it is stated, emits a number of roots in the first stage of germination. The primary root of *Sabal* (fig. 87) seems to differ from the others here described in not being a prolongation of the posterior end of the embryo, but a lateral production. In fig. 86 is a section of a seed of a *Corypha* from which all the albumen has disappeared, and is replaced by the enlarged spongy tissue of the upper end of the cotyledon, which perishes when it has performed its office. W. B. HEMSLEY.

**Vitality of Seeds.**—I observe that Mr. Hemsley in his interesting table showing the average vitality of seeds of various kinds gives Cabbage seed a period of five years. Probably that is a fair average of ordinary stocks, or if kept in bags, and thus exposed to the action of the atmosphere. Last summer I saw growing in the grounds of the Middlesex Industrial Schools, at Fulham, a large breadth of Cabbage raised from seed ten years old. It was originally carefully saved and preserved in a tin on the mantleshelf of a living room. The seed plant was a good one, as good as usually results from a sowing of new seed. No doubt the original sample was well ripened and harvested, and that the even dry temperature in which it was kept assisted in the retention of its germinating powers. No doubt many seeds suffer more from moisture—that is, from being preserved in a damp atmosphere—than from dryness. The Messrs. Sutton & Sons, who are among the largest exporters of garden seeds in this country, have a chamber heated with hot air in which all seeds to be sent over the seas are placed in tins made for the purpose, and subjected to a very high temperature, so as to thoroughly expel from them all superfluous moisture. They are then packed in air-tight canisters and hermetically sealed, and in this way retain their vitality after being subjected to the damps, changes, and vicissitudes of a voyage of several thousands of miles.—A. D.

**The Common Squill a Poison for Rats.**—The Squill (*Scilla maritima*) in a fresh state is prized by the modern Greeks as a poison for rats as well as for its medicinal qualities. Some years since the bulbs of the *Panacratium maritimum* were largely used to adulterate the Squill, and even as a substitute for it, thereby bringing Greek Squills into disrepute in the foreign markets. The Squill is found in large quantities on the shores of the natural harbour of Phalaris, the Gravensend of Athens, the islands of Egina and Salinus, and in many of those of the Greek Archipelago. It is also found on mountain plains, far away from the shore, and on the sides of high mountains, situated high above the level of the sea, although it is generally supposed to be a maritimus plant. It is much used in our gardens about Athens as an ornamental plant, its property of showing a plentiful crop of green leaves when everything else is burnt up making it valuable for this purpose. Whether it be true or not that Pythagoras prolonged his life to 135 years by the constant use of Squill vinegar, it is nevertheless a valuable diuretic and expectorant, and large quantities might now be exported from Greece had it not been for the adulteration which was formerly practised. The ancient Egyptians venerated this plant as the symbol of the god Typhon, and his temple at Pelusium, in Lower Egypt, is ornamented with representations of the Squill in marble.—X. LANDREER, *Athens*.

## THE INDOOR GARDEN.

### SPECIMEN BALSAMS.

TEN or a dozen years ago, Balsams, Fuchsias, and similar plants occupied a recognised position in gardens; but now they are elbowed into comparative obscurity by newer and more valuable subjects. Notwithstanding this, however, they will deserve a place in the greenhouse or conservatory. As regards colours, they comprise the most delicate tints of scarlet, salmon, maroon, rose, white, purple, &c., and the blooms rival in beauty, substance, and form some of the smaller species of *Camellia*. Of late years the blossoms of Balsams have deteriorated sadly, so that it becomes necessary in procuring seeds to see that they come from a trustworthy source.

The cultural details, though simple enough, must have attention at the proper time, or the foundation of a specimen plant cannot be laid. To have good specimens early in July, the seeds should be sown at once; if for late work, the sowing may be deferred till the middle of April; or if the plants be intended for front rows or small stages, and only intended to occupy 8-in. pots, a safe calculation may be eight weeks from the time of sowing till the plants are ready for decorative purposes. Specimen culture differs little from that of smaller plants, if the latter be well managed, except that a defective foundation will be more obvious in the former than in the latter case. In sowing the seeds it is necessary, in the first place, to make the usual preparation by having the requisite number of clean 3-in. pots crocked, and the soil ready to proceed with the operation of sowing. The different colours will be best kept by themselves and legibly named. The pots should be filled with mould about half-way up, and two seeds should be dropped into the centre of each (if both seeds germinate, one of the plants will, of course, be pulled out) with the name of the colour attached. If the pots be kept together on the bench, the seeds can be covered thinly through a fine sieve, and taken to a warm frame and plunged. I prefer beds where the heat is on the decline, as, for instance, one that has been used for propagating purposes till the heat had abated to a gentle warmth, so that something like natural time may be given for germination, and growth may not be unduly hastened. When the young seedlings appear above the rim of the pot, they should be earthed up, leaving the usual space for a supply of water. It may be necessary at the same time to raise the plants nearer the glass by a fresh addition of half-spent material to make up for the subsidence that took place during fermentation. At this stage especially it is of the utmost importance to have the young plants as near the glass as is consistent with safety from breakage when giving air or from scorching in case of changeable weather. Water through a moderate-sized rose, and ventilate on all favourable occasions, in order to secure short, stubby growth; better admit a little air, even if it be necessary to do so through a piece of fine canvas, if the weather should be unpropitious, than to give none. In a week or ten days the young plants will be ready for a shift into 5-in. pots, and will have made two shoots at the base of the perpendicular one on either side; those that do not behave in this way should be either potted for packing plants, *i.e.*, filling in between other pots, or thrown away, as they never make handsome specimens. A fine day should be chosen for removing them from the frame to the potting bench, and the material in which they are to be potted should be a rich compost of good soil, cow manure, and rough leaf-mould, well incorporated and warmed to the same temperature as that in which the plants have been growing. The pots should also be warmed by being placed in a warm house or shed for some time before they are crocked. In potting let the two bottom shoots hitherto mentioned be trained horizontally level with the rim of the pot. When the potting has been completed they should be returned to the frame and plunged, making allowance this time both as regards height and width for the rapid progress which they are sure to make under the conditions adverted to. The bottom heat at this stage will be about enough to accelerate fresh root action and impart tone and vigour to the plant. The frame should never be quite closed under any circumstances, and the

more air that can be safely given at all times the better. Another pair of shoots will soon be produced at the base a little higher up, and these must be pegged down as previously indicated. These four shoots form the foundation of the future specimen, and the upright stem will soon clothe itself with a number of shoots, which must be taken in hand in a similar manner. At the next shift the ultimate size of the plant must be determined. A 10-in. or 12-in. pot will be quite large enough for all practical purposes, and as the requisite conditions this time are identical with the last, it will be unnecessary to go over the same ground again. Up to the time at which the specimen is fully grown I would recommend a gentle warmth at the root. The plants should also be given plenty of room for a free circulation of air to play among them. When they have become re-established after their final shift they will require almost daily attention to training. A frame-work can be made of sticks painted green, with a piece of tar cord forming the extremity or outer line of the circle, and an inner circle might also be formed in the same way to facilitate the process of training. The leading shoot will, of course, be tied to an upright stake, and, as the plant furnishes itself, every shoot should be drawn in a downward direction by means of a piece of matting suspended from the outer extremity of the frame-work to the tip of the shoot. Each shoot pulled down in this way will break out at every point into a number of other shoots, and so on till the specimen attains the desired proportions.

The flowers should be picked off the earlier-formed growths as they make their appearance till the plant has become furnished and well proportioned from top to bottom, after which flowers may be encouraged, and, if necessary, the plants may be taken to any house in which there is plenty of light till such time as they are ready for the embellishment of the show house or conservatory. These plants require careful attention in watering, and will almost live on liquid manure throughout the whole growing season in case a rich compost is not at command.

W. HINDS.

#### CULTURE OF JAPAN LILIES.

I HAVE read with considerable interest the disquisitions on Lily culture which have appeared in recent numbers of THE GARDEN, and having been for several years a successful grower of Japan Lilies, I have ventured to furnish a few observations on the subject. When I commenced the cultivation of these Lilies, and was about to purchase some, a friend gave me this advice, "Do not consider any bulb a flowering bulb which does not measure  $1\frac{1}{2}$  in. in diameter, and one single bit of manure used at the time of planting will bother them." I used equal portions of sod mould and fibrous peat with some silver sand, and at first I flowered all my bulbs singly, planting them as deeply as I could in about 6-in. pots, giving little or no water for a few weeks after potting. When they had fairly started into growth I shifted them into blooming-pots of such size as the fleshy roots appeared to require, and sunk the bulb as much deeper as was practicable, leaving at least 2 in. at the top of the pot for top-dressing in summer. When all chance of frost was over I placed them out on a gravel walk, taking care to place slates or boards under the pots, as worms are very injurious to Lilies. I kept them well syringed during the summer months, and when they began to show the smallest appearance of a flower-bud I filled the pots up to the rim with some thoroughly decayed cow manure. The surface roots of these bulbs will bear manure, but the scaly bulb itself will not, and I attribute much of the degeneracy complained of (especially amongst imported bulbs) to the admixture of manure in the soil at planting time, for, coming in contact with the scales, it rots them, and the bulb grows smaller every year instead of larger.

I have gone into these details to show that the old bulb never dies, as your correspondent seems to think, inasmuch as I have grown these  $1\frac{1}{2}$ -in. bulbs in two years to the size of 4 in. across, and  $1\frac{1}{4}$  lb. in weight, so that annual death of the old and reproduction of a new bulb appears to have been impossible in my case; but when they had attained this size, the bulbs showed a tendency to propagate by dividing themselves naturally. By the simple mode of treatment I adopt, I have dark

shining foliage down to the rims of the pots, and from twenty-five to twenty-seven splendid blooms on single stems of about 5 ft. high. One great secret in growing these Lilies successfully is in making sure that the surface roots are well covered, for if exposed, the foliage will become discoloured and fall off. Of course, I always bloomed my plants under glass, for although these Japan Lilies are well known to be very hardy, if the weather should happen to be unfavourable at the time of blooming, I know of no flowers which suffer so much in appearance from exposure when we compare outdoor with indoor specimens.

I am of opinion that another cause of the degeneracy of Lily bulbs is consequent on encouraging them to make upward growth before they have made good root action, and with imported bulbs I think it an admirable plan to plunge them, like Hyacinths, in coal-ashes for a month or six weeks after planting, in order to induce them to fill the pots with roots before they are allowed to start into growth, for when once *L. auratum* appears above-ground it grows apace. The drying off after blooming should be merely allowing the sap of the stem to fall back to the bulb, when it ought to be shaken out and re-potted at once, taking every precaution to preserve the fleshy roots intact.

JOHN O. BEALE.

East Ferry, Co. Cork.

Will "Dunedin" allow me to suggest the possibility of dyeing a Lily bulb, and then tracing the fate of the coloured scales, supposing that it is possible to serve a bulb so, and yet not destroy its vitality. I would suggest madder as a dye, from the fact that it has already been used to colour the bones of living animals, and proved permanent, without any evil effects. Watering the growing plant with a solution of it might possibly lead to some interesting results if absorbed.—LONDON STONE.

#### FOUR FREE-FLOWERING CACTI.

**Cereus (Echinocereus) Roemerii.**—A small-growing plant, almost hardy, and quite so in the south-western districts. It should be classed with half-hardy Alpines. A full-sized plant of it is only 6 in. high, but the best of this section of the Cactus family is, that they produce such grand flowers. Those of the species under notice are purplish-red, shading off to pink. Its spines are meagre and pale yellow. For those who like the nobler sorts of Cacti, this is not a desirable plant, but amongst open-air sorts it will always keep its place. It comes from the northern parts of California, almost from the snow line.

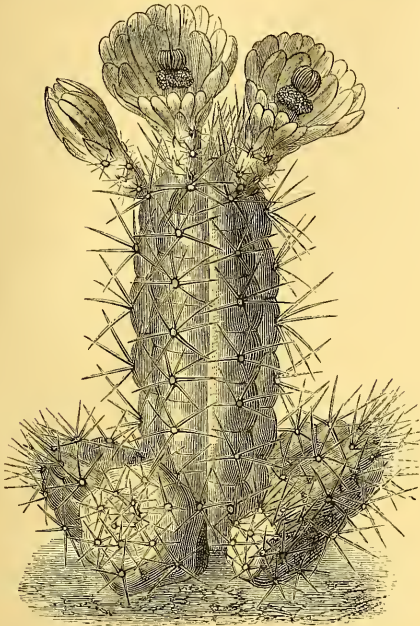
**Cereus Hayni.**—For a *Cereus* this is a small plant, and one which, when young and out of flower, might easily be mistaken for a *Mammillaria*. A plant 1 ft. high is old, and resembles a bottle-brush. The spines are brownish-white, rather soft, and very profuse. Its flowers, which are white, are not produced very freely, but this I attribute to our climate. The more sun the plant gets the better it blooms. It is nearly hardy, and, as is the case with all the more hardy kinds of Cacti, it is apt to be attacked by thrips and mealy bug, for which the best remedy is setting the plants out in the open air.

**Echinocereus pleiogonus.**—This is a plant of small stature, but one which certainly shows itself off to advantage. It is only a few inches in height, but it pushes up flowers larger than its stem. Its spines are stiff, yellow, and reflexed, from eight to twelve in a set. The flowers are purplish-red and very beautiful; but, unlike those of true *Cereus*, they only open during sunshine and last about three days. They shut up in the afternoon, and if there be no sun the next day they wait until there is. It is a very hardy little plant.

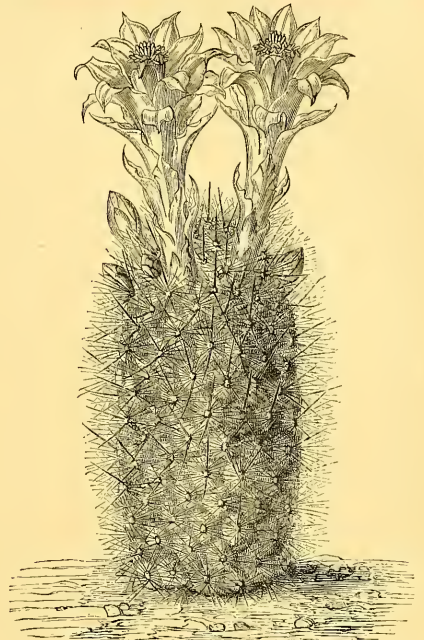
**Cereus nycitellus.**—This species is very similar to the old night-flowering Cactus (*C. grandiflorus*), but its stems are more robust and darker green. The flowers are orange-yellow, turning to white in the centre; they are quite as large as those of *C. grandiflorus*, and the plant requires the same treatment. It may be distinguished from *C. grandiflorus* by the quantity of white hairs that grow on the tube of the flowers. It opens about seven in the evening and closes about the same time in the morning. For those who want a night-flowering *Cereus*, and have only space for one, I should, however, recommend *C. MacDonaldiae*.

J. CROUCHER.

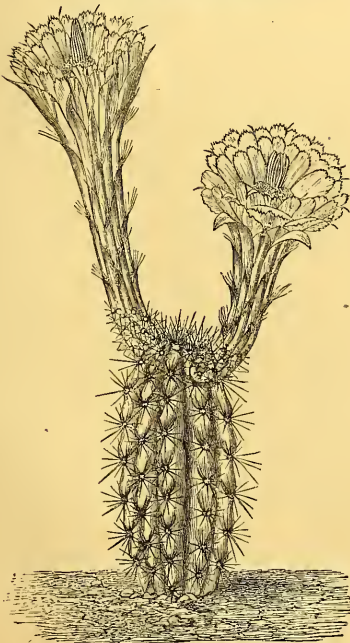
**Aphelexis macrantha.**—Amongst hard-wooded plants now in flower in nurseries few are more beautiful than *A. macrantha* and its varieties. In the shape of small, bushy plants, *Aphelexis* may be



*Cereus (Echinocereus) Ræméri.*



*Cereus Hayni.*



*Echionocereus pleiogonus.*



*Cereus nycitellus.*

used in a variety of ways, and their lively purple blossoms last, either on the plants or in a cut state, for months. In private establishments these Everlastings are seldom grown in quantity, on account of some imaginary difficulty attending their cultivation. They are, however, no more difficult to grow than many less beautiful plants. Cuttings, consisting of the flowerless shoots, should now be taken off and inserted in well-drained pots filled with equal parts of silver sand and sifted peat. Use a sharp knife for removing the cuttings, and avoid bruising them as much as possible. Make the soil round them firm when inserted, and place the pot containing them in a larger one, filling in the vacancy between the two with sand or fine soil. Plunge the whole in a gentle bottom-heat in a close frame or cucumber house. Careful watering is necessary. When well rooted pot the young plants in well-drained 4-in. pots, using peat, broken potsherds or broken bricks, and a little charcoal. When again established, move them into a cooler temperature, and when their pots are filled with roots, shift them into 6-in. pots, using the same soil as before. Abundance of air and water are necessary at all times. Large plants are not so useful as small ones, because they want training, which gives them a formal appearance; and by striking a potful of cuttings yearly, good, bushy plants, full of bloom for several months in the spring, may be obtainable. *A. macrantha purpurea* grows more upright than the type, and its flowers are superior to it in point of colour. *A. m. rosea* is also well worth culture.—C. S.

**Fairy Roses.**—Neat, bushy little plants of brightly-flowered Fairy Roses at all times meet with a ready demand in Covent Garden, where they may now be found in abundance. Considering their easy culture and their usefulness, they might with advantage be grown more largely than they are in private establishments. They are grown as follows:—Cuttings, consisting of the young tops, are inserted in pots of sandy soil in May or June, and placed in a warm house where they can be shaded from direct sunshine until they are fairly rooted. They are then potted singly into 4-in. pots, using sandy loam and leaf-mould. When these pots are filled with roots they are shifted into 5-in. or 6-in. pots, kept in a light, airy house, where they receive abundance of water at the roots, and by the following spring bushy plants, well furnished with deep green leaves and a profusion of buds and blossoms are the result. It is necessary to fumigate occasionally to keep down green fly, to which these little Roses are subject, and frequent syringings on fine days greatly improve their growth. In vases in rooms such plants last a long time in perfection, and they furnish sprays of green leafage and buds for bouquets and other floral arrangements.—C.

#### NOTES AND QUESTIONS ON THE INDOOR GARDEN.

**Todea superba** from Seed.—To get a good stock of plants of this Fern by means of spores is a rare occurrence. Mr. Laing, of Forest Hill, has, however, been fortunate in this respect, for spores ripened and sown in his nursery have produced thousands of young plants. This beautiful filmy Fern may therefore be expected ere long to be more commonly met with. Equally good success has also been obtained in the case of *Davallia Mooreana*, an old but comparatively scarce Fern.

**Cereus Macdonaldii.**—Surely your correspondent, writing about plants in flower at Kew (see p. 252), is wrong in his description of this species. Many years ago I received a small cutting of it from my friend, the late Sir W. J. Hooker, which grew rapidly, and a plant raised from it has long since reached the top of a small conservatory attached to my villa at Torquay. It has no aid from hot-water pipes or fire, the only assistance in the matter of heat being from the drawing-room chimney, against which it is trained. It produces its glorious flowers freely, which are pure white, except in the centre, which is a delicate lemon colour; the blossoms are sweet-scented. It would be desirable to know the name of the species your correspondent describes.—J. L.

**The Fuchsia as a Cool Greenhouse Climber.**—I have planted out here in a cool greenhouse some new varieties of Hybrid Fuchsias, raised by Mr. Lowe, Highfield House, near Nottingham, and find, by their rapid growth and free-flowering habits, that they will make excellent climbers when trained on pillars. I have in the same house a plant of the old Fuchsia Rose of Castle, 14 ft. in height, trained on a pillar, and during the summer months when in flower it affords one of the grandest floral sights which one can imagine in a Fuchsia. Mr. Lowe's seedlings are named Columbine, Sieva, Anatu, Adria, Concordia, Inez, Dragonina, Phoece, Violetta, Odin, and Robin Hood. Of the above sorts I have selected Odin, Adria, Violetta, and Columbine as being the strongest growers, and evidently having some of the strain of *F. fulgens* in them, from the shape and size of the flowers. To see the tender varieties of Fuchsias in all their beauty, we must train them as climbers, with plenty of room for them to get to a good size. When grown in pots for exhibition purposes, it is only a few cultivators that bring out collections of well-grown plants, owing to their rambling habits, unless, indeed, they are well stopped when young.—W. TILLERY, in "Florist."

#### GARDENING FOR THE WEEK.

##### Indoor Plant Department.

**Orchids, Insects, &c.**—To attain success in Orchid growing there is nothing more important than freedom from insects, to cope with which it is necessary to keep a continuous look-out. If the whole collection (as some weeks back was recommended) has been carefully gone over so as to exterminate all the adults perceptible, the work will be very much lighter now, but any that may escaped detection and the hidden larvae that lie undisturbed beneath the stem-stirrings of some, such as *Miltonias* of the spectabilis section, and the axils of the leaves of the East Indian varieties like *Vandas*, *Aerides*, and *Saccolabium*, will, by the increased warmth at this time rendered requisite by the growing season being at hand, quickly come to life. With that worst of all pests on Orchids, white scale, the grower should not be satisfied with anything less than extermination. This can only be effected by diligent and persistent examination of infested plants. The crowded condition that Orchid houses generally get into, necessitating the plants standing so close together that they touch each other in all directions, make this kind of the equally objectionable, but less injurious, brown scale, as also the third species which affects Orchids, the scale coverings of which are circular in shape like the white, with brown centre and white edge, more difficult to contend with, as it is only by actual contact that these insects spread from one plant to another, or in the case of a clean plant that stands immediately underneath one hung up or otherwise that is affected. To so far as possible prevent these insects spreading, I have found a considerable saving of labour effected by standing all the insects in a house together, frequent syringing over them until a complete riddance was made. The white and white-edged scale are easily seen, but beginners in Orchid culture do not always so readily detect the presence of the brown species on thick-leaved plants like *Vandas* and *Aerides*, for though it will live and increase apace on these, yet it never attains more than one-tenth of the size that it will grow to on thin-leaved species, like *Calanthes*, *Lycastes*, &c., and in this way I have seen the leaves of the former affected so as to seriously injure them before it was noticed. Orchids will not bear washing with any insecticide strong enough to kill the parasites, consequently there is little recourse except brushing and sponging, which, if persistently carried out, will effect a clearance of the insects; but it is necessary at all times, and especially now when growth has commenced and the plants are in a softer condition, to see that the cuticle of the leaf is not injured by the brush employed being too hard, or using it with too much force. I have frequently seen the pseudo-bulbs of *Lycaste Skinneri* and *Odontoglossum* turn rotten through the outer skin being injured in removing scale. Where the small yellow thrips, so difficult to eradicate, has existed, will not get to increase. It is particularly partial to some of the thin-leaved *Dendrobis*, such as *Devonianum*, are generally first attacked by it. It gets into the young, partially-developed leaves at the points of the shoots, and if left for only a short time unmolested causes the destruction of the leaves, which at once stops the further extension of the bulb. I never could grow this plant satisfactorily without daily syringing in a way so as to direct the water right into the points of the young shoots from the time that growth had fairly commenced, that is, after the flowering was over, until the autumn was completed. Before resorting to this the bulbs were invariably stopped short in their growth; this insidious little pest, unlike the larger black thrip, never appears to attack the leaves except in their first stages, and almost always confines itself to the thin, delicate-leaved species, such as *Dendrobium Devonianum*, *D. Falconeri*, *Odontoglossum*, *Lycastes*, and the fleshy, yet soft leaves of *Phalenopsis*, but it cannot endure a daily application of water, and where the plants are grown with sufficient light and air, and are not under the attenuating influences of too much heat and moisture in the atmosphere, they will bear syringing overhead daily, of course excepting the time when the tender flower-spikes are emerging from the base of the bulbs of those that throw up in this way, and whilst they are in bloom. I know there are many Orchid growers who syringe overhead very little, under an impression that it endangers the young growth; but of one thing we may rest assured, that where plants will not bear the application of water overhead in this, the natural way of their receiving it, there is something wrong in the conditions under which they grow rendering them too weak. The one thing necessary where daily syringing through the growing season is carried out is to perform it sufficiently early in the afternoon to admit of the plants getting all or in a great measure dry before darkness sets in. Of equal importance to the health of the plants is it to keep the leaves and stems perfectly free from any dirty sediment accumulating upon them. Many fine collections of Orchids are grown in the neighbourhood of towns where the soot-charged atmosphere is such as to render the frequent use of the sponge necessary to keep the pores of the leaves free and open; where this is neglected, especially in the case of *Aerides*, *Agnes-virgata*, *Saccolabium*, and *Cattleya*, the natural formation of which favours its lodging in the base, it accumulates to an extent that clogs up the pores, and causes the foliage to turn yellow and fall off long before its allotted time. In such places it is also necessary to repeatedly wash the glass both inside and out to enable the admission of full light, the unimpeded presence of which, except when the sun is actually shining upon the plants, is indispensable to their well-being. In any house devoted to Orchids that require either hot or cool treatment, or of an intermediate description, such as a stage of heat and cold, where there is space under the plants, or elsewhere, but not in one very three or four weeks a few barrow-loads of horse-droppings that will ferment; it will produce a marked effect upon the plants, both in appearance and reality, the collective growth being stronger under such condi-

tions, the leaves assuming a deeper shade of green, caused evidently by the presence of ammonia in the atmosphere given off from the manure. Several methods have been devised for thus charging the atmosphere of Orchid houses with ammonia, but nothing that I have tried was so simple and effective as this. Another advantage gained from the presence of stable droppings in an Orchid house is that woodlice and beetles hide themselves in them, and when removed, as they necessarily must be once a month or so to make room for fresh material, the insects are destroyed, or conveyed away with it.

**Heat and Air.**—The increased solar heat and advancing growth of many species will permit of the temperature both night and day being raised a few degrees. Give sufficient air by opening the roof ventilators for a few hours in the middle of every day, when the weather is such as to allow of this, so that the moisture in the house may get moderately dried up. I have found that the general character of growth in Orchids, resulting from the admission of a considerable amount of air for some time during the daytime, with a moderate charged atmosphere, when the house is closed and a few hours afterwards, is much superior to that which is produced by giving a small volume of air almost continuously, as frequently recommended. The sufficiently drying process to which the plants are subjected for a short time daily in this way has the effect of solidifying the growth during its progressive development in a manner that never takes place when they are kept in a more uniformly damp atmosphere during the whole of the twenty-four hours. Plants managed as above advised invariably make pseudo-bulbs and leaves of a more rigid and enduring character, with a greater disposition to flower, than when they are treated in a way that produces a softer kind of growth.

**Plants on Blocks.**—Now that more air is admitted, plants grown on blocks, such as *Dendrobium albo-sanguineum*, *D. Cambridgeanum*, *Phenacis*, *Phalaenopsis bilobum*, *Sophranopsis*, *Barkeri*, *Skinneri* and *epetabilis*, *Senticularis*, *Broughtonia sanguinea*, *Lullia superbiens*, *Cattleya citrina* and the Guiana species *C. superba*, and others that succeed best in this way will require daily attention with water; dipping in a pail is the most effectual method, but care must be taken that the advancing flowers, such as are being pushed by the first-named *Cattleya*, are not much wetted, otherwise they are liable to decay.

**Plants in Baskets** suspended and now making growth are also in a position for being quickly dried up, and, in addition to the water they get by syringing, should be closely examined once or twice a week, to see that they are sufficiently moist.

**Masdevallias** that are now throwing up their flowers will require abundance of water, but on no account should they be placed on an over-wet surface, where the pots keep sucking up the water until the whole material in which the roots are growing is wet to saturation. Though moisture-loving plants, growing naturally, as they do, with their roots in a wet medium, still, when confined in a pot, they do not usually succeed well when placed so that the water is continually sucked up in this way.

**Sobralias** that have been kept somewhat drier through the winter will now be forming their flowers, and must have sufficient moisture at the roots. These usually showy plants, although the individual blooms do not last long—rarely more than three or four days—are well worth more extended cultivation than they at present receive. They are amongst the most easily grown of Orchids, requiring a *Cattleya*-house temperature, and when they get strong they give a succession of flowers that compensates for the bloom individually being short-lived; and there is nothing in the whole family of Orchids that surpasses the combined size and splendid colours they possess. Their worst fault is, that in the macrantha section they often exhibit a disposition to grow too tall, but there are some varieties obtainable much dwarfer than others, and the great height they grow to is frequently, to some extent, attributable to their being subjected to too much heat and atmospheric moisture.

**Trichopillias.**—Such species as *T. crispata* and *T. tortilis*, now pushing up their flowers will need their roots moistening sufficiently after being dry through the winter. They are very impatient of water, and the young advancing flowers, which spring from the underside of the bulb in almost absolute contact with the soil. The best way to moisten the material in which the roots are placed is to plunge the pots in a bucket of tepid water; by this means the whole can be moistened enough without allowing the water to rise so as to touch the flower-spikes.

**Cypripedium caudatum** and **Uropedium Lindeni.**—These plants, somewhat similar in appearance, will now be pushing up their flowers; the latter especially is a water-loving subject, but care should at this time be taken that the water does not lodge to any considerable extent about the ascending flower-scape, which, from the formation of the plant, it is very apt to do, and, although anything but delicate subjects, the flower-stems, if thus continually in contact with moisture, will sometimes rot. The flowers of these plants are not surpassed in structural beauty and singularity by any Orchids, and no collection can be said to be complete without them.—T. B.

**Stoves.**—Put a few neat stakes amongst the leaves of the earliest-started *Caladiums* to keep them from getting broken. Keep the young stock of *Palms*, *Cycads*, *Dracenas*, *Ixoras*, *Crotons*, *Pavettas*, &c., in a warm, moist temperature, as in that case the plants start more freely into growth, and develop their foliage in greater perfection than they otherwise would do. Re-pot the stock of *Alocasias*. Plants belonging to the macrorrhiza section of that genus like a good substantial loamy compost; whereas those belonging to metallic delight in an open turfy soil.

They like plenty of water, both at the root and in the atmosphere; indeed, *A. metallicum* and *Marantaceae* would thrive set on inverted pots in an aquarium, &c. If the bases of the pots were just above the water. *Cyrtanthe*, *Phytolobos*, and *Medusa* also enjoy a similar position, and the large and magnificent foliage they produce under such circumstances amply repays any attention they may receive in that way. Put some *Tradescantias* of the discolor section in 4-in. and 6-in. pots, and keep them for a time in a brisk, moist temperature, when they will make excellent plants. Start *Clerodendrons* of the fallax, fragrans, and *Kämpferi* section, and give the climbing ones plenty of string to support their growing shoots. As soon as *Criminus* have done flowering, re-pot them in a good substantial loam mixed with some well-decomposed manure. The many *Phytolobos* and *Medusa* same pot for two or three years in succession if the specimens be large; but in that case manure water must be given them. *Centradenia* make useful plants, if propagated from cuttings now and well attended to. Keep *Brexiens* free from scale, and *Ixoras* from mealy bug. *Allamandas* must now be kept in active growth; *A. nobilis*, *grandiflora*, *Hendersoni*, *Cathartica*, *Schottii*, and *Aubleitii* are amongst the best. *Ficuses*, *Zeschynanthes*, and similar plants thrive admirably in baskets. Cut back plants of *Stentellaria Mocciana*, and pot and start them into growth. *Cissus discolor*, a plant which well deserves every encouragement, enjoys heat and moisture when grown, and is rather partial to a slightly shady nook. Cut back old plants of it close to the main shoots, and induce them to start afresh. Divisions of the cut-away shoots strike freely, and form striking little plants for suspended baskets or for pot trellises. *Torenia asiatica*, *Coccyzium discolor*, *Panicum variegatum*, *Hoyas*, *Selaginellas*, some *Ferns*, and *Dracenas* for centre-pieces are suitable for basket-work; but if a little extra shade can be afforded, many other plants, such as the beautifully-leaved *Philodendron Lindeni*, *Pothos argyrea*, different kinds of *Cissus* and *Pithecia* plants may be effectively employed for the same purpose.

**Green-houses.**—Hard-wooded green-house plants of all descriptions, except *Azaleas*, which are better moved later on, should immediately be potted. It is a very great mistake to defer this operation (as is frequently recommended) until further on in the season, as then the greater amount of solar heat necessitates air being given to an extent that the plants cannot well bear for two or three weeks after potting, the ill effects of which are further aggravated by the then drier condition of the atmosphere. Another great advantage in early potting plants of this description is, that whilst the weather is cool they do not require water being given so soon after; this also is a most important matter, as the more time that elapses before it is necessary to moisten the soil, the less chance is there of the roots suffering thereby, for despite the greatest care, there is always some mutilation in re-potting which renders them highly impatient of moisture. In all cases, see that the ball of every plant which has to be moved is thoroughly moistened beforehand; this should be attended to the day previous to potting, so as to give time for the water to drain off. Do not further disturb the roots than by the removal of the drainage crock from the bottom of each ball, and mix the new soil with the potting-stick until it is as close and solid as the ball of the plant, otherwise, when water is given afterwards, it will pass off through the new material, leaving the roots so dry that death or an unhealthy condition is sure to follow. In potting plants, avoid the error of placing them too high in the pots, the effects of which are more injurious upon hard than soft-wooded subjects, the result to all being that there is a difficulty in watering, through insufficient space betwixt the surface of the soil and the rim of the pot. All plants, large and small, should be placed sufficiently low in the pot for it to hold enough water at one application to moisten the soil, as where the watering of a plant has to be done by degrees in two or three applications (should this be omitted) the surface alone gets moistened. Some seed of *Colasia pyramidalis* should now be sown; it is well to sow it twice or thrice at intervals through the spring, by which means this useful decorative plant can be had in flower from the latter end of summer to the close of the year.

**Conservatories.**—Indoor plants now starting freely into growth must be encouraged. Deciduous shrubs and climbers still unpruned must now receive that attention in order to prevent unshapely growth, and all evergreen shrubs may yet be safely pruned. Stake plants in pots as requisite, bearing in mind, however, to use as few for that purpose as possible. As the young shoots lengthen they should be tied out at once to the principal supports. Wash all sashes requiring that attention, paint any other wood or iron-work that seems to need a coat of paint, and scrub off any coniferous or green slime that may collect on the sashes. No dirty water should be used in potting, and the pots in which plants not to be shifted this spring are growing should also be well washed, and if the surface-soil cleaned and, if necessary, a fresh dressing applied. Newly-potted plants should be kept in the warmest corner of the house for a time and excluded from cold draughts, but to plants in active growth plenty of air should be admitted and abundance of water given. Maintain the gayety of conservatories and other show houses by means of *Hoteias*, *Spiras*, various sorts of *Prunuses*, *Dentzias*, *Lilacs*, *Rhododendrons*, *Weigelas*, and *Roses*, brought from forcing houses. Keep up a good succession of *Hyacinths*, *Thilips*, *Narcisus*, and *Crocuses*, and for late bloom secure the latest of these to a cool house or pit with a north aspect. Introduce *Mignonettes* from frames, and, if necessary, sow a fresh supply in pots for summer blooming. *Rhodanthes* are charming plants both for summer and autumn decoration; therefore, sow some at once in 4-in. and 6-in. pots or in pans, and when ready prick the young plants out into pots, keeping them near the light and pinching them at the third joint.

### Indoor Fruit Department.

Pines are now being put in good condition; others are swelling, flowering, and coming on in succession. To those ripening fruit give but little water, whilst to those in a less advanced state supply it more liberally. For suckers maintain a temperature of 65° at night, and to those farther advanced allow 70° by day with a rise of 10° by means of sun heat. Keep the bottom heat at about 75° to 80°. Give weak manure water at the root, and also sprinkle the plunging material and paths with it. To late Vines give abundance of air, so as to keep their buds back. Vines that are just started should be kept close and freely syringed, thinning both bunches and shoots as they require it. The farthest advanced Figs should have a night temperature of 60°; these should now receive plenty of water overhead as well as at the root. The second house may now have the same temperature as the first; the third one kept at 55° at night, allowing a rise of 10° by sun-heat. Peaches, Nectarines, Apricots, and other fruits should be well syringed, except when in flower, and due attention should be paid to thinning the fruit as soon as it is tolerably well set, and again after stoning time.

### Flower Garden.

**Auriculas.**—It is a time of intense interest to the grower of these

spring flowers, especially at early dawn, to watch the development of the flower trusses and inhale the sweet perfume of the flowers. It is also a time of great watchfulness. The March winds and April showers that bring forth May flowers are not equally acceptable. The former must be guarded against, as they curl up the petals of the scarcely opened pips, and prevent some of the finer varieties from flattening out at all. The lights must always be tilted against the wind; and if this be not possible, some hexagon netting placed over the openings will moderate the force of cold winds. It is not necessary to place sticks to the flower-stalks if the plants are well managed; they ought to stand up stiff and erect. As a rule, the old growers have discarded those varieties that had weak stems. There are a few amongst the stage sorts, and more still amongst the Alpines, that will not hold their heads erect with the best management; notably *Petronella* (Heardly) and *Blackbird* (Spalding—both dark selfs). Then the pips are sometimes too numerous to develop themselves properly, and the badly-shaped ones must be removed with a pair of narrow-pointed scissors. There are frequently over a score of pips on a strong truss, and these may well be reduced to a dozen. The outside pips are often coarse, and those near the centre are small and the edges imperfect; great care must be taken not to damage the pips that remain. If the plants have to be taken to the exhibition, a stick must be placed to each truss, and some clean cotton string must be worked in amongst the flowers to prevent the pips from rubbing against each other. The usual way to remove the plants to the show in the north of England is to turn them out of the pots, and wrap the roots round firmly with some cloth or paper; they are then packed closely together in boxes in an upright position, and a large number of plants can be put into a small space. Empty pots are provided, into which the balls of roots still in their cloth or paper wrappings are placed, and the surface is nearly covered with green Moss. Other exhibitors prepare their plants at home, and take them to the place of meeting in vans.

**Carnations and Picotees.**—These were placed in their blooming pots a month ago, and have now taken hold of the new soil. Although the weather has been cold at nights for the last few weeks, the sun has had a stimulating effect by day, and many of the sorts are "spindling" for blooms. Our plants are all placed in frames under glass lights, and this permits us to shelter the plants if necessary, and also to fumigate them with tobacco smoke if it is necessary to do so to destroy greenfly. All decaying leaves must be removed with a pair of small scissors, and as the plants "spindle" for bloom the sticks must be placed to them to prevent accidents. Do not place the glass lights on unless the severity of the weather requires it.

**Herbaceous Phloxes.**—The cuttings put in some time ago are now rooted, and must be potted off. For want of room or time, we had to put in a number of cuttings in a 3-in. pot; these have been potted off singly, one in the same sized pot. A few Phloxes cultivated in pots are very useful, and make a distinct feature in the greenhouse or conservatory about the month of September. The plants for the pots will be potted, as soon as they are fairly established, in 6-in. pots; they will each produce one spike of bloom, and after this they should be placed out-of-doors. The plants in beds have made considerable growth, and it has been necessary to place the sticks to some of them. This must be done early, as the stalks snap off in a high wind close to the surface of the ground.

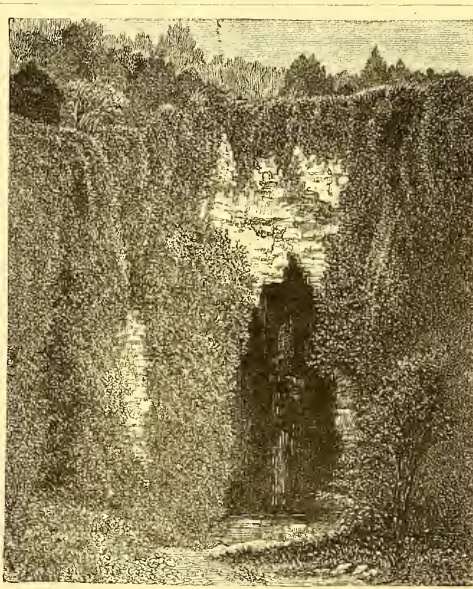
**Pyrethrums.**—This is a class of hardy border plants that are not sufficiently known. The large flowers, in form like a double-headed Aster, are freely produced in June and July. They are also perfectly hardy, and are increased by division of the roots. If not seen to already, no time should be lost in doing so. Our plants were potted in the autumn and have been wintered in cold frames; they are now planted in beds in rich soil. Although the finely-divided leaves look tender and fragile from being under glass, they received no injury from 10° of frost, to which they were exposed a few days after being planted out.

**Tulips in beds** also look remarkably well. I find the leaves suffer but little from frost if they be dry and the ground is also dry around the plants. The surface of the beds has had a dressing of rotted manure placed over it; and this is, I believe, also a slight protection to the plants. Still, if the glass lights could be spared, I would place them over the beds, and this would be ample protection. We may yet have keen frosts, accompanied with rain or snow, and it would be better to shelter the beds from such a contingency as that. Nearly, if not quite, all the growers for exhibition place iron hoops over their beds, and throw canvas over them in rough weather and when it is frosty at night. Then there is the usual tent erected over the beds, high enough for a man to walk under and attend to his flowers. The canvas, of course, is movable, and is drawn up with pulleys when it is not used to shelter the flowers. In all cases it is desirable to keep mats and canvas coverings out of sight as much as possible. I have seen the mats and other coverings of frames thrown carelessly down close to the frames, and if it should rain, the water from the lights saturates them. Mats and canvas coverings ought to be quite dry when used to protect the plants from frost.—**J. DOUTLAS.**

**Lawns.**—Where new lawns have to be formed the preparation of the ground is of the greatest importance, and, except this is attended to in the first place, no after management is likely to be so thoroughly productive of that verdant, close, even, evergreen turf desirable. Unless good, firm turf can be secured, perfectly free from coarse Grasses and weeds of every description, it is best to sow with seeds adapted for the formation of a permanent lawn, being particular that the ground is made evenly solid. Lawns that were top-dressed early in winter, and such as are patchy, will be improved by being sown with Grass seeds and White Dutch Clover; afterwards rake and roll over the ground. Finish turning repairs and edge the margins of walks. This is a good time, before the ground becomes hard, to grub up Daisies, Dandelions, &c. Sweep and roll the turf; the rolling should be done the day previous to mowing, and lose no time in laying the Grass out with the machine, which will greatly improve the appearance and texture of the turf.

### Kitchen Garden.

**Cauliflower and Lettuce.**—Cauliflower plants from frames may now be planted out in well-dug, highly-manured ground—a planting trowel being used to remove them, in order that as much root as possible and a good ball of earth may be secured—planting them 2 ft. apart each way, which for this crop will be ample space. The Cauliflowers that have been wintered under glass—a portion of the plants must now be removed, some three of the strongest being left under each glass, and as



Entrance to great Stalactite Cave in Park Monceau, with Ivy, &c.

these undisturbed plants advance in growth raise the glasses on bricks, removing them in the daytime so as to give plenty of air, but keeping them over the plants at night. This not only protects them from any severe frost that may occur, but in mild weather brings them on quicker than would otherwise be the case. The plants that have been removed from the hand-lights will form a succession to those remaining. Should there be an indication of keen frost before these newly-turned-up plants get established, there is no better protection for them than 8-in. or 10-in. flower-pots placed over each. These pots effectively ward off the frost, and the labour of removing and replacing them is small compared with the benefits to be derived from their use. Lettuce from frames and under the protection of south walls should also now be planted out in well-prepared and richly-manured ground—the richer the better—in order that they may be grown large and crisp, and also to prevent their running early to seed. Plant them 15 in. asunder in the rows, with the same distance between the rows. In taking them up use the planting trowel so as to check them as little as possible—the barbarous system of tearing up plants intended for replanting, entailing, as it does, the certain destruction of their roots, should never be tolerated in a garden where there is any pretension to intelligent management. For this reason the fork or planting trowel should be used in taking up for re-planting even the commonest or least valuable vegetable; the little extra labour involved is nothing as compared with the gain. Lettuce or Cauliflower plants that have been sown in a little warmth must, as soon as large enough, be gradually hardened off and pricked out in frames, sufficient air being given them in mild weather to induce a sturdy growth.

**Rhubarb.**—This crop, from the great weight of its produce, quickly exhausts the soil; neither is it desirable to let it stand too long without removal, as plants that have been for some time undisturbed have a greater disposition to produce flowering shoots, which, even if cut out as soon as they appear, are prejudicial to the growth of the edible stalks; but it is not a good plan to disturb the whole plantation at once, as this stops the supply for a time. If some of the outside crowns be severed from strong established stools with a portion of root each, and planted now two or three together, and allowed to attain a maximum of strength, not gathering from them this summer, they will bear strong stalks next spring; or roots that have been forced through the winter planted now and permitted to regain strength through the summer, will succeed. As Rhubarb is a deep-rooting, gross-feeding plant, in all cases it should have rich soil, and if it be of a heavy retentive nature, some old, exhausted tan, leaf-mould, wood-ashes, or sandy road-drift, if such can be procured all mixed together, with 6 in. or 8 in. of good rotten manure, should be mixed with it, trenching the ground 2 ft. or 2 1/2 ft. deep, planting 6 ft. apart each way. A crop of Radishes, Spinach, or Lettuce may be had off the ground between the rows before the Rhubarb makes sufficient growth to interfere with them. Existing beds of Rhubarb will be much benefited by heavy dressings with strong manure water during the next two months.

The value of trenching and ridging ground in winter has been made fully apparent this spring, for, while plots that were dug only have been hardly workable, the ridged ground crumbled down like dust, even though there has been little frost; and, indeed, it is soon next ground we depend on for our Cauliflowers, Lettuce, Peas, Potatoes, &c. Sow a full crop of Savoy and Broccoli; sow, also, some seeds of Asparagus in lines 18 in. apart; likewise successional crops of Radishes, and occasionally some Lettuce, both Cabbage and Cos kinds. Finish transplanting Onions, and, if not already done, sow the summer crop at once. Sow Round Spinach between rows of Peas, or, in some other places, in quantity sufficient to meet the demand; sow also some of the New Zealand Spinach in heat for a summer and early autumn crop; this variety often affords fine succulent leaves when ordinary Spinach cannot be had. Of Carrots sow a full crop in deeply-trenched ground, which should get a good dressing of fresh air-slaked lime. Sow some small kinds of Turnip in lines 1 ft. apart, or in beds 4 ft. wide, on warm, light soil. Earth up and stick Peas as they advance in growth; any exposure to cutting winds should have the assistance of a few evergreen branches to break its force. The following are first-rate sorts for sowing about this time, viz., Champion of England, Laxton's Prolific and Quality, Veitch's Perfection, Dixon's Favorite, McLean's Best of All, Prince of Wales, Wonderful, Fairbairn's Surprise, Victoria Marrow, Knight's Tall Marrow, British Queen, and No Plugs Ultra. Transplant Cabbages as required.

**Herb Plantations.**—Herbs in many gardens frequently do not receive the attention which they require; they are often fondly neglected in some out-of-the-way corner, where they become almost wholly thrust; from this cause their product is but small, and their appearance very untidy; Mint especially, if it be allowed to occupy the same ground too long, exhausts the soil, which generally gets foul with weeds. Now is a good time to make a fresh plantation of herbs, fork up the underground creeping roots, prepare a piece of ground in size proportionate to the supply required by digging and putting in a fair amount of manure, forming it into a bed about 4 ft. or 5 ft. wide; then take an inch or two of the soil off the top, lay on the roots not too thickly, and cover them with the soil that was removed, leaving the surface tolerably smooth. Growth will soon commence, but the produce will not be so soon ready as from an established bed, consequently it will be well to leave a portion of the old plantation undisturbed until that from the new is ready for use. Camomile, Pennyroyal, and similar herbs, where required, should be planted in similar beds prepared in like manner, putting in rows 1 ft. apart in small pieces divided from the old plants. Sage is a green from cuttings struck in the latter part of summer, when they get freely; such as were struck at that time can now be planted in rows in a bed where

they are to remain permanently, as also Tarragon and Fennel; the latter, from its taller growth, must have considerably more space allotted to it. The principal thing necessary with the above, and any other herbs that may be required, is to keep the ground clear from weeds, and not to allow them to grow too long in one place. Chives.—Where these are held in estimation they may be fast increased by taking up and dividing the root clumps, re-planting in thin rows. The planting of all the above should not be delayed, otherwise the season's growth is much interfered with through their not getting established in their new quarters before dry weather sets in.

#### Extracts from my Diary.

**April 1.**—Sowing first lot of Spanish Cardoons, Green Curled Endive, and All the Year Round and Carrot's Giant White Cos Lettuce; also Long and Red and Early Turnip, Radishes, &c. Drawing drills for Carrots and Beet. Hand-weeding and Dutch-hoeing amongst autumn-sown Onions. Making new Mushroom bed under north wall for summer use. Earthing up Potatoes in frames; also French Beans in pots, and putting sticks to them.

**April 2.**—Sowing the main crop of the following sorts of Carrots, viz., Early Horn, Early Nantes, James' Intermediate, Long Surrey, and Altringham; also the following sorts of Beet: Eastwood Early Red, Osborn's Select Red, Nutting's Dwarf Red, Pine-apple Short Top, Veitch's Improved Black, and Spinach or Green. Potting spring-struck Petunias, Heliotropes, Salvia, and Verbenas. Renovating linings round frames. Dutch-hoeing amongst Strawberries.

**April 3.**—Sowing Aytton Castle, Giant, Carentan, Henry's Prize, and Large Rouen Leeks; also Vegetable Marrows and Ridge Cucumbers. Putting in cuttings of Dahlias and choice sorts of Pelargoniums for winter flowering. Pricking out Cery in boxes; also Golden Pyrethrum and Tagetes species. Clearing off Seakale beds and getting them forked up. Sicking Peas and earthing them up.

**April 4.**—Sowing the following sorts of Broccoli: Early Purple Cape-early White Cape, Watchtower, Snow's Winter White, Osborn's Winter White, A Jan's Early White, and Early Purple Sprouting; also dwarf Green Curled Savoy, Early Dwarf York Cabbage, Asparagus, and Green Curled Kale. Potting off late sown Tomatoes, Lobelias, and Melon Plants. Forking up the ground amongst the Cauliflower plants left in the frames to come in early, and giving them a top-dressing of rich manure.

**April 5.**—Sowing Dandelion for salads, Mustard and Cress, Balsams, Asters, and Cockscombs. Putting in cuttings of Coleus and Alternantheras. Washing all the Roses with Quassia Water to keep down green fly. Watering early Vineries and Peach houses with tepid water. Giving Broad Beans a little earthing. Watering Carrots, Asparagus, and Potatoes in frames. Clearing off Brussels Sprouts stumps, and getting the ground manured and dug. Looking over the Grapes and removing the bad berries, and filling up the hotches where required.

**April 6.**—Potting on Sweet-scented Verbenas, Fuchsias, the forward Tomatoes, and Sweet Basil. Planting out Melons in manure frames. Removing hedging plants from Vineries in cold pits to harden. Disbudding and tying down shoots in early Vineries, and thinning Grapes where required. Looking over Strawberries in bloom, and picking off all weak and late blooms; also getting another batch into warmer quarters. Mowing and cleaning up the pleasure grounds. Rolling down all gravel and turf that require it. Looking over Fines and watering them all through.

W. G. P., Dorset.

**Streamlet Issuing from Ivy-clad Rock.**—In this case (see opposite page) a pretty garden-streamlet is made to issue from an Ivy-clad rock. After coming from beneath the sheet of dark Ivy it is soon busy amongst Flags and other waterside plants and flowers. The idea is one which may be worked out with advantage where there is natural or good artificial rock within the reach of the designer.

**Effect of Sulphate of Iron on Plants.**—At p. 69 of Vol. XII. of THE GARDEN is a paragraph upon the injurious effect of sea water on land, partly "from the formation of sulphate of iron, which is known to exert a very prejudicial effect upon plant growth." Lately an account has been published of the beneficial results of using a solution of it, and in the face of these contradictory records how are we to arrive at the truth? Last summer, having a quantity of the double salt of sulphate of iron and ammonia on hand, I was giving a very weak solution of it to my plants, and I thought with beneficial results, possibly owing to the presence of the ammonia, but no reading the paragraph just alluded to I left off using it. Now I shall again employ it on some pot plants, and trust some authority will kindly publish his opinion on its use.—LONDON STONE.

**Sowing Sweet Peas.**—Everyone who has a garden should have a row or two of Sweet Peas. If sown at once (not too thickly) on deeply cultivated land, they will continue to furnish successive crops of bloom throughout the whole season, and the more the expanded flowers are gathered, the more the peg and satisfactory will be the results, as if allowed to mature seed-pods the plants become quickly exhausted. Sweet Peas may now be had in many distinct colours, but a good mixture will usually yield the best results. I generally drop a few seeds of Convolvulus major in the rows, and these late in autumn form beautiful objects.—J. GROOM, Henham.

## GARDENING AT FROGMORE.

The Royal Gardens at Frogmore are at all times well worth a visit, on account of the excellent manner in which they are kept, and the many cultural hints which they afford to anyone interested in horticulture. Every branch of gardening is carried out here in perfection, and although there are no pretensions made as regards effect, or grand displays of indoor plants, good and useful subjects well grown, can always be found here. All the plants cultivated here are for supplying cut flowers, or for room decoration. Large Camellias which are yearly divested of all their blossoms never fail to grow and flower freely; and of Tea-scented Roses, planted in an outside border and allowed to cover the roof of a large lean-to house, the best kind in bloom at the time of our visit was *Celine Forestier*, which grows well and yields abundance of golden-tinted flowers for many months in succession. In the same house was also a plant of the beautiful *Clematis indivisa lobata* loaded with snowy blossoms. Gardenias are grown here extensively; they are planted out in a narrow bed at the back of a half spau-roofed house, and being kept well pruned and tied in, form quite a thick hedge, which when in full bloom is a sight worth seeing. By keeping the plants thus close blossoms of a better description are obtained than when they are allowed more freedom, as in the latter case they are usually loose, and will not last long when cut. In the same house we also noted a very attractive plant of the old *Euphorbia splendens*, or by some called, and perhaps more properly, *E. spinosa*. It was planted out, the shoots being kept tied closely in so as to form a cone, and at the time of our visit was a mass of flower. Amongst other plants grown for furnishing cut blossoms and for indoor decoration may be named *Hebeclinium uthinum*, the great, feathery mauve-coloured flower-heads of which are very showy; cuttings of it struck last spring, and grown in the same way as those of *Poinsettias*, now make good plants in 6-in. pots. Older plants of it form large bushes, from which great quantities of cut flowers are obtained. *Begonia hydrocotylifolia* is also grown in considerable quantities. Cuttings of it struck every year in winter make handsome plants, with large stiff green leaves hiding the pots, and produce quite a thicket of stout flower-stalks laden with light and graceful white and rosy-tinted blossoms. *B. dracenaefolia* is also grown largely for decorative purposes, and of all plants which are used for room decoration by gaslight these rank amongst the most effective. The scarlet-flowered *Salvia Heeri* likewise plays an important part in house decoration; cuttings of it are struck in spring and planted out during the summer in good soil in the open air. In Sept. they are lifted and potted and placed in orchard houses, where they open their long racemes of brilliant scarlet blossoms in profusion; and some of the plants grown in this way attain a height of 3 ft. or more, and are as much through, and are more effective in rooms than many choicer subjects. The flowers just before opening are very useful for bouquet making. Fine pyramidal-shaped plants of the white *Eupatorium* are also great favourites here. In vases they look bright and elegant, and last good for a considerable period. Neat bushy plants of *Crotonas*, *Dracenas*, *Pandanas*, and similar subjects are likewise grown in large quantities for vase decoration, and many more old, but nevertheless useful, subjects are grown by hundreds for supplying cut blossoms.

## Fruit.

No one who has not seen Frogmore can form the least conception of what is done there in the way of fruit growing.

VINES are cultivated with the greatest success. The principal supply is needed during winter, and this is kept up by fruit of smooth *Cayennes*, weighing on an average  $8\frac{1}{2}$  lb. to 9 lb. each. The plants are grown in deep pits, bottom-heat being supplied by means of Oak leaves and other fermenting material. The soil is a rich sandy loam, and the plants are grown on ridges. When the fruit has been cleared from a pit, the plants are pulled up and divested of their suckers; and, after duly preparing the soil, &c., these are planted as before, and a never-failing succession of large, handsome, well-formed fruit is the result.

VINERIES.—From these nearly 2000 lb. of Grapes are obtained yearly; and it is satisfactory to find that, so far from the crops being on the decrease, owing to the age of the Vines

a much greater weight of fruit has been obtained during the past two or three years than was gathered even when the Vines might be considered at their best. These results have been brought about by supplying the roots with good soil and liquid food, and paying unremitting attention to other points connected with their culture. Some of the oldest and least productive of the Vines have been cleared away and replaced by younger ones, which have not yet come into bearing, but which appear likely to yield fine crops, judging by the growth which they have made since they were planted. Pot Vines are grown to perfection, no bottom-heat or plunging material whatever being used for them; the pots are placed on plain slate slabs, and the crops which they bear are surprising. The earliest permanent Vines are yielding a large crop, which has been thinned, and the berries have just done stoning, so that ripe Grapes may be expected early in May. Most of the Vine borders here are made both inside and outside, but a late house, planted with *Lady Downes* and *Black Alicante*, with a half-span roof, has its border entirely outside, and the wall plate is so constructed that the Vines, when cleared of their crops, can be brought through the front ventilators and tied to stakes outside, thus leaving the house ready for the culture of Strawberries in pots, French Beans, and other crops. This method ought to be more extensively practised than it is, for, in addition to the accommodation made with regard to house room, the Vines are greatly benefited by being exposed to the sun, wind, and weather for a few months whilst at rest. When started, Vines thus treated break strongly, are hardier, and, as a rule, produce better results in the way of fruit than are attained from Vines always confined indoors. The principal aim here in Grape growing is to keep the table well supplied with fruit every day throughout the year; and that this end is attained may be gleaned from the fact that there still remains some 300 lb. of sound, ripe, and well-coloured Grapes in the Grape room—a quantity sufficient to supply the table with from 4 lb. to 5 lb. of Grapes per day, irrespective of new fruit, until far into the month of May.

THE GRAPE ROOM.—No one need despair of keeping up a supply of Grapes until new fruit can be had in the spring if they will only adopt the plan in use here. There is no need to keep Grapes hanging on the Vines until growth again commences, and it becomes dangerous to prune from fear of bleeding, thus keeping the wood in a half-ripened state, instead of being dry, plump, and hard, ready to bear better crops in coming years. The Grape room in question is but a small one, but it is nevertheless capable of holding some hundreds of bunches. It is from 15 ft. to 20 ft. in length and about 7 ft. or 8 ft. wide. All round the walls are placed upright pieces of deal about 3 ft. apart. These are furnished with zinc troughs which slide into places made for them on wooden ledges fastened to each upright about 2 ft. apart. Along the centre of the room is a stand of similar construction, but which is supplied with wider troughs, in which are two sets of holes, so that Grapes may be hung on both sides. These troughs are simply pieces of zinc turned up, so as to form sides and bottom of box-like fashion, and the tops and ends are soldered on. In the bottom of the troughs inside is placed a little ridge of zinc, against which to rest the Vine stems bearing the Grapes. In the lid are bored holes about 6 in. apart in rows nearest the side farthest from the wall, but the troughs are supplied with two rows of holes, as before stated. There is a window in the front end of the room, and a ventilator in one corner at the back, so that a free circulation of dry air can be maintained. Small hot-water pipes, connected with one of the boilers generally in use through the winter, run round the room; on fine days a little heat is turned on, the ventilators are opened, and the Grapes thus get thoroughly dried. By this means any mould which may occur in any of the berries which have been injured or slightly affected with mildew is at once dried to a powder, and prevented from affecting the fruit which is in close proximity to them. They are kept regularly filled with water, and a few pieces of charcoal are added to keep it sweet. When a bunch of Grapes is cut the hole it occupied is corked up, thus preventing any dampness from arising. Early Grapes as well as late ones are kept in this room—a good plan, inasmuch as a house occupied with pot Vines can, when the fruit is cut, be used for other crops.

**STRAWBERRIES.**—Of early Strawberries in pots some 8000 or 10,000 are grown here yearly, and from these nearly 500 lb. of ripe fruit are obtained. The earliest plants, consisting of Keen's Seedling and La Grosse Sucrée, are now just ripening their fruit. These are grown on shelves in houses; others are being brought on to succeed them plunged in pits. For later supplies plants which were forced last year are planted out in pits, and bricks are placed between the rows in order to raise the plants as near the glass as possible and afford greater facilities for watering. To succeed these a quantity of plants are put out on a warm, sloping bank under a wall, and a thin canvas is placed over them when showing bloom. In like manner a quantity of plants is placed in rows under Cherry trees on the wall, from which good crops are secured just before Strawberries ripen naturally in the open ground. Thus a good supply is obtained from the end of March until late in autumn.

**CUCUMBERS** are, as a matter of course, grown here in quantity, and that, too, all the year round. The only variety used is Hedsor Prolific, a short-fruited kind, very green and excellent in flavour; the soil in which they grow is a rich, turfy, yellow loam. Whilst the plants are young saucers made for the purpose, which have two rims and a hole in the centre, are placed over them; these are kept filled with water, and by this means the stems of the plants are kept from the ravages of slugs, crickets, or other pests.

**CHERRIES.**—Some of those in houses are grown in pots, but others are planted out, a plan which it is intended to adopt throughout. The houses in which they are grown are span-roofed, and the trees are planted so as to be easily trained up the rafters; a pyramidal-shaped tree is planted between every other two. When we saw them the trees were loaded with blossom. The kinds found to succeed best for forcing are May Duke and Knight's Early Black. Newer sorts have been tried, but they did not prove so satisfactory as those just named. The beautiful fan-shaped trees on the walls were one sheet of blossom, being protected by a wide glass coping and supplied with canvas blinds on rollers, which can be let down whenever required. A famous crop may reasonably be expected.

**THE FRUIT ROOM.**—This, which is 110 ft. long and about 10 ft. wide, is a lean-to on a northern aspect. The floor, which is concreted, is sunk some 3 ft. or 4 ft. below the ground level; the walls are of brick, and about 1 ft. thick; the roof is slated, but under the slates are 4 in. or 5 in. in thickness of straw. There are several ventilators along the back and at the ends to let out the damp, and in front are small iron gratings, so that a free circulation of air can at all times be maintained. No heating apparatus of any kind is employed, but in case of severe frosts the iron gratings are stopped, and a never-varying temperature is thus always kept up. The shelves or stages on which the fruit is placed consist of lattice-work, on which no straw or other material is placed, and therefore no objectionable flavour is imparted to the fruit. There are still some good examples of Apples and Pears to be found in this fruit room, the flesh of which appears to be nearly as fresh and plump as on the day on which they were placed there, and early varieties are said to keep nearly as well as late ones.

#### *The Kitchen Garden.*

This has been much improved by doing away with unnecessary walks, grubbing out old fruit trees on the walls, and replacing them with young ones. Much is now being done in this way, for a great number of the wall trees bear fruit only on the ends of the branches; therefore, a piece at a time is cleared right away, the ground trenched, and young trees, previously grown and trained for the purpose, are planted. This is a much better method than introducing young trees between the old ones, as is often done, but which seldom proves satisfactory. Where Plums are done away with Pears are planted, and *vice versa*, so that a change of soil is secured. With early Pears a very good way has been adopted; the trees are trained with a shoot in an upright position, and the side branches, which are kept closely pruned in, are led downwards, which induces fruit-bearing spurs to be formed. These Pears are planted between Cherry trees on a south wall, where they occupy little more than 12 in. or 18 in. of space, and being protected like the Cherries, by means of glass copings and canvas blinds,

they set their blooms perfectly, and a supply of good early Pears is the result. Root-pruning is practised whenever the trees show signs of being over-luxuriant, and thus a large supply of excellent fruit is obtained. The Pear trees on low arches by the sides of the walks in the kitchen garden are being done away with. They were planted under the middle of the arch, over which the shoots were trained downwards to the ground, but the young trees which are planted to take their places are being trained horizontally, and the growth which they make is such as to show at once the superiority of the system over that just described. In this case, as in that of the walls, an old tree is not taken away and a young one planted in its place, but a piece is completely cleared and the soil is well prepared for the reception of the new tree. A piece of land lately added to the garden is being planted with Apple trees in such a manner as to admit of classification. All new kinds are procured as they appear, and Mr. Jones purposes to spare no pains in obtaining the true name of each variety planted.

#### OPENING KEW GARDENS.

WE are sure that the peculiar hardship of the gardens at Kew being kept shut in the morning is not known to the Chief Commissioner, or it would not be tolerated by him. In the museums, galleries, &c., where space is limited and every inch has to be cleaned every day, there is need for reserving certain hours for cleaning; but even in such vast and magnificent galleries as the Louvre this difficulty is arranged for at such hours as suit the public. In such great galleries and museums the sole reason why they are not opened for a longer time every day than is now the case is the impossibility of lighting them efficiently without danger to the structure or injury to its contents. In the case of a garden, but a small portion of the surface will undergo cleaning on any given day; and as for the lighting, that is done by the sun himself. It is therefore more than unreasonable that a noble garden like Kew should be closed to the public at the hours when such places as the National Gallery or the British Museum have their doors wide open. There is good reason why it should be opened hours before and hours after them, just as in other cities public gardens are opened early in the morning, while the adjacent museums may not be opened till after breakfast. The forenoon is so much the more agreeable time for the public to visit a garden, that if Kew must continue alone among the botanic gardens of the world open for about one-third of the time the flowers are open, it will be necessary to ask that these few hours should be the forenoon hours. It is pitiful to see the narrow-mindedness which persists in endeavouring to justify a state of things which would not be tolerated for an instant in any other city in Europe. It is astonishing to see the noble name of "science" used, and most frivolously so, in this vain attempt to keep the public out of their rights; for it cannot be that those most interested in the matter—that is to say, the horticulturists of the United Kingdom—and the general public will consent to be deliberately shut out of a place designed and kept up at an enormous cost for their instruction.

There is another aspect of the case which well merits consideration by the "powers that be," that is, the claim of some so-called "scientific" men who ask for exceptional privileges for themselves, and appear to consider the public as a kind of necessary evil, deserving no kind of consideration as compared with their scientific majesties, who, instead of being amiable public servants, act the uncomfortable part of the "wet blanket." No high nature or scientific man—using the term in its best sense—would claim exceptional privileges for himself or his work. On the contrary, he would, as Thackeray did in the case of "literary" men, disclaim any exceptional favours at all. This is a particularly disagreeable aspect of the question when we consider the liberal way in which the public pay for the garden, and that Sir Joseph Hooker, who opposes the opening asked for, is the paid servant of those against whom he shuts the gates. As to the "scientific work" question, that is easily disposed of. The Chief Commissioner or any person interested has merely to go to the garden in the morning, see the miles of walks and the acres of turf

and the flowers open, too truly "wasting their sweetness," for neither students nor public are there. Such "scientific work" as is really done, is, we presume, done in the working rooms of the Director and his assistants, in which we think the public of all shades are willing to leave them unmolested, no one having ever claimed that these able gentlemen, or even the men in the houses, should be disturbed at their labours.

— I feel sure that many gardeners, like myself, would be glad to know what the scientific and other work which Kew is supposed to be doing. That it does accomplish something in some directions, I would fain believe; but as far as horticulture is concerned in this country, its influence, hitherto, has been almost *nil*. The Garden of Plants in Paris, I understand, exercises a kind of central authority over a number of other and similar institutions scattered throughout the country, and distributes plants and seeds amongst them, which eventually find their way into the gardens and nurseries of the country; but does Kew do any good practical work of that kind? As far as I can learn, it is as often a recipient of favours as otherwise, and it is certainly looked upon by gardeners as having few interests in common with them or their profession. But the question is, what is Kew doing? On this point gardeners are almost profoundly ignorant. They do know something of the Royal Geographical Society, the Transactions of the British Association, and even the Royal Horticultural Society, and other learned associations and institutions, but the Chronicles of Kew are a sealed book. As regards the admission of gardeners and others, we are now told by the "Gardeners' Chronicle" that they could be admitted before public hours by applying at the curator's office, and much capital is made of a "photographer with his apparatus" who managed to get in; but we should like to know who has ever heard, in a general way, of that rule before. If the rule was in force, it has been a dead letter hitherto. If the fact had been intimated in the public papers, or placarded at Kew gates, it would have saved many a gardener a useless journey, paltry provision as it is; but now that the question of admission and other matters is fully opened, let us hope that it will be satisfactorily answered. J. S.

— The Jardin des Plantes at Paris is open all the year round without exception—in summer from six, in winter from seven a.m. until dusk. There the department containing the chief plants used in medicine and in the arts is crowded with visitors every day, chiefly in the morning. The strictly botanical department, including all the annual or perennial hardy herbaceous plants (the most complete in the world), is open at the same time in the morning, but closed at about ten, then opened again for a few hours in the afternoon; and I must say that quantities of students meet in the morning for the sake of conferring together, and that they are always surrounded by a great number of visitors, who at last get interested in botany; but people never think of going there in the afternoon, owing to the heat. This department is accessible to any visitor at any time by applying to the foreman. The greenhouses are never opened to the public, but admission is granted to anyone who wishes to inspect them. Now why should not Kew Gardens be opened from early in the morning until dusk, the houses only being closed during certain hours when absolutely necessary? The hardy herbaceous department will not require enclosure or a continual watch. It is also a great hardship to be made to keep to the footpaths; and I should like to know why taking notes in writing is not allowed there. A FRENCHMAN.

— Though the Kew authorities do not seem inclined to yield to the public, I cannot help thinking that the present struggle—in which decidedly the majority are in favour of the earlier opening of the gardens—has disposed them to make certain concessions. For example, only a fortnight ago, through the medium of the "Gardeners' Chronicle," it was made known to all whom it might concern that "any gardener or under gardener, any artist, any student of botany or other science, can be admitted for purposes of study before public hours, on application at the curator's office." This looks well, and may be perfectly correct, but the further statement, that this has always been the case since the present director came into office, is very far from being true. The "Richmond and Twickenham Times" of Saturday last says:—"As a matter of actual fact this statement is erroneous. Only last week we were in conversation with a Richmond resident, whose scientific tastes are well known,

who, on purely botanical grounds, made formal application for such a pass. In this instance a reasonable request was refused and no explanation given. And if, wholly unsuspecting, such a case comes under our notice, it is reasonable to suppose that in London and other parts of England there are hosts of other persons similarly aggrieved." I have heard of several instances, and can myself vouch for one, where permission to study during private hours was refused by the director, who is now announced as the friend of all students and artists. I have no doubt that numbers of similar cases could be quoted.—VERITAS.

— A gardener holding a good position writes to us as follows:—"The first time I went to Kew was on a Sunday, and I trusted to Mr. Donald McLeod, then orator's assistant there, to get me in in the forenoon, a little sooner than usual, as I had little time, and had come all the way from Edinburgh for a few days only, but he could not, although he went twice into the curator's house and explained how I was situated. I had, therefore, to hang about Kew Green till the gardens were opened. I have applied since at the gates before the time of opening, and could not get in, and was never told about the rule respecting earlier admission, though I explained all about myself."

— A correspondent of the "Chronicle" says—"Wishing a few years since to devote a day to study in the gardens, I met with only a gruff intimation that they would not be opened until one o'clock. But a harder fate befell a friend from one of the midland counties, who brought his gardener all the way for a day's rest at Kew, and found to his dismay that but a short interval would elapse from the time of admission until that of starting upon his return journey."

— A correspondent writes:—"Mr. Carruthers gave a demonstration in the public gallery at the British Museum on Saturday to more than fifty members of the Geologists' Association, and neither they nor the public were impeded." How then can the public be "impeded" by any lecture given in the wide gardens at Kew?

— There is one argument in favour of the Kew Gardens Public Rights Defence Association which has received but slight attention. Although the Gardens are opened at one o'clock, without great inconvenience to the visitors, the hour of actual opening to the public must be two or half-past. One o'clock means dinner or lunch time, and after Kew is reached, half-past two will have usually arrived. It is no just argument to reply that a number of visitors flock in the moment the gates are opened; this simply proves the eagerness of some of the public who are willing to forego the comforts of the usual meal so that they may secure the pleasures of Kew at the earliest hour available by the present clumsy and selfish arrangement.

The Kew Gardens Public Rights Defence Association are still moving with that persistent energy which befits so good and just a cause. They are organising a meeting for April 5 at Richmond, at which Sir Trevor Lawrence, M.P., will preside, and in which Mr. Cave and other members of Parliament will take part. On and after to-day petitions to Parliament praying for the early opening of the gardens will lie for public signature at Waterloo, Richmond, and Kew Gardens Railway Stations. Surely this fact need only be known to secure such an array of signatures as shall fully prove to official obstructives how thoroughly in earnest are the public in their persistent attempt to secure what is not only a boon, but an undoubted right. Such gardens only open a few hours daily, and those hours most inconvenient, would be dear to the nation at half their present yearly cost. If we are to pay annually over £20,000 for their maintenance, let us at least have some reasonable return for it. If not, let future grants be largely reduced, and obstructives thus brought to their senses through the tender medium of the breeches pocket.—"Richmond and Twickenham Times."

— There are a few points in the memorial published in THE GARDEN (see p. 221) respecting the early opening of Kew Gardens about which I should like to say a few words. When, let me ask, do the teachers go to the garden with their students? I never saw one lecturing there yet. But the point of most importance to scientific men, horticulturists, and the public generally, is the following statement, viz., "The means now afforded by the *unrivaled collections at Kew!*" Now, it is a well-known fact that the collections at Kew are inferior to many others. For instance, if we wish to see a good collection of Pitcher-plants, do we go to Kew? No; we must go to the nurseries of Messrs. Veitch & Sons, in the King's Road, Chelsea; and the same may be said in reference to Orchids. If we want to see a good collection of Alpine and herbaceous plants we must not go to Kew. If we want to find a good collection of economic plants we must go to the Royal Botanic Gardens, Regent's Park. If we want to see a good collection of Protocææ or Cape Heaths do we go

to Kew? No; they are represented there only by a few stragglers. If we want to see the best collection of Agaves, Cacti, and similar plants, it is useless to go to Kew, for there will only be found the older varieties. No; for a person who wishes to inspect the latest importations, or see rare species of living plants, Kew is not the place. There is, however, at Kew good collections of Palms, Ferns, and Aroidae; but if we want to examine the *Acanthodes* or *Melastomadae*, or even the great Order *Leguminosae*, we cannot find them arranged there with any kind of intelligence, though many plants belonging to these Orders may be found scattered about the place. If we want a good collection of Aquatics we must go to Oxford. The want of system in the arrangement of the plants in the houses at Kew is also a great drawback as far as students are concerned. The museums are well arranged and managed satisfactorily, and I know from experience that what is done in the museums can be done in the houses and grounds, and until this is done the words "scientific work" and "unrivaled collections" should be struck out of the Kew memorial. It may be said that Kew is the finest botanical establishment in the world. That I admit; but that does not prove it to be what it might and ought to be. How making it more popular can detract from its usefulness I am at a loss to guess; for let it be remembered that if science be not for the people, the people ought not to be called upon to support it.—J. CROUCHER.

## SOCIETIES AND EXHIBITIONS.

### ROYAL BOTANIC SOCIETY, REGENT'S PARK.

MARCH 27.

THIS, the first exhibition of this Society this year, was held in the long corridor adjoining the Conservatory, the latter structure being itself gay with forced bulbs, Acacias, Azaleas, and similar plants. The principal features were groups of pot Herbs, from Messrs. Veitch & Sons and Mr. Charles Turner, and large collections of Hyacinths and Tulips from some of the leading growers.

**New Plants.**—Messrs. Veitch & Sons sent a collection of new or rare plants, among which the following were named and certified of merit, viz., *Magnolia Halliana*, a new Japanese species, mention of which was made in THE GARDEN last week; *Cypripedium porphyreum*, a hybrid, the result of a cross between *C. rosei* and *C. Schlummi*. The flower-spike is branching, and the blossoms somewhat resemble those of *C. Sedeni*, but they are larger, and of better shape and substance. *Carnation Alogatiere*, a fine-flowering scarlet kind, which will be valuable for market purposes, and of which notice has before been made in THE GARDEN. *Hyacinth Queen of the Blues*, a kind bearing compact trusses of pale blue blossoms, forming a good companion for the dark King of the Blues; also *Hyacinths King of the Blacks* and *Grand Maître*; a beautifully-spotted variety of *Odontoglossum cirrhosum*, *Pavonia Wiota*, and *Microlepis hirta cristata*, which was also shown by Mr. Williams. It is an elegant Fern, with light green fronds resembling in appearance those of the well-known *Davallia Mooreana*. Mr. Williams also received a certificate for *Anemidictyon Phylliditis tessalata*, a Fern of considerable interest. Certificates were also given to Mr. Smith for *Polyanthus Duke of Wellington*, a beautiful velvety-black, and rich seedling variety, with yellow centre, and edged with gold; also to Mr. Clarke, Twickenham, for *Cyclamen Brilliant*, a miniature variety of compact growth, and having short-stalked marbled leaves, the flowers being of a rich velvety-magenta or crimson colour. Among *Cyclamens* this is, without exception, the greatest improvement in habit of plant and colour of flower which has been made of late years. Among other new plants were several seedling *Amaryllids* from Mr. B. S. Williams, several curious *Orchidaceous* plants from Messrs. Veitch, also a good plant of *Croton Macarthurii*, and *C. Hawkeri*, a species from the South Sea Islands, of dwarf habit, and having narrow, pointed leaves of a rich creamy colour edged with olive-green. Mr. James sent excellent cut blooms of *Cinerarias*, and Messrs. Cutbush & Son sent plants of a *Dracæna* (species) excellent for decorative purposes.

**Roses.**—Of these, considering the season, there was a good display. Messrs. Veitch & Sons had an extensive group of well-grown plants, among which were noticeable the delicate bluish *Madame Liebaud*, *Madame Lacharme*, the pure white *Cocquette de Blanches*, associating effectively with the brilliant *Monsieur Boncenne*, Dr. Andry, and well-flowered specimens of the crimson *Duke of Edinburgh* and the deep rosy-pink *Anne Alexieff*. In the class for six forced *Roses* Mr. Charles Turner, of Slough, was the only exhibitor. The plants consisted of well-grown specimens beautifully in flower; the kinds were *Madame Victor Verdier*, *La France*, *Madame Lacharme*, *Duke of Edinburgh*, *Edward Morse*, and a magnificently-flowered specimen of *Souvenir d'un Ami*. This was altogether an interesting collection, and showed which were the best kinds of *Roses* for early forcing.

**Stove and Greenhouse Plants.**—In the class for twelve stove and greenhouse plants Mr. G. Wheeler, gardener to S. F. H. Goldsmid, Bart., Regent's Park, had the best collection which consisted of neat,

shapely, and well-flowered plants of *Clorodendron Balfouri*, *Erica affinis*, *Eriostemon densiflorum* and *E. pulchellum*. These associated effectively with magnificent-flowered specimens of *Imantophyllum miniatum*, the brilliant-flowered *Azalea Stella*, *Anthurium Scherzerianum*, and several *Heaths*. Mr. Roberts, gardener to W. J. Perry, Esq., Fulham, had a group in which were finely-flowered plants of *Dendrobium nobile* and *Chorozema Chandleri elegans*.

**Orchids.**—Only one collection of these was shown, and this came from Mr. Heins, gardener to F. A. Philbrick, Esq., and to which an extra prize was awarded. Noticeable in this group was a large plant of *Cattleya citrina*, growing on virgin cork placed on the top of a stump of *Tree Fern* to a standard. It bore about a dozen large, golden, waxy blossoms, which, on account of their drooping character, were, grown in the way described, seen to the best advantage. A plant of *Dendrobium crassinode* bore six pseudo-bulbs clothed with richly-coloured blossoms. With these were associated well-flowered plants of *Dendrobium litiflorum*, D. Freemani, several good *Phalænopsis*, *Odontoglossum triumphantis*, O. Andersonianum, the curiously-spotted *O. maculatum superbum*, and a plant of *O. cirrhosum* bearing a profusion of sweetly-scented, beautifully-spotted blossoms, and a pair of *Sophranitis grandiflora*.

**Azaleas.**—Of these there was a good display, the best in the nurserymen's class coming from Mr. Charles Turner, who had small but profusely-flowered plants of *Queen Victoria*, a kind with large white flowers conspicuously striped with bright purple; *Juliette*, a semi-double flower of a brilliant rose-crimson colour; and the best of purple, *Duc de Nassau*, together with other good kinds. In the amateur's class the best plants came from Mr. Ratty, gardener to R. Thornton, Esq., who had standard and bush-trained specimens of well-known kinds. Mr. James, Isleworth, had also a group of well-flowered plants, the best white kind being *Ivryana*, and the best coloured kind *Duchesse Adelaide de Nassau*.

**Hyacinths and Tulips.**—These occupied a narrow stage the whole length of the corridor, and the blooms throughout being of fair average quality, they made a very attractive display. The best and most extensive collections of *Hyacinths* came from Messrs. Veitch & Sons, Messrs. Carter & Co., and Messrs. Cutbush & Son, and, although not shown in competition, an extra prize in all cases was awarded. In the first collection the best flowers were King of the Blues, Mont Blanc, Charles Dickens (blue and white), yellow Bird of Paradise, and a bright crimson kind named *Vuurbaak*. In Messrs. Carter's group were similar kinds; also, *Lord Derby*, lavender; H. M. Stanley, dark blue; *Lord Macaulay*, pink; and a large white-flowered kind, named *Lord Shaftesbury*. The best twelve plants in the amateur's class came from Mr. Douglas, who had well-grown plants, with symmetrical, well-coloured blossoms of the best kinds. Mr. Morman, gardener to the Misses Christy, Kingston-on-Thames, had also good plants furnished with dense heads of blossoms, among which were especially noticeable *La Grandesse*, purple white; *Grandour*, lavender; and *White Bird of Paradise*, rosy pink. In the class for plants with a number of flower-spikes, Mr. Douglas was again first with finely-flowered plants, and Mr. Morman was second. In the nurserymen's class, Messrs. Cutbush & Son had the best collections, the next best coming from Mr. Hill, Alfred Street, Bow, and Messrs. Osborn & Sons, Fulham. The best collection of *Tulips* came from Messrs. Cutbush & Son and Mr. Morman. Among the best kinds exhibited were the *White Pottshaker*, *Vermilion Brilliant*, *Yellow Prince*, and the purple *Van-deer-neer*. Well-flowered groups of *Narcissi* came from Mr. Douglas and Messrs. Osborn & Sons.

**Cinerarias.**—Extra prizes were awarded to collections of *Cinerarias* from Mr. James and Mr. Lovesley, Isleworth; also to Mr. Wiggins, Waverley Nursery, High Street, Tottenham. Mr. James' group consisted of dwarf, bushy plants, bearing large, self-coloured, and exquisitely-edged flowers. Mr. Lovesley's were small plants grown in 6-in. pots, and were not more than 6 in. high, and bearing large heads of small, but beautiful and variously-coloured blossoms. Mr. Wiggins' strain consisted of edged, named kinds, among which were some very good blooms, but others were very loose and ragged in the petals.

**Cyclamens.**—Of these, there were several good groups, all of which were of a meritorious description. The best twelve plants came from Mr. H. B. Smith, Ealing Dean Nursery, Ealing, who had well-grown plants furnished with large, glossy, green foliage, and masses of large, pure white, purple, rose, and tinted blossoms, many of them delicately perfumed. The second prize was awarded to Mr. Edmunds, Hayes Nursery, Hayes, whose plants were good, but had smaller flowers than the preceding group. The best six plants came from Mr. James, gardener to W. F. Wilson, Esq., Isleworth; they were dwarf, clean, and well-flowered. An extra prize was awarded to Mr. R. Clarke, Twickenham, for a group of *Cyclamen* of the most meritorious description; the flowers were large, well formed, and varied in colour, and the leafage was elegantly marbled and mottled; also to Mr. H. B. Smith, Ealing, and Mr. Lovesley, Isleworth.

**Forced Herbaceous Plants.**—The best collection of these came from Mr. Roberts, and comprised neat plants of the beautiful blue-flowered *Symphytum capenseum*, *Dielytra spectabilis*, *Spizæa*, and a well-flowered plant of *Primula cortusoides*. Mr. Wheeler sent plants of *Polygonatum multiflorum* furnished with long, graceful racemes, and a group of *Primulas* flowers, a good plant of *Amaryllis macrantha*, giant  *Lily of the Valley*, and *Gloxinias*. Six *Primulas* were shown by Mr. Roberts, the best kinds being the white *P. nivalis* and *P. acialis rubra*.

**Miscellaneous Plants.**—An extra prize was deservingly awarded to Mr. B. S. Williams, of Holloway, for a collection of *Amaryllids*. It

contained many of the newest and best kinds, embracing the most brilliant self-coloured and striped flowers. These were effectively associated with Palms, Dracænas, the light and elegant Casuarina samaritana, so useful for table decoration; also Cupania filicifolia and Baucaura recurvata. A similar award was also made to Mr. H. Little, Hallington Place, Usbridge, for a group of Amaryllids, also for a group of small plants of Indian Azaleas, which, on account of their bright and varied colours, were much admired. Excellent specimens of Dentzia gracilis came from Mr. J. Douglas, gardener to P. Whitbourne, Esq., Ilford. They were 3 ft. high and nearly as far through, and represented a profusion of graceful garlands of snowy-white blossoms. Mr. James had smaller but well-grown, profusely-flowered plants. An extra prize was awarded to Messrs. James Carter & Co. for dwarf, well-flowered plants of *Dielstra spectabilis*. Good potsful of Lily of the Valley came from Messrs. Cutbush & Sons, Mr. Douglas, and Mr. James. An extra prize was awarded to Mr. Ratty for a well-grown plant of *Imantophyllum minutum*, bearing six massive heads of brilliantly-coloured blossoms; also to Mr. Wm. Paul for a display of cut blooms of *Camellias*, including the best kinds, mention of which has been before made in THE GARDEN. Of Chinese Primulas there were three collections, the best coming from Mr. James, and consisted of kinds with well-coloured, imbricated blossoms. Mr. Edmunds had a group in which were plants bearing flowers of a bright scarlet colour, and double kinds of a delicate mauve, very valuable for bouquets. A good collection of hardy bulbous plants came from Mr. Roberts, consisting of *Scillas*, *Græpe Hyacinths*, *Dog's-tooth Violets*, *Lachenals*, and *Fritteleins*, and Messrs. Gelsom & Sons sent a group of *Crocuses* in pots, for which a second prize was awarded.

At a recent meeting of this Society a fine bunch of Plantain fruit, 50 lb. in weight, grown in the Society's garden, was exhibited, and also several interesting medicinal plants in flower. The secretary reported the receipt of several donations of plants and seeds, and of £100 from Earl Dudley to the Conservatory Building Fund.

### THE WEATHER AND THE FRUIT CROPS.

This year February failed to "fill the dyke either with rain or snow," and in this part of the kingdom the weather that month from beginning to end was of such a mild, sunny, pleasant, and, I may add, unseasonable character as has seldom occurred within the memory of most people. Yet wital, the majority of plants that usually begin to move under the influence of the first returning sun's warmth were more than ordinarily backward until the extreme end of the month. A few of the first days in the present month were so sunny and warm as to feel more like May than March, the effect of which on vegetation was almost magical. Many things advanced with a rapidity such as we seldom experience in this country. The bloom of Peaches and Nectarines on open walls made as much progress in one week as is usually observable in three. After this the wind veered round to the north, where, with little alteration, it has been ever since. We had then over a fortnight of cold, unless weather, the dust blowing almost daily in clouds, much more seasonable than agreeable, with frequent frosts. On the night of Thursday, 14th inst., we had 12° of frost; on the 15th, 9°; and during the night of the 16th, 13°. I cannot hear that on the south side of London, even in the valley of the Thames, there was more than 8° or 9° on any of the above dates. This is remarkable, for high and dry as we are here on the north side, when frost occurs we usually get 3° or 4° less than on the south. On the night of the 23rd there was 12°; the snow shower of the 24th inst. was followed by 13° in the night, and 8° the night after. Peaches and Nectarines on walls are in full bloom, and these, as well as Apricots, have the bloom injured more or less, but to what extent, especially with the former, it is impossible to say. The air and soil were so unusually dry, has, no doubt, to some extent saved them, or none might have been expected to escape. In most places that I have seen through the southern division of the kingdom there is a profusion of Apple, Pear, Plum, and Cherry bloom, which fortunately, with the exception of a very few varieties of Plums and Pears, has been kept back by the dull, cold weather that prevailed during the greater part of the month, and will not expand before near the middle of April. During the continuance of unseasonably mild weather, which prevails to the last fortnight we experienced, I noticed one unerring sign that winter was not over, viz., the presence of considerable numbers of fieldfares; these birds never make any mistake, and so long as they remain we have not done with hard weather. T. BARNES.

Southgate.

**Bleeding in Vines.**—"J. S. W.," in his excellent article on this subject (see p. 253), omits one specific which I have found most successful in stopping bleeding, viz., ordinary sealing-wax. We lately planted out six Vines in a small house; they were cut back at the time of planting. Unfortunately, as the house was also required for bedding plants, a certain amount of fire-heat had to be kept up, with the inevitable result of copious bleeding. A hot iron, knotting, pitch, and quick-drying varnish were all tried without avail. As

in every case the bleeding recommenced before the various applications had time to dry, as a last resource I tried sealing-wax, first drying the cut with a hot iron, and then applying the wax with a taper. This set at once, and we have not been troubled with bleeding since.—C. H. W.

**Effects of the Frost on Spring Flowers.**—The late severe frosts coming after so long a spell of mild weather have done less harm to spring flowers than might have been expected. With Primroses it has been shown that very little protection, such as that of an overhanging plant, has prevented all damage. Snug nooks in the rockwork have proved their value. Polyanthuses and Primroses of the altaica type have been most touched. A small collection of Mr. Barr's beautiful and rare species and varieties of *Daffodils* in the corner of our rock garden seemed to be cut hard, their heavy leaves and flower-stems being bent to the ground; they have, however, recovered. A large clump of *Aubrietia purpurea*, with its pretty flowers peeping out of the snow, made one realise the beauty of the early Alpine flowers. Two plants which have not before bloomed with us (*Saxifraga virginensis*, with its pretty little white flowers, and *Pulmonaria virginica*, with its blue buds) seem unhurt.—GEORGE F. WILSON, *Heatherbank, Weybridge*.

### ANSWERS TO CORRESPONDENTS.

**Ivy on Trees.**—Does Ivy injure timber trees either young or full grown? and is it advisable to destroy it to any and to what extent?—J. M. [Ivy is generally thought not to injure old trees. When their bark is thick they do not feel its embrace like young ones. It is worth encouraging on some trees for the picturesque effect which it produces, and if too luxuriant it can be kept under by pruning the leading shoots now and then. On young trees Ivy is injurious, as it keeps off the dampness and air required for the swelling of their bark, and in their case it ought, therefore, not to be encouraged to any extent.—W. T.]

**Raising Privet.**—I want to rear some common Privet to make a hedge. I have frequently tried cuttings put in in spring 5in, or 6in, deep, but very few of them have grown. At what time of the year should Privet be set?—H. O. G. [The best time for planting Privet cuttings in order to form a hedge is in September or October, even if the foliage be on them. The cuttings should be from 1 ft. to 15 in. in height, so as to give them when planted a good hold of the ground. Privet is not particular as to soil, although light ground suits it best. Cuttings might easily be obtained from places where Privet is grown in quantity.—W. T.]

**Green Damp on Stone Seats.**—By what means can this be removed from a stone seat under a Yew tree—washing is of little or no use?—G. S. [Try boiled linseed oil, which must be rubbed over the stone with a hard brush; after a coat or two of oil the green damp will, as a rule, disappear.—W. T.]

**Name of Plants.**—~~TERRERIN~~—The name of your fungus is *Peziza coccoinea*. It is not uncommon about, and upon sticks (especially Hazel), in some places at this time of the year.—W. G. S.—B. C.—The plant you send is a species of *Oxalis* with pretty canary yellow flowers, which grows very freely as a naturalised plant in warm countries. We fancy we have seen it abundant among the Grass in the Naples Botanic Garden. It is probably *O. cernua*.

**Celery for Exhibition in July.**—Can you inform me which is the best and quickest way of growing Celery for exhibition in July, and also the best manner to use as a stimulant, and the best variety to plant as regards size and earliness?—SUSANNE. [If you require your Celery in the forthcoming July you must sow at once in shallow pans of light rich soil, well drained, placed in a warm house or plunged in a manure frame; place a sheet of glass over the pan, and on the lay Moss or leaves to shade the soil and keep it moist. Always water with tepid water, and as soon as the plants show themselves remove the Moss and, a day or two after, also the glass. Gradually inure the plants to the light and air, and as soon as they are large enough to handle, prick them out carefully into other pans or boxes, 4 in. or 5 in. apart, or into a warm bed of light soil in a frame. When well established let them be as near the glass as possible, keep them well watered, and occasionally stir the soil between the plants and sprinkle a little soot on the surface, afterwards watering it in. A frame which has been used for early Potatoes or a similar purpose will answer well in which to finally put out the plants. Use turfy loam, as free from worms as possible, and with it mix plenty of manure, which should be prepared at once by adding to every barrowload about 1 lb. of salt and a shovelful of soot; turn frequently until wanted and then mix it thoroughly with the soil, which should be about 1 ft. in depth. The after treatment consists in giving plenty of water and air on fine days. Raise the frame when the plants get too near the glass, and in June it may be removed altogether. Earth up with dry soil free from manure, and syringe frequently overhead. The last earthing should be done about three weeks before the Celery is wanted for use. White Celery is the earliest, but smaller than the red; the chief point, however, to observe is to get solid, well-hatched heads rather than large woolly ones. Avoid checks, or the plants will run to seed. By strict attention you may obtain fairly good Celery in July, but the seed ought to have been sown in February.—S.]

"This is an art  
Which does mend Nature: change it rather: but  
THE ART ITSELF IS NATURE."—*Shakespeare*.

### FUCHSIAS ON WALLS.

MR. MITCHELL'S remarks, together with the striking illustration of a Fuchsia on a wall (see p. 283), suggest the question, Why Fuchsias on walls are so rare? All the older varieties, such as *Riccartoni*, *globosa*, *macrantha*, and others, were almost hardy on walls in Scotland some thirty years ago; they are not likely to have become less so, and several most useful sorts for open air culture among more modern varieties, such as *Corallina*, *Madame Cornelliessen*, and others, seem about as hardy as the old *Riccartoni*. Some of the finest specimens of Fuchsia in the open air which I have ever seen were on a wall at Bellwood House, the residence of Mr. Turnbull, of the Perth Nurseries. They were from 10 ft. to 15 ft. high, if I remember rightly, and were simply magnificent. The position was somewhat warm and sheltered, but hardly more so than thousands of sites that might be chosen for Fuchsias in numbers of gardens in different parts of the country. Then it is so easy in less favoured climates to afford Fuchsias on walls a little protection in winter when needful; a bunch of Wheat straw tied over them, the whole being enclosed under a common mat, would carry the majority of Fuchsias safely through our winters; being deciduous, this treatment would suit them well. When uncovered all that is needful would be the pruning off any superfluous or dead shoots. The mass of the plant would pass thus through most of our winters in safety, and make a free growth and bloom profusely the following season. Fuchsias live long on walls, and the longer they stand the more profusely, as a rule, they bloom, and this property renders them peculiarly well adapted for the clothing of walls. No plant, indeed, is more accommodating in its habits than the Fuchsia. It may be cut or trained into any shape or form; run up into a stately pillar, displayed over a panel, or, best of all, allowed to ramble freely over and densely clothe a wall as a huge bush or half-standard tree backed up against it. Planted in a well-drained border of medium rather than rich soil, the wood of many varieties of Fuchsias get sufficiently hardened before winter to bear a considerable amount of frost with impunity.

There is another capital mode of growing Fuchsias against rather than on walls. For this mode of culture the soil can hardly be too rich, nor the summer treatment too liberal. This method is admirably adapted for hiding low walls and fences with a rich screen of summer beauty. If Fuchsias be simply treated as *Pentstemons*, *Phloxes*, *Asters*, or other herbaceous plants, it is as well not to cut the shoots back till the spring; or if pruned back in autumn, a little Cocoa-nut fibre refuse, ashes, sawdust, or a mulching of rough manure should be spread over the stools to exclude the severe frosts of winter. Such plants break or grow with extraordinary vigour. The shoots may be either thinned and trained vertically up the wall or in any other direction required, or a sort of forest of Fuchsias may be tied back to it by a thick cord passing along in front of them. By the use of manure water and other means the annual shoots of Fuchsias treated thus may be made to grow from 3 ft. to 6 ft. or more in the summer months, and flower freely from base to summit. Few sights in a garden are equal in grace and beauty to a Fuchsia wall well and fully clothed.

Of late years, too, when so much has been said and written on the flat monotony of the much-abused bedding-out style of flower gardening, it is surprising that standard Fuchsias have not been more used than they have been. The Fuchsia is quite at home as a standard, and any variety may be grown into that form with a little care and skill in the formation and training of the plants. The flowers are never seen to such advantage as when they droop and weep down from a head considerably elevated from the ground. If half the care and labour bestowed in the growing and forming of standard *Pelargoniums* were devoted to Fuchsias, the effect

would be far more rich and congruous. Then there are some noble species of the Fuchsia, such as the *corymbiflora*, that must be grown as standards to have their beauty fully seen. The racemes of flowers and the flower-tubes themselves are so long that they only look their best when raised on clear stems of 4 ft., 6 ft., or more in length. This species, too, now so seldom seen, is one of the very best for outdoor culture. Thirty or more years ago I used to bed out Fuchsia *corymbiflora* and *fulgens* in East Suffolk, and found them both the most valuable of all flowers for the decoration of large silver epergnes and vases for the dinner-table. But, though the *corymbiflora* flowered freely in beds of poor soil, the corymbs of bloom were too long for the dwarf plants, as they used to whip the ground in windy weather, and so got soiled. The foliage alone of this and a few other species makes them fit to associate with so-called sub-tropical plants, whilst the noble flowers would add a peculiar richness and grace to groups of *Dracænas*, *Solanums*, *Cannas*, or *Beet*.

Standards of Fuchsia *corymbiflora* used to form striking features at Shrubland many years ago, when Mr. Donald Beaton was in the hey-day of his strength and success. A row of these plants flanked the walks in the looking-glass garden, and the effect was as pleasing as it was at that time unique. The walk terminated in a small summer house, the notable feature of which was a picture of a lovely landscape in the centre of the wall. In front, as the visitor advanced the illusion dissolved, and he found himself entranced before an open frame, commanding the richest parts of the garden, the park beyond, and the woods and fields in the far distance, with the river rippling, which becomes the Orwell, winding like a large silver thread through the verdant green meadows that it enriches and adorns. The looking-glass garden is, I believe, still at Shrubland, but I fear the noble specimens of the Fuchsia *corymbiflora* that used to form its richest embellishment have disappeared. If not, I have no doubt that Mr. Blair, the present gardener at Shrubland, will tell us something concerning them. Mr. Beaton, my first friend in East Anglia, and one of the truest and kindest that ever man had, was marvellously proud of those Fuchsias, and took pains to describe their origin and treatment to me, though just then his enthusiasm was at white heat in pursuit of a white, scarlet, and a blue *Pelargonium*. The finest specimens were in 12-in. pots. About October 1 the best of them were placed in the conservatory for winter flowering. The others, and those not in pots, were closely stowed away in a dark, Orangery sort of place, among huge *Camellias*, *Rhododendrons*, &c., for the winter. About April they were overhauled, pruned, if necessary, and started for a time in one of the houses, and reinstated in their quarters in the borders in the looking-glass garden about the end of May. For bedding out a similar course of winter storing was adopted. Old plants of these larger species flower more freely than cuttings, and in choosing cuttings rather weak shoots should be selected, and rooted early in the autumn. Fuchsia *fulgens*, being bulbous-rooted, may be taken annually, and stored and treated like *Marvel* of Peru, *Salvia patens*, or *Dahlias*. The hardy red Fuchsias in beds or borders, however, do not need lifting; they may be safely left in the open air for the winter with such protection as we have indicated, or without, if their tops are left on till the spring. It is rare, indeed, that winter frosts will destroy the wood of well-ripened plants of Fuchsia to the ground, and should it do so it is better, perhaps, for next year's crop of shoots, for the Fuchsia almost invariably breaks the strongest just at the ground line or around the collar. The whole of our greenhouse varieties, as far as I am aware, might be used for bedding out with less rather than more attention than is now bestowed on *Pelargoniums*. In many positions, as in raised beds, borders, baskets, and in vases, what a welcome change and freshness would be produced by the use of Fuchsias! To those who may doubt these thriving and flowering in the open air, I would add that they need have no fear on that head. We generally grow most of our late specimen Fuchsias in the open air from June to the middle or end of September, and find the foliage finer, the wood stronger and more short-jointed, and the flowers far more numerous as the result of this hardy treatment. Large spare plants, from 6 ft. to 8 ft. high, have also been frequently planted out in beds or borders, and have

done well. Therefore, to all in search of a new sensation or a more graceful form of beauty in their flower gardens, we would earnestly give the advice to try Fuchsias on their walls, in their beds and borders, as standards, and as dwarf single plants, or in masses.

D. T. FISK.

### THE FIGHT FOR FRUIT.

THIS continues, and becomes more severe. March indeed went out, like an angry lion, in a blinding snow-storm, succeeded by a tremendous frost, registered in such widely differing degrees as from 10° to 20°. Coming so suddenly on the heels of the snow probably added to its intensity. The ground this morning (April 1) was as iron, like what we find it in December. In low-lying situations the frost was so severe that I fear little or no fruit can have escaped. Even the hardest plants, such as Violets, have their leaves blackened, as if a current of fire or of hot water had passed over them. Dwarf Roses have every young shoot killed or browned. Standards have suffered much, though not quite so severely. Marshal Niel, showing Roses in the open air, has got so severely bitten that the myriad trusses of Banksian Roses droop, as if for support and warmth, on to the branches. Common *Dafodils* and *Narcissus* are lying all over the ground—a confused mixture of leaves and flowers. Common *Primroses*, and even the *Tusilage* fragrans, are also flattened or blackened; while the lovely *Myosotis disitiflora*, first blushed with a tinge of red colour, and then bent to the earth in sheer despair. Most of these will rise again with a change of weather; not so, however, the fruit blossoms—stabbed through the heart of their pistils and ovaries with the cruel black darts of the frost. These stabs in the cold and the dark are absolutely fatal. No refreshing dew or soft summer-like rain, nor bright warm sunshine can bring back the dead flowers to life. These but make the death more apparent; hence, I always contend for spring protection. Broadly stated, every unprotected Apricot, Peach, and Nectarine bloom has perished within the last ten days. It is equally certain that protection from without, or a very small consumption of fuel in heated walls, would have saved at least a crop out of all those myriads of blossoms frozen to death. I cannot find a single exposed bloom alive. Apricots are frozen worst before the flowers were even open, and closed Peach buds cannot resist such tremendous frosts and winds as these, so these, too, are gone. Many under copings, &c., look suspicious, but I still hope a crop is left on the trees best protected. Forward Pears also seem dead; the embryo fruit behind the unopened flowers are frozen through. Some of the Apples also look suspicious; it is too soon to be sure of them yet. Those protected with canopies of branches look sound and fresh, though they were the forwardest. Gooseberries on the summits of the branches are gone; but those, rather thick, on espaliers seem to have escaped better, the upper branches sheltering the under ones a great deal. Currants are less forward, and, so far, do not look black. Nuts seem much injured, as do forward Plums. Cherries seem safe, but appearances are very deceptive. Apricots, for example, turn black at once, and show that the fruits are destroyed. Not so Peaches; the petals look as pink and beautiful as ever, though the pistil and ovary are quite dead. A further and more minute examination to-day (April 2) shows very few blossoms, even under the threefold protection of wooden or glass copings, double nets, boughs, &c. The weather promises a change at last, but the greater part of the crops of wall fruits is ruined.

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— Tiffany I consider the cheapest, lightest, and most effective material for protecting wall trees. Have light wooden frames made strong enough to bear the stretching required; as to height, the tree must be the guide. The frames should be about 5 ft. in width. Stretch and nail the tiffany on them, and they are fit for use. Lean them against the wall, leaving room enough to walk behind them. Fasten them to the wall with cord and nails. They need not be removed until all danger is over, and they shade the trees just enough to prevent them getting too forward.—F. CANNELL, *Feltthorpe*.

**Fruit Prospects in Cleveland.**—After ten days of continued hard frost and snow, fruit trees and bushes present a very frost-bitten appearance, and we hardly expect the fruit crop to be better than last season. About Yarm—a fine, low-lying, sheltered spot—where fruit for market purposes has been grown from a very early date, the trees look seriously injured, Pears specially. At Great Ayton, where Apricots are cultivated on almost every house wall, the crop will this year be a failure. The latent buds of Gooseberries may yet produce a light crop, if the weather become favourable. This season will test the reputed hardness of the Gooseberry called *Industry*, which is so favourably spoken of about Newcastle. It would be doing useful service if growers of this variety would report on

this season, Gooseberries forming, as they do, the most important part of the fruit crop in the north of England.—C. M'D.

**Fruit Crops in Devonshire.**—Peaches and Nectarines have been in full bloom here for these three weeks past, and appear to be setting freely. The trees, too, are making healthy growth. Apricots are also well set. My plan is to protect with double ordinary fish netting, but in addition this year I have used large, flat branches of common Laurel, grown under the shade of trees, and the bloom seems quite uninjured. The trees were quite protected by the netting and branches from a heavy fall of snow which we had during the morning of March 29. The whole of the Peaches and Nectarines here are on an east wall, and some of our finest trees are fully forty years old. The netting and branches are supported on Larch poles, placed about 6 ft. apart, and tied together on three pieces of tar cord run the entire length, which keeps both netting and branches off the wall.—JOHN GARLAND, *Killerton, Exeter*.

**Limes in Montserrat.**—A pamphlet, entitled "The Island of Montserrat," just published, contains much interesting and valuable information respecting the cultivation of the Lime (*Citrus Limetta*). According to a Blue Book for 1875, the little island of Montserrat has been raised during the last fifteen years from a very low point of depression to a degree of substantial prosperity mainly through the efforts of Sturge's Montserrat Company. The Lime tree plantations owned by this company now cover about 600 acres, and contain 120,000 trees. These are generally planted about 15 ft. apart, and the highroad passes between them for a distance of two miles. We are told that no more beautiful sight can be seen than these orchards when the trees are laden with their bright fruit, and at the same time the air is pervaded by the luscious fragrance of the blossoms. The leaves, even, are so highly fragrant, that they are commonly used throughout the West Indies to perfume the water in the finger-glasses at dessert. About seven years elapse between the sowing of the seed and the tree arriving at full bearing. Regular pruning is required, and the plants must be kept clear of those mischievous parasites, *Mistletoe* and *Dodders*. The juice from the finest fruits—which are first sliced by water-power, and afterwards squeezed until all the juice is expressed—is sent to England, where it is used in the manufacture of various Lime-juice products; that from the inferior fruits is converted into citric acid. Graphic descriptions of the glorious scenery and vegetation are given, and some highly-coloured chromos help to convey a good idea of the beauty of the Lime orchards.

**Cucumber Growing.**—What is the best way of growing Cucumbers under glass, heated by hot-water pipes, beginning with directions for sowing the seed, heat required, soil, ventilation, watering, the cure or prevention of insect enemies, the room each plant should have, and the distance the trellis should be from the glass?—**QUEERIST**. [This is a good time to commence the cultivation of Cucumbers successfully, as every day we expect more sun-heat and light. The seed ought to be sown in pots or pans, and when of sufficient strength the young plants should be potted singly in small pots, and kept in a temperature of from 60° to 65°; the soil used for potting them off, and for the border when planting them out, should be of a light loamy character enriched with some well-rotted manure. When planting them out they may be about 2 ft. apart, and the trellis should be 15 in. from the glass, the plants being trained on the inside of the trellis. Sufficient ventilation must be given on warm sunny days, from 75° to 80° being the maximum, and if a slight shading of tiffany be put over the pit on very warm weather it will keep the plants from flagging. They must be syringed frequently to keep red spider in check; and if thrips make their appearance a little Tobacco water or soot water may be syringed over them with safety to keep them under. Some of the smaller varieties of Cucumber, where quantities are wanted, are the best for cooking or eating. Bollisson's Telegraph and Master's Prolific are excellent kinds. Where long show varieties are desired, Tender and True, Blue Gown, and Daniel's Duke of Edinburgh can be recommended.—W. T.

**Apricot Bloom.**—"A. D." (see p. 213) wishes to know the date on which the first Apricot blooms expanded. Our first blooms were open on March 6; the flowers seem unusually large and fine this spring. Our trees are on a south-east wall and unprotected; those on other positions are opening fast. On first Peach blossoms opened on the 12th, on an east wall without protection. Plums and Pears will soon be opening, and there seems no lack of bloom buds G. NOAKES, *Mountfield Court, Sussex*.

**Destroying Crickets.**—My Cucumber house and one of my orchard houses, both heated by hot-water pipes, are infested with crickets. Can you recommend an effectual means for destroying them? Last year they ruined a large number of my Peaches; and, as I have a promising crop for this year, I am anxious to know of some method by which this noisy and mischievous little enemy may be destroyed.—G. L. M. [Try Chase's Beech's Paste.—S.]

## NOTES OF THE WEEK.

**Violet Belle de Chatenay.**—Flowers of this fine new double Violet have been sent to us by Messrs. Lee, of Hammersmith, and very handsome they are. They are nearly as large as a very Daisy, white, here and there slightly tinted with violet, and very fragrant. A good woodcut illustration of this Violet is given at page 117 of the current year's volume.

**A New Pavnionia.**—The best Pavnionia which we have yet seen is now in bloom in Mr. Bull's nursery, at Chelsea. In habit it is much stronger than *P. Wiota*, and its flowers are considerably larger and brighter than those of that species. When better known it will doubtless be appreciated as a winter decorative plant.

**New Gardenia.**—A new Gardenia, named *G. Kalbreyeri* is described and figured in the last number of the "Journal of Botany" by Mr. Hiern. It has fragrant Lily-shaped, yellowish, flowers spotted with brown, and is stated to form a shrub some 12 ft. or 15 ft. in height. It was collected by Kalbreyer at Old Calabar.

**Blandfordia Cunninghamii.**—This, one of the best of the Blandfordias for greenhouse decoration, is named *G. Cunninghamii* after the London nurseries. It is of easy culture, and established plants of it never fail to produce stout flower-spikes surmounted by whorls of orange-scarlet, bell-shaped blossoms, which are exceedingly effective when associated with small Ferns, Grasses, or Palms.

**Clerodendron Balfourii** on Low Walls.—Although this beautiful stove climber always succeeds best in a light sunny position, it will do fairly well when trained along low walls, such as are frequently found in glass structures. For such purposes it is best grown in pots, and if the shoots be well pruned in every year they will produce an abundance of large green leaves and a fair amount of blossom. We lately saw some thus grown in a London garden blooming freely.

**Daffodils at Tooting.**—Mr. Barr's collection of these hardy spring flowers is just now in full bloom, and well worth a visit by anyone interested in this class of plants. All the known species and scores of varieties are represented, and many of them are almost as beautiful as some of the choicest Orchids. In spring gardening the smaller and better kinds of Daffodils should everywhere play an important part.

**Amantophyllum miniatum.**—The improvements both as regards the habit and flowers of this useful decorative plant which have been made lately are very satisfactory. A variety named *superbum*, now flowering in Mr. Parker's nursery, shows a decided advance on the type. The leaves are broad and glossy green, and the flowers, which are well formed and of a brilliant orange-scarlet colour, are produced in trusses of from fifteen to twenty. Another advantage is that the flower-heads are borne on longer stalks than those of the type, and are, therefore, more effective.

**Iris reticulata in Pots.**—During snowy or wet weather the beauty of this valuable Iris, when grown in the open border, is often, to some extent, lost. It therefore requires to be either covered with a hand-light or potted, in order to preserve its flowers. We lately saw some in pots and pans, in a nursery near London, which had been taken from the open ground whilst in full bloom. Placed in a cool house, it keeps in perfect condition for several weeks, and it fills the whole house, with its scent. Either for the conservatory, or for placing in vases in rooms, this Iris might be used extensively; and if grown in pots or pans, plunged in a bed of ashes or soil during summer, and taken indoors when cold weather sets in, beautiful plants of it in full flower might be had much earlier in the year than they could be obtained in the open air, and they would form fit associates for Cyclamens, Primulas, and similar decorative plants.

**Tree Peonies in the Conservatory.**—Plants of the Tree Peony forced into bloom now form attractive objects in the conservatory at Pine-apple Place. They consist chiefly of plants with a single stem 12 in. to 15 in. high, and surmounted by large heads of blossom. The variety grown is one named *P. arborea Elizabethae*; it bears very large heads of flowers, which are well-formed, very double, and of a bright rose-pink. In order to get Peonies to open their blossoms perfectly little heat must be given until the bloom-buds are visible, when they may be placed near the glass in a warm temperature with every prospect of success. On account of the attractive character and longevity of the blossoms of the Peony, they might be grown for conservatory decoration either in the shape of large or small plants to a much greater extent than is at present the case. Small plants, such as those just described, are among the best subjects for vases in rooms.

We are obliged to keep a considerable amount of correspondence concerning the opening of Kew Gardens until next week, owing to the report of the meeting at Ghent taking up so much space.

**Answers to Correspondents.**—Many of these we cannot insert till next week, owing to pressure of matter.

## NOTES FROM KEW.

**Hardy Herbaceous Plants.**—Owing to the unfavourable weather but few fresh outside flowers are to be seen. One of the prettiest of these is the Blood-root (*Sanguinaria canadensis*), from the United States and Canada; the white flowers are large and showy, and overtop the kidney-shaped leaves. The orange-coloured juice of the root-stock was formerly used by the American Indians to smear their bodies. A rare variety of the Hoop-petticoat *Narcissus* (*N. Bulbocodium Græzellei*), which, in a wild state, is confined to Spain, is also in flower. *N. moschatus* is another very charming Daffodil, with fine blossoms, the trumpet-shaped corona of which is primrose and the remaining portion white. *N. Tazetta* var. *Polyanthus* has a yellow corona, the rest of the flower being white. *N. poeticus* var. *radiiflorus* is an attractive variety of that beautiful section of the genus to which the name of Piesant's-eye is often given. *Fritillaria montana* is a dwarf Frilly from Algiers, having narrow, glaucous leaves and drooping, bell-shaped, dark purple, faintly-bell-shaped flowers; this rare species is, however, inferior in beauty to the Snake's-head (*F. Melegriæ*), of the moist meadows of some of our eastern and southern counties. *Corydalis solida* is a very pretty tuberous-rooted Fumitory, with glaucous leaves and purplish flowers this has naturalised itself in some localities in England.

**Greenhouse Plants.**—*Geranium anemoneifolium*, introduced nearly a century ago from Madeira, has long-stalked, deeply-lobed leaves and panicles of purplish flowers. *Palargonium ardens* var. *superbum* is a Cape species, with small, brilliantly-coloured flowers fiery-scarlet with black blotch. The orange-velvet flowers of *Imantophyllum miniatum* are exceedingly lovely; this beautiful Cape Amaryllid seems to succeed quite as well in the cool greenhouses as in the stove. *Acacia pulchella* is an Australian bush, with very small, pinnated leaves and globular heads of orange-yellow flowers, borne singly on stalks as long as, or even longer than, the leaves; this very desirable species is worthy of general cultivation. Another *Acacia*, *A. brachybotrya* var. *glaucophylla*, differs from the last-named almost as much as one species can differ from another of the same genus; it bears no true leaves; the flattened leaf-stalks which take their place are oval, very glaucous, and thickest on the branches; its blossoms are similar in colour to those of *A. pulchella*. *Brahysema melanopetalum* makes a rather straggling bush, but is remarkable for the colour of its petals, a genuine black being extremely rare in flowers. *Guodia lotoifolia* is a very pretty member of the Pea family from Australia, and one, moreover, of very easy cultivation; its neat, trefoil-like, light green leaves and racemes of conspicuous yellow flowers are very pleasing. *Coleonema album* is a handsome, dwarf, evergreen shrub from the Cape of Good Hope; its branches are closely set with small, linear, aromatic leaves and small, pure white, star-like flowers. *Diosma ericoideus* makes a charming pot plant, and is of very neat habit; the branches are thickly set with small, oiliated leaves, and terminated by umbellate heads of white blossoms. One of the very best and most showy of the Pimeleas is *P. spectabilis*, with large heads of creamy-white flowers. *Phytica gnidioides*, with flowers many times the size of those of *P. ericoideus* (mentioned in "Notes from Kew" some time ago) is well worth growing. *Amphicomme Emodi* is again in flower; it is a remarkably handsome *Bignoniaceae* plant, about 1 ft. in height, with pinnate leaves and racemes of large, pink, tubular flowers. *Rhododendron fulgens* has deep crimson flower-heads, and is one of the most striking and distinct of the Himalayan *Rhododendrons*.

**Stove Plants.**—A double variety of the West India *Amaryllis* *egnestria* has large, very beautiful, vermilion-scarlet flowers. This was introduced to English gardens at the commencement of the present century, but is rarely seen, in spite of its beauty. Genera *rosea* Raesi, one of Van Houtte's seedlings, is a most desirable kind of the Leopoldi type; it is of very dwarf habit, and its pink flowers are freely produced. *Soberberia mexicana* is another *Generad* with fine, showy, dark blue flowers. *Jonesia Asoca*, or *Saraca indica*, as it is also called, the *Ushoka* of the Bengalese, is commonly planted throughout India and the Mauritius for the beauty of its foliage and flowers; the latter are produced in great abundance, and bear a considerable resemblance, both in size and colour, to some of the scarlet *Ixoras*; the only drawback is that it requires more room than can generally be afforded it in any but large establishments. *Clavija macrophylla*, from tropical South America, has an upright, unbranched stem, crowned with a fine head of large, leathery, dark green leaves. From the old wood, for some distance below the crown, spring large numbers of racemes of orange-yellow flowers.

**Orchids.**—*Dendrobium crystallinum* is a handsome species from Burmah; it has narrow, white sepals, and broader, purplish-tipped petals; the apex of the large lip is also purplish, the whole of its base yellow. *D. superbum* var. *gigantum* is a free-flowering variety, bearing very large, disagreeably-scented flowers, the sepals and petals

of which are rosy-purple, and the base of the large, trumpet-shaped lip several shades deeper in colour. *D. Parisii* was introduced from Moulmein some fifteen or sixteen years ago by Messrs. Low. Although it bears a certain resemblance to *D. nobile*, it is quite distinct from that species. Flowers spring from nearly the whole length of the stiff, leafless branches; the sepals are a beautiful light rose colour; the petals are broader but of the same colour, while the nearly round, downy lip is richly marked with purple. *Odontoglossum roseum*, with its delicate, deep rose-coloured flowers, is a most charming little Orchid. *Restrepia elegans*, found in a wild state in Caracaca on the Mosay bark of trees, at elevations of from 5000 ft. to 6000 ft., is similar to *R. antennifera*; the general ground colour is yellow, thickly spotted with purple. *Oncidium Papilio* and *O. Kramerianum* are two nearly allied species, the first from Trinidad and Venezuela, the other from Peru; both have very singular flowers, borne singly on the ends of very long, slender stalks; the upper sepal and petals are long and narrow, the lateral sepals are shorter and much broader. From the appearance presented by these strange, yellow and reddish-brown flowers, the name of Butterfly plant has been applied to the two species.—†.

### HOW TO GET RID OF SLUGS.

THE discussion as to how to get rid of slugs has begun very well, and I hope it will be continued. The plan suggested (see p. 273) is Mr. Carson's; not mine. I have sent him a copy of THE GARDEN that he may answer any remarks made in it if he pleases. It shows well the good of free public discussion, that one great authority looks upon the plan as "wonderfully like a good joke," and is followed by a greater authority with still wider experience, who says that it is substantially what he has long adopted, recommended, and found efficacious. I hope the ball will be kept rolling. In some gardens, especially where the plants are not much disturbed, slugs are a most serious nuisance, the more so that, owing to some mysterious law of Nature, our favourites seem almost always to be theirs.—GEORGE F. WILSON, *Heatherbank, Weybridge Heath.*

— I am pleased to see the interest that is taken in my remarks in reference to the destruction of slugs. I must, however, disclaim all merit or originality in the matter; but, having tried many plans, I have found this to be one of the best. "J. S. W." says truly "that if a night or two be missed they are just as bad as ever. The lime must reach the slug if it is to kill it." Now we found in practice for at least fifteen years that no plan got the lime so thoroughly amongst the crops, and that without injury to them, as the fine dust carried like a mist by the wind into all parts. The plan of keeping young ducks, mentioned by Mr. J. Smith, is an excellent one, and was practised by us for several years; but we found that the ducks had to be turned out long before they were fit for the table, owing to their laying down and tramping on plants and borders, and also stuffing themselves with green Peas and Strawberries instead of Sage and Onions. Mr. D. T. Fish is disposed to be severely facetious, but I accept it all in good part for the help which he gives me when he says "the lime can neither be too hot, too fine, nor too dry, and the mere quantity is of less moment than these qualities." With regard to the time required for the operation, he cannot have read my letter carefully, as I mentioned that two men walked round the paths; yet he says "that the lime has almost as strong a tendency to rise into the air as to fall to the ground." This very tendency allows the wind to carry a portion of it, perhaps, across an acre. In practice we found in large gardens, with few walks, that about 20 ft. apart was enough; if the operation was repeated in these gardens, they were gone over so as to cross the previous tracks, so that the quantity a man can plough in a day is no criterion as to the time required for this kind of work. Again, I mentioned that in 1849 we had no slugs in Victoria, and therefore those there now are not likely to be thinner in their skins than their parents introduced from Britain.

Mr. T. Barnes concluded with some excellent remarks when he says that "one good dressing, given at a well chosen time, will effect the destruction of more slugs than trapping and hand-picking daily for months. It is, however, necessary for those who try such work to be well acquainted with the habits of the slugs and the kind of weather that brings them out in the greatest numbers." He, however, seems to have missed the idea that I wished to convey, but may have failed to put as clearly as I might have done, viz., that this dusting can be put in practice with good effect without disfiguring a garden or injuring delicate plants, and he fails to consider that when a slug throws off its slimy jacket and the lime on its back, it cannot move from the spot without coming in contact with a fresh supply of lime on its more tender and vital parts underneath, thus insuring its destruction. I have often tried his plan of heavy liming, having used as much as forty bushels of unslaked lime at one dressing, and, as far as slugs were concerned, found more benefit from five bushels

used through bags. Let me add that the lime must be hot and caustic, not long slaked, as I have found, on moving a bag of lime that had remained from a previous season, several large slugs snugly sheltered under it, and at least 6 in. of similar inert lime underneath them. I can thus understand a failure at Drumlanrig, where "there was always a shed kept full for the purpose." While fresh from the kiln, the smallest quantity will kill; yet when it comes in contact with damp ground, or wet by a shower, though spread an inch thick it will soon be harmless.

One general remark to my critics and I have done; we always worked, as a sailor would say, to windward, beginning at the lee side of the garden and walking away from the dust, and when there was a steady breeze, the men could dispense with any covering over their clothes, the filling one or two shovelfuls into the bag being for them the most trying part. Should the arms get tired beating when the lightest of the lime is on, the bag may be shaken up and down. I trust that some of your readers will give the plan a fair trial, as it is easily put in practice and entails no more trouble than many other operations in the garden, such as watering, hoeing, digging, &c.—JOHN CARSON, *Clapham.*

— One of the best plans for clearing a garden of slugs, and one which I have adopted for many years, is to place small handfuls of fresh brewers' grains about the garden on a mild, damp evening, about six o'clock, and then when it is quite dark, or between nine and ten, to go round with a bucket of fresh lime and dust each heap, thereby killing great quantities. I have seen fifteen or twenty on a handful of grains, and they come to them from all directions.—JOHN GARLAND, *Killerton, Exeter.*

— Is it a fact that ducks do eat slugs? For some years I have encouraged them in the garden, but on several occasions I have caught and given slugs to them, which they invariably fail to see, while at the same time they eat and devour with the utmost avidity the smallest or largest worm. The idea that ducks are fond of and devour slugs is, I fear a delusion, for, notwithstanding their constant presence, if there be a special plant or plants—unless other means are taken to secure them—the slugs are pretty sure to devour them. Fresh slaked lime, applied at a proper time, makes short work of them, and is, in fact, the only certain remedy. It is, however, only on special nights, known alone to those who have noted the habits of the slug family, that they all seem to come out with one accord, and then, if the opportunity be seized, old and young, big and little, suffer alike. The only drawback to the use of lime is that it makes the place look so unsightly afterwards. I have mixed soot with it to take off its glaring whiteness, but think that thus diluted it is less effectual. An atom of fresh lime will literally drill a hole into a slug, but it requires at least two doses of soot to settle him. Cultivators resort to many devices to entice slugs from pot plants; it would be well to make these known.—T. SMITH, *Newry.*

— I am sure that Mr. Smith's suggestion (see p. 275) concerning ducks, as a cure for an evil that many of us have to contend against at this season of the year, is a very good one. It was mentioned to me by a friend twelve months ago, and since that time I have never been without a few of these birds, to do that work which all human efforts had failed to accomplish. My garden, till 1872, had been for many years very much neglected, allowing slugs and worms to increase enormously; and although, by means of perforated zinc and pot protectors, Cabbage leaves, and Barley chaff, I avert for the last few years preserved the rarer flowers, I never could exert the great destruction caused by these horrid pests upon the larger kind of herbaceous plants, and as Mr. Smith says, many of the green vegetables have been almost unfit for use. I am quite certain that the number of slugs is greatly diminished this spring. The patches of *Iris pumila*, which last year were almost all eaten off, are now swelling for bloom; and the plants of *Delphinium Belladonna* (to all appearance their favorite food) are almost untouched, and if I may not attribute this to the ducks, I do not know where to look for the cause of so happy a result. Sea gulls, if they can be procured, are far prettier, and I believe more effective than ducks, but I have never been able to keep them long enough to do much good.—E. F., *Swaffham.*

**Propagating *Nertera depressa*.**—Anyone wishing to get up a stock of this can readily do so in the following manner, viz.: Take the old plants, divide them into small portions, and then pot them off. They should be placed in heat for a time until started into growth, when all the points of the young shoots should be taken off and inserted in pans filled with one part leaf-mould and the remainder sand. When watered, a large square of glass or a bell-glass should be placed over the pan. Thus treated, they will take root in a few days, when they should be potted off into thumb-pots and again placed in heat until established, when they should be removed to a shelf in the greenhouse until the fruit is set.—T. W. S.

## THE FLOWER GARDEN.

### ANDROPOGON HALEPENSIS.

THERE are so few large hardy ornamental Grasses in cultivation, that it is with pleasure we from time to time recommend anything useful in that way. M. E. André informs us that this plant is a native of Syria, and that it has been grown in Paris gardens since 1862. It is quite hardy, at least with a covering of leaves about the root, during winter. Its aspect is quite different from that of the Pampas Grass or the New Zealand Arundo, which now adorns so many of our gardens, but all the more valuable from being so distinct from them. Plants well grown in the public gardens of Paris attain a height of nearly 6 ft., spreading into large clumps, and the effect is very grace-



*Andropogon halepensis.*

ful when the plants are laden with flowers or seeds. To secure a good development of this plant it is necessary to plant it on rich and deep soil, well drained and well watered in summer.

**Aplopappus Fremonti.**—This is a comparatively dwarf species, growing from 6 in. to 12 in. high, with smooth erect stems branching corymbously upward, and oblong, or linear-oblong, half-clasping leaves, mat entire and pointed. The flower-heads are more than 1 in. across, terminating the leafy branches, both disk and ray florets being yellow, the latter being about  $\frac{1}{2}$  in. to  $\frac{3}{4}$  in. in length. It promises to be a desirable addition to hardy border Composites. It is a native of Colorado in the sub-Alpine districts, and requires only the treatment of other plants of its class.—W. THOMPSON, Ipswich.

**Duplex Polyanthus.**—The Duplex forms of the Polyanthus, or, as they are known in commerce, *Primula veris* duplex, possess, in addition to their decorative qualities, the curious property of having one flower growing out of the other. All of these Hose-in-Hose kinds are very early, which is an important matter, and they are also robust; either for the open border or in pots in the hardy plant house they are very beautiful. They comprise white, yellow, sulphur, buff, and crimson hues, some partaking of the form and habit of the Cowslip, and others Duplex kinds of the self and fancy Polyanthus. One of the yellow kinds throw up first golden-yellow flowers on Primrose stems in great abundance, and these are followed by scapes, so that the period of blooming is materially

lengthened. The older forms are pin-eyed, with the exception of the one just alluded to, but the newer kinds have size and form equal to that seen in the best Polyanthus flowers. I hope, during the present season, to secure seeds from many of these plants, but it is an undoubted fact that, owing to the extreme length of the floral tube, fertilisation of the pistil is very difficult; and, therefore, seed is by no means abundant.—A. D.

### NEAPOLITAN VIOLETS AFTER FLOWERING.

THE principal season of flowering as regards these, the most beautiful of Violets, being now nearly over under glass, preparation should at once be made for next year's supply. The earlier the young plants are out in their growing quarters the greater chance there will be of satisfactory results. The plan we adopt to have plants full of bloom from the first week in October until April is as follows:—As soon as the bloom is cleared off the plants, they are lifted and divided; all the stoutest young side growths, with single crowns, are selected for planting, all hard crowns and wiry, slender growths being thrown away as useless, as they never make good plants. Having chosen a favourable position, viz., a border shaded from the midday sun, and which has been deeply cultivated and well enriched with manure the preceding autumn, and the staple of which, if possible, consists of tolerably stiff loam, the surface is levelled with a rake, and the plants are firmly inserted in rows 1 ft. apart each way with a dibber. If the weather be mild and showery, little watering is needed for some time; but if very dry, sufficient water must be applied to keep the soil constantly moist until the plants begin to grow freely. Frequent surface stirrings with the Dutch hoe are highly beneficial to the plants at this stage, for it keeps down weeds and promotes root action by aerating the soil. As soon as side runners are observed, they are carefully cut closely off with a pair of Grape scissors; but the main leaves must not on any account be removed. By this operation all the strength of the plants will be concentrated in their crowns, exactly as Strawberries in pots are prepared for forcing. During the heat of summer, when growth is active, an abundance of moisture must be applied to the roots, weak liquid manure being alternately applied with clear water. A good heavy syringing after a bright day is a good antidote for red spider, which is sure to attack Violets of all kinds, especially the Neapolitan, when they lack soluble food, but when liberally treated they seldom suffer to any injurious extent. By the middle of September plants treated as described are covered with flower-buds; they are then carefully lifted with their roots intact and transferred to frames in sunny positions and raised well up at the back, so that every ray of sunlight during the winter months may be admitted to the plants. We fill the frames nearly full of leaves and litter, which, trodden firmly in, imparts a gentle and lasting warmth to the roots. When planted the leaves of the plants almost touch the glass. From a quantity of plants treated as described we have had an abundant daily supply of large fresh Violets for six months past. The surface of the soil in the frames after planting is covered with Cocoa-nut fibre, which keeps the blooms clean. The lights are kept entirely off in fine weather and tilted up during heavy rains; but on the first indication of frost a good covering of reed mats, supplemented, if required, with dry litter, is applied. Very little water is needed during the winter months, but in February and March a more liberal supply is necessary. Anyone not having hitherto grown this beautiful Violet should at once commence; the routine is simple, and the results certain. JAMES GROOM.

*Henham.*

### SPRING FLOWERS AT MENTONE.

THE charming and extensive grounds surrounding the residence of Mr. Hanbury, at the Palazzo Orongo, situated between the frontier towns of Mentone in France and Ventimiglia in Italy, form an object of great interest to the observer and cultivator of rare plants and shrubs. The plants enumerated in THE GARDEN of March 23, as growing in a garden in the same neighbourhood, may mostly, if not entirely, be found here also, while the greater extent of the grounds affords room for many specimens of shrubs and ornamental trees,

such as the *Greivillea* and *Schinus Molle*, *Pittosporums*, and *Daturas*. Perhaps, however, the most striking part is that which might be called the "wild garden," or if such a term seems unenited to any part of a highly-cultivated spot, the "natural garden;" the beauty and simplicity of this has a charm which makes one wonder that it is so seldom to be met with. Here, springing up through a green undulating sward, are large tufts of various species and varieties of *Anemones*, varying from pure white to deep violet and dazzling scarlet; *Narcissi*, white, pale yellow, and rich orange; *Crocuses*, *Hyacinths*, &c. These, with a varied surrounding of ornamental trees and plants remarkable for the beauty of their foliage, form a scene of unusual interest, having for a background the grey-green of the Olive with the *Pinus halepensis* on the hills above. Anyone who has space to devote to this simple mode of cultivating spring flowers may produce an effect, the beauty of which cannot be thoroughly realised till seen. Succulents, which abound in great quantities, form some fine and striking features, and seem quite at home here on the hot limestone soil. A variety of *Kennedy*, bearing deep violet flowers in the greatest profusion, is particularly beautiful. Then, of course, there are *Roses*—*Banksian*, *Tea*, *Climbers*, *Dwarfs*, and *Hybrid Perpetuale*, besides many other familiar plants. To enumerate all the contents of this very attractive garden would require more space than could be spared in the pages of THE GARDEN.

Montone.

J. T. P.

### RENOVATING GRASS LAWNS.

Now is the time for this work. Lawns that were not turfed in autumn may be done now, or any time during the month. There are three ways of forming a lawn—by turving, and thus covering the ground at once; by inoculation (where turf is scarce); and by seed. The two first methods are the best where good turf can be got, which is not always the case, as it is difficult to procure turf quite free from *Daisies*, *Dandelions*, and coarse Grasses. The best is usually to be procured from commons, and sometimes from roadsides, or places where there is a certain amount of traffic. Hereabouts it is not possible to procure good turf for lawns anywhere but on the roadsides, just at the edge of the roadway where people walk. This, when the authorities will allow it to be removed, if chopped up and scattered on good soil and well rolled, makes a good sward. For small plots, however, I would recommend fine lawn seeds. I saw last August, at Southport, the most perfect examples of a sward that ever came under my notice, and which, indeed, attracted the attention of even the non-professional eye at once. The ground appeared to have been laid down with the finest of lawn Grasses, and was scrupulously kept. Not a blade of coarse Grass or a single weed was to be seen, and the pile was like that of a carpet, the Grass being cut apparently about twice a week. No doubt the sea air helped to give greenness, but the keeping was simply perfect, and showed what could be done by a little timely forethought and attention. I have often seen lawns the produce of seed, but never any examples like those facing the beach at Southport, and it would no doubt be instructive to learn how they were made and managed. As regards the renovation of Grass lawns, the best plan, when it is not desirable to go to much expense in renewing them, is to harrow or scratch the turf well, to give it a good scarifying, and then to top-dress with fine soil, free from stones and mixed with soot and wood-ashes, and sow Grass seeds pretty thickly. This work may be done any time this month.

J. S. W.

**The Best Bedding Lobelias.**—I do not admire white *Lobelias*, they are so dingy; indeed, all the so-called white kinds are anything but white; these, therefore, will have no place in my list, nor will the purple or lilac varieties, as I consider them worthless, or, at the best, ineffective, either in masses or lines. Only the true blue varieties are really effective in the flower garden, and the best of these are the following:—*Blue Beauty*, a rich dark blue with a white eye, is always covered with flowers throughout the entire season, and rarely exceeds 6 in. in height; its growth is very dense, and, unlike the *pumila* section, it is not liable to damp off on account of its density (I have given up growing the *pumila* varieties because of that fault). *Blue King*, another good kind, is an exact counterpart of *Blue Beauty*, with the exception of the colour of its flowers, which are light blue. *Blue Stone* is the darkest flower I have yet seen, and, but for its disposition to produce nothing but flowers, would be in every way a most desirable variety; as it is, if planted very thickly to make up for its sparse growth, it is most satisfactory. *Ebor* is a near relative of *Blue Stone*, but, of the two, the better grower, and both are fine dwarf kinds. I am, however, by no means sure that both must not succumb to *St. Martin's Blue*. I saw a basket of this at the Carlisle show last September, exhibited by Messrs. Ireland & Thomson, of

Edinburgh, which, if as good for bedding as it was when shown in pots, will displace all other dark blue varieties; the flowers are of the richest dark blue imaginable, with the smallest white eye, whilst the foliage is distinct from that of all other *Lobelias* I know, being a real bronzy-purple with a sturdy habit of growth. I think so well of this kind that I propose using it largely this season. There are numerous other good varieties, but the above constitute the cream of the many kinds that have been grown here for trial.—W. WILDSMITH, *Heckfield*.

**Astragalus diphysus.**—The extensive genus *Astragalus* furnishes our gardens with several very desirable border or rock plants, among which *A. monosperulans*, *A. alpeocroicoides*, and *A. dasylotidis* are specially deserving of mention. Of the numerous American species few have at present been introduced. *A. diphysus* is a very distinct and desirable plant from New Mexico and Utah. It is of dwarf habit, not exceeding 1 ft. high, with numerous stems bearing pinnate foliage of from nine to eleven pairs of small oblong fleshy leaflets, and dense terminal heads of blue-purple flowers each about  $\frac{1}{2}$  in. long. The plant may be recommended as a desirable contribution to the ranks of dwarf hardy perennials. It is scarcely necessary to add that it is perfectly hardy, and is suitable either for the mixed border or the rockery.—W. THOMPSON, *Ipswich*.

**Polyanthus and Primrose.**—Your correspondent, Mr. Farrer (see p. 272), is not the only grower of these beautiful spring flowers who has been puzzled to understand where the characteristics of the *Primrose* end and those of the *Polyanthus* begin. Now it is desirable to understand that these flowers, although having distinct titles, have few arbitrary distinctions, and derive their titles more from the florist than from the botanist, the former finding it necessary to so classify them for his own convenience. The *Primrose* proper we all know, and whether of the most beautiful and richly coloured garden kinds, as recently figured, or whether of the most ragged outline and palest hues, they are exact counterparts in habit of the wild *Primrose*, dwarf, compact leafage, and flowers borne on single stems from the base of the plant. The *Polyanthus* proper, as recognised by the florist, produces its flowers in scapes or bunches on single, erect, stout stalks, and has no *Primrose* flowers. The truss should be even, compact, and rounded, and the individual flower-stems short and stiff, so that the flowers may be kept erect and in place. These are essential elements in the making of a good *Polyanthus*. Between these two distinct forms come a hybrid race that produce flowers in both ways, the *Primrose* blooms on single stalks always preceding those borne on the taller stalks, which come last. These are, as far as possible, classed as "Hybrid *Primroses*;" they are most useful and effective in the spring garden, flower early, and for a considerable period. Seed saved from either *Primrose* proper or *Polyanthus* proper will give some of this latter form in the seedlings. The whole of the family of these hardy spring flowers are very sportive, but on that account none the less beautiful.—A. D.

### NOTES AND QUESTIONS ON THE FLOWER GARDEN.

**Ivies on Stakes.**—I am charmed with the illustration, and the idea of growing *Ivies* on stakes (see p. 288), and shall certainly adopt it. I can imagine how effective a trio of plants, viz., dark green, golden variegated, and silver variegated would look. The picture also reminds me of some plants of *Clematis* that are trained in a similar manner in the pleasure ground of Beerwood Park, Wokingham, and which when I saw them in June last were a sight to be remembered.—W. WILDSMITH, *Heckfield*.

**Primroses in Kent.**—The woods about Tonbridge are now gay with *Primroses*. Blooms of them have been procurable sparingly all through the winter from warm and sheltered situations. About a month ago a double flower was brought to me, having been found by a young friend in a wood between Sevenoaks and Tonbridge.—W. T. T.

**Stealing Snowdrops and its Punishment.**—Two men, named Sampson and Wells, were indicted for stealing *Snowdrops* and bulbs from the garden of Mr. Balguy, the Woolwich magistrate. Wells pleaded "Guilty," Sampson "Not Guilty." They had both been previously convicted of similar offences, and the remarkable feature in the case was that they appeared to be systematic depredators. It was proved by Mr. Balguy's gardener that he saw them pulling up *Snowdrops* and bulbs in his master's garden. On seeing him they ran away, but were pursued and taken. It was proved that Sampson had been convicted in 1876 at East Grinstead, in Sussex, of stealing *Pansies*. The jury found the prisoners guilty, and the learned judge, in passing sentence, said the prisoners had been convicted several times of like offences since 1869, and seemed to make their trade of such depredations. Sampson had already had eighteen months' imprisonment, and Wells three months, for similar offences, and it was of no use dealing leniently with them. He therefore sentenced them each to seven years' penal servitude.

## THE FRUIT GARDEN.

### POT STRAWBERRIES AND THE SEASONS.

It appears to me to be a matter of very little importance, as regards pot Strawberries, whether the season be wet or dry; but if I had my choice, I should prefer a pretty moist summer to a very dry one. Still, as I say, it is not of much importance, provided the plants are propagated early and from a fertile stock, and they should be kept in pots that they are sure to cram with roots by the end of September. Watering, soil, &c., are important, but secondary considerations to these, which are the main points in the culture of Strawberries for forcing. The late Mr. McEwen, of Chiswick, who was one of the most successful and enthusiastic of Strawberry growers, said that he liked to see the roots bursting the pots about, and then he was sure of a crop; and he was right. During the last twelve years our pot Strawberries have never missed a crop, and I must say that the plants that were grown in wet seasons have always done just as well as those grown in those that were dry. I believe the best ripened plants we ever had was our stock of 1868, when we were without rain from June till some time in October, but they were also the smallest plants, owing, no doubt, to the excessive sunlight and drought, though the plants were watered twice, and sometimes three times a day. Yet the crop from these was hardly so heavy as from our plants of 1872, when we registered 5 ft. of rain, and which fell, chiefly, during the summer and autumn. That year our plants grew amazingly, and had to receive more room than usual; the leaves were so large and fine, and the crop of fruit the spring following was excellent. Last season, again, was pretty moist, some 42 in. of rain having been registered here, a large proportion of which fell in September and early in November, about 9 in. altogether, all of which our Strawberries received, for they were not housed till later on, and after they had been subjected to a touch of frost. It was, in short, what may be described as a bad season for ripening Strawberries; yet I do not think we ever had a finer crop than we have this season. We have been gathering at the rate of a large dish every day since about the middle of March, and have a great quantity coming on. The flowers were unusually large and fine, and the fruit is well swelled. I saw it stated somewhere lately that Strawberries were inclined to make leaves more than flowers this season, in consequence of the plants being imperfectly matured last autumn; but I feel sure that this has very little to do with the matter. Premature leaf-growth is, in most cases, caused by too hard forcing and high night temperatures. We have not only our Strawberry house here crammed with plants, but the shelves of other houses as well; and we could, at the present time, show plants of the same batch and variety which manifest in one case a disposition to make leaves fast, and in the other to flower; but the former are in houses where they cannot be accommodated with a temperature to suit them exactly, being rather too high. However, by pinching the prematurely forward leaves—in some cases only the middle lobe off, and in others the whole leaf out by the socket—till the flower-scapes get well up, we always prevent injury, and, of course, the plants are moved forward to suitable quarters as soon as room can be found for them. Upon the whole, then, although I believe the seasons have much to do with the crops on permanent plantations, I do not think they influence pot plants in a sensible degree. I may state that this is one of the coldest situations in England. J. S. W.

### MAKING VINE BORDERS OF LIGHT LOAM.

In making Vine borders of light loam, is it a good or economical practice to chop the sods up in the usual way? From my own experience of light sandy loam, I have come to the conclusion that it is not, and that the organic or fibry portion of the sods decomposes much more rapidly than it otherwise would do, affording for a short time a glut of nutriment to the Vines, and ultimately leaving a comparatively poor border. On taking charge of the gardens here, about seventeen years ago, everything connected with them was old and dilapidated, and it was decided to remodel them all at one time. The heaviest loam to be had within reasonable distance was very light. It was chopped up in the usual way, and mixed with  $\frac{1}{2}$ -in.

bones, charcoal, and old lime rubbish. In turning this to mix all well together, the fibre appeared even then to have disappeared to a considerable extent. The Vines grew well in it, and for some years carried good crops. The Grapes generally finished well, and were of excellent flavour. These borders—made with great care, in the usual orthodox fashion as regards chopping and mixing—have not lasted so long in a condition favourable to the production of good Grapes as in other cases where the sods have not been chopped, but simply cut into pieces 6 in. or 7 in. square, and which, in forming the borders, have been packed closely together in layers with the Grass side down. The manure and bones used were strewn on each layer of sods, and a little fine soil was used to fill up any open spaces left in packing, my object being to get so solid and firm a mass as to exclude as much as possible the decomposing power of the atmosphere. Borders made in this manner remain in proper condition for a much longer time than when the turf is chopped fine. This has been very strikingly seen in the case of wall borders which were concreted and well drained, and the turf put into them as it was taken from the park, and packed closely; the carts passing over the border made the turf very firm, and these borders have retained their fibre longer than any about the place. Four years ago a Vinery was put up for late Grapes, and as soon as the fruit was above the ground level, the inside border was made. The sods were packed as closely as possible, and each layer was trodden and rolled. Bones and charcoal were all that were added, as lime-rubbish has a decomposing effect on the fibre. The carpenters, glaziers, and painters did all their work over the border, and it was as solid as it could be made. All the fine soil used was just enough to plant each Vine. The Vines I struck from eyes, and planted them in the end of June. They have done exceedingly well, and we are cutting some very fine Grapes from them now (January). In comparing these Vines planted in borders made as above described with others grown in chopped, loose turf, the former are not only equally strong, or more so, but the character of the wood is far better than that of the latter, it being harder, and has less pith. On examining the roots, they are found very different in character in each border. Those in the chopped, loose soil have produced comparatively few large roots, and but few fibry ones near the stems of the Vines. In the solid border they are just the reverse, there being a perfect network of roots up close to the collars of the Vines. From this experience, I would never, when working with light soil, chop a single turf, but use them as they came from the field, and make the whole as solid as possible. Neither should any description of lime be used, but instead some charcoal, and, of course, bones. Our subsoil being sand, and the rainfall light, copious waterings of manure water are given—and care has to be exercised that the borders be regularly attended to in this way. I feel certain that any who have to make borders of light soil will not regret trying the plan described.—A. H., in "Gardener."

### PERFECT FERTILISATION NEEDED IN FORCING STRAWBERRIES.

A WRITER on this subject (see p. 280) has found out, it appears, that in order to insure perfect fertilisation of Strawberry flowers, an artificial process affords the best means of securing that result. Under certain circumstances I quite concur with this view, and have no doubt that such a discovery would have been welcome news a century or so ago. In the present age, however, it is the every-day practice of most practical men, but on a somewhat different basis from that recommended in the remarks alluded to. It appears the author of the remarks referred to would recommend the general application of principles founded on his own notion of what a crop should be, or, at least, what he thinks people should be satisfied with, forgetting that those who write for the public only recommend what they know and have proved to be the best and safest plan of securing the best results. Besides, there are those who aim at securing quality in preference to number. An allusion is made to time as a justification of a high temperature. Now, I think anyone possessing ordinary powers of calculation, with a little practice, would overcome this difficulty by making natural allowance as to time at the beginning. Anyone accustomed to grow Strawberries "to time" will see at a glance how useless it is to raise difficulties for the self-gratification of overcoming them. There is one important point which the writer in question would seem to have altogether ignored, viz., the organic capacity of flowers for performing their natural functions of fructification. A strong heat would simply be the ruin of imperfectly ripened plants, of which there are not a few this season, inasmuch as they would yield submissively to the influence of a high temperature by throwing up leaves before the flower trusses; the latter would therefore be, in a degree, robbed by the former, owing to the premature application of a too high temperature, and the

flowers subjected to such debilitating influences would lack stamina to impart the vigour necessary for the development of fine fruit. The fact of a flower setting does not prove that its organs were not weakened, and the produce would necessarily take the same character. Give plenty of time till the fruit is set, and while that process is going on keep up a healthy circulation of warm air from 50° to 60°, going over the flowers once a day with a feather duster, and there need be little apprehension as to results, whether the temperature afterwards be high or low. W. HINDS.

Otterspool.

**Scarcity of Pear Blossoms.**—Allow me to say, in reference to Mr. Fieh's inquiry (see p. 282), that I rather think this is general this season; at all events in this garden and district such is the case, but for all that, the probability is that there will be a better crop of fruit; for I have noted that, as a rule, the thinner a tree is of fruit buds the better the fruit sets, so that with propitious weather (which at present is anything but that), I think the majority of trees possess flower-buds sufficient to produce an average crop, *i. e.*, if the severe frost of the past week has not frozen them, for although no blossoms are unfolded, I much doubt their being able to withstand from 7° to 12°, which we have registered nightly during the whole of the past week. Apricots have flowered and set well under thick canvas coverings, but where netting protection only was used, they are all destroyed. Peaches have not flowered so well for years as they have done this season, and at present, under thick canvas, they are uninjured. Apples are wonderfully well budded, and, I think, late enough to be as yet safe. Plums of all kinds are one mass of blossom. Cherries are the same, and as they are not yet expanded, I think they must be safe. Gooseberries are too forward, and all the upper parts of the trees will be fruitless. Currants are late, and therefore safe, but, as the saying is, "we are not yet out of the wood."—W. WILDSMITH, *Heckfield, Hants.*

**The Weather and the Fruit Crops.**—March has this season reversed the old adage—it came in like a lamb and went out like a lion. The weather during the last ten days has been exceedingly wintery, but culminated last night with a depression to 15° or 17° of frost. This is the lowest temperature experienced here since the last day of December, 1874, when it fell to 16°. It has of course blasted all hopes of securing crops of such fruits as the Apricot and the Peach, and has seriously imperilled that of the Pear and the Plum; and if Gooseberries and Currants be found to have escaped, which is doubtful, it may be attributed to their being well covered with snow. The trees upon the Apricot wall here are under a temporary roof formed of old lights, and this extends some 6 ft. from the face of the wall; the fruit which had set in abundance was as large as Peas, and up to last night did not appear to have greatly suffered from a nightly temperature ranging from 22° to 31°. But 17° of frost have proved too much from them. Some isolated Apricot trees upon a south aspect, the same as the others, were covered with branches of the Red Cedar, and a few trees were left unprotected, but in all cases the fruit has met with a similar fate.—P. GRIEVE, *Culford, Bury St. Edmunds.*

## NOTES AND QUESTIONS ON THE FRUIT GARDEN.

**Bleeding in Vines.**—When a youngster, and wishing to be orthodox in all my gardening operations, I, of course, practised all the remedies recommended to prevent bleeding, such as burning the ends with a hot iron, fixing Potatoes on the ends of the rods, sealing with wax, painting with painters' knotting, Thomson's Styptic, grafting wax, &c.; but some years ago now I gave up all these remedies, and now when a Vine manifests a disposition to bleed, I stir up the fire with a view of inducing a quicker motion of the sap; there is then soon an end to bleeding. My treatment is therefore just the opposite of that recorded by "J. S. W." (see p. 253), but I can vouch for its effectiveness.—W. H.

**The Jolly Beggar Apple.**—This excellent early kitchen Apple was sent to us some time since, with a very high character for its quality and good bearing properties, by Mr. Rivers, of Sawbridgeworth. It is a fruit of full medium size, roundish, and somewhat ribbed near the crown, pale yellow, with a tint of deeper yellow on the more exposed side. The eye is large and open, and set in a shallow basin formed by the ribs already alluded to. The stalk is inserted in a deepish hollow, and is  $\frac{3}{4}$  in. or more in length. The flesh is tender and juicy in texture, white, sweet, with a brisk, pleasant flavour. Dr. Hogg, in his "Fruit Manual," identifies it with a variety called Lord Grosvenor, and notes that it is a first-rate cooking Apple, in use from August till October (Mr. Rivers says, October to December). "The great merit of this variety," he remarks, "is its great fertility, the small bush bears producing an abundance of fine yellow fruit. The tree bears very early, and is one of the most useful for garden culture." Others speak of it as a prodigious bearer.—"Florist."

## ROSES ON STOCKS FROM BRIER CUTTINGS.

There are few matters connected with Rose-growing on which more diversity of opinion exists than on that of the kinds of stock on which Roses do best. Some are in favour of the seedling Brier and Manetti, others the common Brier, or on their own roots. The seedling Brier has much to recommend it, and I believe that it will be more extensively used as it becomes wider known; but it is not without its drawbacks, especially for standard Roses, because it takes several years from the time of sowing the seed until the stocks are large enough for budding, and in the case of many time is money. The old style of getting up standard Roses by digging up a number of old Briers with long stems from the hedgerows in autumn, and budding them the following season, is still very generally practised; indeed, it has been so long followed that few agree with anything that is said against it, but the system has many weak points that may be improved with advantage. I have often heard it remarked that standard Roses, as a rule, do not make such vigorous growth, produce such fine blooms, nor live so long as dwarfs on their own roots or on the Manetti. I know a good many Rose growers who object to grow standard Roses on the Brier altogether, because they are so liable to die off or decline in strength. It is not the least surprising that they should do this, and if people would only look at the roots of the Brier before planting it would not be difficult to imagine the cause of their decay in the generality of instances. The scarcity of standard Briers is acknowledged; consequently those who are in the habit of grubbing stocks from the hedgerows and elsewhere are compelled to take every Brier that is tall enough and sufficiently thick, no matter what age it is. Briers of this description never have many fibrous roots, and few of them are found without a large club at the end of the stem, which lifts as clear of roots as the head of a walking-stick. How stocks of this kind can support buds and growth until the plants are saleable I cannot imagine, but I can say this, that I have frequently received dozens of standard Roses with club roots as fireless as the palm of one's hand. Therefore, seeing that fibrous roots are so necessary in order to produce fine Roses and healthy bushes, what wonder that standard Briers should prove so unsatisfactory and die prematurely. Instead of lifting old Briers with rootless club heads, never disturb the roots at all, but secure all the straight shoots on the Brier bush that can be had, and put them in as cuttings. To insure their rooting they should not be cut, but pulled off with a heel of the old wood attached. When put in in November they are ready for "working" the following July or August. All buds, except two or three at the top, should be removed from each shoot. In putting them in, the rows should be about 2½ ft. asunder, with 6 in. or 8 in. between each in the row. The cutting should be inserted about 3 in. under ground, and the soil must be pressed very firmly around it. It is an advantage to mulch between the rows after the cuttings have all been put in. Treated in this way 90 per cent. of them will root. I am aware that this is not a new way of raising Brier stocks, but it is not practised anything like so extensively as its merits deserve. Stocks thus raised possess all the good qualities of the seedling Brier, as the fine fibrous roots freely produced by the cuttings are equal in every respect to the best produced from seed. And it has this important advantage, that good plants may be got up from cuttings in half the time which it takes to raise them from seed. The old way of procuring Briers will bear no comparison with the plan now suggested, so far as growth and culture are concerned; and where only one or two Briers could be got from a bush with suitable roots, dozens of suitable shoots can be often had from the same bush. Many grow Roses extensively, using only the cuttings of the Brier, and the plants are healthier and finer grown than any others of the same age. Those who have planted them in previous years are so satisfied with their superiority that they will have no others, and I am acquainted with one garden in which 800 of them have been planted this winter.

CAMBRIAN.

**Protecting Rose Cuttings.**—I find a slight covering of dry Fern to be an excellent protection for Rose cuttings and dwarf Roses when the buds are expanding, and until the young shoots get from 3 in. to 1 in. long. The frost comes and blackens them when unprotected, and in the case of cuttings they have not the vitality to start again.—R. GILBERT, *Burghley.*

## TREES AND SHRUBS.

JOINTED IRON COLUMNS AS SUPPORTS  
FOR TREES.

Those interested in street trees, avenues in parks, or trees planted singly have doubtless noticed their tendency to grow towards the east, or, from some cause, growing otherwise than in an upright position. I could point to many instances in London where the beauty of trees is completely spoiled by inattention to this matter. There is no reason why we should not, by judicious care, prevent this unnatural growth in trees. It is probably well known that light has a tendency to retard growth, a simple instance of which may be seen when plants are placed in a room near a window; these we can turn occasionally, but trees we cannot. I have no doubt, also, that trees are in a condition most conducive to growth in the early morning, when they are covered with dew, hence when the sun rises to warm the surrounding atmosphere the darkened side of the tree makes rapid progress, while that on the sunny side is retarded, causing the unnatural growth alluded to, and which may be exemplified by a very simple problem, *i.e.*, the inner curve is constantly shorter than the outer, and if continued would form a circle, or something nearly approaching to it. Since, therefore, no natural remedy exists to prevent this, we must devise an artificial one. A friend of mine suggested to me some time ago what appeared an extraordinary method of overcoming the difficulty; in fact, what he suggested was the paradoxical difficulty of making two wrongs one right, that is, he proposed to calculate with mathematical accuracy the amount of bias a tree would gain in a given time, and plant his trees so much out of an upright position in an opposite direction. I assume that this is impracticable, or, to say the least, a most undesirable method of procedure.

I am of opinion that trees should be planted perfectly perpendicular, and maintained in that position until they are capable of taking care of themselves. The only sure way with which I am at present acquainted of arriving at such a result is, for trees in streets, staking firmly with stakes long enough to go well up into the head of the tree. On lawns or similar places the same result may be arrived at by using three short stout stakes driven in triangularly round the tree at several feet from the stem, and tying with wire or other suitable material, to keep the tree in position. Much may also be done by judicious pruning, so far as the head is concerned, but it will never have the effect of keeping the stem perpendicular. Staking with wooden stakes, if properly done, is expensive work, in consequence of the frequency with which it is necessary to renew them. Light iron columns, say 20 ft. in height, would answer the purpose admirably, and would not require to be renewed. They could be removed for use elsewhere if required, as no difficulty would be experienced in drawing them from the ground with the aid of some mechanical contrivance. The length of time they would probably be required to remain in London to support trees would be from ten to twenty years. They would not be unsightly, and could be made in two or three lengths, so that they could be added to as desired and never appear above the tree. The tying would, of course, be done in the usual manner, and in as many places as necessary.

I really do think the adoption of the foregoing suggestions would insure straight trees in avenues and other conspicuous places. These columns would be lighter in appearance than wooden stakes and much cheaper in the end. Moreover, it is impossible to drive down large stakes without injury to the roots, which should at all times be avoided. With respect to the best method of making these jointed iron columns, they could either be made to screw into the ground or be pointed and driven in, if not fixed at the time of planting the trees, in which case they would probably be put in like an ordinary post and solidly rammed. The joints could be made to fit in sockets and riveted or pinned, or made to screw on. The advantages I claim for these columns are lightness of appearance, durability, rigidity, and cheapness. In cases where trees have been long neglected it would be necessary to open the ground round them and place them upright before the columns were fixed.

CHARLES DENNIS.

*Southwark Park.*

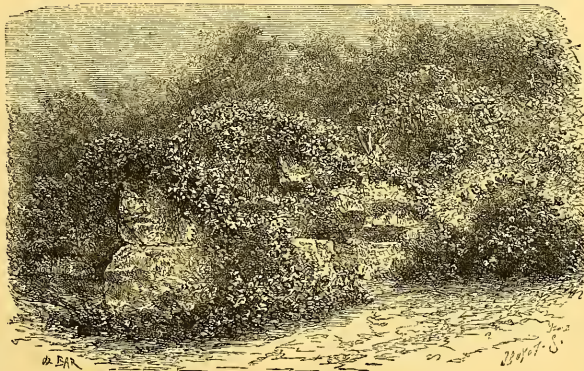
## THE POISONOUS PRINCIPLE OF THE YEW.

THE recent loss of a valuable herd of cattle, poisoned by eating the outtings of Yew trees has once more directed attention to the unsatisfactory state of our knowledge of the properties of common plants. The Yew has the reputation of being poisonous, but its

berries are eaten freely by children without inconvenience, and an infusion of the leaves (Yew Tea) is employed by country people for certain ailments, over which it undoubtedly exercises some effect. Its action resembles that of Digitalis, though its effects are scarcely so evident. So far as cattle are concerned, Yew is popularly supposed to be a dangerous tree to have within their reach, but it is certain that deer, and probably also cows and horses, eat it with impunity when in the fresh and growing state, while the latter, at all events, are fatally injured by devouring the half-dried cuttings. An exactly similar action is attributed to the common Laurel, cattle browsing

upon the living leaves apparently without any injurious results, but being poisoned when they consume the half-dry and partially decomposed trimmings. The fact that the cuttings of Yew trees exercise more powerful toxic effects than the fresh leaves is well known, but no explanation of the extraordinary difference when consumed by cattle has been forthcoming. There is of course the obvious explanation that in the fresh leaves the toxic principle is more largely diluted with water, while in the half-dry state of Yew trimmings the poison is of sufficient strength to produce disastrous results; but that explanation is not altogether satisfactory, and it would be of service if someone would determine whether cattle may be allowed to eat Yew leaves fresh from the tree, and explain why the half-dry cuttings exercise so fatal an influence upon them. Although a decoction of the leaves is used by country people, they are careful to administer only small doses; and even the children, who eat the fruit, are strictly enjoined to eject the stone or seed, because it has poisonous properties capable of producing serious results. Actions at law have been brought to recover damages for injury to horses through eating the young branches of unprotected Yew trees, and in some cases they have been successful; but now that Earl Lovelace has lost a valuable herd of cattle through eating Yew in his park, we may expect that an exhaustive investigation will be made.—“Echo.”

**Shrubs on Rock Gardens.**—It is not only for Alpine plants that rockwork, rock gardens, and rocky banks are desirable; there are numbers of mountain shrubs for which such offer the very best



Shrubs on Rock Gardens.

positions. Many elegant dwarf shrubs are lost or weakened in the struggle for life. Shrubberies well exposed to the sun on rocks or rocky banks would form objects as attractive as any seen at our flower shows. Apart, too, from shrubs there are numbers of graceful creeping, trailing, or recumbent plants which also demand such a home. As important as any of these plants, however, are the more beautiful hardy climbers, which are rarely seen in perfection in our gardens. The rampant and vigorous climbers may be trusted to take care of themselves in various positions, and some of them would, indeed, if placed in a rock garden, soon overrun it and destroy all plants but themselves in it. But there is a host of beautiful life among the not less hardy, not less free-flowering climbers, which are admirably suited to the larger type of rock garden, such as the more elegant Clematis which are seldom seen, Atragene, and various herbaceous climbers, such as the Jalop plant, which also does well in such positions.

### SPIRÆA THUNBERGI.

This beautiful Spiræa has not been generally known more than ten years, and may therefore be fairly termed new as well as choice. It is one of the acquisitions obtained from Japan, and named after Thunberg, the great botanical explorer of that portion of the globe. No weakness or imperfection of any importance prevents its general acceptance, and it has therefore gained favour with more than usual rapidity, so that now all well-assorted nursery collections must include it among their varieties. It is rather remarkable for excelling alike in foliage and flower. The leaves are quite small, which gives the plant a light, feathery aspect, and of a tender, greenish-drab, very peculiar and attractive. Thick and vigorous, the foliage in full growth assumes very graceful curves, suggesting, from a distance, some light-coloured weeping evergreen. It is one of the earliest plants to put forth in the spring, when its unusual green is very fine, relieved against the brilliant, early verdure of the Grass. Indeed, the appearance of this delicate little Spiræa is quite unique among hardy shrubs, and it is therefore invaluable for producing contrast and variety on the lawn. The flowers, likewise, are both striking and beautiful. Pure white, small, and wreathing the entire plant, it should have received the name of the Bridal-wreath Spiræa, had not the older variety *S. prunifolia* already, with less justice, secured that title. The end of April or the beginning of May nearly always finds this Spiræa in its full glory, and few objects appear more agreeably to the eye than these late wreaths of snow unfolding the bending branches. It is moreover remarkable that so delicate and feathery a shrub should be hardy under all circumstances, and so vigorously withal. Under the strain of transplanting it behaves equally well, although this need not astonish us in a Spiræa. Its size is neither large nor majestic, yet to the landscape gardener it is invaluable, because it doubly perfects a group of shrubs by its early white flowers as well as by its delicate and peculiar leaves. It is no less beautiful standing singly near a gateway, or by the steps and in the angles of houses. Indeed, if groups were to be constructed with the intention of deriving autumnal colour effects alone, this Spiræa would still be most useful; and certainly no finer masses could be formed than such groups. I am aware that my remarks may seem to claim overmuch favour for a shrub that has lost somewhat of its attraction by becoming very common on our lawns, but I feel that its intrinsic value fully supports my assertions, and that a rapidly acquired fame only confirms their accuracy. S. PARSONS, in "Country Gentleman."

### NOTES AND QUESTIONS ON TREES AND SHRUBS.

**Hollies on an Elm.**—In going through a wood the other day I saw a Holly which had actually grafted itself in the fork of two suckers of an Elm tree, just as the *Mistletoe* does. This circumstance has been so unusual to me and those to whom I have mentioned it, that I determined to make a note of it, and ask if anyone is acquainted with a similar case.—*EBORACU.*

**The Catalpa at Home.**—It is stated by Prof. Burrill, of the Illinois Industrial University, that, from experiments performed at that institution, the Catalpa is one of the cheapest and easiest trees to grow, and one of the most rapidly growing of forest trees, native or introduced. Its growth has been surpassed only by the White Willow and Soft Maple among the various trees tested in the last eight years. It has outgrown the American Elm, White Ash, European Larch, Osage Orange, and Black Walnut on the same ground and under the same treatment. It is not attacked by any insect. Some statements are added showing the great durability of the timber.

OVER 200 species and varieties of the Willow family are said to be now in the Washington (U.S.) Botanical Garden.

## THE KITCHEN GARDEN.

### CARROTS AND THEIR CULTURE.

Of all garden esculents the one which gives the most trouble, or is the most difficult to grow in a clean, clear shape, is the Carrot, which in rich cultivated soils is generally grub-eaten or disfigured by wireworms, which have a special fondness for this root, as may be seen by the innumerable perforations they make in it. Nor does the injury end there; they cut off the tap root, which in the case of Carrots is the principal feeder, and once they lose that their downward course is stayed, and a profitable crop is then out of the question. Many who grow this useful vegetable are often puzzled why it is they flag so, little thinking there is an enemy busy at work below; and even when they escape wireworm, canker often sets in and quite spoils their appearance. This disease is brought about by a too free use of manure, which in some way affects the delicate skin, and more particularly is this the case if it happens to be of a rank, crude nature, and not thoroughly decomposed. Even in this state the less Carrots have of it the better and clearer will the crop be; and in growing them in gardens the best way is to so arrange that they are made to follow Celery, or some esculent of that kind, for which the land has been previously enriched and well aerated, as it is when dug out and thrown up into ridges for the purpose of blanching and protecting the plants. This exposure not only sweetens the soil, but is very destructive to insects, the larvæ and eggs of which during the winter are so vulnerable, as to be readily affected by frost. Besides this there are other advantages in a systematic rotation, not the least of which is the labour saved in trenching or digging, as by a little management one crop may be made to prepare the way for the other, much to the benefit of both. Premising, therefore, that the ground recently occupied by Celery is now at liberty, all that will be necessary is to level it down, and so work it about by means of a fork and rake as to get a thoroughly smooth and pulverised surface, which for all root crops is a matter of the greatest importance. Previous to doing this, however, a good dressing of soot should be given, as it is not only a most powerful fertiliser, but is very obnoxious to insects, and particularly such as affect Carrots. By its use I have had splendid crops in situations, where without it they would have been eaten up or so damaged, as to be comparatively worthless; and whether it kills the grub of the wireworm or not, I cannot say, but if not, these pests vacate the soil and betake themselves to fresh fields and pastures new. From my experience of soot, I am convinced it is not half enough used in gardens; as, were it more liberally applied, we should not have the bother we have with slugs and such like devouring the young plants the moment they make their appearance.

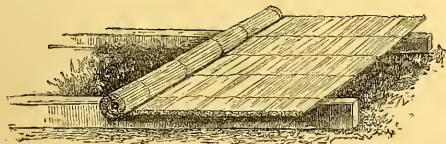
As Carrots are rather slow in germinating, the final preparation of the land should be deferred till the seed can be got in, as when allowed to lay undisturbed for a time, weeds are apt to get up before them and take possession of the ground before the rows can be seen. This makes cleaning a difficult matter, and if done ever so carefully, it causes such a disturbance that the crop is sure to be checked. To get ahead of the weeds and save this, I find it is a good plan to damp the seed and let it lay a couple or three days in a warm place, but when this is done it requires close watching, and there must be no delay in sowing directly it begins to sprout, or the young germs will be injured. The first or second week in April is the most suitable season for getting it in, but it is better to be a little late than to venture to sow when the weather is bad or the soil not in good order, as the condition of this has so much to do with success or failure, not only with Carrots, but with most other crops. When required to grow to full size, the proper distance for the rows is about 1 ft. apart, which affords ample room for the hoe to get well between them for the purpose of hoeing and cleaning. If there is a certainty of the seed being good, it is always advisable to sow thinly, but whether this is done or not the singling out should be set about early, or the young plants get soon drawn up and weakened. As young Carrots are always in great request, the best way is to leave them at about 3 in. apart, and then take out every other one when required for use. The hand-

somest and most serviceable Carrot for general purposes is James' Intermediate, which is of medium length, rich colour, and delicate flavour, and altogether a great favourite with most people. For use in a small state, however, there are none equal to the scarlet French Horn, which, when young, is delicious. These should be sown in rows about 6 in. apart in beds prepared specially for them in the following manner:—Select a sheltered border in a warm sunny spot, and if the soil be not naturally light, make it so by digging in some road scrapings, sand, or leaf-mould, mixing the same well up as the work proceeds. To have these really good during the summer and autumn, it is necessary to sow regularly at intervals of every three weeks or a month, so as to have a constant supply of young roots, which are far more tender and succulent than those that are allowed to stand till they get large before being used.

Anyone having a half-spent hotbed may, by putting on it 6 in. or 9 in. of light sandy soil and sowing at once, soon have Carrots fit to pull, which in May are looked upon as one of the choicest of early vegetables. In a frame the object is to make the most of the room, and therefore the best way is to sow broadcast evenly over the surface, and then thin out when large enough to be of use. In very unfavourable soils, or where Carrots are required very clean and good for show purposes, it is a good plan to dibble holes and fill them with prepared mould containing a good deal of sand, and then sow the seed in the centre of each. By so doing, very fine roots may be obtained free from spot or blemish of any kind, as they can easily run down and swell out without meeting with any obstruction. S. D.

#### REED MAT PROTECTORS.

The accompanying is a representation of these mats, to which allusion was made the other day (see p. 278). It gives a good idea both as



to how they are made and used. They consist of the stems of the common Reed, sewn together with strong tarred twine. They are between 7 ft. and 8 ft. wide and very strong. They must be very useful for throwing off hail or snow, and they may also serve for shading.

#### CELERIAC, OR TURNIP-ROOTED CELERY.

Or vegetables used in foreign countries large quantities are not worth growing in England, but the Celeriac is an exception. It may be found in a few large establishments in this country, but its culture ought to be extended to even the smallest gardens, on account of its fine flavour. It is by no means difficult to grow, and it is one of the most useful of winter vegetables, coming into use, as it does, when the kitchen garden is almost bare. On the Continent it is met with on every table, and is considered a welcome delicacy. It forms an irregular, globular, Turnip-like root or knob from 2 in. to 3 in. in diameter. It is brown on the outside, but the flesh is white, tender, and very pungent. Three varieties of it are in general cultivation.

1. **The Common Celeriac**, which has leaves about 1 ft. long, spreading, and dark green, stalks hollow, root irregular, globular, growing nearly entirely in the ground, gray-brown outside, top large, flesh white, tender, of first quality, medium precocity, requires protecting against severe weather. This variety is that most generally known.

2. **Erfurt Celeriac**.—This has leaves from 12 in. to 15 in. in height, erect, not so numerous as those of the common kind, dark green, stalks hollow, tinted with purple, root half above ground, more regular than that just alluded to, frequently angular, and conical in shape above ground, brown outside, flesh white, tender, sometimes woolly if the growth has been impeded; much earlier than the preceding, more delicate and not so hardy, but well worth attention.

3. **Curled Celeriac**.—The leaves of this are numerous, erect, and spreading, light green, and beautifully curled; root irregular, spherical in the ground, somewhat flattened, rough and nearly white outside, flesh white. This variety is interesting on account of its curled leaves. It is the latest of the three, and the hardiest; in fact, it only requires protecting against very severe weather.

As regards cultivation, a deep, well-prepared rich soil is necessary, the secret with respect to growing Celeriac to perfection being heat, manure, and water. It should be sown in February or March on a hotbed, or in pans under glass; the seed will come up in about sixteen days. Thin out, transplant in another genial bed as soon as the seedlings will bear handling, and plant them in the open ground in May 14 in. apart in rows 16 in. asunder. Frequent hoeings and a thick mulching are of great benefit to the plants, and during summer water must be abundantly supplied, as should they get dry, or suffer from any cause, the quality of the root would be deteriorated. When Celeriac can be irrigated during the heat of summer it produces a marvellous effect upon the growth and the size of the roots; frequently when the early months are cold the growth for several weeks has the appearance of being checked, but when hot summer days set in, it soon makes up for lost time. In warmer regions market gardeners sow Celeriac in March in the open ground, and as the seed is about twenty days in coming up, a crop of Radishes is grown and removed before the young seedlings are in any way injured by the Radishes. The roots of the Celeriac are ready for use by the beginning of October, and they may be kept in the open ground until the following April, if protection be given them, consisting of mats, straw, or any other kind; otherwise they must be removed to a cold cellar before severe weather sets in, or they may be put in a bed close together after part of the leaves has been cut off. Thus situated, they will be easily secured from frost. In February, however, they must be again removed, in order to check growth, which would destroy their quality. Treated in this way, Celeriac will be most serviceable during the winter, and will afford excellent dishes. It never requires earthing up—an advantage which it has over Celery.

As regards its use, cut off the leaves, remove all irregular knobs, give the root a hard crushing in clean water, and it will be ready for the cook. In a raw state, cut it into thin slices; it forms a good addition to winter salads. Cut in pieces  $\frac{1}{2}$  in. thick, and when boiled, fried with butter and served with sauce, is the general way in which it is put on French tables. Boiled as above and made into salad, with salt, pepper, oil, and vinegar, like Potatoes, is the chief way in which it is used in Germany.

Celeriac is also called large-rooted Celery; (French) Celeri rave, Celeri navet, Celeri boule, Celeri à grosse racine; (German) Sellerie Wurzel, Knoll Sellerie. D. GUIHENEUF.

#### NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

**Broccoli**.—We are now cutting that prince of midseason Broccoli, *Watts' Excelsior*, some heads of which weigh 5 lb. each, the flowers being securely wrapped up in its own foliage. What is wanted in Broccoli is a late Excelsior, which will not come in until May or June. *Castleg's* is now among the best, but the flower is yellow.—R. GILBERT, *Burghley*.

**Large Stick of Horseradish**.—When in the neighborhood of Malvern Wells the other day I saw a stick of Horseradish taken from the railway embankment measuring 24 in. round the crown, or rather under the crown, and 18 in. in length. I thought it an extraordinary specimen.—JAMES PRESSING, in "Field."

**Cauliflowers Buttoning**.—The whole of my early London Cauliflowers have buttoned, but not the Walcheren, at least at present. I hear, too, this is also the case in many parts of the country. I have for years noted that after a cold, severe winter and a warm spring both Cauliflowers and Cabbages "bolt," but this season having been quite the reverse, I thought they might have escaped.—P. GILBERT, *Burghley*.

**Removing Potato Flowers**.—A Paris letter to the "New England Farmer" says that Dr. Boeghs has published the results of his experiments on the removal of the flower of the Potato. By this process he has found an increase in tubers of 25 per cent. in addition to their quality being improved; he succeeded best with the blue and the white varieties of the Potato. One woman can nip off an acre of flowers in a day.

## PLATE CXXII.

## IXORAS.

(WITH A COLOURED FIGURE OF I. DUFFI.)

Drawn by H. NOEL HUMPHREYS.

*IXORA DUFFI* is a distinct species from the South Sea Islands. In habit it is not unlike *I. Lobbi*. The leaves, which are of ample size, are of a beautiful deep green. Some of them measure as much as 10 in. in length. In colour the flowers are deep red, with a slight tinge of crimson as they get older; one truss of them on quite a small plant measured  $8\frac{1}{2}$  in. in diameter through the centre, not across the top. It is a fine addition to our evergreen stove shrubs, and is named in compliment to Mr. Duff, foreman in the Botanic Gardens, Sydney, New South Wales, by whom it was discovered.

If asked to point to a genus of plants inhabiting our stoves that combines the showiest of flowers with the finest evergreen foliage, I should have no hesitation in naming *Ixoras*; and the freedom with which their great trusses of flowers are produced, ranging in colour from deep red through all the shades of scarlet and orange to white, entitle them to the first place in any collection of stove plants where there is sufficient heat to grow them. This is indispensable, for, coming, as they do, collectively from the hottest parts of the world, they are essentially heat-requiring plants; in fact, they will bear as much heat as any plant in cultivation; and, although they may exist in a temperature not sufficiently high, yet where there is not the means of keeping them, not only in the summer but also in the winter, hot enough, I should not recommend their cultivation, for to arrive at the highest point of success they should be kept growing slowly even in winter, as if growth is ever completely stopped through insufficient heat, they are almost certain to get into a stunted condition, from which it takes a considerable portion of the spring to get them out. Another advantage, when enough warmth is used, is that some or other of the kinds may be had in flower almost all the year round. They strike freely from cuttings taken off at any time of the year when young, half-ripened wood can be obtained. I prefer the strongest cuttings that can be got, as they make plants much quicker than weaker ones. Take them off at the latter end of February or beginning of March, and insert them singly in small pots, drained, and filled with sandy peat, the remaining portion being pure sand; they may be placed in bottom-heat if the temperature of the house be not kept sufficiently high at night, otherwise it is not necessary. Keep them moist and covered with a bell-glass, and they will strike in a few weeks; then inure them to the air of the house. As soon as the little pots are fairly furnished with roots shift them into others 4 in. larger, using the best fibrous peat, with a moderate quantity of sand added, but no leaf-mould or manure, which for this and the majority of other plants of a similar character is a mistake, as both decompose too rapidly, getting into a pasty condition. Manurial elements can always be supplied in a liquid state during the period of active growth when the pots have got full of roots, at which time they are most wanted. As soon as growth has fairly commenced pinch out the points, to induce them to break back, and keep them near the light with little or no shade. The atmosphere should be kept moist, with never so much external air admitted as will make it too dry, not even in the hottest parts of the day; for this reason, it is well to keep these, along with a few of the most heat-requiring subjects, at the warmest end of the house, giving the greater portion of the air needed at the opposite end. The temperature from the beginning of May throughout the summer months should run from  $70^{\circ}$  to  $76^{\circ}$  at night, with  $5^{\circ}$  more by day in dull weather, and  $5^{\circ}$  or  $10^{\circ}$  above this when it is sunny will be rather an advantage than otherwise. For some time after the house is shut up in the afternoons during bright weather the temperature may rise to  $95^{\circ}$ , or even a few degrees more will do no harm, providing the plants are grown in a good light house, and kept near the glass. After root-growth fairly commences the plants must be always well supplied with water; never at any time, even during winter, should they be allowed to get so dry as some plants need to be. Continue to treat them as just directed, with a

liberal use of the syringe until the end of August. The treatment now must be based upon the temperature that can be maintained through the winter; where sufficient heat can be kept up, the plants may be at once moved into pots 6 in. larger than those they occupy, tying out the shoots, so as to give enough room to the young growths that in healthy, vigorous plants are always being pushed up from near the base. Syringe now more slightly, and, at the same time, a little more air, with a somewhat drier atmosphere, will be requisite for the general stock in the house; but the dry condition of the atmosphere that used to be at one time considered necessary through the autumn and winter for these and most other stove plants is simply wrong. As solar heat decreases reduce the temperature, but it should be kept up as near to  $70^{\circ}$  at night as possible, with a rise of  $5^{\circ}$  in the daytime. In this the plants will keep on growing slowly through the winter, and with the increased warmth of spring will commence to push away freely. Any shoots that appear to be taking an undue lead may be stopped back. By the end of March plants that were not potted in the autumn should receive a shift more or less in accordance with the plentiful or otherwise condition of the roots. By the beginning of May the autumn-moved plants will also need larger pots, using the soil, now in a rough, lumpy state and as full of fibre as it can be had, with a fair mixture of sand.

*Ixoras* are naturally such free flowerers that they will bloom whilst small, in which state they are very useful for the decoration of the stove; if they have been kept, as suggested, sufficiently warm through the winter, they will be in flower during the latter part of May and the beginning of June. As a matter of course, the temperature will have been raised, as in the preceding year, and other details of cultivation, as then recommended, carried out. There is no necessity to cease syringing whilst the flower-buds are advancing or when the plants are in bloom, provided the operation be carried out early enough in the afternoon to allow of the moisture to dry up before nightfall, otherwise it will sometimes cause the unexpanded bloom-buds to drop off. After flowering the shoots may be shortened back more or less as may seem to be necessary in order to preserve the symmetrical form of the plants, but if cut in considerably it will be late in the autumn before they flower again; whereas, if the decayed trusses of bloom be only just pinched out shoots will be emitted from the sources from which these spring that will make a short growth and then flower, after which any strong growths that require it may be shortened back. Winter the plants as before, and in the spring give additional pot-room as needed. The treatment from this point will be of a routine character as hitherto recommended. When the plants have grown as large as is required, they need not be potted oftener than once in two years. In potting remove as much of the soil from the upper portion of the balls as can be got away without too much disturbance of the roots, returning them to the same pots or larger ones if requisite. A large-sized specimen will require a pot 18 in. or 20 in. in diameter. To facilitate their blooming early in spring, say by the beginning of May, whatever potting has to be done it will now be better to carry out about the beginning or middle of September, which will give time for the roots to get established in the new soil before winter. About a month or so previous to potting any cutting in that may be required should be effected. They will bear a free use of the knife, even to the extent of reducing them one-half their size. This has the effect of promoting the growth of strong shoots, which produce the finest heads of flowers, and are much better than numbers of little blooms borne by plants allowed to get too large and to be full of weak growths. Managed as described, *Ixoras* will go on for almost an indefinite period. I have cultivated individual plants for twenty years, and have had them as strong and vigorous then as during the earlier portion of their existence.

*I. coccinea*, from Eastern India, is a magnificent species, and one which bears freely very large heads, when well managed, of scarlet flowers. Its foliage and habit are also unexceptionable.

*I. salicifolia*.—This comes from Borneo. Its flower trusses are large, but somewhat thinner than those of the preceding, and they are orange-scarlet in colour; the leaves, as its name implies, are of a long Willow-like shape. It generally succeeds better when grafted





than on its own roots, the best stock I have found for it being *I. javanica*.

**I. alba.**—A white-flowered species from India, handsome and distinct, but not so free a grower as the others.

**I. Griffithi.**—This is a large-leaved, erect-growing species from Singapore, with thick leathery leaves, and yellowish-red flowers.

**I. amboynensis.**—A very fine species introduced from Amboyna, a good grower and free bloomer, bearing a profusion of large orange-yellow heads. It is of a bushy, broad-spreading habit. Young specimens of this variety are preferable to old plants.

**I. javanica.**—This is the freest grower of any which I have cultivated, and it is equally free in flowering, bearing a profusion of orange yellow trusses that open almost simultaneously. It does not flower so freely for some time after being severely cut in as the other kinds.

The following, which I believe are all garden hybrids, are most beautiful, free-flowering kinds, viz. :—

**I. Williamsi.**—This has fine, dark green foliage, is a good grower and free flowerer, producing a profusion of blossoms of a dark orange-red colour.

**I. amabilis.**—A strong, compact grower, with dark green leaves and very large flower-heads, dark orange in colour and produced freely.

**I. Colei.**—This has dark green, somewhat ovate leaves, and produces large, dense heads of white flowers in profusion.

**I. Prince of Orange.**—Another free-growing, fine orange-red-flowered variety.

**I. Dixiana.**—This also is a vigorous-growing and free-flowering hybrid, the flowers of which are salmony-orange in colour.

There are several other species and varieties in cultivation, but the above are the best and sufficient for all ordinary purposes.

*Ixoras* are very liable to the attacks of brown scale and mealy bug, which, if not either completely eradicated or kept well in check, entail a great deal of labour from the rapid way in which they increase consequent upon the strong heat which the plants require, and a natural partiality of the insects for them. I may here say that to do full justice to them, and to preserve their flowers in full beauty, they must be kept completely free from bug, as when it gets up into the young flower-heads its removal can never be effected without injuring the bloom. Repeated and thorough washings, dippings, or syringings in strong insecticide through September and October, when the plants are making less growth, if persisted in, will free them from this pest, and also destroy scale. If the latter reappears, washing and sponging at intervals through the season will keep it down. The humid atmosphere and continuous syringing through the season of growth will be sufficient to keep down red spider, and will also check green fly and thrips, but, should these make their appearance, fumigation must be resorted to.

T. BAINES.

*Southgate.*

#### HOW TO IMPROVE THE CINERARIA.

Of all plants grown for general decorative purposes *Cinerarias* are unquestionably the most useful, and more particularly is this the case as regards amateur cultivators who have only a limited amount of house room, as the *Cineraria* is a plant that does exceedingly well in pits and frames. Indeed, if these be of that substantial character which they usually are when built with bricks, no better place can be had for growing them; and if a single hot-water pipe happens to run along the front wall for the purpose of drying the atmosphere when necessary and to keep out frost, the situation will be perfect, and it will exactly meet all their requirements. Anyone, therefore, having the convenience of such a structure, will have one of the most perfect, not only for growing *Cinerarias*, but also many other plants for keeping a greenhouse gay during the winter and early spring months, as the same temperature will just suit *Cyclamens*, *Lachenalias*, *Libonias*, *Eupatoriums*, and a host of such plants that come in about the same time, but which, until they get into bloom, are not easy to manage among others, where they have to stand far from the glass and are crowded for room.

Valuable as *Cinerarias* are at this season, they are doubly so at or soon after Christmas, at which time they may be easily had by sowing seed at once and growing the plants on during the summer in a cool, shady retreat, so as to keep them free from the attacks of red spider. The best way of raising them is to fill pans with light, rich soil, consisting principally of leaf-mould or peat finely sifted and pressed down level and smooth. Before sowing, however, this should be watered through a fine-rosed pot, and then allowed to stand and drain for a night or so to get rid of the surplus moisture. Seed of such a delicate nature as that of the *Cineraria* should never be watered till the young plants are found to be peeping through the soil, and the necessity for this may be obviated by covering the pans with a sheet of glass and laying a little Moss or a piece of brown paper over that, so as to shut out the light and sun; but, in all cases in which this is done, much watchfulness is needed to remove these coverings directly the young plants make their appearance, as a day's confinement in the dark will be sufficient to draw them up to that degree as to weaken them very considerably. In order to facilitate the banding and pricking off, as well as to prevent the plants from becoming etiolated from being too near each other, the seed should be sown thinly and slightly covered with silver sand and fine soil in about equal proportions, and if then placed where it can get a gentle moist heat, the young plants will soon be through, after which a shady place near the front of a hotbed or the back shelf of a forcing house is the best place till they are large enough to pot off singly, and when this is done they may be transferred to any cool frame where they can be kept close for a short time to give them a start. Although *Cinerarias* will grow in almost any kind of soil, they delight in that which is rich and light; and if a mixture of about equal parts of loam and leaf-mould, together with a little decomposed cow manure, be afforded them, they will be found to flower stronger and better than in anything else. A pinch of soot at the bottom of the pot, or a little mixed up in the soil, is a great help to keep them in health and add to the size and deep green colour of the foliage, besides which, being disagreeable to worms, it is desirable on that account. During summer we select a shady site for them near a building or where a large tree casts a shadow; on this spot we place a three-light box, and then put in 3 in. or 4 in. of coal-ashes to form a firm bottom for the pots to stand on. A situation of this kind is always better than a more open one, as the shade is natural to them, and they get more light than could be had if the sun's rays have to be screened by mats or other means, and it often occurs when these are used that they are not on when most wanted, or that they remain on long after they ought to have been removed, thus damaging the plants by causing the leaves to come thin and flimsy. In a naturally shady position there is no fear of this, and they may be grown much more successfully with far less labour and attention than they require anywhere else. The same remarks apply to Chinese *Primulas*, which, during the summer months, should be grown and treated in a similar manner. An important point with both is to surround them with an atmosphere saturated with moisture, and this may be secured by copious syringings overhead, or gentle watering through a fine-rosed pot every afternoon before closing. These repeated applications will saturate the ground under them, and keep it in that desirable condition throughout; and if this be done, the growth of the plants will be rapid, and there will be no difficulty in maintaining them in the most perfect health, provided they are shifted on from time to time as they require more pot room. This is one of the most important matters in the cultivation of *Cinerarias*, for if they be allowed to remain stunted from want of root room till the flowering period arrives, or suffer from an inadequate supply of water, they are never so fine or have anything like the sized leaves and quantity of bloom they otherwise would have. The great thing with these, as with all other so-called soft-wooded plants, is to keep them growing right on without a single check, so as to insure a full and free development of foliage, without which they can never be regarded with satisfaction.

Besides being subject to red spider, *Cinerarias* are likewise liable to attacks of mildew and green fly, the latter of which is frequently troublesome, and can only be destroyed by

repeated fumigations with Tobacco. This is a work that requires great care, as no plants are more easily injured by overdoses than Cinerarias, and therefore the fumigations should only be light at one time, but repeated again and again after a few hours' interval till the insects are dead. From want of caution, and not using it in this way, I have seen a whole year's labour and attention lost, and no doubt this has been the experience of many, both as regards Cinerarias or other plants, as few escape such mishaps at some time or other, especially if Tobacco paper be burned instead of the genuine article.

The sportive tendencies of Cinerarias are so great that there is sure to be a marked difference in the quality and size of the flowers of a batch of seedlings; and as most of last year's plants are now in bloom, it is a good plan to go over them and pick out any that show special merit, in order that they may be placed somewhere apart from the rest, as it is only by thus isolating them that they can be kept pure, or any improvement effected. In cases where it is desired to perpetuate any particular kind and increase the stock, it may easily be done by saving the plant, which after it has done flowering should be turned out of the pot and plunged in leaf-soil in a cold frame, where, if kept duly syringed and attended to, it will soon send up a quantity of suckers around the base. These form the future plants, and should be taken off as soon as they have made sufficient root to support themselves. They should be potted singly in 3-in. pots, and afterwards treated precisely the same as seedlings. Years ago few of the latter were grown, and even the named varieties of that time would now be thought little of, so great has been the improvement that has taken place in these popular flowers. It is no uncommon thing at the present day to see them with broad thick petals overlapping each other forming individual blooms larger than a two-shilling piece—a striking advance compared with what they used to be. The new race of doubles that caused such a stir have disappointed many; but, considering what has been done with Cinerarias during the last quarter of a century, there is reason to hope that we have not yet reached the limit to which they may be brought. All progress, however, must be made by seeding from the very best, and no other, and if this be done constantly we may look for still better results. S. D.

#### PERFECT DARKNESS NOT NECESSARY FOR PRODUCING WHITE LILAC.

I EXTRACT the following particulars respecting the production of the white variety of the coloured Lilac from an interesting article by M. A. Lavallée, Secretary-General of the Société Centrale d'Horticulture de France, published in a recent number of the Society's journal.—In December, 1876, M. Lavallée laid before the Society several branches of the Red Marly Lilac with perfectly white flowers, and at several subsequent meetings he exhibited similar specimens, all of them produced upon a system differing from that generally adopted. The most usual method of obtaining the artificial white Lilac is to grow the plants in a greenhouse from which every ray of light has been carefully excluded, but M. Lavallée has proved, by repeated experiments, that absolute darkness is not essential for producing the white flowers. The effect of darkness, perfect or partial, on the plants is due to the well-known principle of vegetable physiology, according to which the colouring matter of leaves known to chemists as chlorophyll—itsself, by the way, being a mixture of variously-coloured constituents—can only be perfectly developed under the influence of light. This principle has long received valuable application in the blanching of Seakale, Celery, Endive, Asparagus, &c., but it is only lately that it has been applied to the bleaching of flowers, and, as far as I know, in the case of the Lilac only. M. Lavallée goes on to point out the needlessness of growing the plants in perfect darkness, and observes that the mistake which horticulturists have made has arisen from the fact of their having confounded two distinct notions; the one being that leaves grown in darkness are pale in colour, the other the absence of colour in flowers in which the colouring principle has never been developed, and which therefore remain white. According to M. Lavallée, specimens of the artificial white Lilac were first exhibited to the Society by M. Laurent in 1860. These specimens excited a great deal of interest and surprise amongst the members of the Society at the time, and a commission was appointed to investigate the means by which M. Laurent succeeded in obtaining such beautiful results. M. Laurent's mode of procedure was found to be very simple. It consisted in

forcing the plants in a hothouse heated to 80° Fahr., and kept in a perfect state of darkness. M. Laurent, however, allowed that it was not impossible now and then to obtain white flowers on plants grown in broad daylight. At the same time the commission reported on the results obtained by another Paris gardener, M. Berthelot, who was also engaged in forcing Lilacs, who produced the same effect in the full light of day, using for the purpose a well-lighted house, heated to a high temperature. From this fact M. Duchastre, who acted as reporter to the commission, concluded that heat as well as absence of light was capable of preventing the formation of the colouring matter in the petals of the Lilac. M. Lavallée has thoroughly tested both these totally different methods of arriving at the same result, and has succeeded in obtaining perfectly white flowers in both cases. He is decidedly of opinion, however, that white Lilacs, grown in an ordinary well-lighted house, give thicker and larger bunches of flowers, and which last a longer time than when M. Laurent's method is employed, and that, finally, the open daylight mode of culture requires much less care and attention. Some 9 ft. or 10 ft. of a frame in a Dutch greenhouse were devoted by M. Lavallée to this experiment, the Lilac plants being planted perpendicularly, so that their buds were within from 8 in. to 1 ft. of the glass. They were then left to themselves for nearly three weeks, the house being kept at a temperature of from 68° to 72°. At the end of this time the Marly Lilac was in full bloom, while the Charles X. variety did not blossom until four or five days after. It has been stated that the last-named beautiful variety could not be forced, but M. Lavallée has proved this to be a mistake. It seems, however, that in the early part of the season it does not always come to perfection, the plants placed in the forcing house by M. Lavallée in November having failed to flower; but after the beginning of December it is the best variety for forcing. Two specimens of the Charles X. variety were shown by M. Lavallée, both of which were grown in the light, but under different conditions of temperature. The first one, which had pale lilac flowers, was placed in a house heated to a temperature of 68° Fahr. on December 23, 1876, to force its growth. At the end of four or five days the flower-buds began to make their appearance, and it was transferred to a cool house, the mean temperature of which was 40° Fahr. The flowers began to open about January 10, and were of a pale lilac. The shade of colour having been carefully noted, M. Lavallée replaced the plant in the forcing house, which was now at a temperature of 70° Fahr., in order to see if the heat would have the effect of destroying the small amount of colouring matter already formed; but not the slightest change took place, the flowers preserving exactly the same tint. The second specimen had perfectly white flowers, and was put in a well-lighted forcing house on December 30, where it remained until it was exhibited to the Society. Two specimens of the Marly Lilac, with equally white flowers, were also shown. They were grown in a well-lighted forcing house at a temperature of 72° Fahr. To vary the experiment, several plants which had produced pale lilac blossoms in a cool house were transferred to a perfectly dark forcing house, but without the slightest change taking place in their colour. From these experiments we may draw the following conclusion—that a prolonged heat of from 68° to 72° Fahr. prevents the formation of the colouring matter in the petals of the Lilac, but that when once it has been formed, this temperature is incapable of destroying it, and that a temperature of 40° Fahr. has no influence on the colouring matter of the flowers of these plants. M. Lavallée therefore supposes that it is on account of the rapidity of their growth in the forcing houses that these Lilacs produce colourless flowers, and that darkness has nothing whatever to do with the phenomenon; and that when the Lilac is forced into blossom in fourteen, fifteen, or even twenty days, the colouring principle has not sufficient time to develop itself. Whenever, therefore, we wish to obtain Lilacs with white flowers, all we have to do is to place the plants in a forcing house, the temperature of which is kept at 68° Fahr., without seeking the aid of the powers of darkness. This method of producing artificial white Lilacs is extensively practised by the country people in the neighbourhood of Antwerp. They simply plant the common Lilac in tubs at the proper season, and place them in their living rooms close by their stoves, which are never allowed to go out. The plants flower well, the flowers being always perfectly white. The same result is obtained by cutting off the flowering branches at an early stage, placing their extremities in a bottle of water, and keeping them in a forcing house or in a well-warmed room.

It has been said that when the Persian Lilac is grown in a forcing house it will not yield colourless flowers like its congeners, but M. Lavallée has obtained identical results with this species. He attributes the want of success which has hitherto been met with is due to the fact that this Lilac is of very rapid growth, and that a lower temperature, say from 60° to 64° Fahr., is sufficient to make it pro-

duce colourless flowers, which would not resist a greater degree of heat. These very philosophical conducted experiments have been repeated by several members of the Society, who have borne witness to the correctness of M. Lavallée's results. We may, therefore, conclude that a certain degree of heat by accelerating vegetation prevents the colouring matter from being formed in the petals. M. Lavallée's experiments open up a wide field for practical research in this direction. It would be interesting to know if other flowers submitted to similar treatment would yield colourless blossoms. Be this as it may, M. Lavallée's experiments are of the highest interest to the practical gardener, the scientific chemist, and the vegetable physiologist.

C. W. QUIN.

## RHIPSALIS FUNALIS.

This comes from Brazil and the West Indies, and therefore requires to be grown in a stove. It is naturally an epiphyte; consequently it makes a good basket plant; but the flowers are so small that it is not likely to receive much notice, except from amateurs, who might



Rhipsalis funalis.

like to grow it as a curiosity. Its flowers burst through the epidermis in all sorts of places, and its fruit bears considerable resemblance to that of the Mistletoe.

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## ADVANCES AMONG PRIMULAS.

THAT there is a marked improvement going forward in the Chinese Primrose will be evident to those who have seen the grand forms which have been exhibited of late years. The many superb double varieties, of which that which we recently figured is one, show a very decided advance; for useful as is the old double form, the newer ones far surpass it in quality. But this is not the only direction in which progress is to be observed. The single-flowered sorts have been perhaps even more improved in size, in substance, and in colouring. A batch of these has recently come before us, and in them we find these important qualities to be specially well marked. We refer to some choice forms which have been bred by Mr. Tomkins (Sparkhill

Nursery, Birmingham), and of which we propose to specially notice four, namely, two white-flowered and two bright red varieties. Of the white, the best known is that called Princess Louise, previously known as Marchioness of Lorne. This is a large pure white of remarkable substance and boldness of character, with a well-marked yellowish spot, and perfectly flat. It has foliage of the typical palmatifid type. A newer variety called Monarch is larger than this, but equally pure, equally stout, and considerably more frilled, so that it is scarcely so symmetrical, but is nevertheless a bold and striking flower of great endurance. This has a bold and yellowish eye  $\frac{2}{3}$  in. across, and differs essentially in having the more novel Fern-like foliage characteristic of some of the sports. Of the carmine-red sorts just referred to, both are far in advance of anything yet in general cultivation. In size the flowers vie with the largest, in substance they compare favourably with the stoutest, while in colour nothing approaches them for brilliancy of hue. They belong to the group which originated in kermesina, the colour of whose flowers may be described as carmine-rose. The brightest of these is Scarlet King, which has flowers of a particularly brilliant tint, with yellow eye, and associated with the old-fashioned palmatifid leaves, while Sunrise, which is a Fern-leaved sort, scarcely falls behind this in the delicacy of its rosy-salmon colouring. These grand varieties, it is said, come true from seed. Another near approach to scarlet has been raised at Chiswick, from seeds of M. Vilmorin's strain. The system of culture practised at the Sparkhill Nurseries has been thus described:—The compost used is a mixture of burnt earth, stiff loam, old mortar, charcoal, very rotten cow manure, and leaf-soil, well mixed together, the roots having a great liking for the pieces of mortar and charcoal; this compost does not necessitate much drainage, as it is sufficiently porous in itself. The crown of the plant is kept low down in the soil in potting, as from this part are thrown out many surface-roots, which add much to their vigour. Seeds are sown at intervals from March until May, so as to insure a succession, the earliest batch furnishing the earliest bloom. Cuttings of special sorts are struck in the spring in a gentle bottom-heat. The plants are grown in a low, span-roofed house, with ventilation at the sides as well as at the top, and in brilliant weather the light is subdued by a little shading, too much exposure being avoided. Careful watering is essential, and tepid water is always used, watering over the foliage until the plants begin to flower. Liquid manure is used most carefully, for the roots are so sensitive that mischief is soon done from an overdose; it is, however, used frequently, but in a very weak state, and always in a tepid condition.—"Florist."

## STRIKING CUTTINGS IN WATER.

M. E. BOURDEAUX, of Vandrenil (Eure), has lately laid before the French Société Centrale d'Horticulture an account of his method of striking cuttings of Crotons, Cissus, Gloxinias, Achimenes, Dracænas, Ficus, Begonias, and other hothouse plants in water. It has long been known that Vine cuttings might be struck in water, but it has remained for M. Bourdeaux to apply this method to the plants we have named. M. Bourdeaux chooses the months of July and August for the operation. The slips are placed in bell-glasses turned upside down and filled with water. The bell glasses should be sunk in a cool frame, the glass of which has been whitewashed, in order to moderate the intensity of the sun's heat. The slips are cut about the beginning of August, and will be found to have struck perfectly about the end of that month. The frame in which the bell-glasses are placed should be warm enough to maintain the water at a temperature of from 70° to 85° Fahr. It is of great importance that these cuttings should not be sunk deeper in the water than about  $\frac{3}{4}$  in., otherwise they are apt to become rotten. To keep them in their proper positions they must be loosely fixed in a round piece of thin board of nearly the same size as the bell-glass. A wooden frame may be used for the same purpose. Vine cuttings struck in this way may be transferred to pots, and within a month of the time they were first put into the water, that is to say, as soon as ever the rootlets are properly developed. They are then placed under a frame until they have become well established. They may be sent into the market a few weeks after. M. Marx, a horticulturist at Notre Dame de Vandrenil, who is a great admirer and grower of the best sorts of Vines, more especially those which are most suitable for the soil and climate of Normandy, possesses the collection made by Dr. Houdebine, M. Bourdeaux taught M. Marx his method of propagation, and M. Marx promises to deliver during the coming autumn specimens of the 200 varieties of the Vine which he possesses, perfectly well struck in 2-in. and 3-in. pots, on very low terms. This method of propagation has the additional advantage of causing the Vines grown by it to fruit much earlier. Crotons and Cissus which were struck from herbaceous cuttings gave the best results. Gloxinias, too, which were struck from leaves formed in the course of a month such strong tubercles, that they

could be potted off and sent into the market. The Achimenes also struck well and grew rapidly in the water. The ease with which Ficuses, Dracaenas, and Begonias are multiplied by this method confirms M. Bourdeaux in his idea that a large number of hothouse plants may be propagated by this means with the greatest certainty.

C. W. QUIN.

**"GEHENNA," A NEW INSECT DESTROYER.**

UNDER the above name I received a small bottle of mixture for destroying fly, thrips, spider, mealy bug, &c. After having tried it on various subjects, I feel convinced that it will, if carefully applied according to the directions, destroy any kind of insect without injury to the plants, although the fact of its requiring to be syringed off after the lapse of a certain period denotes that there is some risk of injury to tender subjects. This is rather the rule than the exception with most of the remedies already before the public for a similar purpose, and I feel little hesitation in affirming that no part of a cultivator's duties requires greater care than that of keeping down insect pests, for if even the best of existing remedies be not applied with discretion they may prove worse than the disease. While the fully-developed foliage of some plants will bear with impunity the maximum strength of the solution, the young tender leaves of even the same plant may be seriously injured by a diluted application of the same remedy. I may mention such subjects as Gesneras, Cinerarias, and most rough or woolly-leaved plants as being particularly liable to injury from the difficulty of thoroughly washing off the solution, while smooth-leaved plants, such as Crotons, Dracaenas, &c., will, if the foliage be pretty well matured, withstand a strong application, as, from the nature of the leaves, they are readily cleansed by syringing. These powerful solutions are of great service for the winter-dressing of Vines, Peach trees, and other deciduous plants at rest, as they may be applied to well-ripened wood in a state strong enough to destroy any kind of insect life. Plants of a hard-wooded nature that are much infested with thrips or scale may be cut into shapely specimens and thoroughly cleansed when divested of foliage, after which the young growth may be kept tolerably clean. It must not, however, be supposed that even the very best of remedies completely eradicate insect pests at the first application if they are at all numerous, for some will be almost certain to escape uninjured; and as their reproductive power is marvellously rapid, and the eggs of some kinds are not easily destroyed, a second or even third application may be necessary to entirely get rid of them. Perseverance is the only thing that will effectually overcome the most obstinate attacks; if only moderate success is to be attained in plant or fruit culture the plants must be kept clean, otherwise they will reflect little credit on anyone concerned in their culture. For fly of various descriptions fumingating is the most expeditious remedy in houses; but in small collections of plants in windows a remedy in a liquid form, which can be readily applied with a small syringe, will be of great value to amateurs.

Henham.

JAMES GROOM.

**Primula purpurea as a Table Plant at Night.**—A few evenings ago I introduced this beautiful hardy Primula to the table after the gas was lighted, and the effect was most striking, for the clear mauve-purple of the blossoms, so perceptible by day, appeared at night to be of a charming pink hue. A plant with the leaves pretty well developed, and having five or six flower-stems, is by no means an ungainly object on the table. There is a tendency now-a-days to make certain plants, such as Palms, Crotons, Ferns, Dracaenas, &c., the regulation plants for the table, and any departure from these is regarded as a breach of good taste. But there is no reason why any charming plant should not be utilised for the purpose, and I confidently commend to the notice of plant cultivators the subject that heads this paper.—D.

**NOTES AND QUESTIONS ON THE INDOOR GARDEN.**

**Salvia splendens compacta alba.**—This is an exact counterpart of *S. splendens compacta* in habit and foliage; the flowers are pure white, and when intermixed with the scarlet variety, have a charming effect. It is comparatively new, and as yet but little known.—R. H. B.

**Azalea imbricata.**—This may now be found in flower in several of the London nurseries. It is one of the most beautiful double kinds yet produced; the flowers are white, spotted with delicate bluish, and last a long time in perfection. This variety cannot fail to find a place in every collection of greenhouse plants.

**Anthurium variegatum.**—This plant is well worth growing for furnishing small vases or for conservatory decoration. It was introduced from the Cape of Good Hope. It is of a hardy character, and in variegation and habit closely resembles *Pandanus Veitchii*. It is, however, much more easily cultivated, and its foliage never fails to assume a bright grassy green colour, beautifully striped and margined with creamy white.

**GARDEN BOTANY.**

(Continued from p. 289.)

**GERMINATION OF DICOTYLEDONS.**—In dicotyledons the cotyledons or seed-leaves are usually so different, as to be easily distinguished from the leaves which follow (fig. 89), but they are not in all cases visible on the seedling plant growing in the ground. There are two essentially different kinds of germina-



Fig. 89.—Germinating seed of Bean, one cotyledon or seed-leaf removed, showing the first true leaves.

tion of dicotyledonous seeds connected, it is true, by intermediate nodes. In the one case the cotyledons remain enclosed within the seed, and the seed itself continues underground or close to the surface. This kind of germination is called hypogæus or underground germination, and is, perhaps, confined to

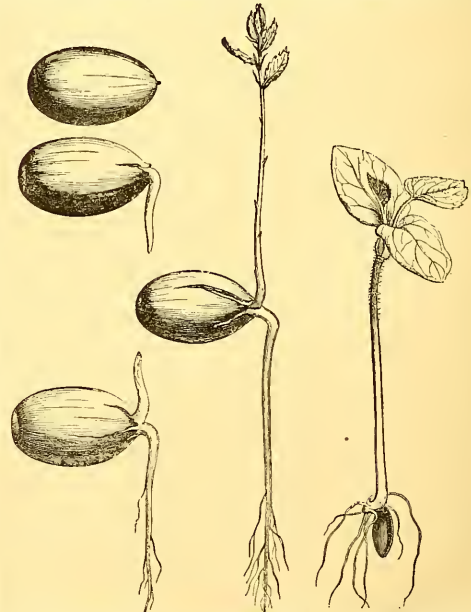


Fig. 90.—Acorns in various stages of germination. The cotyledons remain enclosed in the seed and pericarp; radicle strongly developed into a tap root.

Fig. 91.—Seedling of Melon in germination; radicle above ground; radicle shrivels and dies away early, and is replaced by a cluster of roots.

exalbuminous seeds with thick cotyledons, though some of this class of seeds are not hypogæus in germination. A good example of hypogæus germination is afforded by the Oak (fig. 90). At that end of the seed (here fruit) where the junction of the cotyledons is, the radicle first appears and takes a downward direction, and soon afterwards the plumule begins to grow. In the other kind of germination the cotyledons are

withdrawn from the seed, appear above ground, and usually change to green, as in the Cucumber, Melon (fig. 91), Cress, &c. This is termed epigeus or aboveground germination. In epigeus germination the testa may be left underground, as in the Melon, or it may be borne aloft and finally cast off by the cotyledons aboveground. In dicotyledons, as in monocotyledons, the radicle or primary root is often little developed, and soon replaced by numerous lateral rootlets. It has been explained that the embryo presents various modifications in its development. Sometimes the cotyledons are very large and the radicle very small, and more rarely the radicle is very large, and the cotyledons minute or altogether suppressed. In the *Guttifera* or *Clusiaceae* these two extreme modifications are characteristic of different tribes and genera. The seeds are exalbuminous, consequently the embryo fills the seed; and when the cotyledons are large, they usually cohere or grow together by their faces, so that in germination the plumule and radicle appear much as in the Oak (fig. 90). In the genus *Garcinia* (fig. 92) the embryo consists of a thick radicle, filling nearly the whole cavity of the seed, and surmounted by a



Fig. 92.—Seedling *Garcinia*. Radicle projecting from one end of the seed, and a plantlet, which has formed an adventitious root, is produced from the other.

rudimentary plumule without any trace of cotyledons. The exact nature of this embryo is easiest determined in germination, when the radicle emerges at one end of the seed, and at the opposite extremity the plumule appears. Then commences the most singular growth. The true radicle soon perishes; to replace which the plumule emits a root, or roots, at its base, whilst its apex elongates into a stem. In the place of cotyledons, the stem below the first pair of ordinary leaves is furnished with a number of scale-like appendages. Another curious kind of germination is that of *Nepenthes*. The seeds are very small, and the testa is relatively very much elongated into membranous tails, and the minute embryo lies in the midst of albumen. It is an almost universal rule that the radicle or primary root is the part to elongate and protrude first from the seed, but in *Nepenthes* it often happens that the plumule precedes the radicle, emerging on one side of the seed and unfolding one or two leaves besides the cotyledons before the radicle pierces the other side of the seed. Some dicotyledonous seeds germinate after the same plan as Palms; that is to say, the upper parts of the cotyledons remain within the seed, and they elongate at the base by intercalary growth into long stalks (petioles), carrying with them the entire axis of the embryo. Frequently the petiolar portions cohere along their margins, forming a slender tube sometimes 2 in. or 3 in. or more in length. Eventually, after the tube has ceased to elongate, the radicle begins to grow from the lower extremity,

and the tube itself is burst open near the base by the enlarging plumule. This kind of germination has been observed in several *Ranunculaceae*, amongst others in *Eranthis hiemalis*, *Delphinium nudicaule*, *Anemone alpina*, and *Aconitum Anthora*; also in some *Umbelliferae*, as *Charophyllum bulbosum* and *Smyrniolum perfoliatum*. According to Mr. Magnus, a German botanist, sometimes in germination of this kind a period of rest intervenes between the outgrowth of the cotyledons and the development of the plumule. The latter does not grow out until the second year, after the tubular portion of the cotyledons has decayed, and no longer present any obstacle to its elongation. This, he states, is the manner in which seeds of *Aconitum Anthora*, *Eranthis hiemalis*, and *Smyrniolum perfoliatum* germinate. Quite recently Dr. Asa Gray recorded a similar mode of germination of a *Curcubitaceae* plant, *Megarhiza californica*, formerly in gardens under the name of *Echinocystis fabacea*. This plant has large seeds, and therefore the different stages of germination are more easily seen than in most of the other plants named. Numerous other curiosities in germination might be described, but enough on this point has already been said, it is to be hoped, to excite the interest of cultivators in this phase of plant life. Comparatively little of what is known of this subject by practical men has been put on record, and doubtless much still remains unknown.

**SEEDS RIPENING UNDERGROUND, &c.**—Whilst the majority of seeds appear to require all the sunlight and air they can obtain to attain maturity, there are some which normally ripen underground. *Trifolium subterraneum*, an annual species of Clover not uncommon in some parts of England, is a plant that ripens its seeds underground. After flowering, the heads, containing the pods and enlarged calyxes of barren flowers, burrow in the earth, where the seeds ripen and in due time germinate. *Arachis hypogea*, another member of the Pea family, which is very generally cultivated in tropical countries for its seeds, exhibits the same peculiarity. Indeed, it is asserted that if the pods are accidentally unable to thrust themselves into the ground, the seed never comes to perfection. It is no ordinary obstacle that would prevent them, as they are able to pierce the firmest soil and avoid small stones. *Geococcus pusillus*, a small plant belonging to the *Cruciferae*, discovered in West Australia by Drummond, also buries its pods in the ground, and there are several other authenticated instances. The ripening process of the seeds of *Colchicum* and *Crocus* deserves mentioning by way of contrast to that just described. In these plants the seed-vessel is formed below the surface of the soil and immediately on top of the bulb, and long after the flower has withered the seed-vessel appears above ground supported on a stalk, which grows out after the flowering season. The *Colchicum* flowers in the autumn, and its seed-vessels remain under ground all the winter, appearing above ground in the spring to perfect the maturation of the seeds. *Vallisneria* ripens its seeds under water.

#### The Root.

**DEFINITION.**—Following the development of a germinating seed into a perfect plant, we usually find that the body or axis of the embryo grows in two opposite directions; the radicle, or root end, growing downwards, and the plumule growing upwards, one being the basis of the root system of the plant, and the other the basis of the stem system, which bears the leaves and flowers. In young seedling plants there is no difficulty in distinguishing root and stem, whether the embryo gives birth to a single primary root, as the seeds of the Oak (fig. 92), or whether several rootlets are emitted at the same time, as in some Grasses, &c.; but the subsequent growth of many plants is such as to render it impossible to give any general definition of a root. The rule is that roots pierce the soil and avoid light, whilst stems seek light and avoid darkness by growing in the direction of the greatest light, as is the case with plants in a window. But it is not always so easy to distinguish between root formations and stem formations, because some stem formations are produced underground in darkness, and because certain stem formations and root formations are in external appearance very much alike. Indeed, there is no absolute difference in the nature and capabilities of stem and root, though there is in function, &c.;

but their functions may be arrested and their characteristic growths reversed by altering the conditions or influences to which they are subjected. It has already been stated that plants differ materially from animals in their capability of reproducing their like from almost any part of themselves. Thus in practice we propagate plants not only from seeds, but also from fragments of leaves (*Begonia*), of stem (*Cordylina*), branches (*Verbena*); and in each case the plants thus obtained usually possess all the attributes, or at least all the capabilities, of seedling plants. By subjecting these parts of plants to certain conditions we obtain such results. But the parts of plants are even more the result of conditions than would appear from this, for it is possible, with some plants, as just stated, to actually reverse the nature of root and stem. Duhamel bent down and buried in the earth the head of a young growing Willow tree, and in course of time the branches emitted roots, so that there was a plant with roots at both ends. This being the case, he dug up the original root-end, and raised it erect. The exposed branches of the root soon gave birth to buds, which developed into leafy branches. It is important to note that the roots were not themselves transformed into branches, nor the latter into roots, and that the experiment proves that conditions determine the nature of the outgrowths. Once a root, always a root, and once a stem, always a stem, though the growths that proceed from them depend upon circumstances. Furthermore, the normal roots of the Willow

are many singular exceptions. Roots differ, too, from stems in their mode of growth, elongating only by growth near the tips, not throughout the whole length of each season's growth. This kind of growth is manifestly better adapted to the medium in which roots usually grow. The tips of roots are guarded by a cap of loose tissue overlying the growing point, and this cap is renewed by growth from within.

W. HEMSLEY.

## GARDENING FOR THE WEEK.

### Indoor Plant Department.

**Pleione.**—These beautiful little plants are amongst the brightest and most distinct of all Orchids, and producing, as they do, a complete sheet of flowers almost all open on a plant at the same time, and not over-balanced by an excess of foliage, they are most effective. They increase fast if treated in accordance with their requirements. Some growers put them in a mixture of fibrous peat and turfy loam, mixed with sand and coarse, others use peat and leaf-mould, or leaf-mould added to peat and loam, with sometimes dry, shaly, rotten manure, and I have seen them do well in each of these mixtures, and also in peat alone. The handsome *P. humilis* may be said to be a true epiphyte, and will succeed well on a block with fibrous peat and Sphagnum in quantity sufficient to retain enough moisture to keep the roots wet when growing, and they should never be very dry. In addition to *P. humilis*, the kinds most usually grown are *P. maculata*, *P. lagenaria*, and *P. Wallichiana*; these are all from the cool, moist hill regions of India, which is sufficient to point conclusively to their requiring somewhat cool treatment, plentifully supplying them with water combined with abundance of light. Most of the species will now be making active growth, and, if properly treated, the result will be a profusion of bloom after their season of rest, and a yearly increase of three or fourfold.

**Oncidium Lanceanum.**—Anyone having a good stock of the best variety of this beautiful old plant possesses one of the very finest late summer-flowering Orchids in existence. Now, when the young growths are in course of formation, more care must be taken than is requisite with most species that water does not lodge in the expanding leaves, as they are more liable to suffer from moisture hanging about them than many plants.—T. B.

**Conservatory.**—At no time of the year should conservatories be better furnished with flowering plants than at present; nor is there a time when they should be more interesting, on account of the numbers and diversity of plants that can be had in bloom during this month. In addition to the last batch of Hyacinths, Tulips, Narcissus, and other bulbs, there will be forced Hydrangeas, Roses, Deutzias, double-flowering Plums, Spiræas, Lilacs, Epacrisæ, Cytisus, Azaleas, Cyclamens, Cinerarias, and Primulas. These afford so much variety as to admit of the most effective grouping, if tastefully arranged along with such foliage plants as are indispensable, such as Agaves, Yuccas, Dasylirions, Cordylines, Rhopalas, and Tree Ferns. Without these, whatever numbers and variety of blooming plants may be at command, the general effect will be unsatisfactory. Never crowd, even if more plants are at hand than are required, as it has a most injurious effect. The object should be to grow every plant, even the commonest, so that it will bear looking at individually. Attend well to *Fuchsias*, *Geraniums*, and *Calceolarias*, as these will be required to play a conspicuous part when early spring plants are over. Keep *Fuchsias* well stopped in, and encouraged with manure water as soon as their pots are filled with roots. Be careful not to use too strong, however, as when that is the case it does more harm than good. In tying *Geraniums*, use just sufficient sticks to support them, and no more, as soon as their flowers are formed, give them weak manure water once or twice a week; yet be careful never to give *Geraniums* too much water at any time, as they cannot bear nearly so much as many things. When *Achimenes* have made 6 in. of growth, pinch out their points, to induce them to break and grow stocky, and tie them out sufficiently open to allow the light to act on their bottom leaves, otherwise these will turn yellow and drop off. It is time now to make provision for next autumn and winter's display, by making a sowing of *Primula* and *Cineraria* seed; also by striking a batch of *Euphorbia jaquinoides*, *Hydrangeas*, and *Poinsettias*. Some experience difficulty in striking this *Euphorbia*; if the young shoots are taken off with a heel when from 4 in. to 6 in. long, and inserted in silver sand, in a moderate heat, covered with a bell glass, very few will fail; but if the cuttings are made from a joint in the ordinary way, the greater number will not succeed. Give attention to such plants as *Deutzias*, *Spiræas*, and similar things that have been forced; for if neglected now they will not flower satisfactorily next winter. It is the best practice to cut all the old wood out of the *Deutzias*, depending on young shoots from the base of the plant for next year's bloom.

### Flower Garden.

**Rose Borders.**—One of the most effective means of arranging Roses so as to bring the largest number under the eye at once when in flower is to plant a broad border on each side of a walk with full-sized standards at the back, i.e., furthest from the walk, with rows of half-standards next, followed by dwarfs, and those nearest the margins of the walks should be pegged down. One of the finest effects I have ever seen produced by Roses was the result of planting in this way. It was in the case of a walk

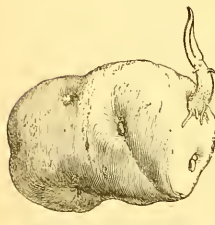


Fig. 93.—Tuber of Potato with one of the buds growing into a stem. The rootlets do not proceed from the tuber itself, but from the base of the stems which arise from it.

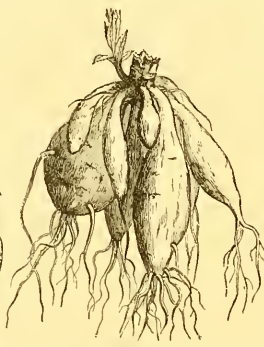


Fig. 94.—Tuberous root-stock of Dahlia, consisting of tubercles, which are tumefied roots, and the permanent base of the axis or stem from which the annual stems proceed.

and those proceeding from its buried branches are indistinguishable; and all roots, so long as they remain under suitable conditions, exhibit the same mode of growth and other characteristics. Thus root formations and underground stem formations may have some general resemblance, and bear the same popular name, as the tubers of the Potato and Dahlia (figs. 93 and 94); but a cursory examination will reveal important differences. Dahlia tubers are branches of a true root, termed a tuberous root, and known to be a root because buds appear only at the apex where the tubercles are connected, whereas buds are produced on no determinate part of the surface of a Potato tuber. There is the great difference between Dahlia tubercles and Potato tubers; the former are true roots held together by the perennial base of the stem, in which the buds of the annual stems originate; whilst the latter bear buds themselves, which, growing into stems, give birth to roots at their bases. In the one case we have tumefied or tuberised roots, and in the other tuberised stems. The distinctions are more fully described in the paragraphs on root stocks, tubers, and tubercles. True roots never produce buds unless brought under the influence of light, like the superficial roots of some trees and shrubs which throw up suckers. But not all roots form buds under the influence of light, nor will the shoots of all plants root if put into the ground. As a rule, the shoots of herbaceous and soft-wooded plants root much freer than hard-wooded shrubs and trees; but there

some 9 ft. or 10 ft. wide, and about 350 ft. in length, with 3-ft. Grass margins, flanked right and left by borders that admitted of five rows of plants in each. The front rows were planted 8 ft. from the Grass, and 3 ft. 6 in. asunder; the kinds used in these front rows consisted mostly of Teas, with some Noisettes and a few Moss varieties, all on their own roots, and they were kept pegged down close to the ground each spring when pruned. A space of 4 ft. intervened between these and the next row, which consisted one-half of Teas and Noisettes; the other half were Hybrid Perpetuals. These, also, were all on their own roots, and were allowed to grow in bush fashion sufficiently limited in size so as to rise gradually higher than the inner rows; in this second row the plants stood 4 ft. apart. The third row, which consisted of half-standards, were one-half Hybrid Perpetuals; the other half Noisettes and Bourbon Hybrids. The fourth row on each was composed of full-sized standards, mostly dark-coloured Hybrid Perpetuals, with some strong-growing, light-coloured Noisettes and a few Gloire de Dijon. These stood 5 ft. behind the preceding row, and the same distance apart in the row. At 6 ft. behind these was a row of pillar plants trained to strong iron supports 9 ft. high, with a stout wire attached to the top of each, and allowed to dip in the middle between the uprights in the usual festoon fashion. The kinds employed in this row were such as are generally used for similar purposes, and comprised the strongest-growing Hybrid Perpetuals with a striking habit, Noisettes, Bourbons, and Ayrals. These were not kept trained any closer than was necessary to prevent their being blown loose from the ironwork that upheld them. At a distance of some 9 ft. on the north side was a dense bank of shrubs sufficiently high to act as a background to the whole in a way that brought out the full effect of the blooms when in perfection, and served as a protection without too much confinement, a matter of such importance in the case of Roses that it should never be lost sight of. On the southern side at the back was a row of Hollies.

**Arrangement of Rose Borders.**—To avoid the too even formal descent from back to front in the case of the Roses that would otherwise have occurred, there were introduced into each of the three front rows on both sides at intervals a few taller plants that broke up the surface without any appreciable interference with a sight of the whole when in flower. The walk and borders slightly diverged from a direct line, which still further tended to prevent the formality inseparable from straight lines of plants running parallel with each other. The colours were so arranged as to secure much the greater proportion of light kinds in the front rows with a preponderance of darker shades at the back, but the rows furthest from the eye were sufficiently broken up by light kinds to do away with the objectionable effect often produced by continuous straight lines of any particular colour, as seen in ordinary modern formal arrangements. The walk was planned at each end by a light border and such of wire-work and trellis others of similar character were placed at intervals between these, covered with Roses, which still further helped to break up any appearance of formality. The whole arrangement was very much superior to that of the Rose gardens introduced in too much exposed places, where the plants on pillars and arches are too frequently seen struggling for existence against the adverse influences of wind, unbroken by any surrounding objects, yet, as is well known to all who have had only limited experience in Rose growing, they cannot bear to be much confined; still, on the other hand, they do not succeed when trained to any height if too much exposed. The season is now too far advanced to admit of an arrangement such as the above being carried out at present, but anyone purposing alterations in or additions to their Rose grounds, and possessing sufficient room and a suitable position will not be disappointed by adopting it, and more satisfactory results are generally arrived at by having sufficient time to consider the details. The advantages of such an arrangement are, that the bare stems of the standards and half-standards, never existing in appearance, and still less so when not in flower, are to a great extent hid by the plants gradually diminishing in height in front, with the increased breadth of foliage and flowers thus brought under the eye, without any sacrifice as regards the cultivation of the plants.

**Pruning Roses.**—In cold districts where Roses are yet unpruned the work should be completed at once. Those who have decided on the wise plan of deferring the pruning of a considerable portion of their plants until a later period than that chosen by the generality of growers will this season reap the advantage of their delay, in seeing their plants break right off into growth and bloom without check, whereas a good deal of the early pruned plants have their first shoots injured, or killed outright, and have to depend on a second effort which the plants will make, but which never results in flowers equal to those produced by the shoots that push first.

**Staking Roses.**—If not already done all standard and half-standard plants should be gone over, and where any broken or doubtful stakes exist they should be renewed. The whole stock ought to be retied every spring, and for this there is nothing better than good fair twine, and not low-priced inferior material that will give way before the wind as usual. The larger the heads the stouter the supports should be, and will be obvious from the greater hold the wind has on them.

**Labelling.**—Rose growers generally know most of the varieties which they grow by the wood and leaves even when not in flower; nevertheless, in every well-appointed garden each plant should be named, or half the pleasure derivable from seeing them when in flower is lost by those who are equally fond of Roses, but who do not know so much about them; consequently all that require it should have fresh labels attached to them. For ordinary cultivators I have found nothing better or neater in appearance than zinc labels written on with indelible ink.

**Shrubberies.**—In many gardens the shrubs are often met with in a most unsatisfactory state, in some instances never having been thinned out from the day they were first planted, and, where sufficient time has elapsed, it is no uncommon occurrence to find them all grown together in a thicket, instead of standing clear of each other, so as to allow every plant space to assume its natural habit of growth, and where they have not been allowed to encroach one on another; the equally objectionable practice of keeping them out in until the whole has much the appearance of a meadow covered with large haycocks. Now if, instead of this, there had been timely thinning carried out whilst the plants were not yet too large to move, the result would have been infinitely more satisfactory. If there is no use for the superfluous plants elsewhere, it is much better to destroy the least valuable. Where room shrubs, like the Holly, the Rhododendron, or the Aucuba are standing with a coarse-growing, common Laurel, the latter will encroach upon and shortly smother the whole. Hesitate not, therefore, to cut it out at once. It is better to have three good plants than four starvelings. Wherever the knife is required it should be used very sparingly, and only to reduce any straggling branches. Do not attempt any pruning that will destroy the natural habit of the plants, or at all tend to give them a formal appearance, for this is worse than allowing them to grow in what may be termed a wild state. Many varieties of shrubs that have been allowed to get into an unsightly condition by overcrowding may with advantage be headed down to within 2 ft. or so of the ground; common and Portugal Laurels especially will be much improved by this, and will soon form good heads.

**Ivy** on walls, covering arbours, or any similar structures should now be cut. This most useful of all plants for wall covering is very often neglected and allowed to grow from year to year until the accumulated weight of the shoots not actually attached to the wall is such that, with the force of the wind, the whole gets torn away, in which case there is very great difficulty afterwards in getting it to attach itself properly to the wall, which often necessitates the complete cutting away of the loosened portion, and until the denuded part of the wall gets clothed with fresh growth it has an unsightly appearance. Another advantage in yearly cutting the least valuable, which are not shrubs, is that they are all cleared away at once, and although the Ivy thus stripped of its leaves for a few weeks looks bare, still, when the work is done at this season just as growth is about to commence, it shortly becomes clothed with new foliage of the most beautiful green. The present is a good time for planting Ivy. It is sometimes thought that this most accommodating plant (which will grow in some way almost anywhere, except in situations where the soil is excessively wet) does not need the ground to be prepared for its reception, yet there is no plant that better repays liberal treatment with good soil and plenty of manure. If the soil be deficient add as much as will bring it up to 1 ft. in depth at least, to which dig 4 in. of good rotten manure. With suitable preparation Ivy will make more growth in a single season than it would in three seasons in poor, shallow soil. Where the space to be covered is limited in extent, I should recommend the use of plants that have been grown in pots, as those taken up from the open ground do not make nearly the progress the first season that those that have been kept in pots do; in which condition they are to be had in most nurseries often 6 ft. or 8 ft. in height, with several shoots each, and a fine display of foliage on over a considerable surface. When turned out of the pots disentangle the roots without breaking them more than is unavoidable, spread them out and cover with 3 in. or 4 in. of soil, treading it firm, at once nail the shoots into the position required. If the situation be inclined to be dry, as is often the case near walls, mulch the surface during the summer with 3 in. of rotten manure.

#### Indoor Fruit Department.

**Vineries.**—In early Vineries, where Grapes are beginning to colour, a good watering should be given to the border, if inside, mulching it over at the same time with some well decayed manure, so as to render additional watering unnecessary until the fruit is ripe. Continue the thinning of berries to the pinching of shoots, and the regulating of growth as occasion requires. Muscat Grapes in flower ought to have a temperature of 75° at night, and Hamburgs 5° less.

**Peach Houses.**—The earliest house of Peaches and Nectarines will now be nearly past the stoning process, when a rapid change takes place in the swelling of the fruit; but before this takes place it must be thinned if too thickly set, as no more will drop off. If the trees be in good health the fruit on them may be regulated from 8 in. to 10 in. apart at this last thinning. When it begins to colour air may be given freely, and the temperature may rise to 75° or 80° by sun-heat. Succession houses will want syringing daily, and attention must be paid to watering the inside border, for although the surface may look moist, underneath they may be as dry as dust. Tying down the shoots as they progress, and thinning them gradually where not wanted, keeping aphides and red spider in check will be routine work now for some time in the late houses.

**Figs.**—Keep these well watered and syringed daily. When the fruit begins to ripen watering must be gradually discontinued. Stop all shoots when 6 in. or 8 in. long, in order to encourage a second crop.

**Cherry House.**—The earliest forced Cherries will now bear a higher temperature, but plenty of air must be given in the daytime, to colour, and to give flavour to the fruit. The supply of water at the roots must likewise be lessened for that purpose.

**Cucumbers and Melons.**—Plenty of heat, together with light, air, and moisture, will now be required for Cucumbers and Melon plants, and the shoots must be regulated frequently, by stopping and pruning them, so as not to get too crowded. A steady bottom-heat must be

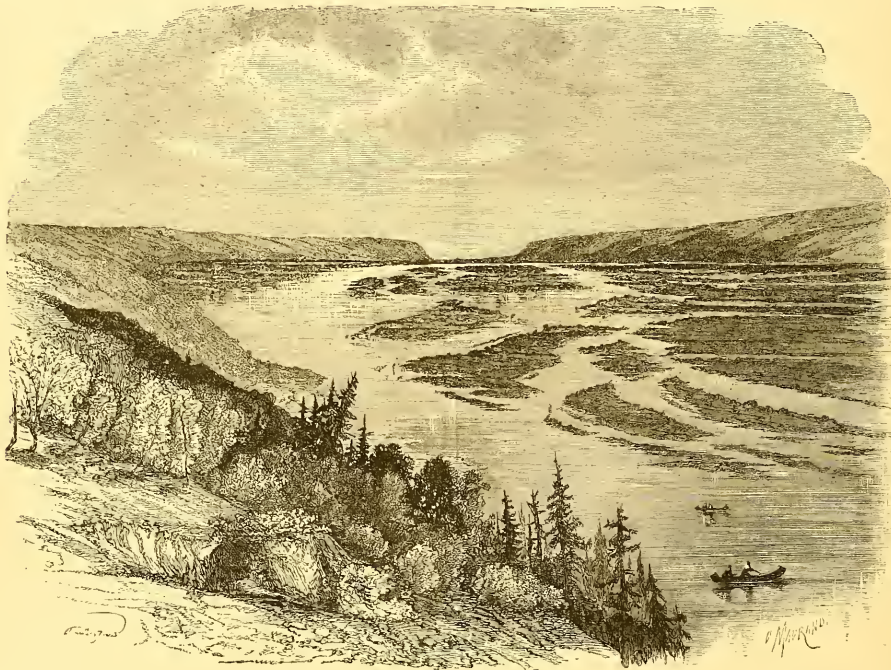
maintained to Melons till they flower, and after plenty of fruit is set liberal supplies of tepid water may be given to the roots. Sow good batches of seeds of both Cucumbers and Melons for a late supply of plants, and some of the ridge variety of Cucumber for planting out in the open air.

#### Hardy Fruit.

**Strawberries.**—These will now require attention. First go over them with the hoe, stirring the soil between the rows. If there be any small weeds it will destroy them, and if any of larger growth they must be removed. After this the Strawberries should at once receive their spring dressing of stable manure. That which has lain together a few weeks will be in the best order. This should be put on 2 in. thick, the whole of the ground between the plants being covered. The manurial portion will get washed in with the rains, the straw will be left quite clean, and in a condition for keeping the fruit from getting soiled with heavy rains. If applied at once, there is plenty of time for the straw to get thoroughly cleansed and sweetened by exposure to the weather. In this respect it will be just as good as the new straw that is sometimes

which is so essential to the maintenance of a healthy tilth. During mild showery weather slugs are sure to be troublesome, devouring, as they do, young vegetables, especially those in seed beds. To prevent their ravages, sprinkle with fresh air-slaked lime. The weather during the last three weeks or so has been favourable for cropping and seed-sowing; and now that "bright days have come again" these operations may be proceeded with. Should gaps appear amongst vegetable crops, they should be filled up from parts that are thickest, carefully preserving the roots and lifting with good balls, with a trowel. Most kinds of crops may be successfully transplanted when in a young state by using hand trowels; even tap-rooted plants, such as Parsnips, Beet, Parsley, &c., will withstand moving in this way whilst young, whilst pulling or taking up young plants, and dibbling them in with naked roots, will be found to be attended with little success.

**Sowing Broccoli, Lettuces, &c.**—A sowing should now be made of Broccoli for autumn and winter use; it is better to sow a little now, and again later on. It frequently happens that, in a very mild winter, the plants intended for late use come in earlier than they are wanted, leaving



River Scene: North-Western America.

placed on just before the fruit is ripe, and it has the advantage of acting as a mulch just at a time when it will benefit the crop and serve as a mulching, which prevents the undue evaporation from the soil of the moisture stored up during the winter, and of which these shallow surface-rooting plants stand so much in need whilst the crop is swelling. Nothing can be more unsuitable than the mulchings of Grass mowings sometimes used. These are naturally cold, in addition to which, whatever seeds are in them will germinate, filling the ground with Grass, which is much more difficult to deal with in a kitchen garden than annual weeds.

#### Kitchen Garden.

A golden rule to be kept in mind in reference to the kitchen garden is, to sow little, often, and thin. Thin out and otherwise attend to all growing crops. Trench every bit of ground as soon as it becomes vacant, casting it up rough with a strong steel fork. Where necessary, give it a good dressing with manure or other compost, thoroughly incorporating it with the soil, as the trenching progresses. Care must, however, be taken not to bring up too large a quantity of the subsoil to the surface; but it is of great importance to loosen it well every time at the bottom of the trenches. This allows water to run through it freely, and renders it pervious to air,

a blank which the second sowing will fill up. The following kinds will afford a succession—Backhouse's White, Snow's Winter White, and Williams' Alexandra; these, with Walcheren and Veitch's Autumn Giant Cauliflower, which two latter, with good management, will keep good till Christmas, will be found to last until late in the spring. Dress the seed, as previously advised, with red lead, to preserve them from birds, as a failure in this sowing of these important vegetables would cause a blank in the crop. A little more Lettuce should now be sown (Cos and Neapolitan Cabbage), as also small salads and Radishes; by sowing these successants a little at a time and often, a continuous supply may be relied upon, notwithstanding extreme dry or wet seasons, in a way that cannot be done where the sowings are made at longer intervals. Ground that has been occupied by Coleworts, &c., should, as it becomes vacant, be dug; if it requires trenching, bury the stalks and refuse leaves of the preceding crop in the bottom of the trench as the work proceeds. This is even better than removing it to the refuse heap, as it slowly decomposes in the ground, affording acceptable food for the roots of future crops. The dry cold weather we have had for some weeks has had the effect of bringing the soil into condition for cropping; where the land is heavy and retentive, that which was dug during the winter will be much benefited by

being again turned over with the digging fork previous to cropping; and the sun and air acting upon it, after being thus loosened up, will pulverise and render it much more suited to the requirements of the tender roots germinating seeds. When the land is thus brought into a fine tiller even the most hardy vegetable will progress in a way not possible when the soil is in a hard lumpy condition. Keep the hoe going in dry weather amongst existing crops of Cabbages, Winter Spinach, early Peas and Beans; the object ought to be not to allow a weed to get in, high, and they are destroyed with one-tenth the labour whilst thus small. Red Cabbage and autumn-sown Savoy should now be planted, and, as these are no better for being grown extra large, 18 in. apart in the rows, and 2 ft. asunder between the rows, will be sufficient space for them.

#### Extracts from my Diary.

April 8.—Sowing the following sorts of flower seeds, viz., Primulas, Cinerarias, Asters, Stocks, Mignonette, Heart's-ease, Polyanthus, and Nasturtium. Pottling Balsams, Petunias, and scented-leaved Pelargoniums. Removing bedding plants from Vineries to colder quarters. Cutting all the old flowering wood out of Deutzias so as to encourage the growth of young shoots. Planting a quantity of small Ashleaf Kidney Potatoes to produce seed for next year. Finished levelling down Celery trenches for Peas.

April 9.—Sowing Carters' Dwarf Crimson and Incomparable Dwarf White Celery in a frame for the main crop; also Spinach and Radishes. Pottling Caladiums, Achimenes, Chrysanthemums, and large Camellias. Putting in cuttings of Dahlias and Alternantheras. Planting out a four-light pit with Melons and three manure frames with Cucumbers, and earthing up those in a more forward state. Getting out trenches for two early rows of Scarlet Runner Beans. Clearing off Seakale beds and getting them forked up. Watering Mushroom beds with manure water.

April 10.—Sowing one row each of the following sorts of Peas, viz., Fortyfold, Giant Emerald Marrow, and Omega; also the following sorts of Broad Beans, viz., Johnson's Wonderful, Longpod, Seville Longpod, and Hardy's Pedigree Windsor. Putting Dragonas, Palms, and a few stove plants. Pricking off Perilla and Golden Prostrum. Clearing the litter from early Rhubarb, manuring the ground, and forking it in round the plants. Sending in the last Lady Downes and Mrs. Pince's Grapes.

April 11.—Sowing Canadian Wonder French Beans in pots; also in hot-water pits; also Osborn's Early Forcing French Beans under a south wall. Pottling off Alternantheras, Coleus, and Dahlias. Pricking out Celery in boxes; also from boxes into frames. Tying in shoots in the early Peach house, and thinning the fruit on trees where stoned. Giving early Vinery where the bunches are thinned a good soaking of guano water, and getting all vacant ground dug up.

April 12.—Vacant a collection of ornamental Grasses; also Mustard and Cress. Picking out Brussels Sprouts and Cauliflower plants in frames. Planting out spring-sown All the Year Round and Carters' Giant White Cos Lettuce. Getting all Broccoli into the store shed as fast as it becomes fit for use. Dutch-hoeing amongst Strawberries, Gooseberries, and Currants. Turning over gravel walks to give them a fresh appearance.

April 13.—Tying down young shoots in Vineries, and thinning the bunches where required. Cleaning off Broccoli stumps and other vegetable refuse, and getting manure on to the ground. Earthing up and sticking Peas. Getting nets put over Broccoli seeds to keep them from small birds. Mowing and cleaning up the pleasure grounds, and rolling down all gravel and turf that require it. Fruit in use for dessert: Pines, Grapes, Apples, and Strawberries. W. G. P., Dorset.

#### WATER MARGINS IN LANDSCAPE GARDENING.

Of the many weaknesses of landscape gardening in its efforts after natural effects there are few, as we have often pointed out in THE GARDEN, more evident and wholly unintelligible than the forming of the margins of artificial water. More than one landscape gardener of our acquaintance has complained to us of the difficulty of getting men to carry out this kind of work well. Admitting the truth of this, we nevertheless think that the real fault in this way is generally the want of observation and taste in the designers themselves, otherwise we should never see the outrageous examples which are formed in all countries where artificial water is designed. It is not for a moment admissible that the water margin, perfectly natural in play and gradation, may not be as attainable in a garden as the hard, stiff, and in all ways wrong margins we so often see. Good design would also arrange such work as conveniently for the wants of public or private gardens as could be desired. As regards opportunities for planting, the advantages are all on the side of the natural and the right way. In connection with this subject the annexed illustration may be studied with advantage for its beautiful fringes of river and islet banks. Although artificial water is generally puny in comparison with such beautiful natural scenes, these illustrate, as well as smaller scenes, the laws which regulate the gradation and fringing of water margins.

## SOCIETIES AND EXHIBITIONS.

### THE GREAT INTERNATIONAL HORTICULTURAL SHOW AT GHENT.

THIS was opened last Saturday, and, notwithstanding the worse than Arctic weather that occurred during the early days of its opening, it was a great success. As we have several times stated in THE GARDEN, the practice of holding these shows so early in the season is an unwise one, considered from a national or international point of view. The horticulture of a country like Belgium—we mean the general horticulture, the fruit gardens, market gardens, country seats, landscape gardening, parks (public and private), arboriculture, open-air nurseries, State schools of horticulture—none of these things can be seen to advantage at the time of the year at which these shows are held. The compensating advantage, if it be one, which determines the holding of these shows at such a time of the year is, that Azaleas, Camellias, and a few similar plants of the same type may be best seen in bloom at that particular time; but, considering the little difficulty one has in seeing these anywhere, it can scarcely justify a course so injurious to more important interests. No doubt the city of Ghent is so full of nurseries richly stored with hothouse plants, that it is desirable that the interests of these should be almost paramount at such a meeting, but we hold that the show of pot plants would be none the less interesting during the fine weather of summer, while many other phases of horticulture could be seen with advantage by all. So far as this country is concerned, moreover, it is certain that exhibitions of plants held in Belgium in March do not show so many English productions as they would if held at a more convenient season. Only the great nurserymen are represented, and even of these the consignments are often limited, or stopped altogether, as happened this time to our own knowledge; however, hoping that some day the authorities in Belgium will give us a summer or autumn show in that most interesting country to horticulturists, we are grateful to them for the excellent organization displayed in the late show, their ample hospitality, and pleased with their successful culture of many plants. The Azaleas of Belgian growers were the brilliant feature of the exhibition. Among these there were some pretty effects secured through grafting different kinds of Azaleas on the same plant, the colours being tastefully associated, and the lines of colour clearly defined, owing to successful grafting and the cultivation adapted to the end in view. English growers contributed very materially to the best features of the show. Mr. Bull exhibited new plants very largely, and was remarkably successful, beating some of the great Continental exhibitors in some of their specialities, such as Palms. Mr. Wills found time, from his many important floral decorations in London, to exhibit some very fine groups of plants, which excited the admiration of foreigners, and was unanimously awarded the highest prizes. Messrs. Veitch and Mr. Williams also contributed very extensive and valuable collections. Many of Messrs. Veitch's Orchids were, however, kept in England by stress of weather. As will be seen by our prize list, the old and well-known house of Messrs. Rollisson, of Tooting, exhibited in various most important classes, and were most successful, particularly in subjects for which they have long been famous, such as New Holland plants.

#### First and Extra Prizes.

Twelve plants newly introduced to Europe by the exhibitor (in or out of flower).—Mr. W. Bull, London, for

Encephalartos Hildebrandi	Dieffenbachia triumphans
Dracaena Goldieana	Carludovicia Drudei
Bowenia spectabilis serrulata	Catakidozamia Hopei
Croton Rex	Cibotium Menziesi
" picturatum	Dieffenbachia splendens
Lomaria discolor bipinnatifida	Aralia splendissima

Six plants newly introduced to Europe by the exhibitor (in or out of flower).—Mr. W. Bull, London, for

Sadleria cyathoides	Croton Disraeli
Dracaena Goldieana	Dieffenbachia Leopoldi
Bowenia spectabilis serrulata	Anthurium Veitchii

Twenty plants newly introduced into Europe by the exhibitor (in or out of flower), and not yet in commerce—Mr. W. Bull, for

Panax plumatum	Alocasia Johnstoni
Aralia venusta	Doodia aspera multifida
Dieffenbachia Shuttleworthii	Croton princeps
" regina	Pandanus princeps
" Leopoldi	Aisophia undulata
Dipteria Horsfieldii	Croton cornigerum

Six plants newly introduced into Europe by the exhibitor (in or out of flower), and not yet in commerce—Mr. W. Bull, for

Aralia concinna	Dendropanax argenteus
Davallia fijiensis	Anthurium insigne
Dieffenbachia Leopoldi	Zamia princeps

Twenty plants newly introduced into Europe (in or out of flower)—M. Louis Van Houtte, Gentbrugge, for

Dracæna speciosa	Croton Challenger
Dieffenbachia marmorata	" afro-maculatum
" brasiliensis	" Earl of Derby
" Parlatoresii	" Regina
Anthurium argenteo-marmoratum	Dracæna Goldieana
" Veitchii	Dracæna Neo-Caledonia
" Waroocuanum	Eranthemum atropurpureum
Aralia gracillima	Goodyera Rolliisoni
Araucaria excelsa elegans erecta	Kentia Van Houtteana
Caladium souvenir de Louis Van Houtte	Nephrolepis Duffii

Twenty plants of distinct kinds or varieties, introduced and put into commerce by Mr. W. Bull subsequently to 1873.—M. Massange de Louvrex, Liege, for

Aralia elegantissima	Dracæna Goldieana
Maranta bella	Tillandsia nuseica Massangei
Aralia hieifolia	Croton Disraeli
Dieffenbachia Cheloni	" majesticum
" amabilis	Curatæria Wallisii
Dracæna Robinsonii	Bilbergia chlorosticta

Plant in flower newly introduced into Europe—M. J. Linden, Ghent, for Anthurium Deohardi.

Plant not in flower newly introduced into Europe—M. J. Linden, Ghent, for Massangea Lindeni.

Plant in flower raised from seed, and never before exhibited at any of the Society's exhibitions—Mr. W. Bull, for Dendrobium Ainsworthii.

Twenty exotic Orchids in flower (amateurs)—M. Oscar Lamarche, Liege, for

Selenipedium caudatum roseum	Odontoglossum Alexandræ
Cypripedium Lowi	" Pescatorei
" Roezli	" novium
" Parishii	Huntleya melegris
Phalanopsis Ludemannii	Lælia superbiens
Epidendrum pseudo-epidendrum	Saccolabium ampullaceum
Ondontium thysiflorum	Acerides Foidlingii
Odontoglossum pulchellum majus	Vanda tricolor Wiotii
Oncidium ampliatum majus	" tricolor
" sarcoades	" Dennisoniana

Twenty exotic Orchids in flower (nurserymen)—Messrs. Rolliison & Son, Tooting.

Fifteen exotic Orchids in flower—Messrs. Rolliison & Son.

Ten Orchids (cool house) in flower—M. Massange de Louvrex, Liege.

Fifteen hardy Orchids in flower—M. Louis Van Houtte, for

Aceras anthropomorpha	Ophrys lutea
Calopogon plicifolius	" myodes
Cypripedium acule	" rosea
" arietinum	Orchis Lingua
" parviflorum	" longicornu
" pubescens	" Morio
" spectabile	" spectabilis

Ophrys apifera

Ten Sarraacenas, Cephalotus, Darlingtonia, Drosera, Dionæa—M. Van Geert, Ghent.

Ten Sonerilas and Bertolonias—M. Louis Van Houtte, for

Bertolonia guttata albo puncta.	Bertolonia hybrida semis
tissima	" maculata marmorata
" hybrida miranda	Sonerilla Hendersoni
" " smaragdina	" " marmorata
" " Van Houtteii	" margaritacea
" " semis	

Eight Nepenthes—Mr. J. Wills, South Kensington.

Aloes and Mesembryanthemums—Mr. C. Eggermont and Sister, Ghent.

Twenty-five Hothouse Plants of variegated, marbled, striated, or coloured leaves—M. L. Van Houtte, for

Abutilon Sellowianum variegatum	Dieffenbachia Bowmanni
Acalypha macrophylla	" Imperialis nobilis
Alocasia Lowi	Dracæna amabilis
" macrorrhiza fol. var.	" Regina
Anthurium crystallinum	" striatifolia
Bertolonia semis	Maranta fasciata
" "	" Makoyana
Caladium Meyerbeer	" rosea-picta
Croton fasciatum	" zebra
" Weismanni	Pandanus Veitchii
Curculigo recurvata fol. var.	Phyllotacium Lindeni
Curmeria picturata	Tillandsia tessellata
Dieffenbachia Bausei	

Fifteen Coleus—M. Jacques Coene, Ghent, for

Coleus Bambergi	Coleus Leopardi
" Frobeli	" M. Fries
" Prince Troubetzkoi	" Vicomte Aguado
" Mad. Boury	" Charles-Quint
" Princess Louise	" Jacob Makoy
" Verschaffelti	" multicolor
" " major	" Uranie

Six Musas—M. L. Van Houtte, for

Musa diecolor	Musa sapientum
" Cavendishi (sinensis)	" violacea
" Ensete	" vittata

Theophrata remarkable for its culture—M. L. Van Houtte, for Theophrata macrophylla vera.

Four Strelitzias in flower—M. Louis de Smet, Ghent, for

Strelitzia Regina	Strelitzia rutilans
" bunulis	" Regina longiflora

Four Imantophyllums in flower—M. Louis Van Houtte, for

Imantophyllum intermedium splen-	Imantophyllum semis
dens	" semis
" miniatum	

Imantophyllum miniatum, remarkable for good culture and profusion of flower—The Count de Kerchove de Denterghem, Ghent.

Anthurium Scherzerianum, remarkable for good culture and abundance of flower—M. Ad. d'Haene, Ghent.

Six stove and greenhouse plants of distinct kinds in flower, remarkable for their beauty and culture—M. L. Van Houtte, for

Acacia linifolia	Medinilla magnifica
Dendrobium nobile	Rhododendron virgatum candidissim.
Diosma capitata	mun
Erica arborea	

Specimen plant, not for special competition—M. L. Rosseels, Louvain, for Aletris capensis.

Specimen plant (not in flower), distinguished for good culture, not an object of special competition—M. Beaucarne, Benaeme, for Diosma purpurea.

Twenty-five Palms (amateurs)—M. de Ghellinck de Walle, for

Areca furfuracea	Livistona rotundifolia
Corypha australis	Phoenix reclinata
" cerifera	" tenuis
Chamædorea desmonceoides	" zeylanica
Chamærops Fortunei	Sabal glauca
" gracillima	" Adansoni
" arborea	" Moccini
Cocos Bonnetti	Rhapis flabelliformis
" Yurumagua	Seaforthia elegans
Jubæa spectabilis	Thrinax elegans
Kentia australis	" elegantissima
Lantana borbonica	Dekenia nobilis
" Verschaffelti	

Twenty-five Palms (nurserymen)—M. Ad. d'Haene, Ghent, for

Acanthorhiza etauracantha	Corypha cerifera
Acroecomia sclerocarpa	Euterpe edulis
Areca Baueri	Geonoma Spitziana
" madagascariensis	Kentia Balmoreana
" sapida	" Forsteriana
" Verschaffelti	Lantana borbonica
Caryota Chantini	Martinezia Lindeni
Cocos Weddelliana	Phoenix reclinata
" majestica	Rhapis flabelliformis
Chamædore speciosa	Thrinax elegans
" fragrans	" brasiliensis
Chamærops Fortunei	Verschaffeltia melanochætes
Corypha australis	

Forty Palms—M. de Ghellinck de Walle, Ghent, for  
 Areca Baueri Ptychosperma Alexandræ  
 " spida Livistona alissima  
 " Verschaffelti " sp. robusta  
 " lutescens Latania borbonica  
 Astrocarum mexicanum " rubra  
 Attalea compta Phoenix spinosa  
 Ceroxylon andicola " reclinata  
 Cocos australis Pritchardia pacifica  
 " Weddelliana " Martiana  
 Acanthopanax crinita Phytolophus macrocarpa  
 Ceroxylon viviparum Phoenicophorum Sechellarum  
 Chamærops elegans Scaevola elegans  
 " Fortunei Sabal Adansoni  
 " humilis " Blackburniana  
 " stauracantha " princeps  
 Brahea dulcis Thrinax Chucuo  
 Euterpe edulis " Martii  
 Geonoma Schottiana " elegans  
 Kentia Mooreana " graminea  
 " Balmoreana Verschaffeltia melanochætes  
 Livistona australis " excelsa

Twelve Palms, large specimens—M. J. Nuytens-Verschaffelt, Ghent, for

Chamærops Fortunei Corypha australis  
 Rhapis Sierotisk Phoenix reclinata  
 Jubæa spectabilis Kentia Balmoreana  
 Areca spida Chamærops melanocantha  
 Latania borbonica " excelsa  
 Areca Baueri Cocos Weddelliana

Eight Palms of recent introduction—M. W. Bull, for

Thrinax barbadensis Cypthokentia macrocarpa  
 Plectocoma himalayana Geonoma Bluntd  
 Kentia Wendlandi Desmonocia granatensis  
 Drymophloeus paradoxus Martineux Roezli

Twelve Coolhouse Palms—M. L. Spaë-Vandermeulen, Ghent, for

Areca spida Corypha filifera  
 Phoenix reclinata Chamærops humilis  
 Corypha australis Areca Baueri  
 Latania borbonica Kentia Forsteriana  
 Phoenix pumila Chamærops Fortunei  
 Latania robusta Jubæa spectabilis

Palm, remarkable for its beauty—M. Louis Hervivauz, Paris, for Cocos Weddelliana.

Palm, remarkable for fine development—J. B. de Saegher, Ghent, for Saribus olivæformis.

New Palm—M. Ad. d'Haens, Ghent, for Areca Verschaffeltii pendula.

Fifteen Cycads (amateurs)—M. de Ghellinck de Walle.

Fifteen Cycads (nurserymen)—M. J. Nuytens-Verschaffelt.

Six Cycads—M. Vanden Wouwer, Antwerp, for

Zamia horrida Dion edule  
 " cycadæfolia Encephalartos Lehmanni glauca  
 Cycas circinalis " villosa ampliata

Cycad, remarkable for its beauty—M. Louis Van Houtte.

Cycad remarkable for fine development—M. de Ghellinck de Walle.

New Cycad—M. Van Geert.

Fifteen Pandanads—M. Van Houtte, for

Pandanus amaryllidifolius Pandanus madagascariensis glauca  
 " caricosus " Pancheri  
 " elegantissimus " pygmaeus  
 " furcatus " reflexus  
 " gramineus " utilis  
 " javanicus " Veitohi  
 " madagascariensis " Van Houttei

Pandanad, remarkable for its beauty—M. Louis Van Houtte.

Pandanad, remarkable for fine development—M. Louis Van Houtte.

Twelve Tree Ferns—The Count Kerchove de Deutergem, for

Balanium antarcticum. Presl. Cyathea Dregei. Kze.  
 " Sellowianum. Presl. " Cunninghami. Hook. fil.  
 Dicksonia squarrosa. Sw. Chnoophora elegans. Hort.  
 " fibrosa. Cul. Alsophila australis. Rob. Br.  
 Cyathea princeps. Hort. Cibotium regale. Moore  
 " dealbata, Sw. Alsophila denticulata. Reich. fil.

Six Tree Ferns—M. Nuytens-Verschaffelt, for

Balanium antarcticum Alsophila Williamsi  
 Cyathea dealbata " capensis  
 " specios (Nouvelle " Williamsi  
 " Zélande)

Tree Fern, remarkable for beauty—M. Vanden Wouwer, Antwerp.  
 Tree Fern, remarkable for fine development—M. de Ghellinck de Walle.

Forty Tree and other Ferns—M. de Ghellinck de Walle, for

Alsophila australis Cyathea dealbata  
 " excelsa " medullaris  
 " contaminans Cibotium Barometz  
 " infesta " Clcitium  
 " Van Geerti " princeps  
 " australis var. " regale  
 Adiantum cuneatum " Schiedeii  
 " macrophyllum " spectabile  
 " Farleyense Davallia hemiptera  
 " concinnum letum Lomaria zamioides  
 " trapeziforme Angiopteris pruinosa  
 Aepidium odonites " maorophylla  
 " Fabianum Platycerium alciorme majus  
 " diversifolium Polystichum species  
 " Bellangeri Pteris prolifera  
 " Nidus avis " quadricolor  
 Aepidium spe. nov. " scaberula  
 Balantium antarcticum Gymnogramma Lautoheana  
 Dicksonia squarosa gigantea  
 Didymoglossum orinatum Polypodium aureum  
 Cyathea Beyrichiana

Forty Ferns (various)—The Count Kerchove de Deutergem.  
 Twenty Ferns (various)—Messrs. Wyckaert, Ghent.  
 Three new Ferns—Mr. W. Bull, for  
 Lastrea aristata variegata Pteris splendida.

Cyathea Imryana Adiantum—The Count de Kerchove de Deutergem.  
 Twelve Ferns with translucent leaves—M. Louis Desmet.  
 Fifty Hardy Ferns—M. Louis Desmet  
 Seventy-five bulbous plants in flower—M. Vauderlinden, Antwerp  
 Twelve Lilies in flower—M. Louis Van Houtte.  
 Six Lilium auratum in flower—M. J. Nuytens-Verschaffelt.  
 Six Tropæolums in flower—M. L. Desmet.  
 One Hundred and fifty Hyacinths in flower—M. L. Van Houtte.  
 One Hundred Hyacinths in flower—M. L. Van Houtte.  
 One Hundred Tulips in flower—Messrs. Schotzer & Son, Haa

Thirty Echeverias—M. Albert Vanden Wouwer, Antwerp, for

Echeveria agavoides Echeveria imbricatissima  
 " argentea (pulverulenta) " Funcki  
 " californica " securifera  
 " farinosa " candicans  
 " De Smetiana " carinata  
 " globosa cristata " gandavensis  
 " " extensa " hybrida  
 " mirabilis " blanda  
 " pachyphylloides " undulata  
 " rusciformis " agavoides rubella  
 " scaphylla " metallica grandis  
 " Scheideckeri " " superta  
 " costata " cristata  
 " spatulata " pumila  
 " imbricata " misteca

Twenty-five Euphorbia—M. Louis Desmet, Ghent, for

Euphorbia abyssinica Euphorbia havanensis cristata  
 " articulata " nereifolia cristata  
 " bulepirifolia " hystrix  
 " canariensis " " viridia  
 " Caput Medusæ " irregularis  
 " bulepirifolia femina " meloformis  
 " cereiformis " odorata  
 " cœrulescens " officinalis  
 " clubriana " Richardi  
 " Commelyni " stapyliformis  
 " erosa " Pescatorei  
 " globulifera major " splendens  
 " grandicornis

Twenty-five Cacti—M. Louis Desmet, for

Mamillaria cornifera Echinocactus ingens  
 " elongata " Leopoldi bicolor  
 " longimamma " tulensis  
 " nivea cristata " undulatus  
 " pycnantha Echinopsis formosa spinosa  
 " Schiedeana " Zuccariana cristata  
 " spinosissima Pilocereus Dautwitzii  
 " subulconata " Haageanus (lanatus)  
 Echinocactus concinnus " senilis  
 " corniger flavispinus Echinocereus pectinatus cristatus  
 " crispatus Cereus Dumortieri  
 " domatus Opuntia cylindrica cristata  
 " electracanthus

## Fifty Cacti—M. Louis Desmet, for

Mamillaria cirrhifera	Echinocactus gilvus
" Galeottiana	" gladiatus
" cirrhifera longispina	" hexedrophorus
" conopsea	" lancifer
" crucegera	" leucanthus
" elephantidens	" lophothele
" Hermentiana	" longhamatus
" hystrix	" mammulosus
" nivea	" Mirbeli
" Oleriana rufispina	" Leopoldi
" polyedra	" albispinus
" pycnantha	" bicolor
" Scyloimoides	Leuchtenbergia princeps
Melocactus coronatus	Echinopsis formosa spinosa
" pyramidalis	" Pentlandi longispina
Malacocarpus corynodes	" tricolor
Echinocactus acifer	Pilocereus fossilatus
" acutissimus	" Houlettianus glaucescens
" Cactetianna	" senilis
" corniger	Echinocereus acifer
" flavispinus	" candicans
" crispatus	Cereus corulescens
" denudatus	Echinocereus Kranssei
" electracanthus	Cereus peruvianus cristatus
" gibbosus	Echinocactus coptonogonus

## Twenty Aloecias, Amorphophallus, Colocessias, and Dieffenbachias—M. Louis Van Houtte, for

Alocasia gigantea	Colocasia esculenta
" Lowi	" heliohorifolia
" macrorrhiza fol. var.	" Mafala
" metallica	" violacea
" Sedeni	Dieffenbachia Baraquianiana
" Veitchi	" Bowmani
" zebraia	" Imperialis
Amorphophallus cornutus	" nobilis
" Rivieri	" latimaculata
" simlensis	" nobilis

## Thirty Caladiums—M. Louis Van Houtte, for

Caladium Ad. Adam	Caladium Marchandi
" Alfred Bleu	" Max Koll
" argyrites	" Meyerbeer
" Beethoven	" mirabile (bleu)
" Bellini	" M. Dombraun
" Brongniarti	" Paillet
" Chantini	" Pœcile
" Dr. Buisduval	" Prince Albert Edward
" Dr. Lindley	" quadricolor
" Due de Cleveland	" Reine Victoria
" Duchartre	" Ricci
" Houletti	" splendidum (bleu)
" Laingi	" triomphe de l'exposition
" Leplay	" Velleda
" Madame Alfred Mame	" Verschaffelti

## Twenty Caladiums—M. Louis Van Houtte, for

Caladium Adolphe Andrieux	Caladium Impératrice Eugénie
" Alfred Bleu	" Leopoldi
" Barra	" Madame Hannebelle
" Beethoven	" Meyerbeer
" Duc de Ratibor	" Prince Albert Edward
" E. G. Henderson	" quadricolor
" Eukei	" Rossini
" giganteum	" Rouillard
" Hérold	" splendidum
" Houletti	" Wighti

## Twenty-five Marantas—M. Louis Van Houtte, for

Maranta argyrea	Maranta Porteana
" corifolia	" roseo-picta
" fasciata	" smaragdina
" illustris	" staurantha amabilis
" Kummeriana	" Van Houttei (ornata)
" Lindeni	" picta)
" Luciani	" variegata
" Makoyana	" Veitchi
" Massangeana	" virginialis
" Mazeli	" major
" medio-picta "	" Wagneri
" Oppenheimiana	" Wallisi discolor
" porphyrocaulis	" zebraia

Maranta remarkable by its culture—M. A. Dallièrè, Ghent, for Maranta Massangeana.

## Ten Marantas—M. Florent Pauwels, Antwerp, for

Maranta virginialis	Maranta amabilis
" illustris	" Wallisi
" fasciata	" rosea picta
" zebraia	" splendida
" Porteana	" setosa
" ornata picta	" princeps
" Van den Heeki	" Baraquiana
" Makoyana	

## Twenty-five Bromeliads—M. A. Vanden Wonwer, Antwerp, for

Æchmea Marie-Regnia	Distiactanthus scarlatus
Ananas piangensis fol. var.	Guzmania fragrans
Encholirion corallinum	" grandis
" Saundersi	Tillandsia glaucophylla
" Joughi	" zaticiflora
Tillandsia argentea	" Zalini
" Lindeni	" juncea
" musica (Massangei)	" tessellata
" sanguinolenta	Hoplophytum giganteum
Anoplophytum Rollisoni	Vriesia Glaziouana (Regina)
Vriesia Malzinci	" Hillegeriana
Tillandsia streptophylla	Roubergia Morreniana
" guttata	

## Ten Bromeliads—M. A. Troffant, Versailles, for

Vriesia Glaziouana	Hechtia carnea
Æchmea densiflora	" pitcairniaefolia
Greigia sphaacelata	Æchmea spectabilis
Bromelia Binoti	Distiactanthus basilateralis
" Species of Paraguay	Bromelia latifolia

## Thirty Begonias—M. C. Mees, Ghent, for

Begonia laciniata bicolor	Begonia gandavensis
" diamant	" Annica
" Couste Alf. de Limminghe	" Helena
" alveata	" Secrétaire Kegelman
" Griffithi	" albo coccinea
" Queen Victoria	" Acté
" miranda	" Hildegarde
" Mad. Stuart	" Rex Leopardina
" Sarrazin	" Rex
" grandis	" Dedalea
" Fran Prof. Kock	" Fernand D'waus
" millia	" Dr. Regel
" Rex Leopardinus	" Princess Charlotte
" Blinsifolia	" Manoël de Silva Bruschy
" J. J. De Beucker	" Ad. Polak

## Fifteen Tuberous-rooted Begonias in flower—Messrs. Blauquaert &amp; C. Vermeire, Ghent, for

Begonia Adrian Benoit	Begonia Mad. Rodigas
" bella	" Minerva
" carminator	" miranda
" boliviosis	" Monsieur d'Offoy
" Comte de Flandre	" Pearcei
" étoile polaire	" rose d'amour
" Mad. de Beukelaere	" rubie
" Gerni	

## Twelve Crotonas—M. Ad. d'Haene, Ghent, for

Croton Andreaum	Croton interruptum
" acumbifolium	" irregulare
" fasciatum	" undulatum
" grande	" variegatum
" Hillianum	" Veitchi
" Hookeriaum	" Weismanni

## Eight Crotonas—M. Ad. d'Haene, for

Croton cornutum	Croton maximum
" fucatum	" undulatum
" Cooperi	" variegatum
" interruptum	" Veitchi

Croton remarkable by its culture—M. Ang. Van Geert, Ghent, for Croton angustifolium.

Seventy-five Amaryllids (amateurs) in flower—Coust de Kerchove de Deutergem.

Seventy-five Amaryllids (nurserymen) in flower—M. L. Van Houtte.

Forty Amaryllids (amateurs) in flower—M. G. d'Hooghe, Loochristi.

Amaryllis (a seedling) in flower, not exhibited before—M. Louis Van Houtte.

Azalea indica (a seedling), not shown before at the exhibitions of the Society—M. Louis Van Houtte.

New variety of grafted Azalea in flower—M. D. Vervaene, Ghent, for Azalea indica La Favorite.

Azalea, single specimen—M. Jean Vervaene, for Azalea indica Totteriana.

Forty Camellias (nurserymen) in flower—M. Jacques Van Eeckhaute, Leideberg, for

Camellia Auguste Delfosse	Camellia Rubens
" Lavinia Maggi	" Napoleon III.
" alba plena	" Madame de Strekaloff
" il 22 marzo	" Victoria magnosa rubescens
" Comte de Gomer	" Triomph di Loddi de la Reine
" Leeana superba	" do la Reine (bicolor)
" Valteverada	" tricolor nova
" Prince Albert	" Reine Marie Henriette
" Princess Clotilde	" Augustina anperba
" fimbriata	" Dyonisia Piotowski
" Polydore	" Marie Thérèse
" Mazuchelli	" Madame de Sôigné
" Leon Loguay	" General Drouot
" Reine des Belges	" maculata perfecta
" Madonna	" Comte de Paris
" Leopold I.	" Giardino Franchetti
" Countess of Orkney	" Lucullus
" Raffia	" Faustina
" bella Romana	
" Mathotiana alba	

New variety of grafted Camellia in flower—M. J. Linden, for Camellia Madame Linden.

Camellia, remarkable for good culture and abundance of bloom—M. L. Eeckhaute, Denis-Westrom, for Camellia Mrs. Abby Wilder.

Ten Himalayan Rhododendrons in flower—M. L. Desmet, for Rhododendron Gibaoni

Rhododendron Gibaoni	Rhododendron Sterotianum
" Edgworthi	" oiliatum
" Madoni	" calophyllum
" Countess of Had-dington	" Princess Alice javanicum
" multiflorum	

Fifty Rhododendrons (nurserymen) in flower—Madame Ve. Hellebuyk & Son, Gentbrugge, for

Rhod. concanum (Byle)	Rhod. Leopold II.
" Duc de Brabant (Vervaene)	" Madame Wagner
" Auguste Van Geort	" Bouquet Royal
" Prince Eugène	" Leopard
" Madame Cannart d'Hamale	" nigrescens
" Minnie	" Sir Thomas Sebright
" Alarie	" Mrs. Heneage
" John Waterer	" Caractacus
" Vesuvius	" Tamerlan
" Jago (Noble)	" Purity
" Bouquet de Flore	" Duc Adolphe de Nassau
" Stanfordianum	" The Warrior
" Prince Camille de Rohan	" Brayanium
" Everestianum	" Mrs. John Waterer
" pardoloton	" Mrs. John Clutton
" Joseph Whitworth	" George Cunningham
" Verschaffelti	" Michael Waterer
" album novum	" Oberon
" stella (Waterer)	" Joseph Vervaene
" Surprise (J. Waterer)	" roseum egregium
" Anilcar	" Gloire de Belle Vue
" Broughtoni	" Mrs. John Penn
" Lady Emily Peel	" The Queen
" The Maroon	" Evelyn
" Comte de Gomer	" William Downing

Twenty Rhododendrons, in flower (cut)—M. de Coninck, Ghent, for

Rhod. Archiduc Etienne	Rhod. Rienzi
" Gloire de Belle Vue	" Raphael
" Princesse Amélio	" Prince Camille de Rohan
" Everestianum	" Vesuvius
" Lady Armstrong	" Cyanoides
" Madame Wagner	" Cynthia
" Mistress R. S. Holford	" President Jules Hye
" The Warrior	" Minnie
" Leopold II.	" Jago
" John Waterer	" Joseph Whitworth

Six new Rhododendrons in flower—M. L. Van Houtte, for

Rhod. Annie Newett	Rhod. M. Joseph Shuttleworth
" Madame Gustave Guilmot	" parvifolium
" Mdlle. Bertha Frœbel	" William Austin

Rhododendron (seedling) not before exhibited at the Society's

exhibitions—M. Louis Van Houtte, for Rhododendron Comte de T'Serclaes.

Rhododendron, remarkable for good culture and profusion of bloom—M. Nuytens-Verschaffelt.

Twenty-five Lycopods—Comte de Kerchove de Denterghem.

Ten Glyceriums—M. Louis Desmet.

Thirty Analias and Rhopalas—M. Dom. Vervaene, sen.

Twenty specimen ornamental plants (nurserymen)—M. d'Haene. Ten specimen ornamental plants (nurserymen)—M. Ad. d'Haene.

Thirty Aroids—M. de Ghellinck de Walle.

Thirty Dracenas, remarkable for good culture, beauty, and novelty—Mr. Wills, South Kensington.

Six Dracenas, not yet in commerce—Mr. J. Wills.

Three Dracenas, remarkable for good culture and beauty—Mr. Wills.

Twenty-five greenhouse plants with variegated, marbled, striated or coloured foliage—M. L. Eeckhaute.

Hardy evergreen shrubs with variegated, marbled, striated, or coloured leaves—M. Louis Desmet.

Zonal Pelargoniums with variegated, marbled, striated, or coloured leaves—Messrs. Vandermeersch.

Twenty Acer palatum—M. Louis Desmet.

Fifty Azaleas in flower—M. de Ghellinck de Walle.

Forty Azalea (amateurs) in flower—M. de Ghellinck de Walle.

Forty Azaleas (nurserymen) in flower—M. Jean Vervaene.

Six new Azaleas in flower—M. Ed. Vandercruyssen, for Azalea indica Héros de Flandre

Azalea indica la Puelle de Gand

" Charles Turner " Comte de Chambord

" le Vengour " Jules Verne

Twenty-five Camellias (amateurs) in flower—M. Beaucarne, Eenaeme.

Twenty-five Camellias (nurserymen) in flower—M. J. De Coster, Melle.

Six new Camellias in flower—M. L. Van Houtte, for Camellia Andrea Spinola

Camellia Pallazo Tursi

" Capitolina Odero " Santa Maria dei Fiori

" Madame Aimé Van Lan- " Scherzo della Regina genovese

Twenty-five Euonymys—M. L. Desmet.

Eight climbing plants in flower—M. Nuytens-Verschaffelt.

Six Hydrangeas in flower—M. S. Desmet.

Thirty Cape and New Holland plants in flower—Messrs. Rollinson & Sons, Tooting.

Two variegated Yuccas, remarkable for good culture and fine development—Mr. Wills, South Kensington.

Twenty-five Cyclamens in flower—M. Spaë, Ghent.

Seventy-five plants in or out of flower—M. L. Van Houtte.

Fifty plants in flower, comprising at least twenty kinds—M. Desmet-Davivier.

Seventy-five plants in flower, comprising at least twelve kinds—Messrs. Wyckaert.

Twenty hardy Azaleas in flower, others than Azalea Mollis—M. L. Desmet.

Six climbing Roses in flower—M. Nuytens-Verschaffelt.

Forty Roses in flower—Messrs. Wyckaert, Ghent, for Alexandriini Bachemotoff

Aimée Vibert

La Reine Paxton

Baronne Prevost Gloire de Dijon

Louise Odier Maréchal Niel

Louis Bonaparte Reine des Violettes

Alcindor Frans Arago

Paul Neron Madame Guillot de Munt Forest

Hermosa General Jacqueminot

General Barral Triomphe de l'Exposition

Jean Bart Eugène Appert

Jacques Lafitte Archimède

Enfant de France Jules Margotin

Pie IX. Alfred de Rougemont

Da Koi Madame Lacharme

Twenty Roses in flower—Messrs. Wyckaert, for Alexandriini Bachemotoff

General Barral

Baronne Prevost Paxton

Louise Odier Jacques Lafitte

General Jacqueminot Du Roi

Paul Neron Aimée Vibert

Jean Bart Reine des Violettes

Hermosa Nephtes

Gloire de Dijon Enfant de France

Extra prizes were awarded to Messrs. Veitch & Sons, for a miscellaneous collection of plants; to Mr. B. S. Williams, for a similar collection; to M. Verveane, sen., for a collection of Azaleas; to Messrs. Veitch & Sons, for Hyacinths and Cyclamens; to Mr. B. S. Williams, for Cyclamens; to M. Van Houtte, for new *Bertolonias*; to M. Banmann, for *Araucarias*; to M. Schwartz, Lyons, for a new Rose; to the School of Horticulture of Vilvorde, for various plants; to M. Vanderzwaln, for *Hepaticas*; to M. Van Hoecke-Peeters, for a grotto; to M. Spithoorn, for various objects; to M. Leopold Haeck, Destelbergen, for tressels for movable steps; and to M. Ferd. Rowan, for garden railing.

## ROYAL HORTICULTURAL SOCIETY.

APRIL 2.

PLANTS were shown much more plentifully on this occasion than might have been expected, considering the severe weather which has lately prevailed, and that most of the London nurserymen have many of their newest and best plants at the Ghent Exhibition. The more prominent feature of the show were long banks of pot Roses and choice Orchids and *Amaryllids* from Messrs. Veitch & Sons, and fine-foliated plants, *Amaryllids*, and *Orchids* from Mr. B. S. Williams.

First-class Certificates were awarded as follows:—

**Amaryllis Crimson Banner** (Little).—A medium-sized flower of good form and substance, and of a rich crimson colour, scarcely any green being visible even at the base of the petals. Apparently one of the best seedling *Amaryllides* which has been raised for some time.

**Primrose Prince Charming** (Dean).—A large-flowered hybrid variety having a golden eye, the petals being systematically striped with white and magenta.

A botanical commendation was awarded to *Masdevallia radicea* (Williams), a curiously-flowered variety, somewhat resembling *M. Chimarra*, but much lighter in colour, and rather smaller.

**Orchids**.—These were well shown by Messrs. Veitch & Sons and Mr. Philbrick. The most noteworthy plants in the former collection were specimens of *Odontoglossum cirrhosum*, furnished with magnificent branching flower-spikes literally covered with beautifully-spotted, sweetly-scented blossoms; and *Dendrobium Devonianum*, bearing between twenty and thirty pseudo-bulbs, beset with delicately-coloured, imbricated flowers. Associated with these were also an unusually large-flowered variety of the golden *Oncidium Marshallianum*, beautifully-flowered plants of *Dendrobium Wardianum* and *D. crassinode Barberianum*, *Oncidium concolor* (conspicuous on account of its lemon-coloured blossoms), and a well-established specimen of *Dendrobium chrysothoxum* bore numerous fine, massive, drooping clusters of rich golden blossoms. *Odontoglossum Rozeii* and its white variety were also shown, and were much admired, on account of their abundance of bloom. *Cypripedium*, too, were well represented. This group, which was originally intended for Belgium, but kept back on account of the unfavourable weather, was one of the most effective which has been shown at South Kensington for some time past. It contained, in addition to those already mentioned, specimens of the following, viz., *Dendrobium Wardianum*, album, and *Cambridgeanum*; *Lycaste Skinneri*, and its white variety; *Masdevallia Lindeni*, *Veitchiana*, and *igneæ*; *Odontoglossum Rossi majus*, luteo purpureum, *prenitens*, *gloriosum*, *cordatum*, *Cervantesi*, *Halli*, *triumphans*, and *roseum*; *Stenia fimbriata*; *Lælia Pilcheriana*; *Ada aurantiaca*; *Oncidium Forbesi*, *sarcodeus*, *fuscatum*, and *leucociliolum*; *Vanda cristata*, *suavis*, *Melagris*, and *tricolor*; *Bollea Lindeni*; *Dendrobium macrophyllum giganteum*; *Aeridee Fieldingi*; *Cymbidium eburneum*; and *Phalaenopsis Schilleriana*. In Mr. Philbrick's group were well-flowered examples of *Odontoglossum Andersonianum*, *gloriosum*, *cirrhosum*, and *Pescatorei*. *O. Alexandræ* was remarkable for the wealth of crisp waxy blossoms which it bore, and an excellent plant of *Cattleya citrina*, bearing nearly a dozen large golden blossoms, rendered the group very attractive.

**Roses**.—These were represented by a large group of well-grown, healthy plants from Messrs. Veitch & Sons. The foliage was green and fresh, and the blossoms strikingly beautiful. Amongst the best varieties were noticeable the pure white *Coquette des Blancs*, the scarlet *Paul Verdier*, and an elegant plant of *Madame Lacharme*, bearing a profusion of partly expanded, delicate blossoms. Well-formed blooms of the bright crimson *Pierre Notting* and of *Richard Wallace* were also observable.

**Amaryllids**.—For the prizes offered by an amateur for seedling *Amaryllids*, light and dark varieties, there were several exhibitors. From light-coloured varieties the prizes were withheld, the kinds shown not being considered sufficiently in advance of sorts already in cultivation. The dark varieties were much better. Mr. Little,

Hillingdon Place, gained the first prize for a kind named *Crimson Banner*, already described. The second prize was awarded to Mr. B. S. Williams, for a very large scarlet-flowered variety named *Dr. Hogg*. Messrs. Veitch & Sons and Mr. B. S. Williams also showed attractive groups of *Amaryllids*. In the former collection the best kinds were—*Clio*, a large, crimson-flowered variety, with broad, recurved petals of great substance; *Sir Trevor Lawrence*, a well-formed, maroon-scarlet flower, well worth culture; *Mrs. Speed*, a free-flowering kind, with medium-sized blossoms, the ground colour of which is white, conspicuously striped with salmon-scarlet. In Mr. Williams' group were plants of the beautiful white-flowered *virginalis*, the elegantly-striped *A. Alexandra*, the dark maroon-purple *Ackermannii purpurea*, and other valuable kinds.

**Miscellaneous Subjects**.—Mr. B. S. Williams contributed a group of Palms, Ferns, and *Dracaenas*, intermixed with which were several finely-flowered *Orchids*, including a brightly-flowered variety of *Masdevallia Lindeni*; and a plant of *Crinum ornatum*, furnished with a stout flower-spike, was surmounted by nearly a dozen large, delicate flowers and buds. The same group likewise contained a healthy plant of *Illicium religiosum*, furnished with waxy flowers somewhat resembling those of *Chimonanthus fragrans*. Mr. Aldous, of South Kensington, again showed an effective group of decorative plants, consisting of dwarf bushy specimens of *Azaleas*, show *Pelargoniums*, *Hydrangeas*, *Lilies* of the Valley, and *Fuchsias*. Mr. James Lovesley, Spring Grove Lodge, Isleworth, sent a group of exceedingly dwarf *Cinerarias* with rich and variously-coloured blossoms. Where small plants are required for vases or for room decoration this strain of *Cinerarias* will be found to be invaluable. The same exhibitor also contributed a good group of *Cyclamens* and *Polyanthuses*. Messrs. Carter & Co. exhibited a collection of new *Hyacinths*, and Mr. Laing again showed an example of *Caladium La Perle du Brésil*. *Sir W. Strickland, Bart.*, sent a cut spike of *Crinum campanulatum*, sometimes called *C. riparium* or *C. aquatum*. Messrs. Osborn & Sons, Fullam, furnished an attractive group of Palms, Cycads, and *Aralias*, intermixed with *Azaleas*, *Lily* of the Valley, and other flowering plants. Mr. Cannell, Swanley, sent boxes of cut flowers of *Pelargoniums*, which attracted much attention. Amongst them were the salmon, white, and striped varieties of *Vesuvius*, and other brilliant and variously-coloured flowers. Amongst these the most attractive were *Circulator*, dark crimson suffused with rose; *Louisa*, a distinct rose-coloured kind; and *Anone*, one of the largest and brightest scarlets, measuring across the petals nearly 2½ in. Mr. R. Dean, Ealing, sent a panful of seedling *Alpine Primulas* of the intermediate section. The foliage resembled very closely that of the *Alpine Auriculas*, and the blossoms were rich and varied in colour. The same exhibitor also showed a self *Polyanthus*, bearing large trusses of yellow blossoms set on long, stout footstalks. Mr. William Chitty, Stamford Hill, contributed a basket of pot plants of *Narcissus juncifolius*; each pot (6 in.) contained nearly twenty blossoms, accompanied by an abundance of graceful leaves. Messrs. Barr & Sugden furnished a group of *Daffodils*, consisting of some thirty or forty varieties, among which were many choice and valuable kinds. Mr. C. Green, gardener to Sir G. Macleary, sent cut blooms of *Crinum pedunculatum*, large, white, and waxy, and conspicuously striped down the centre with rosy-purple.

**Fruit and Vegetables**.—A cultural commendation was awarded to Mr. McLean, The Gardens, Linton Park, Maidstone, for a collection of variegated *Kales*, the colours of which were rich and well varied. Mr. Joshua Atkins, gardener to Colonel Loyd-Lindsay, sent three bunches of Black Alicante Grapes in excellent condition; and examples of a white *Seakale* came from the Society's gardens, at Chiswick. A good dish of Apples was also shown.

## OBITUARY.

WE have to announce, with much regret, the death of Charles George Turner, the youngest surviving son of Mr. Chas. Turner, of Slough, and a youth of much promise. After an education at a good school, he selected medicine as his profession, and proceeded to the University of Edinburgh to graduate in the usual way. He passed his preliminary examination on every subject immediately on his presenting himself, and was preparing for his professional examinations when he was cut off at the early age of eighteen.

THOMAS JOHNSON, who had been gardener to Colonel Battersby, Conny Meath, for the long period of sixty years, died lately at the age of 106. He retained all his faculties to the last. Longevity in his case appears to have been hereditary, for his father, it is said, died at a still riper age, namely, 115 years.

The death is announced of Michel-Charles Durieu de Maisonneuve, on February 20, aged eighty-two. He was honorary director of the Gardens of Bordeaux. As member of the Scientific Commission of Algeria, he was known to botanists for his researches in the flora of that country.

"This is an art  
Which does mend Nature: change it rather: but  
THE ART ITSELF IS NATURE."—*Shakespeare.*

### MY WILD GARDEN.

THIS being introduced, as it now is, in many places as a part or branch of gardening, I have thought that a few remarks in reference thereto might not be uninteresting to some of your readers. It is now some seven years since we commenced our wild garden here. Its size is 8 acres, and nearly in the form of a square. It was formerly full of underwood, but this was all grubbed up many years ago and planted with Laurels, large Yews, and other shrubs, which now have grown to such a size as to quite hide its square form. It contains some very fine old trees, such as Sycamore, Lime, and Silver Fir; one of the latter, mentioned by London, in his "Arboretum Britannicum," has been a landmark for many years. It also contains some Oaks, but these have been more recently planted. Such trees are very essential to give shade to such plants as require it. *Cryptomeria* and *Sequoia* are quite at home here, and beautifully clothed with branches from top to bottom; their heights are from 40 ft. to 50 ft. and upwards. The common Laurel, another fine object here, grows to a great height and size, and when singled out as specimens there are few evergreens that excel it; and as standards in the Orange tree style, it is particularly beautiful when in flower. The Laurel is a plant too often subjected to ill-usuage. After flowering it should be cut back with a knife, to encourage it to make flowering wood for the following year. The beauty of the wild garden is greatly enhanced by having flowering shrubs to skirt the Laurels, such as *Cotoneaster Simmondsi*. This should be cut back a little every year, where there are any gross-growing branches, in order to make it bushy, otherwise it gets naked and unsightly. The *Deutzias* also make good wild garden plants, and so do *Eunymus europæus*, with its red berries, and the varieties of *Ribes* and *Guedler Rose*. This last, when planted close to the Laurels, gets surrounded by them in a year or two in such a way as to just show the top with its beautiful white blossoms, set off to advantage over the green leaves of the Laurel. *Laburnums* should be treated in the same way, as should also *Lilacs* and some of the *Spiræas*. *S. ariæfolia* makes a good plant for the wild garden, as do also *Weigelas*, some of the newer sorts of which are very beautiful. The Double Bird Cherry should on no account be omitted, nor *Malus floribunda*, which is most attractive, and a shrub which one never tires of admiring. *Mahonias*, too, come in very well clustered together at the bottom of the Laurels. There are some new sorts of Laurels (*Jeffreyi* and *rotundifolia*, for instance) which have very beautiful leaves; indeed, from seed, many varieties, with different kinds of leaves, might be produced. About ten years ago we raised some from seed, and amongst the seedlings scarcely two are alike; some are much longer in the leaf than the common one. Again, the Traveller's Joy has a pretty effect, covering parts of bushes, and also the wild Honeysuckle; nothing can exceed the beauty of the latter when once established amongst rambling bushes, Briers, or Thorns.

Our wild garden is not in finely-rounded curves, circles, and squares, but quite the reverse. In making a wild garden the ground should be thoroughly trenched; we go two spits deep and then dig the bottom, getting all roots and weeds out. This we do two or three times over during six months, letting it lie a month or six weeks between each operation, and if any roots be left they will be making renewed efforts to grow, and are easily discovered. Of weeds in the wild garden I may as well state that those which we discard are the common sorts of Thistles, Nettles, Goutweed, Docks, and Dandelions. Such work will doubtless seem to many very expensive, and so it is; but it is afterwards well repaid, and it need not be all done at once. A piece or pieces may be operated on every year until all is done that requires it. Last year we dug about one-quarter of an acre, and in August, which is the

best time, sowed over it Forget-me-not, Foxglove, and other sorts of wild flower seeds. Now the ground is quite carpeted with plants from which we "expect great things" this season. On other places might be sown thinly dwarf Grasses—*Cynosurus cristatus*, *Festuca ovina*, and *Poa nemoralis* rank amongst the most useful—and in order to have flowering plants amongst the Grass, the Welsh Poppy, Columbines, Buttercups, Harbells, Lady's Bed-straw, *Linarias*, Meadow Sweet, and others may be used.

The wild garden season begins with the Winter Aconite and single Snowdrop. The latter I gathered this year on January 7. The Aconite seeds freely, but the seed should be looked after early, as it soon ripens, and very quickly sheds itself. The next bulbous plant is the Crocus, of which there is a great variety, and when distributed in large patches about the wild garden they are most interesting; a little preparation of the ground is, however, highly beneficial. We choose a piece of ground, say one, two, or more poles in extent, with an irregular outline, about September, dig off the top spit, and then lay it on the sides; we then dig up the bottom roughly to let the air and sun into it. At planting time (about six weeks afterwards) we fork the bottom over, levelling it; then we lay down a few  $\frac{1}{2}$ -in. boards to stand on when planting, as it is unadvisable to tread the ground unevenly; then set the bulbs irregularly all over the surface, some within 1 in. or so apart, others 6 in. to 9 in., and along with them may also be put some Lilies and single Tulips; then with the spade lay on the top spit gently, when the roots will have a covering of 7 in. or 8 in. of soil, and the result will be a prolonged season of flower. I hope to send you rambling notes of what we are doing from time to time in our wild garden, which has already proved a source of great beauty and interest. TEWENSIS.

### FUCHSIAS ON WALLS.

THE *Fuchsia Riccartoni*, described and illustrated in THE GARDEN (see p. 283) reminds me of two other instances of its remarkable talent for choosing its own place of abode: one, where a fine plant has located itself, at about 4 ft. from the ground, on the north side of an old stone wall. This is not a seedling, but must have pushed its way through some crevice in the wall, and eventually taken root there, from a large plant which formerly covered the sunny side of the wall, but which was removed a few years ago. This seems to prove its liking for shade, and certainly a more flourishing and flowery plant could not be than this self-made one. The other instance is of much older date, not much less than forty years ago, when, I believe, this fine old *Fuchsia* was, for the first time, brought to Ireland by one of our family, to whom it was given by the owner of Riccarton. It may have been the following summer that a seedling plant of it was discovered at the top of the village church tower, where it grew afterwards to a sufficient size to be plainly seen from our garden, which joined the churchyard. It is refreshing to see, from time to time, such "honourable mention" made of such valued old plants that few people now living have the good taste and discernment to preserve and cherish. Among old *Fuchsias* I should like to say a good word for *F. globosa*, so well suited, by its spreading growth and hardiness, for rockeries or rustic beds, and being so easily pruned into shape without disfiguring it, even when in full flower, which is not the case with some of the other *Fuchsias*. DELGANY.

**Baby Castle Wallflower.**—This is the best habited of all the Wallflowers, and to my mind, the best in colour, notwithstanding the prejudice (at least for market purposes) in favour of the dark varieties. It is nearly equal in colour to *Cheiranthus Marshalli*, and a few plants of it in early spring brightens up a place wonderfully. But I am desirous of pointing out its utility as a pot or decorative plant. Sown now (March or April), and when strong enough planted out to nurse in poor stiff soil, stout dwarf plants about 9 in. or 1 ft. high will be the result. These lifted late in autumn, wintered in a cold pit, and introduced early in spring to the conservatory, will yield a scent and give a mass of flower that will be very acceptable so early in the season. Everybody loves the scent of a Wallflower.—THOS. WILLIAMS, *Omskirck*.

## NOTES FROM CALIFORNIA.

THIS is a fine country for the Japan and South American plants. The winters are of Italian mildness, and many of our old greenhouse favourites remain in the open ground, and bloom profusely. Camellias, Chorozemas, and Azaleas are hardy shrubs where protected from the wind; even the *Cycas revoluta* succeeds in a warm situation, and *Phoenix dactylifera*, *Sabal Adansoni*, and *Brahea filamentosa* often form conspicuous features in the landscape. Still glass is a necessity here, as everywhere, I fancy, for propagation, and for the growth of soft-wooded plants, Orchids, winter flowers, &c. Conservatories are increasing amongst the classes who have leisure, and a conservatory is always a delightful mirror in which to study a man's character. The enraptured owner may choose to luxuriate in fruit out of due season, or to revel in masses of bloom, or to fairly despise colour, and hide himself in leaves, brilliant and shapely. Some unstable possessors of a few square feet of glass are everything by turns, and nothing long; but if there is, to the rightly-balanced mind, any pure delight, it is to slowly obtain those permanent plants which will grow better and better for a series of years, and which everybody does not have. I notice to-day that my seed-boxes are fairly awake. Possibly the most fascinating moment to the lover of flowers is when some little brown seed has set in order her curious underground palace, and got her forces and economies fairly under way, so that she can come delightfully up through the mould, and begin to breathe the upper air. I confess that I have a tender sympathy for every seedling, and love to imagine how the cells divided, and the germ increased, and to notice how early peculiarities of form reveal themselves. This month there is a whisper of hanging baskets, and I begin to arrange them at leisure. The variety of possible effects is most surprising. Your basket may be simple or profuse, modest or gorgeous, subdued or overwhelming. It is a good plan to select the plants one wants, take them to the potting-bench, and there group them until the general effect is satisfactory. It is not pleasant to mingle too many colours or styles of foliage in the same basket. Choose one plant to give the impression, and let the rest be subordinate. Now and then we find a basket in which art is hidden; it is a bit of Nature, full of simplicity. You may span it with your hand; yet there are cool depths in which the fancies wander beneath traceries of Fern and the plants which love shade. Someone planned it in a happy moment, and Nature seconded his efforts. This month the Cyclamens begin to show their delicate flowers, with their reflexing, tinted petals and rosy beak, shining above the cordate leaves. "Jest the old shootin' star," said an over-hasty country visitor once; she meant the American Cowslip (*Dodecatheon Meadia*), but arguments were futile. Still, it is often delightful to take people around. There is the busy merchant, who thinks flowers as a rule are foolishness, but show him that Bluebell yonder, and he is a boy again in the bonnie woods. Here, too, is the modest maiden, just tiptoeing in to see if she may have a rosebud and a sprig of Geranium. And now and then, on memorial days, some friend, who knows and loves plants in a cheerful, embracing fashion, drops in with an armful of bright ideas, questioning, criticising, praising. Someone asked me the other day what I considered the most accurate test of the inborn gardener. Now that is one of those questions which are somewhat puzzling, because the true gardener makes every plant personal, and real, and separate, even as every true nurseryman knows every tree over whole acres. I showed him a little box of Coffey plants. In that little box there might be seen infinite variety; here a crooked leaf, there a twisted one; yet again, one narrow and another wide; some dark, some light, and some spotted—the stems being of differing thickness, colour, angle of inclination, or even shape. Now the true gardener perceives this difference, enjoys it, and acts accordingly, in all his daily work.

Niles, California, U.S.A.

CHARLES H. SHINN.

Destroying Crickets.—I observe that "G. L. M.," who enquires about destroying crickets, is recommended (see p. 322) to use Chase's Beetle Paste. This paste is not near so effectual in the destruction of crickets as Hardman's Beetle Powder, which I have found very good, and it may be obtained of any chemist.—F. B.

## ORCHIDS AT WHITCHURCH RECTORY.

THE collection here even now well repays a visit, although there are not nearly so many species in bloom as there will be later in the season. The following were, however, the other day finely in flower. In the first house was *Odontoglossum Cervantesi*, *O. radiatum*, *O. Pescatorei* (one spike of which bore forty-five flowers), *O. luteo-purpureum*, and *O. triumphans*, the last one of the largest-flowered and finest-coloured forms of this species with which I have met. As to *O. hystrix*, the last bulb on a plant here is 6 in. long, and bears a couple of spikes 4 ft. in length; associated with it were also *O. Andersonianum*, *O. Prestans*, *O. Halli*, *O. gloriosum*, *O. roseum*, many forms of *O. Roezli*, and numbers of *O. cirrhosum*, on one spike of which I counted seventy flowers not yet open. In the same house were *Dendrobium Wardianum*, *D. crassicaule*, *D. Boxalli*, *D. primum*, *D. cucullatum*, *D. subriatum* oculatum, one plant in particular with very large flowers finely-blotched; *Lycaste Skinneri*, both white and other varieties; various forms of *Cattleya Trianae*, including the best that were in Mr. Marshall's and Mr. Russell's collections. One especially bears unusually large blossoms, the petals and sepals being pure white, with an intensely purple-coloured labellum. One specimen of *C. amethystina* bore seventeen flowers, and on *Oncidium sarcoodes* were spikes  $\frac{1}{2}$  ft. long. Of *O. Marshalli* one plant bore a seven-branched spike, and others were equally fine. In an adjoining house were numbers of *Odontoglossum cirrhosum* with not less than 100 spikes of flowers pushing up; *Cyclopogon conferta*, a seldom-seen, pretty, white and yellow, sweet-scented species; *C. Baccida*, scented like a *Narcissus*; *Helicia sanguinolenta*, a seldom-seen plant with a white labellum streaked with blood-red, and with petals yellow and crimson—these were all finely in flower, as well as many others. In an adjoining house I noticed a plant of the white *Anthurium Scherzerianum* bearing several flowers in an abnormal condition; from the spadix were issuing a number of small spathe clustered together in a curious way in its attempts to produce double flowers—not by the formation of two or more spathe at the base of the spadix, as may be frequently seen in the red variety, but absolutely from the spadix, the stamens assuming this spathe-like condition, which, in a flower so formal as the Aroids, to which this *Anthurium* belongs, gives it a most singular appearance. As to culture, Mr. Shields, who is an adept at Orchid growing, avoids the extremes of too much heat or the opposite of keeping them too cold, to both of which, especially the former, may be attributed the great losses that have been and that are still being continually experienced in connection with these costly plants. The atmosphere in the different houses is sufficiently moist, but an excess of humidity is carefully guarded against. The houses are constructed and so situated as to afford an abundance of light; less and thinner shading material is employed than many growers use, and the plants are kept well up to the glass—the only rational conditions under which Orchids can be grown with a view to the plants going on increasing in size and vigour individually for an indefinite time, and which, even in a cultivated state, they are capable of when subjected to treatment suited to their natural requirements.

B.

Tree Peonies and the Frost.—The effect of the recent frosts on the Tree Peony (*Paeonia Moutan*) has been here most disastrous. There must be many living who remember May 15, in the year 1838, when a frost not only destroyed in many places the opening bloom of the Peonies, but also seriously injured that of the Lilacs and Laburnums; but never before have I witnessed at this period of the year such damage as the late frosts have effected in the foliage and bloom-buds of the Tree Peony. A nipping of the most advanced shoots at this season is not of frequent occurrence; but the almost total destruction of four-fifths of the current year's produce is what I do not remember to have noticed before. The first of the four very cold nights my Fahr. thermometer registered 11° of frost, which did not seem to have any injurious effect on the Peonies. This was followed by a night almost as cold, the thermometer's lowest point being 22°. Then began the mischief, and the two next nights, and occasional frosts since, completed it. The only blooms we are likely to have, if we have any on these shrubs, will be a few on the lower and most protected shoots. Perhaps some other of your correspondents will give their experience with reference to this and other of our spring-blooming shrubs.—B. S., Rutlandshire.

*Chelanthus elegans*.—This is one of the most graceful and elegant of Ferns, and one which only requires an intermediate temperature in which to grow to perfection; in fact, like most cool house Ferns, it is more liable to suffer from too much heat than too little. Well-furnished plants of it in 6-in. pots make fine objects in vases, and will last in good condition much longer than the inmates of a stove temperature. A compost of loam, peat, and silver sand and a little leaf-mould suits it admirably.—J. Gaoxh, Heatham.

## NOTES OF THE WEEK.

**Portrait of Mr. Marnock.**—A Committee has recently been formed for obtaining an oil portrait of Mr. Robert Marnock, the well-known landscape gardener. The following gentlemen form the Committee:—Rev. Canon Hole, Professor Bentley, and Messrs. T. Spencer Wells, John Noble, John Waterer, George Paul, J. F. Meston, Harry Veitch, and Wm. Robinson. As it is probable that many who know Mr. Marnock and his work have not received any communication as to the intended presentation, the Committee have thought it well to announce publicly that subscriptions to the Marnock Portrait Fund will be received by the Treasurer, Mr. John Waterer, Bagshot, Surrey; or the Hon. Secretary, Mr. Wm. Robinson, 37, Southampton Street, Covent Garden, London, W.C. No further announcement will be made. The portrait will be executed by an artist of known excellence, and will be presented to Mr. Marnock himself.

**Hardy Plants at Tottenham.**—Among the plants now in flower in Mr. Ware's collection are *Armeria juniperifolia*, a little Mossy kind, with delicate little rose-lilac heads of blossom; *Narcissus pallidulus*, a Spanish species allied to the Hoop-petioled *Narcissus*; *Primula arctotis*, a distinct and handsome dwarf species; *Scolopis Biglowi*, a very curious plant from the western part of North America; and that very pretty little Squill-like flower which used to be grown (although always rare) about London under the name of *Puschkinia scilloides* before the coarser plant that now bears that name came into cultivation. The true name of this little plant is still uncertain, but we hope soon to publish it.

**Pot Roses in Covent Garden.**—Healthy little plants of the Rose called General Jacqueminot, grown in 6-in. pots, have this week been exposed for sale in the Central Avenue, Covent Garden. They were from 6 in. to 9 in. high, bushy, and well furnished with blooms, of which each plant bore from six to eight. Beautiful under all conditions are early Roses in pots, but when seen in a miniature state like those just referred to they are more interesting than in the form of larger specimens. For the conservatory or for rooms, or even dinner-table decoration, such plants would be found to be most valuable.

**Choiysia ternata.**—A good specimen of this useful greenhouse plant is now in flower in Messrs. Veitch's nursery at Chelsea. It is about 2 ft. high, and as much through, and bears about twenty clusters of white, sweetly-scented blossoms closely resembling those of the Orange, for which it makes a very good substitute. On account of its hardy character and its easy culture, this plant should be extensively cultivated. A coloured figure of it was given in *THE GARDEN* (see Vol. XII., p. 232).

**Magnolia conspicua in the Conservatory.**—Where easily-grown and effective-flowering plants are required for conservatory decoration this might be used with advantage. Although perfectly hardy, its blossoms usually get cut out-of-doors by frost long before they arrive at maturity; if, therefore, plants were grown in pots, or even large tubs like those in which we often find *Camellias*, and moved indoors early in winter, a profusion of snowy blossoms in February and March would be the result. When in flower such plants would associate well with *Almonds*, *Prunesses*, and similar subjects.

**Portrait of the late Mr. J. C. Loudon.**—The Council of the Linnean Society received four members of the London Portrait Committee (Sir Joseph Hooker, Mr. Marnock, Dr. Masters, and Mr. David Wooster), and Mr. Markam Spoforth, and Mr. R. C. Saunders, on Monday afternoon, when Sir Joseph Hooker made over the portrait of the late Mr. Loudon to the Council for the Society, briefly touching on the merits of the works of their late distinguished Fellow. The Council expressed their great gratification at receiving so valuable a gift, and considered the Society would be most fortunate in possessing so valuable a work of so eminent an artist as Mr. Linnell. The likeness is a singularly striking one; and as the picture has been in the possession of the artist ever since it was painted, it is in an admirable state of preservation.

**Amaryllids in the London Nurseries.**—From a decorative point of view the Amaryllids of our greenhouses are amongst the most useful, as well as showy, of winter and spring-blooming, bulbous-rooted plants, and they now form one of the most attractive features of our London nurseries. Although no pains have been spared to improve the varieties by cross-fertilisation, yet it is stated by many who are competent to judge that the improvements made are not so important as might have been expected, considering the labour and trouble expended on them. With a view to induce growers to continue their efforts in raising new kinds, a series of prizes are being offered for the best seedlings, which are shown from time to time at the Royal Horticultural Society's meetings, at South Kensington; and it has also been requested that old kinds should be shown as

often as is convenient, for purposes of comparison. Few plants are more difficult to get into bloom at a given time than Amaryllids are; hence, probably, the reason why they have not been shown at our London exhibitions in such quantities as other plants. Lately, however, there has been a great improvement in this direction, and it is now hoped that Amaryllids will be brought into prominence, and good results be obtained.

**Orcchids at Chelsea.**—Messrs. Veitch's nursery in the King's Road, Chelsea, is just now well worth a visit. The Orchid houses are full of the choicest blossoms, the names of most of which have been published in *THE GARDEN* last week (see p. 326). There is also a large collection of Hyacinths, Tulips, and other bulbs in full bloom. The hard-wooded plant houses, too, are brilliant with *Azaleas*, *Rhododendrons*, and *Heaths*. The large *Camellia* house is also still very attractive.

**Ixora Duffii.**—In our description of this new species (see p. 312) it was inadvertently omitted to be mentioned that it was introduced by Messrs. Veitch. It is stated in their catalogue, just received, to be a native of Strong Island (or Ualan), one of the Caroline group, in the Pacific Ocean.

**White Bouquet Flowers in Covent Garden.**—Amongst the numberless white flowers used in bouquets in Covent Garden Market just now few are more beautiful than those of the *Tabernamontana*. They are as double as those of a Pink, and their petals are beautifully imbricated. The *Tabernamontana* is a plant of easy culture, showing well in a stove or warm greenhouse temperature; and if planted out against a wall or otherwise, yields an abundance of blossoms in value little inferior to those of the Cape Jasmine.

**Camellia Augusta superba.**—Amongst the many kinds of *Camellia* now in cultivation few are superior to this one. It grows freely and blooms profusely, and its flowers, which, when fully expanded, often measure 5 in. in diameter, are well-formed, waxy, and of a rich pink colour. Their petals, too, do not drop so readily as those of many less attractive kinds. In even small collections this is a variety which should always find a place.

**Spiræa Thunbergii.**—As a margin to shrubby borders, or planted in isolated clumps, this hardy and free-flowering *Spiræa* is worthy of extensive culture. Blooming, as it does, for many weeks along with *Primroses* and *Daffodils*, its long garlands of small white blossoms are seen in such company to good advantage, and its wreath-like branches are very useful in a cut state. Notwithstanding the cold and showery weather that has been experienced during the past few weeks, it still continues to bloom profusely in several of the London nurseries.

**Plant-lore of Shakespeare.**—Many readers of *THE GARDEN* will be pleased to know that "The Plant-lore and Garden-craft of Shakespeare" (reprinted, with additions and corrections, from *THE GARDEN*), by the Rev. Henry N. Ellacombe, M.A., Vicar of Bitton, Gloucestershire, will be published shortly. In this work every passage is quoted in which Shakespeare names any tree, plant, flower, or vegetable production. A short account of each is given, identifying Shakespeare's plants with their modern representatives, with illustrations from contemporary writers, and with notices of any points of literary, botanical, and historical interest connected with the plants named. If only as a work of reference we feel sure the book will be welcome to many. We hope to speak of it again on its appearance.

**The Art of Grafting and Budding.**—A re-issue of M. Balle's useful work on this subject has just been published by Messrs. Macmillan & Co., of Bedford Street, Covent Garden. It is, as is now pretty well known, full of illustrations representing the different modes of budding and grafting, and will be found a trustworthy guide to the inexperienced in such matters. It is, indeed, the most complete and trustworthy work on the subject, and shows a practical modes of grafting and budding.

**Botanical Instruction in Berlin.**—The educational authorities of Berlin possess an enormous garden in one of the suburbs of the city for the purpose of supplying all the schools with fresh botanical specimens. The distribution takes place regularly after April 1, and over 4,000,000 plants are required for botanical instruction in the course of the year.

**Clapham Common.**—The Metropolitan Board of Works, as conservators of this common, have, in compliance with the wishes of the resident inhabitants of Clapham, assented to preserve the common in its present park-like form, and the proposed conversion of a part of it into a public recreation ground is now abandoned. The Board purchased the manorial rights and other interests in the common at £17,000 to avert its being built over, and to preserve it as an open space for the public.

## NOTES FROM KEW.

**Hardy Herbaceous Plants.**—The weather not having of late been very favourable, there is still a scarcity of outdoor plants. Tulipa Greigi, from Turkestan, is the finest of all the wild Tulips; its glaucous leaves are copiously spotted with oblong blotches of a chestnut-brown colour, and are much waved towards the margin; the large flowers are bright crimson, with a black and yellow blotch at the base of each of the six divisions. A variety of the European Valeriana Phu, with golden leaves, is at present one of the most conspicuous objects in that part of the Herbaceous Department, and is sure to be a favourite with all who have a leaning towards variegated plants. Three species of Giant Fennel, *Ferula communis*, *F. gigantea*, and *F. conspiciua*, are particularly beautiful; they are strong-growing plants, and their magnificent, dark green, feathery leaves have not been injured in the slightest by the late frosts which have done so much harm to many denizens of the hardy flower border. For isolated groups on lawns, &c., few plants can compare in grace and beauty with the species whose names we have just given. *Fritillaria Munbyi* is a remarkable dwarf Fritillary with large, drooping, dark purplish-red, bell-shaped flowers, the outer surface of the six divisions of the perianth being rendered more striking by a broad band of green which runs throughout their whole length.

**Greenhouse Plants.**—*Sonchus platylepis* is one of those peculiar arborescent Sow Thistles from the Canary Islands, which, from their size and strange form, constitute striking features in the landscape; the large, bright yellow flowers of *S. platylepis* are produced in an umbellate head, and are both striking and handsome. *Boronia serotina*, with its neat little leaves and large, deep red flowers, is one of the most charming of the greenhouse plants from New South Wales. *Rhododendron formosum*, a very neat-habited and free-flowering species, from the mountains of Sillbet, in Eastern Himalaya, has large and highly-fragrant white flowers, tinged with yellow and rose on the inner surface and striped with reddish on the outside. *R. formosum* var. *magnificum* has flowers somewhat larger than those of the type. *R. Falconeri* is a noble Indian species from the summit of Tongo Mountain, 10,000 ft. above the level of the sea; the leaves are very large, and the broadly bell-shaped corollas are white with a dark purple blotch at the base of the interior. *Agapetes buxifolia*, from the Dupla Hills on the eastern frontier of Bhotao, is a fine evergreen, leafy bush, with Box-like leaves and tubular, bright red, axillary flowers; in a wild state it grows epiphytically upon trees at elevations of from 2000 ft. to 3000 ft. *Paltenea stricta* is an Australian member of the Pea family, and is one of the few cultivated species out of the fifty or sixty kinds known to botanists; its yellow and brown Pea-shaped flowers are freely produced on the upright, twiggy branches. *Stylidium fruticosum* is a little Australian plant of much interest; the pink flowers are plentifully produced in upright racemes; the column, formed by the union of the style with the two stamens, is extremely irritable; it springs up with great force and shifts at once to the opposite side of the flower when touched. *Bossiaea linophylla* is one of the most elegant of all the Australian Leguminosae; its branches droop somewhat after the style of the Weeping Willow, and are clothed with brilliant yellow flowers, the standards or upper petals of which are marked with purple at the base. Three very fine shrubs and very valuable ones for greenhouse decoration are *Eriostemon scaber*, *E. myoporoides*, and *E. nerifolia*; all the species of this genus are desirable plants. The three just named have white flowers, others have reddish, lilac, or pink blossoms.

**Stove Plants.**—*Eranthemum tuberculatum* is a very free-flowering small shrub, with neat little leaves, and pure white flowers, with a long narrow tube. *Franciscia violacea* var. *grandiflora* is very showy, with its large deep blue blooms. *Centrostemma multiflorum*, or, as it is sometimes called, *Cyrtoceras reflexum*, is a handsome climber, from Java; the large umbels of white, yellow-tipped flowers resemble those of some Hoyas. *Allamanda nerifolia*, from tropical America, takes up little room, and makes a noble appearance with its showy flowers, deep, almost golden, yellow, streaked with orange.

**Orchids.**—*Epidendrum aurantiacum*, from Mexico and Guatemala, has numerous, large, rich orange-coloured flowers; in a wild state it grows on exposed rocks on the precipitous brows of ravines, where it is subject to great extremes of heat and cold. It has also been found on the trunks of the deciduous Cypress (*Taxodium distichum*). *Cattleya Skinneri* is a splendid species, with large, very lovely lilac-purple flowers. Skinner says it inhabits the hot damp coasts of Guatemala, &c., is always found on very high trees, and is most difficult to get at, except after a storm, which may have chanced to hrow down some of the largest forest trees. The inhabitants call it Flor de San Sebastian, and eagerly search for its flowers to ornament

the temples and shrines of their favourite saints. *Panisea uniflora* is a little Orchid from the hot valleys of the Sikkim Himalayas; its leaves are in pairs, the sepals and petals are membranous, and the tongue-shaped lip is pale orange-yellow. *Lycaste orureta* has large, powerfully-scented orange-yellow flowers, larger, and on longer stalks than those of *L. aromatica*. *Coslia Baneriana* is a West Indian plant, with long pseudo-bulbs and long Grass leaves; the white flowers are borne in short upright spikes. *Leptotes bicolor* is a pretty little Brazilian epiphyte, with fleshy, rush-like leaves, and large, white, purple-lipped flowers. *Dendrobium fimbriatum* var. *oculatum* is a Nepalese species, with large golden-yellow flowers, the beautifully-fringed lip bearing a dark, blood-coloured, eye-like spot in its centre.—↑

**Lime Trees at Longleat.**—The terrific hurricane that swept across this part of the country in October last uprooted from 200 to 300 trees on the Longleat estate. Fortunately, the old ornamental trees in the park did not suffer very severely. Five Limes uprooted were the worst casualties in the park; three of them were standing in an exposed position, and were, consequently, wide-spreading, bushy-headed trees, and had short, rough, faulty butts more or less decayed at the core. These were sold some time ago for £28 the lot. The other two were growing in a grove, and were exceptionally fine, long, clean, sound timber trees. The longest measured 122 ft., and the other 114 ft. from the root to the topmost twig; the stems ran up clean without a branch or break 63 ft. and 58 ft. respectively; and the total contents of the two trees were 350 ft. They were bought the other day by a London firm for pianoforte work, the price being £50 for the two trees just as they laid in the park.—G. BERRY, Longleat.

**Primula amena in Pots.**—It has been strongly forced upon my notice this year that the best way to secure robust groups of flowers and foliage in pots from this beautiful Primula and its varieties is to allow the clumps of roots to remain in the same pot two years together, and then break them up and re-pot after the foliage had died down. To get a fine show in this way it is desirable to have enough of stock to be able to break up clumps in alternate years so that some established for the second year would always be ready to bloom. About nine good, strong, single crowns planted in an 8-in. pot will give a good head of bloom, but it will be far better the second year. I find that these Primulas make but little root-growth before the blooming period, and, indeed, if it is desirable to shift at all, I think it is better to do it after the flowers have died down, as the chief root work is done during the summer. Still it is evident that these Primulas, like nearly all hardy ones, prefer rather to be starved than pampered, and probably throw up more flowers having brighter colours than is the case if there be an excess of root room. Single crowns are now flowering freely in 3-in. pots, and do not care to be kept too moist; if each of these get a shift into 3½-in. pots presently they will flower finely next year. In breaking up an established clump it is easy to select the strongest crowns and to pot those separately; the weaker ones can then be potted up thickly, and will soon make plenty of stock. *Primula amena* forces badly, but under ordinary circumstances commences to bloom early in April. Some of the new seedling kinds are much earlier than others, one of the lacinated forms named Pink Beauty having been in bloom since the middle of March, whilst others are nearly a month later.—D.

**Giant Arum Lilies.**—Some grand specimens of this useful plant just now in bloom in the entrance hall of Bedford House, the residence of Mr. A. J. B. Goodwyn, illustrate forcibly its noble decorative qualities when the plants are of large size, full of vigorous flowers, and leafage. The culture of this Arum is by no means difficult. It will even thrive amazingly in limited pot space; but the luxuriant growth that displays its finest features is best got out of richer soil, more space, and plenty of moisture. The group in question stands in a cool hall in front of a disused fireplace, and, fringed by a few dwarf-flowering plants, presents a marked effect in efforts at indoor decoration. Few plants, perhaps, at this time of the year would more fittingly associate with this Arum than strong, well-bloomed specimens of the Chinese *Dielytra*, one of the most handsome and graceful of all early spring plants. The pendulous growth of both foliage and flower would effectively support the drooping and noble foliage of the Arum, whilst the handsome white spathes project from the mass of luxuriant leaves with a grace that words fail fully to describe. Plants that are so nearly aquatic in habit are doubtless difficult customers to feed in accordance with their entire needs in an entrance hall, but the need might be met by placing the large pots in zinc pans; and, further, in occasionally running a damp sponge over the leaves to keep them free from the dust that will inevitably rise in the best conducted house.—A. D.

## TREES AND SHRUBS

## UNMUTILATED SHRUBS.

The accompanying illustration is from a photograph of a portion of a shrub garden, where the plants, well chosen and well grown, were allowed to grow in a natural, untortured manner. It is curious and most depressing to note the dreadful way in which shrubs generally are grown, or rather mown both above and below. Owing to the bad influence of habit, the very men who ought to protect and encourage this beautiful shrub-life are continually employed in taking the most direct means to make all beauty impossible; and this not merely in small gardens, but in Her Majesty's parks, where many acres of these dismal shrubberies may be seen. Ten shrubs stand where only one could find room to grow well, and each of the ten so mutilated above with knives and below with the spade (wholly needless in any established shrubbery), that each remains for life in the scare-crow stage. Very often the planter is to



blame for putting in six plants where one would do. That even the meanest shrub should be allowed to attain its full development unmutilated by the knife or spade, and uninjured by its neighbours, is a rule that might be safely laid down in many a garden.

## POPLARS, ASPENS, AND COTTON-WOODS.

By Dr. JOHN A. WARDER, North Bend, Ohio.

In an interesting account in the "Journal of Forestry" of what you in England are pleased to call the Black Italian Poplar, I see that you refer it to the species *Populus monilifera*. With your popular names we are not expected to be familiar, and as we have the Lombardy Poplar from Europe, now accepted as a form of *Populus nigra* of that continent, the words Black Italian\* would lead us to think of the Lombardy, long believed to be *Populus glabata* of Aiton. Indeed, one of our best informed American dendrologists, Mr. Meehan, seems to have been of this mind, since in the November number of the "Gardeners' Monthly" he ventures to correct your citation from London, and gives *Populus nigra* as the proper name for your tree. In this I do not concur, for a careful reading of your article gives evidence of a plant very different from the Lombardy, which is essentially a densely clothed pyramidal tree, rarely if ever having a "clean hole." You may be right in referring your tree to *Populus monilifera*, though, unfortunately, this is one of the questionable species, respecting which botanists are not fully in accord. At this distance, and with the meagre evidence presented, omitting all botanical characters except the habit and habitat, it may be thought presumptuous for anyone to express an opinion, but it is modestly suggested that some other American Poplar may have been introduced into Scotland, and that your tree may be *Populus angulata* of Michaux, or his *Populus monilifera*, which last he calls the Virginia or Swiss Poplar, and says it is extensively cultivated for timber in Europe, espe-

cially in Switzerland and France. The Carolina Poplar, *P. angulata* of Michaux, is commonly planted in Belgium; either of these might answer the description of your tree. The Poplars are not esteemed in this country where hard woods abound, and are preferred for construction; but in the great prairie regions, where the scarcity of woodlands is forcing the people to plant, and where millions of trees are annually set out, the rapid growth of Cotton-woods and their easy propagation from seeds and cuttings make them favourite pioneers for the future forests which must be planted. This, too, is following the natural indication, for in our progress westward from the wooded regions of the Ohio valley the Cotton-wood is the proper arboreal form, and while almost all others disappear, these continue to recur along the streams to their very canons at the base of the Rocky Mountains.

However, in the beginnings of an American forestry, yet to be developed, we advise the planting of Cotton-wood first to act as windbreaks, under the shelter of which adjoining lands may afterwards be planted, with many other species which would have inevitably encumbered to the dry blasts from the prairies and open plains. With your leave, a brief conspectus of the Poplars of this country and Europe is here presented, as the result of a recent study of the genus with the aid of such works as were at hand in my limited library, and supported by my own observations. In this article they will be divided into the three very natural groups of Poplars, Aspens, and Cotton-woods.

## Poplars.

*POPULUS BALSAMIFERA* (Tacamahaca, or Balsam Poplar) is a very distinct species. This is essentially a northern form, being found as far north as the Great Slave Lake, in latitude 63°. Tree of medium to large size, with open, straggling branches; leaves are on roundish petioles, oval, coriaceous, dark green above, rusty brown beneath. Though unseemly, it is somewhat cultivated.

*P. CANDICANS* (Balm of Gilead, Heart-leaved Balsam Poplar) is now considered merely a variety of the above. This form is seen chiefly in cultivation, though it has little to recommend it. The buds of both these are large, and abundantly covered with a balsamic resin that has been used in medicine.

*P. ANGUSTIFOLIA* is described by Mr. S. B. Watson as a common tree in the Rocky Mountains. It is now grouped with *candicans* and *balsamifera*, of which it is a very distinct Western form. Different trees and locations present quite a variation in the foliage, some leaves being ovate, while in other trees they are nearly linear, and with a drooping spray, the resemblance to a Willow is very striking, as seen on the Platte River or Denver Colorado. Nuttall considered this a good species, and says it becomes a noble tree on the western coast.

*P. TRICOCARPA* is another Western form found in Truckee Valley, Nevada, and elsewhere in the heart of the Rocky Mountains, as well as on the Santa Clara River, California.

*P. NIGRA* (European Poplar) was not recognised by the Michaux and Pursh, though they found a form of it growing in New York City and on the Hudson River, near Albany, which was described as the *P. Hudsonica* by Michaux, and by Pursh as *P. betulifolia*. There is now no doubt about its having been introduced from Europe, where it grows to a large size, and with *P. alba* is much used along the banks of the Danube in reclaiming low and overflowed lands. The thickets arrest the debris of floods, and furnish abundant material for the fascines used in the weir-drows and levers placed along the river for the improvement of the navigation of that noble stream.

*P. DILATATA* (Aiton), the Lombardy, or Italian Poplar, is no longer looked upon as a species in this country, but merely as a variety or sport from the *P. nigra*. This plant is extensively grown as an avenue tree along the highways of Southern Europe, where it appears to be a great favourite, notwithstanding its formal habit. It does not appear even there to be valued for its timber, and is never seen in forest plantations.

The Lombardy was very early introduced into this country. In 1784 it was planted by William Hamilton, Esq., on the site of the Centennial Exhibition (vide Watson's "Annals of Philadelphia"), and extensively planted elsewhere, particularly in the streets of towns and cities. In the Eastern States very large trees may yet be seen in good condition, but in the Western States, especially in Northern Illinois and Wisconsin, it has been largely planted in fence rows and wind-breaks with fine effect. In our soil, however, the tree does not promise to be long-lived. The plants in this country are all staminate or males, and have been multiplied by cuttings. How is it in Europe?\*

\* This question is already answered by my friend and jury colleague at Vienna, Giovanni Carlo Sismorio, who says this Poplar, which he also calls the Cypress or pyramidal, and *P. Italica* Dur., is considered only a variety of *P. nigra*. No firmer plants are known. He adds that it is much cultivated in Lombardy, and particularly along the Po. In evidence of its antiquity he quotes Ovid,—"Manuale d'Arte Forestale," 1872, p. 137.—J. A. W.

\* Nuttall calls this the Italian Poplar, or Lombardy. "Am. Sylva," vol. i, p. 55.

### Aspens.

The Aspens, or Abeles, form a distinct group; they are usually smaller trees, as we see them here, especially the native species.

**POPULUS TREMULOIDES** (Quaking Aspen), is a small tree seldom more than 20 ft. to 30 ft. high, and a few inches in diameter; and in the north it becomes a mere shrub. A form of this species in the valleys of the Rocky Mountains springs up spontaneously in the greatest abundance wherever the woodlands have been burned over. The older trees have stems of from 50 ft. to 60 ft. in height, and are used in construction. This plant is almost unique as a deciduous tree among the evergreen Conifers of that extensive region. Generally speaking, this species has little value, but there are some peculiar forms of this and the next that are cultivated for effect in gardens and parks.

**P. GRANDIDENTATA** (the Michigan Poplar of the nurserymen's catalogues) is a much finer tree than the last, and also northern in its habitat. On account of its rapid growth, this tree has received much attention among western tree planters; and though only a Poplar, considerable merit has been accorded to it as a fencing material. The poles cut in early summer and tested have been found to last ten and twelve years when nailed to posts as a fence; they are, however, like all their kind, deficient in strength and easily broken.

**P. CANESCENS** (or more correctly *P. alba Abele*) is the common White or Grey Poplar of Europe, with its many forms or varieties of Abele, Athenian, Maple-leaved, and Silver Poplars. Though widely diffused and planted everywhere, and wonderfully multiplied by numerous suckers in their new homes, these are all believed to be of European origin. If correctly understood, however, my good friend Prof. Karl Koch, of Berlin, who has made a life study of trees, considers this species to be American, or common to both hemispheres. His valuable work is just now, unfortunately, not at hand. In Northern Europe the White Poplar becomes a noble tree, attaining the height of from 90 ft. to 100 ft., and a diameter of from 5 ft. to 6 ft., as seen in the Praterst, Vienna, Austria. The timber is much used in the construction of buildings and for other purposes in Europe, and the tree may be found valuable to our own western planters. Michaux claims two distinct trees, the white and the grey, attributing superiority to the latter.

**P. TREMULA** (Trembling Poplar or Aspen, the congener of our *P. tremuloides*) is a European tree of small size and of little value, except to cover denuded tracts as a restorer of the soil, preparatory to the introduction of some other more valuable species.

### Cotton-woods.

These form a characteristic group of the family, and are believed to be essentially American in their origin. Many have been transplanted into European soil, and thrive as well in their adopted home as though to the manor born. In their native land many of the Cotton-woods attain majestic proportions, and they are not without their value. The great logs were easily wrought into canoes by the aborigines and early settlers. They provided food for the native beavers as well as material for their subaqueous structures, and the pioneers of the West often helped to sustain their live stock during winter by the coarse forage furnished by the soft wood and large, almost succulent buds of the branches of trees out down for the purpose. The lumber, though inferior for most purposes to the hardwood species, was, and is still, used to a considerable extent in some parts of the country, and the Cotton-woods are planted more numerous than any other trees in the new forests that are rapidly spreading upon the borders of the great plains. These will effect the double purpose of furnishing abundant supplies of fuel and timber in a few years, sheltering the open country, rendering it more habitable as well as more productive in cattle and crops. But, best of all, they will enable the forest planter to introduce other and more valuable kinds of trees for the future wants of the people that are destined to cover these vast areas, that have been heretofore but desert steppes, so far as human habitations were concerned, and only roamed over by hordes of savages and by herds of the ruminant buffalo of the plains. With great diffidence the determination of some of the species has been reached by the writer, who gracefully bows to the magnates of botanical science; but where even these are in doubt, who shall decide? There is some uncertainty as to the designations given to these plants by botanists, some of whom, perhaps, had only herbarium specimens, and the unsatisfactory descriptions of non-scientific, though intelligent, travellers from which to make up their diagnosis.

**P. ANGULATA** (the Carolina Poplar).—Michaux says this species, which he first met under the name of Carolinian Poplar, was found in the south of Virginia, and also on the Mississippi and Missouri rivers, growing with the Cotton-wood, his *P. canadensis*. He describes it as a tall-growing and upright tree, which is the character of the

Carolina Poplar as now known. The buds are short, dark green, and destitute of the viscid resin found on these of the Cotton-wood proper, and on most other Poplars. This is believed to be the tree so prevalent in Belgium, where it is planted along the lines of the canals, for which position it is peculiarly adapted by its upright habit, that is persistent even when grown singly.

**P. CANADENSIS** (the Cotton-wood) is considered by our excellent botanist, Dr. Gray, to be the *P. monilifera* of Aiton, and the same also as the *P. laevigata* of Willdenow. However, Wood's No. 5, *P. monilifera*, after Aiton also, seems to be different, and he gives its habitat, "on the Hudson, near Troy, New York," and quoting Dr. Beck, "apparently native." Michaux found this species as far north as latitude 43°. It is abundant in the Black Swamp of north-western Ohio, and fine trees may be seen on the bank of the river below Detroit, Michigan. Michaux describes the tree as larger than *angulata*, and the bark as thicker and more deeply furrowed, having also a rounder head, and with the boughs more numerous branched. This character of the outer bark has attracted the attention of the fishermen on our great lakes, who utilize it as a substitute for the more costly bark of the Quercus alba, or Cork. Sections of this substance, often 3 in. thick, turned into oval form and perforated, are used as floats to their gill-nets. Michaux reports this species rare on the Atlantic slope, but very common in the Mississippi valley, especially above the mouth of the Arkansas. The Cotton-wood is the chief source of the steamboat fuel used on our southern rivers.

**P. MONILIFERA** (the Virginian or Swiss Poplar), does not appear to have been found in this country by Michaux, father nor son, but they say it is extensively cultivated in Europe, especially in Switzerland and France, though the males only are found there. The young shoots of this species are angular. Comparing it with the Cotton-wood, M. Foucault says the leaves are smaller and less distinctly heart-shaped; the young shoots and twigs are smaller and less angular, becoming cylindrical in the third year, and the limbs are less divergent than those of the Cotton-wood. It also grows faster, and succeeds in drier soil, hence its popularity in France. The wood is said to be softer than the Cotton-wood of Michaux, or *P. canadensis*.\* Dr. Torrey found it in Western New York, on Lake Oneida, and on the Genoa River.

**P. ARGENTEA** (or the Cotton Tree), and according to Gray the *P. heterophylla*, is found in the Middle, Western, and Southern States. Michaux refers to Fort Massac, on the Ohio River, and to a large swamp in Southern Illinois, as its habitats. The tree is large with thick bark, and the shoots are round, the leaves very downy when young, becoming large when expanded, and having the lobes at the base overlapping each other. The wood is described as inferior, becoming yellowish at the heart. These trees would probably receive the common name of Cotton-wood among our Western wood-choppers; indeed, they bear a very close resemblance and have close analogies, which might very properly be referred to a conference of eminent botanists and foresters for a settlement of the questions which now exist. The sub-group of Poplars, which has been consolidated, embraces kinds more dissimilar than some of the Cotton-woods that are still recognised as distinct species.

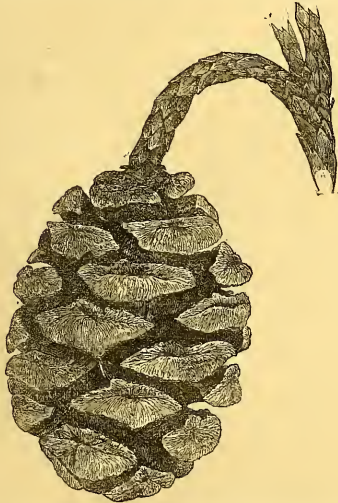
In this hasty review of a numerous genus, which occupies so large a space in the northern temperate regions, the endeavor has been made to compress a great deal within the limits of an article for the "Journal of Forestry." Perhaps too much has been attempted, and much certainly has been introduced to enable the reader to follow intelligently. For the sake of brevity, all new botanical descriptions have been omitted, but these can readily be found by the student in the works of the authors referred to in the text.

### THE "BIG" TREE.

So much as been written about this vegetable wonder since its discovery by Lobb, in 1853, that there is scarcely an excuse left us for more than mentioning it. Philosophers and poets of the highest modern order have treated us to some of the finest English measure respecting it and its more immediate surroundings. They have given us the imaginary size and height of its larger members, and now the prosy, matter-of-fact chief of the State Geological Survey of California (who was paid for his dry figures) has reduced the "big" trees to an actual average height of 250 ft., the maximum height being 325 ft., thus bringing it within the level of the Oregon Red Cedar (*Thuja gigantea*), *Picea grandis*, and *Abies Menziesii*, plants of which have been found—according to reports in THE GARDEN—that measured from 318 ft. to 325 ft. But though

\* This species is cited as *P. monilifera* (Moench) by Sirrioni in his *Mammal*, p. 237.

thus reduced to a height in common with its fellow-inhabitants of the North-West Pacific slope, it is yet known to contain within its thick shaggy bark more timber than any other known tree. Twenty-five years have elapsed since its introduction, and now one-year-old seedlings can be bought for £10 or even less per 1000, a price at which it finds a ready sale. Indeed, at this season of the year it is scarcely possible to find a respectable well-grown plant from 3 ft. to 6 ft. high in any nursery in Britain. I may mention that 3 ft. of the hundreds of thousands, that are annually raised from seeds a moderate percentage dies in the first and second years of their existence whether grown under glass or in the open ground. When out-of-doors the death-rate is greatest towards the end of summer, when the plants are growing rapidly, and when the soil is pretty well charged with moisture, and the atmosphere warm, moist, and sunless. At such a time and under such conditions the plants are succulent and completely gorged with crude sap, and it is probable that, owing to the want of sunlight to partially elaborate and eliminate the sap, it either bursts or rots the cells, and hence decay arises often only in a mere branchlet or branch, but frequently throughout the whole plant. Whether this be



One of the "Big" Trees (Sequoia—Wellingtonia—gigantes).

the correct explanation or not, certain it is that an abundance of sunlight and a partial drying of the soil will prevent the spread of the evil. Sunlight is not at the bidding of the arboriculturist, but he can, for the benefit of his young Sequoias, select a naturally well-drained light soil in which to grow them, and the less manure given at this stage of their existence the better.

As an ornamental plant in a small garden, this giant Sequoia (*Wellingtonia gigantea*) is not a success, or if so, only for a short time. Avenues of it have been planted, and, as respects the health and uniformity of the growth of the plants, with the best ultimate results; but the judgment in making use of the formal Sequoia for such a purpose is somewhat doubtful. Single specimens when in good health look well in extensive parks; and I lately saw it to advantage in the grounds at Stancliffe, near Matlock, where a few plants were growing on a steep, almost vertical bank, out of an undergrowth of Hollies and other shrubs. They stood out in bold relief against the romantic, yet artistically-adorned, cliff, from which, I presume, the place takes its name. It is as yet too expensive to be extensively planted as a common timber tree, but the day is probably not far distant when it may be profitably used for that purpose. Unfortunately I am unable

to speak of the quality of the timber. Its home is so far outside the home of civilisation, that I fear its timber has never been thoroughly tested. Its wood, however, is known to be soft and brittle, and of a light Cedar-brown colour. The woods of several of the members of the sub-tribe *Taxodium* (*Parlatore*), to which it naturally belongs, are of great economic value, and this is especially true of its nearest relative, *S. (Taxodium) sempervirens*, the Redwood. The Sequoia has proved to be perfectly hardy everywhere in Britain, for, although the foliage sometimes gets browned, it is more frequently the effect of wind and exposure than of cold. In its native mountains it has to endure a much greater degree of cold than it ever experiences here; but, tall as it is, it is so completely immured in the deep glens of the Sierras, that wind seldom reaches it. It is unreasonable to suppose that the young of a plant that has been thus tenderly nurtured for probably thousands of years are unlikely, when grown in Britain, to submit to less tender treatment. They require shelter from cutting winds, and must have it. Like the majority of plants of great commercial value, the Sequoia has its varieties. These are white-twigged, golden-twigged, golden variegated, and pendulous-branched kinds, all of which are very pretty in their way, but the latter, *S. gigantea vera pendula*, so named and distributed by the Messrs. Little & Ballantyne, Carlisle, is generally allowed to be a great horticultural acquisition.

The accompanying figure is from a drawing by Walter Dawson, of a California-grown cone. GEO. SYME.

**Cattle Poisoned by Eating Green Yew.**—That living Yew is as injurious to cattle as its drier state has been most fully exemplified on the estate of Geo. A. Everitt, Esq., Knowle Hall, Warwickshire, a very valuable horse and cow having succumbed to its poisonous properties, while a large number of other cattle were so severely injured by eating it that for the season they were comparatively worthless as milking cows. This occurred during the winter of 1876-77. The cow had broken through a fence into a covert in which Yew formed a part, and had, judging from the contents of the stomach when opened, eaten freely and died in apparently great agony a very short time afterwards. The horse had cropped the green ends of the branches of the trees that were hanging over the field in which it was grazing in company with the other cattle that were injured, and was being led into the stable a very short time afterwards when it fell and immediately expired. The fact of cows not being able to reach so high as the horse, and consequently failing to consume so large a quantity, prevented them from sharing the same fate. It is scarcely needless to state that all Yew trees within reach of cattle have been taken away on the estate, and the greatest care is observed in strengthening the fences and otherwise preventing ingress to any place in which the deadly shrub is growing—a hint that may advantageously be taken by all those who have charge of cattle, for, although a number of years may expire (as in the present case) without the animals eating the Yew, yet they are, of course, always liable to do so, and "prevention is better than cure." With regard to the common Laurel, we have here several large clumps that are periodically eaten by the cattle without, up to the present time, any apparent injury being done to them.—F. W. SILVER, in "Gardener's Chronicle." [It seems singular that the cattle should have received no injury from eating the leaves of the Laurel, which contain notable quantities of prussic acid.]

**Continental Forests.**—Elsass and Lothringen (Alsace and Lorraine) have long been famous for their wealth in forests. According to the report issued by the Imperial Commissioners of Woods and Forests, the entire forest lands of the newly-acquired province represent a value of about twelve milliards of marks. No less than 460,573 hectares of these forest land are State property, and are estimated to be worth 500,000,000 marks, or £25,000,000 English. In the year 1876 the woods yielded an income of 6,944,000 marks to the Treasury. The report has a table of the average annual value of a hectare of forest in Continental countries. In Elsass-Lothringen it is reckoned at forty-three marks, in France twenty marks (25 francs), in Prussia at nineteen marks. The cost of administration is far higher in the latter country.

**The Eucalyptus in California.**—Last season the Central Pacific Railroad Company planted 300,000 Gum trees on the lines of their roads. This winter they intend to plant 700,000 more. These set out by the company around their shops in Sacramento last season having made such rapid and healthy growth, the company are now planting 2000 additional trees, placing them in every available nook and corner around the works and along the track by the slough.

**Germination of Acorns.**—In this place (Lansing, Michigan) white Oak acorns germinate in autumn. The radicle pushes out and down into the leaves or soil often 3 in. or more. The petioles of the cotyledons grow out from the shell about  $\frac{1}{4}$  in. This enables the plumule to find plenty of room to start in spring. It is quite common to find two embryos in one acorn, and three embryos are not very rare.—"American Journal of Science."

## DISUSED GRAVEL PITS.

THERE are few who are not familiar with those tracts of land which exist near almost every large town usually called commons, heaths, or greens, and who are unacquainted with the necessity there is for retaining them as open spaces for public recreation. It cannot be too widely known that these commons, with their trees, shrubs, and plants, assist materially in purifying the vitiated atmosphere emanating from all populous districts. They are, so to speak, so many filtering beds, doing their work silently but surely. The principal use of these open spaces hitherto appears to have been to supply gravel, sand, turf, loam, peat, &c., for the neighbourhood in which they are situated, and to form grazing ground for a few horses, cows, sheep, &c., certainly giving no adequate return, considering their extent and value. In many cases they have been hampered by old and what should be obsolete laws, rendering them useless, or comparatively so, to all concerned. Within the last few years, however, a movement has been made in the right direction, and, so far as regards the metropolis, a goodly number of broad acres have been secured in perpetuity for the recreation of its teeming population, and that, too, at what may justly be termed moderate cost considering their immense sanitary value. What primarily strikes us upon going over these open spaces is the neglect into which they have fallen. Happily, however, the remedy is fast being applied, and great credit is due to the public spirit exhibited in the matter. It is, of course, both impossible and unadvisable to at once convert them into public parks with all their modern expensive adjuncts, but everything seems to tend in that direction, and that, too, in spite of cost, at least, so far as regards those which are in proximity to the great centres of commerce. So far, however, as respects the conversion of these commons into public parks, we must for the present rest and be thankful, and turn our attention to other works which may with advantage be carried out, such as drainage, fencing, formation of roads and paths, renewal of turf, &c. While, however, the absolute necessity for these works will be self-evident, there are others equally important which may escape attention unless brought prominently before those in whom the care of these open spaces is vested, and amongst these I venture to name the re-forming and planting of disused gravel pits. These afford, without doubt, one of those chances which rarely occur of doing a great deal of good work at a trifling cost. Upon some of the commons near London these pits are very extensive, and would, if properly treated, form landscape features of a high order. At present they are bare and unsightly, with the exception of a little Furze and Broom. Generally but little soil remains, 'tis true; still, much may be done with a knowledge of what is suitable for planting in such situations. In the majority of cases little need be done so far as the surfaces are concerned; in a few instances it may be necessary to slope down the banks, an operation which must, however, be carried out with great care, and only where absolutely necessary. In some instances water might be made to assist the designer; and in my opinion, where it is available and can be obtained at little cost, these pits would afford an excellent opportunity of displaying it to advantage. In all cases where soil is available the slopes should be covered to a uniform depth with it, say, at least, 1 ft. If any difficulty be experienced in getting soil, its use may be limited to simply putting some in each hole in which trees or shrubs are to be planted. It will thus be seen that much may be done at a trifling cost in the way of laying out such pits to advantage. The planting should be done firmly and somewhat deeper than usual, the nature of the soil being generally sandy. It is almost impossible to conceive what a great change the skilful carrying out of this work would effect; hill and dale could be worked out in miniature, and where water could be made available, really beautiful little landscapes might be created. This would be a simple and natural method of dealing with these pits, which, at present, are decidedly unsightly. I should most certainly deprecate any attempt at filling them up to render the ground available for cricket or football. The improvement which such changes would effect, in addition to the very moderate expenditure which they would incur, should, I think, recommend them to the notice of all interested in the matter of open spaces. The

list of trees and shrubs suitable for planting is a very large one. Conifers of various descriptions might be made to play an important part. Birch, Willows, Poplars, &c., are also extremely pretty in such positions, whilst Tamarisk, Broom, and similar subjects have likewise a very graceful appearance. My object, however, is not so much to give a list of trees and shrubs available for planting as to direct attention to the desirability of doing something towards the decoration of these disused gravel pits. CHARLES DENNIS.

*Southwark Park.*

## GRAVEYARD GARDENS.

THERE are few open spaces either in town or country that present features more depressing than those found in cemeteries or country graveyards. A few sombre trees may be seen here and there sometimes planted with judgment, sometimes without, but generally of a heavy, funereal aspect, and nearly all the rest is a wilderness of mounds, headstones, pretensions tombs, and monuments, much long rank Grass, and seldom any attempt to produce elements of beauty or of cheerfulness. That this is largely the case in rural graveyards is patent to all who care to visit them. A modern graveyard, on the other hand, resembles a newly-built neighbourhood, where all is in a transition state; the more recently erected tombs are all clean, the more recently made mounds are bare clay and gravel; there is little that can be termed sacred, but much that is tawdry. We want an entire revolution in our graveyards; we want their sombre and harsh aspects abolished, and instead thereof a purer and more fitting respect paid to the memories of the departed by converting the precincts of their last resting-place into a pleasant garden. To sweep away all the evidence of the stonemason's craft would be a worthy beginning, and with that all mounds and wooden erections, however humble or however emblematic; these I would replace with simple zinc plates supported by wire and iron supports, around which might be trained Ivies, Roses, Clematises, Honeysuckles, and all kinds of hardy climbers, thus leaving the name plates exposed and so fixed as to enable a future generation to take them off, and at any time re-write them. The surfaces of all graves should be little gardens, surrounded by an edging of wirework or some other elegantly made material, and on each should be cultivated a few dwarf flowers, such as the taste of the surviving relatives might dictate or their circumstances enable them to obtain. Here at once are introduced elements of beauty and cheerfulness, and not least of cheapness, as the requisites may be obtained at a comparatively trivial cost, whilst the attention necessary in all future time may well be the duty of the graveyard attendants, who should receive a sufficient salary to enable him to keep his garden so neat and so pleasant as to make it at all times a loved resort of the living. Only one such a grave garden have I yet seen; it is in a humble churchyard, and is now all abloom with pretty spring flowers, Daisies, Primroses, Forget-me-nots, Hepaticas, and topped over with fine Cocoa-nut fibre refuse, and enclosed with a low edging of wirework. To maintain the neatness is but a labour of love, and grave gardens will more fully than in any other way serve to perpetuate a sentiment for the dead, which should ever be that of fond remembrance. A. D.

**Weather Proverbs.**—The late trying weather has done less harm among spring plants than might have been expected. Some of the more succulent kinds, like *Dentaria digitata*, have been cruelly out, while *Orobus vernus* in sheltered situations is little hurt. The Japanese *Rosa Regeliina*, being in full leaf, has some of its points quite browned. The weather has been spoken of as quite exceptional. Some lines I learnt from my mother, who said that they were considered very old in Lanarkshire, would seem to show that in Scotland, at least, very severe weather was to be expected at the beginning of April. The lines are these, and I hope the Scotch is about right:—

Said March to Aprel,  
I see twa hogs at yonder stile;  
If ye'll gae me days three,  
I'll fa on means to gar them dee.  
The first of them was wind and weat,  
The second of them was sna and sleet;  
The third of them mak sic a freeze,  
Made all the birds' nebs stick to the trees.  
When they three days were past and gae,  
The silly pair hogs cam birplin hame.

The three bad days have often been noticed in England, but the season being earlier, they usually come in the last week in March. I may add that hogs mean yearling sheep.—GEORGE F. WILSON, *Heatherbank, Weybridge Heath.*

## THE FLOWER GARDEN.

## VARIEGATED NEW ZEALAND FLAX.

(PHORMIUM TENAX VARIEGATUM.)

In the *Revue Horticole* of March 1 M. Carrière gives the following account of the variegated variety of the New Zealand Flax, of which the annexed is an illustration: This plant is one of the most vigorous of the varieties of *Phormium*, and is readily recognised by the size of its leaves, which are larger than those of any of its congeners. In addition to this, they spring obliquely from the stem, growing in an arched form, sometimes even bending over at the extremities. They are variegated with beautiful yellow streaks from one end to the other, the markings being separated by green lines. The flower-stalks often grow to the height of 6 ft. or 7 ft., and are covered with long, reddish bracts, which soon become dry. The flowers are numerous, and the bracts soon fall off, often before the blossoms have opened. The flowers are thickly crowded together, and are of a dark brick red. The seed



The Variegated New Zealand Flax in Flower.

vessels are borne on short stalks, and are of a dark reddish-brown. The specimen from which the annexed figure was taken was planted out in the open air in the Paris Jardin Fleurist. It was well protected from cold during the winter. Although a large number of shoots have been taken away from it every winter, for the purpose of keeping up a supply of fresh plants, it is still more than 3 ft. in diameter. Last year it was artificially fertilised, and produced a large number of pods full of excellent seeds. If sown as soon as they are ripe the seeds soon spring up, but, up to the present, all the sowings that have been made have never reproduced the variegated kind, the leaves in every case being plain green. In spite of this circumstance M. Carrière recommends his readers not to neglect sowing the seed of the variegated kind, for although there seems little chance of obtaining specimens of the striped variety amongst the seedlings, the resulting plants are much more vigorous and the leaves much larger than is the case with the parent species. C. W. QUIN.

**Dwarf Gladioli.**—Those who care for useful and exceedingly beautiful plants for cutting late in summer, both from the conservatory and open border, should try *Gladiolus nanus*, a delicate salmon-coloured hybrid, 18 in. in height, with crimson spots on the lower petals. M. Van Houtte, in his catalogue, states that when grown out-of-doors it requires protection with litter, but my patches of it here have been uncovered throughout the winter, and are now very robust, and none the worse for the sharp frosts which they experienced last month. The price of *Gladioli* is so small, the better kinds being only 10s. per 100, that they are within reach of those who possess the smallest gardens.—E. F., *Petigards Hall, Swaffham*.

**Ivy on Stakes.**—The illustration (see p. 286) recalls to my recollection some excellent examples of this style of growing Ivy, which I saw recently on a Grassy slope by the edge of ornamental water—dense masses of Ivy with no visible supports. I was inclined to think that they had overgrown and smothered some low bushes, but on inquiry I found that it was only a single plant of Ivy that in the first instance had been tied to a stout stake and afterwards allowed to train itself. This it has done effectually, and some beautiful symmetrical heads of glossy foliage, thickly interspersed with jet black berries, formed very pleasing objects presentable at all seasons. Doubtless all the vigorous-growing, plain-leaved varieties of Ivy would conform to this mode of culture, but if variegated varieties be employed, some means of restricting the roots must be adopted, or over-luxuriant growth would in most instances be found to cause them to revert to their original forms.—J. GROOM, *Henham*.

**Old Pelargoniums for Planting in the Flower Garden.**—Where large quantities of Pelargoniums are required for summer decoration, it is much better to retain a good supply of old plants than to trust exclusively on fresh-struck cuttings. When the beds are cleared in autumn we go over all the sorts that are desired for the following season, and, selecting all the healthiest plants, cut them down quite close, shortening the long straggling roots; they are then packed thickly into cutting boxes in fine, light soil, and kept rather dry. During the winter they are kept as cool and airy as possible in fruit houses at rest, and in spring, when vegetation becomes more active, they are shaken out. The best-shaped plants are potted for vases and window boxes, and the remainder is tied up in Moss with a handful of soil and set closely together in brick pits, where they can be fully exposed on favourable occasions until required for planting out. By using a good proportion of these plants the beds may be pretty well filled at once, and an early display of bloom secured. In moist seasons young plants are liable to run too much to leaf instead of to flower, whereas old out-down plants flower profusely in all seasons, while for single specimens in vases plants with dwarf, bushy habit are indispensable; and few plants so well withstand the trying conditions under which they are thus placed and furnish such good results as these. Single specimens in small vases of distinct colours, or large vases filled with mixed varieties and edged with the beautiful trailing varieties of the Ivy-leaved section, will be found as continuous and satisfactory as any plants grown.—J. GROOM, *Henham*.

**Plants that Flowered in March.**—The following is a list of plants which flowered in March. On looking back, I find that in January twenty species, belonging to thirteen Natural Orders, opened their flowers; in February, forty-seven species belonging to nineteen Natural Orders; in March, we have a total of seventy-three species, belonging to twenty-six Natural Orders. They are as follows: March 1. *Vella Pseudo-Cytissus*, *Mycotis alpestris*, *Scilla bifolia alba*, and *Dentaria digitata*. 2. Large double Daffodil, *Primula purpurea*, *Cardamine trifolia*, and *Viola collina*. 3. *Puschkinia scilloides*, *Saxifraga hispida*, and *Corydalis cava*. 4. *Lamium levigatum* and *Dielytra canadensis*. 5. *Berberis nepalensis* and *Hyoscyamus orientalis*. 6. *Narcissus polyanthus* and *Anemone apennina*. 7. *Corydalis bracteata* and *Milla uniflora*. 8. *Muscari sygca*, *Othonna cheirifolia*, and *Orobus vernus plenus*. 9. Double Periwinkle, *Orobus alpestris*, *Palmatoria sibirica*, double *Narcissus*, and N. bicolor. 10. *Anemone hortensis*, *Hyacinthus amethystinus*, *Alyssum saxatile*, and *Fritillaria montana*. 12. *Erythronium giganteum* and *Narcissus multiflorus*. 13. *Porsythia suspensa*, *Narcissus biflorus*, and *Iberis sempervirens*. 14. *Anemone nemorosa*, *Myrrhis odorata*, and *Narcissus Basilman-major*. 15. *Iris pumila*, and *Ceanothus Veitchianus*. 16. *Odonis vernalis*, *Muscari botryoides album*, *Helianthemum arcuatum*, and *Doronicum Columnæ*. 17. *Porsythia viridissima*. 18. *Anemone palmata*, *Ranunculus montanus*, and *Potentilla verna*. 19. *Scrophularia verna*. 20. *Primula decora alba* and *Apongeton*. 21. *Kerria japonica* and *Menziesia empetriformis*. 22. *Lilium grandiflorum* and *Hannuculus amplexicaulis*. 23. *Narcissus Trewianus*. 24. *Fritillaria Melegaris*, *Stellaria Holcista*, and *Geranium fumaricæfolium*. 26. *Rhododendron Chamæcistus* and *Centranthus ruber*. 27. *Lnaria rediviva*, *Anemone bracteata*, and *Narcissus angustiflorus*. 28. *Fritillaria contorta*,

Saxifraga cespitosa, and Cydonia Gonjardi. 29. Ranunculus gramineus and Primula decora. 31. Corydalis nobilis and Narcissus incomparabilis plenus.—H. W. MOORE, *College Botanic Garden, Dublin.*

## ROSES.

MAY QUENNET, figured (see p. 286), is the best rosy-magenta I have ever seen, La Rosière the best dark, or say equal to John Keynes. Duchesse de Vallombrosa, from the coloured engraving, does not take my fancy as much as Captain Christy, but perhaps the delicacy of the blush colour may be impossible to show. In many of the suburbs of our towns the soil is poorly adapted for the culture of Roses, and therefore it must be made so by liberal dressings, in the autumn of the year, of very rotten manure composed of whatever is most easily procured; and decayed leaves and old turf form a good addition. A few useful and hardy kinds may consist of Safranot, Solfaterra, Céline Frestier, and Devoniensis for climbers; for standards choose Gloire de Dijon, John Hopper, Madame Falot, John Keynes, Mrs. Bosanquet, Jules Margottin, Eugène Appert, Charles Lefebvre, and Madame Rothschild. These I always grow, and for general use think them equal to any; but if the intending Rose-grower possesses over so small a greenhouse, he can without heat grow Maréchal Niel, an abundant bearer, under favourable circumstances, splendid in shape and colour, and with very full centres. The only other Rose for the greenhouse is Niphotos—unfit for out-of-doors, but perhaps the most delicately white of white Roses.

EUGÈNE E. P. LEEGE.

Litton Cheney, Dorset.

**Late Pruned Roses.**—Those who deferred pruning until late in March this season have reason to congratulate themselves, as the bright weather in the early part of the month induced rapid growth, and had they been pruned close all the buds would have been forced into growth, whereas where unpruned the leading shoots have carried off the superfluous sap, and plenty of dormant buds are left, unscathed by the late inclement weather, for although we do not as a rule experience such severe frosts as in more inland places, I find that it has been sufficient to leave its mark on Roses as well as on other plants, and those who pruned early will probably find that their supply of Rose blooms will be more limited than those who adopted the late method.—JAMES GROOM, *Henham.*

**Roses that Bloom Freely, and Roses that do not.**—We have covered the back of our conservatory wall, which is brick about half way up, the remainder being glass, inside with Roses, and more than half of it is devoted to a fine old plant of Gloire de Dijon, which produces an abundance of fine blooms, of which I have counted more than 600 on it at one time. By the side of it I have a strong four-year-old plant of Reine d'Or which last year bore a few blooms. It made good growth each year, and last season some of the shoots measured from 12 ft. to 15 ft. in length. I tied them down exactly as I did those of Gloire de Dijon, and expected a profusion of bloom. Gloire de Dijon is just coming into flower, as usual, but Reine d'Or shows nothing but leaves, which I admire, but I want flowers as well. Climbing Devoniensis I have growing up an iron rod in a border in the front of the conservatory; it is of the same age and quite as strong as Reine d'Or, and it too has not yet bloomed. I have pruned down to the hard wood, but no further. Will some of your readers who have had better success with these Roses kindly give me a hint or two in reference to them?—WILLIAM HOUGH, *Oaklands, Hyde, Manchester.*

## NOTES AND QUESTIONS ON THE FLOWER GARDEN.

**Calceolarias in Trenches.**—The readiest way of protecting these from late spring frosts is to transplant them into trenches, similar to those used for late Celery. We have just transferred our stock with good balls of earth into trenches 3 ft. wide and 1 ft. deep; a few cross bearers are then laid over the trench, and at night or during hail or snowstorms they are covered with long canvas screens, or evergreen branches which be substituted until the beds are cleared for their reception.—J. GROOM, *Henham.*

**White Flowers.**—A young friend found at Ribyl, late in the summer of last year, a flower of the Scabiosa arvensis perfectly white. We have also met with a root of Ononis arvensis, the flowers of which were white. The lovely little Harebell, or Bluebell (*Campanula rotundifolia*), I have often met with white, as well as blue; indeed, we had large tufts of both colours growing in our garden. The Scilla nutans is also often to be met with white, and even pink. We have from childhood been taught to call the Scilla nutans the wild Hyacinth, and the Campanula rotundifolia the Bluebell; this latter name is in Staffordshire mostly applied by the country people to both plants without any discrimination.—E. EDWARDS, in "Science Gossip."

## THE INDOOR GARDEN.

## INDOOR WINTER-FLOWERING PLANTS.

AMONGST winter flowering plants requiring a temperature of from 55° to 60° *Poinsettia pulcherrima* may be justly considered indispensable. It begins to flower during the depth of winter, producing immense heads or clusters of bracts measuring sometimes as much as 18 in. or 2 ft. in diameter, and remaining in perfection for several months. It is readily propagated by means of cuttings or eyes, which should be inserted as soon as the flowering season is over, or say early in March, and as most growers prefer young plants, the old ones are generally discarded as soon as the success of the inserted cuttings or eyes can be ascertained; but, if desired, old plants may be retained with advantage another season, and when that is the case they should be carefully cut in, and for a time kept dry until the wounds have fairly healed, when the pots containing them should be plunged in a slight bottom-heat in order to induce the production of young shoots. When these are 1 in. or 2 in. in length the plants should be re-potted, or the same sized pots may be used again with a portion of fresh soil. They will then form suitable plants to flower the second season. Cuttings should be formed of the young shoots, selecting such as are somewhat short-jointed and not too strong, while the stronger or partially ripened shoots may be split down the centre and cut into pieces of about 1 in. in length, each having an eye or slightly developed bud in its centre; these, like the cuttings, should be inserted in well drained pots filled with a mixture of leaf-soil and sharp silver sand, and should be placed on a slight bottom-heat under a hand-glass in the propagating house. Nearly every cutting or eye will grow, and when roots have been freely formed they should be potted off singly into small pots and shifted into larger ones as may be required. All should be in the pots in which they are intended to bloom by the middle of August. Plants occupying pots some 6 in. or 8 in. in diameter, bearing each a single head of bloom, will be found to be exceedingly useful for decorative purposes, while two-year-old plants should occupy larger pots, and will produce several heads of bloom which are useful in a cut state; they will be found to keep long in good condition when placed in water. The only difficulty likely to be experienced is keeping them in a dwarf state. In order as far as possible to do that, the plants during the summer months should occupy a cold pit, and should be kept as near the glass as possible with abundance of air, and they should be lightly shaded during bright sunshine. Early in November they should be taken into the stove or warm conservatory, and they will generally be in full beauty at or soon after Christmas. As a method of obtaining very dwarf flowering specimens of these plants, the top portion of the bracts may be cut off to any desired length as soon as the bracts are perceptible; the portions so removed should be inserted as cuttings in small pots of sandy soil, and placed in a close propagating case where they will soon form roots; they should then be gradually exposed to the atmosphere of the structure in which they are placed, and when well rooted they should be re-potted into larger pots. Plants may thus be obtained of any desired height, but large and fine heads of bloom can hardly be expected to be the result of this method of treatment. The soil most suitable for these plants is a mixture of turfy loam and peat or leaf-mould—about two parts of the former to one of the latter.

There is also a variety of *Poinsettia* with white bracts in cultivation, and a very marked contrast it makes to the scarlet kind. Of late, too, as is well known, a double-flowered variety has been added to collections. This is found to be somewhat later than the ordinary kind in coming into bloom, and, being equally persistent, considerably prolongs the season during which these fine winter plants are in perfection.

*EUPHORBIA JACQUINIEFLORA* belongs to the same Natural Order as the *Poinsettia*, and is, like it, an exceedingly useful winter-flowering plant, beginning, as it does, to open its bright scarlet flowers about Christmas, and continuing in great beauty until the middle of March or even later. The blooming shoots, too, when cut and placed in water have the property of remaining long in good condition. It is somewhat straggling

in habit, and young plants of it are generally preferred to older ones. Therefore, cuttings of it should be inserted as early in spring as they can be obtained. When the flowering portion of the shoots has been cut, young shoots will soon after that be produced, and these should be taken off with a heel, and will soon root if inserted in a mixture of silver sand and finely-sifted leaf-soil; or the lower portion of the shoots which have borne flowers may be formed into cuttings, and will root freely. These, when well rooted, may be potted singly in small pots, or, in order to obtain bushy or well-furnished specimens, three or four may be placed in one pot. As soon as the small pots are filled with roots they should be shifted into their flowering pots, which need not exceed 6 in. in diameter. During summer the plants may occupy a cold pit, and should be kept as near to the glass as possible, and removed into the stove early in November. A suitable soil for them may be composed of about equal parts of turfy peat and loam, with a portion of silver sand, and the pots used should be well drained.

**HEBECLINIUM LANTHINUM.**—This requires a stove temperature. Its season of flowering is during the months of December and January. The flowers are produced in graceful plumes of a soft mauve colour, and as they are produced in considerable abundance, the plant is exceedingly useful for decorative purposes, as well as for the production of flowers for cutting. It is easily increased by means of cuttings, which should be inserted early in spring; they should be potted off singly as soon as they are well rooted, and the plants should be grown on as rapidly as possible. They are by no means particular as to soil, and may be successfully grown in peat or in a compost similar to that generally used for Pelargoniums and other soft-wooded plants. Plants in 6-in. pots raised from cuttings inserted early during the preceding spring are generally found very useful for purposes of decoration, and, if larger specimens be desired, such plants may be cut back when they have ceased flowering and grown on for another season. During summer they should occupy a cold pit, kept somewhat close, and should have abundance of water.

**SERICOCRAPHIS GHIESBREGHTII.**—This is also a winter-flowering plant requiring similar treatment to that recommended for Hebeclinium. Its flowers are produced in long depending racemes of a rich scarlet colour. Well-grown plants of it have a peculiarly graceful appearance, which render them very useful for decorative purposes. It is easily increased by means of cuttings, which should be put in early in spring.

**ERANTHEMUM PULCHELLUM.**—This is a very old winter-flowering stove plant, invaluable on account of the colour of its flowers, which are bright blue. It is of easy culture, and is readily increased by means of cuttings; it will succeed in any ordinary, not too rich, soil.

**JUSTICIA SPECIOSA.**—This is also a plant which flowers during the depth of winter. The *Justicias* are nearly all easily grown, and if cuttings of them be inserted early in spring, they will form useful flowering plants during the ensuing winter. The flowers of *J. speciosa* are of a light purple or pink colour, and are useful in a cut state.

**CYPRIPEDIUM INSIGNE.**—This pretty terrestrial Orchid may be grown in an ordinary greenhouse temperature, where it will generally flower in August. It does better, however, where it can be afforded the temperature of a stove, in which it will generally bloom twice during the year, and seldom fails to do so during the month of January. A soil consisting of turfy peat, a portion of loam, and a few lumps of charcoal appears to suit it. The flowers, which are large, are very ornamental, and, like those of all the *Lady's-slippers*, peculiar in form. They remain long in perfection, more particularly when produced in winter, and even when cut and placed with other flowers in water they have been known to keep fresh for upwards of a month. The plant is easily increased by division.

**CENTRADENIA FLORIBUNDA.**—This is an old, easily-grown stove plant, and, considering its merits as a decorative plant in winter, it is strange that it is not more extensively grown than it is. Its flowering season may be said to embrace the entire winter, or at least six months in the year. It forms itself into a compact globular bush, its numerous shoots requiring aid from

neither stake nor tie, while each branch furnishes a continuous supply of neat pale pink flowers. Pots of some 6 in. or not exceeding 8 in. in diameter appear to be the size most suited to it, and it succeeds in a soil consisting mostly of light rich loam, with a portion of either peat or well-decayed leaf-soil. Early in April the plants, although still in bloom, should be cut close in, when it will be perceived that young shoots are beginning to develop themselves as the base of the old ones; these form the flowering portions of the plant for the succeeding winter. Plants of this should now be kept somewhat dry for a time, without, however, entirely withholding water. When the young shoots have attained to the length of 1 in., more or less, they may be slightly thinned out, and these, if desired, may be formed into cuttings, which will root freely if inserted in the usual method and placed under a hand-glass in the propagating pit. The old plants should be taken out of their pots, and their balls should be considerably reduced, and they should be returned to the same pots with the addition of fresh soil, or pots of larger size may be used if thought desirable. It will thus be seen that the same plants may be grown for many years. Cuttings inserted in April will make good specimens in 6-in. pots for the second winter, and to encourage their growth they should not be allowed to bloom until that time has arrived. A somewhat close pit is a suitable structure for them in summer.

**CENTRADENIA ROSEA.**—This is, I believe, an earlier introduction than *C. floribunda*, and what has been said respecting the latter applies also to *C. rosea*. The flowers are of the same colour, size, and shape as those of *C. floribunda*; the habit of the plant is also the same, or nearly so, but the foliage is of a somewhat darker shade of colour. Could a variety of either of these plants be by any means obtained bearing flowers of a more decided colour, such as an approximation to scarlet, it would doubtless be considered as an invaluable acquisition for decorative purposes.

**BEGONIA INSIGNIS.**—This is an old species of a somewhat straggling habit of growth, but it blooms during the depth of winter. Its flowers, which are pink, are very useful in a cut state. Old plants of it should be cut close down about the end of March, and afterwards re-potted; they will again furnish flowering shoots for cutting during the ensuing winter, and cuttings of them may at the same time be inserted, which will produce plants sufficiently strong to bloom at the same time.

**BEGONIA MANTICATA.**—This is also an old but very handsome species, which generally commences to flower early in January. The blossoms are thrown well up above the foliage, which, as well as the flowers, is of a very ornamental character. In any structure where a minimum temperature of 55° can be maintained a few plants of this *Begonia* cannot fail to produce a pleasing effect during the months of January and February. It is propagated by means of cuttings, but, as the shoots are of a succulent character, the cuttings, after being made, should be allowed to dry for a few days before they are inserted; when this has been done, the pots containing them should be placed upon a shelf in a temperature of 60°, and when they have become well rooted they should be shifted into larger pots as may be found necessary.

**BEGONIA METALLICA.**—This pretty and distinct plant blooms early in spring, but the blossoms are, possibly, of less importance than the leaves, which are very ornamental, the upper surface being of a dark, shining, metallic colour, while the under sides are pale green beautifully veined with bright red. When in a position in which the foliage comes between the eye and the light the effect produced by it is remarkably pleasing. Altogether, the plant is very ornamental at all seasons of the year. It is increased freely by means of cuttings inserted in a mixture of sand and sifted leaf-soil.

**BEGONIA FRUEBELI.**—This is one of the most distinct and beautiful of the tuberous-rooted section. Its flowers, which are produced well above the foliage, rival in colour even the most brilliant of the scarlet *Pelargoniums*. The upper surface of the leaves is bright green, while the under side is thickly covered with white hairs. When intended to flower during winter the tubers will at rest should be kept as cool as possible, in order to prevent them starting too early. When they have

fairly commenced growth, however, they should be re-potted and grown on in a cold pit, keeping the plants pretty close to the glass, and by the end of September or early in October most of them will be more or less in bloom. They should then be placed in a structure in which the temperature will not be allowed to fall much under 55°; under such conditions they will continue to produce their large bunches of brilliant scarlet blooms throughout the winter. Begonias are not particular as regards soil; they will, however, thrive best in a compost formed of, say, two parts light, rich fibrous loam, and one part peat, or leaf-soil. P. GRIEVE.

Culford, Bury St. Edmunds.

**Free-flowering Cereuses.**—I am glad to see Mr. Croucher, who is so well qualified for the task, directing attention to some free-flowering Cereuses in last week's GARDEN (see p. 290). Such notes as these might be extended to the great advantage of cultivators, and the solid enrichment of gardens. A list of the best Cactusee to grow for decorative effects, with cultural instructions, might tend to restore these plants to their proper place in general collections. In the olden times, when Mr. Green's Cactusee used to hold their own against Mrs. Lawrence's stove and greenhouse plants, and Mr. Farmer's Orchids at Chiswick and the park, almost everyone grew a few Cacti, while a fair collection of them was by no means rare. Some of the commoner sorts were also exceedingly well shown. I remember my late friend, Mr. W. Allan, then gardener to Lord Rendlesham, showing an enormous plant of *Cereus speciosissimus* with over fifty open blooms on it, and as many or more large buds. Even the night-flowering *Cereus* was then comparatively common, and cultivators used to invite their friends to meet and watch this, and enjoy to the full the almost overpowering, but delicious, perfume of this species. I shall never forget my experience of this sort, nor a fact which I thought I discerned at the time, viz., a sort of momentary glory or luminosity proceeding from the flower when at its meridian. This, of course, was years before the luminosity of flowers was heard of. Has Mr. Croucher any facts to offer on this head? Apart altogether from the scientific interest attached to Cacti, which is very great, they deserve to be more generally cultivated than they are for their decorative value, and I trust that Mr. Croucher will comply with my suggestions.—D. T. FISHER.

**Broken Rocky Margins to Artificial Water.**—These offer opportunities for charming effects to the planter happy enough to possess them. Islets of this kind artistically formed constitute a pleasing feature in good water, and they have a use of which some of their designers never thought, in the culture and preservation of a variety of hardy flowers, quite at home in such places. It is often possible in such situations to establish little colonies of bog, marsh, or rock plants, which could not so easily be grown elsewhere. The safety from encroachment by coarser plants, the complete exposure with at the same time abundant moisture, and the power of isolating a species or a family where that seems desirable, make it clear that such spots might be made much better use of than leaving them to Briars and weeds, though even with these they are charming.

Two blooms of a very fine variety of *Cactleya amethystina* have been sent to us from Down House, Blandford, by Sir William Marriott.

## PLATE CXXIII.

### THE LONG-LEAVED BUTTERWORT.

(*Pinguicula Vallisneriifolia*.)

THIS beautiful species differs from others of the genus in its clustered habit of growth, six, eight, ten, or even twelve crowns being sometimes densely massed together in one clump. Its leaves are of a pale yellowish-green, sometimes very thin in texture and almost pellucid, linear or linear-oblong, erect in the tufted plants, and undulated at the margins. Towards the end of the season they become much elongated, not unfrequently measuring 4 in. or 5 in., and occasionally even 6 in. or 7 in. long. The flowers, which are large, are of a soft purple or lilac-purple, with large white or pale centres. The lobes are more spreading than in *P. grandiflora*. Dripping fissures and ledges of calcareous rocks (frequently in tufts) suit it perfectly. It requires very free drainage, continuous moisture, and a very humid atmosphere. It comes from the lofty mountains of Spain.

Amongst other species worthy of note may be mentioned:—

**The Great Irish Butterwort** (*P. grandiflora*).—This rivals the preceding in beauty. Its flowers are more compact, nearly if not quite as large, and uniformly of a decided blue-purple. The leaves, which are broad and spreading, lie flat upon the rock or soil. It prefers the shady side of a moist, mossy rock where the face is steep and the narrow chinks are filled with rich loam. If planted in earth alone, where the drainage is imperfect, we find that *P. grandiflora* often—indeed usually—perishes in water. The white centre of the flower is much smaller than in the preceding species. The blossoms are borne four or five from one crown, the crowns being usually solitary—a natural



Broken Rocky Margin to Artificial Water.

result of their dense, wide-spreading leaves.

**The Alpine Butterwort** (*P. alpina*).—This differs from all the other species in having white flowers, with more or less lemon-yellow stains on the lip, and having its lobes sometimes tinted with pale pink. It is smaller than *P. vulgaris*, which it resembles in general habit, but has more tapering leaves, of a reddish-brown hue beneath. It roots firmly, by means of strong woody fibres, in peaty soil, mingled with shale or rough gravel, in shady humid positions, such as are afforded by high rockwork with a north aspect, or the shelter of a north wall.

**The Common Butterwort** (*P. vulgaris*).—This is too well known to require description. It grows freely in any sunny position in rich moist peat or peaty loam. A small form, with leaves almost exactly resembling those of *P. alpina*, both in form and colour, occurs in Alpine bogs in the north of England, which may possibly prove to be the *P. leptoceras*.

**The Pale Butterwort** (*P. lusitanica*), found on the west coast of Scotland and in Ireland, is smaller than any of the preceding, and has pale yellowish flowers. It grows in peaty bogs exposed to the sun.

For the opportunity of figuring this pretty and distinct species of Butterwort we are indebted to Messrs. Backhouse, of York, who grow such plants very successfully.





GARDEN BOTANY.

(Continued from p. 318.)

FORMS OF ROOTS.—Some idea of the diversity of form as-



95.—Young Turnip with a tap root.

sumed by roots may be gathered from the paragraphs on germination, but many roots do not develop their characteristic

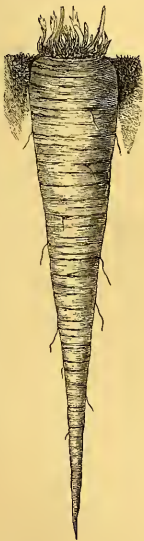


Fig. 96.—Tap root of Carrot.

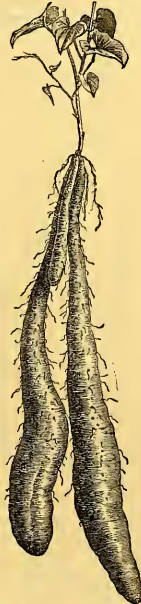


Fig. 97.—Tubercles of Dioscorea Batatas.

root, as in Grasses, the Melon (fig. 91), &c., and the tap root, as in the Oak (fig. 90) and the Turnip (fig. 95). The tap root, which is the direct prolongation of the radicle, may soon be replaced by other roots from successively higher parts of the base of the stem, as in the Date Palm and many others, or it may ramify itself, and these ramifications soon exceed it in size, as in the majority of dicotyledonous plants, or it may increase to an enormous size, and only bear lateral branches in the form of slender fibrils, as the Parsnip and Carrot (fig. 96). In some instances the tap root soon ceases to elongate, as in the Turnip, and grows very thick. Between the most delicate of fibrous roots and tap roots of great volume there is every intermediate gradation. The tuberous roots of some of the Yams (fig. 97) are sometimes 3 ft. or 4 ft. in length, and upwards of 40 lb. in weight. Asparagus has crowded, fleshy, cylindrical roots; the Cucumber produces an intricate network of very slender fibrous roots. The roots of the Dropwort are fleshy, with distensions here and there. Our native Orchids have fleshy, spherical, or palmate tubercles, and the common Flewort (*Ranunculus Ficaria*) owes its popular name to its cluster of short, round, fleshy roots.

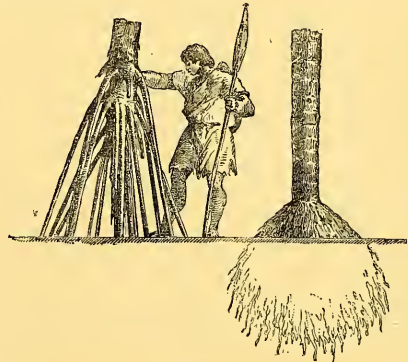


Fig. 98.—Mode of rooting of many Palms, the so-called stills of the *Paxiuba* Palm.

**NORMAL AND ADVENTITIOUS ROOTS.**—It has already been explained that the root system of Palms often consists of a succession of roots produced farther and farther from the original base of the stem after the disappearance of the radicular or tap root. All roots which are not tap roots or ramifications of a tap root are termed adventitious, and some botanists call them abnormal, but the latter term is misleading. The three rootlets or radicles which the embryos of some Grasses push forth almost simultaneously are just as much normal as the single radicle of the Oak; and it is open to question whether they should be called adventitious, inasmuch as they appear at determinate points. But the successive roots of Palms and Screw Pines (*Pandanus*) and many other trees do not. Some of the Palms (fig. 98) are ultimately borne several feet clear of the ground, in consequence of the lower ones dying away, by the stout adventitious roots which succeed each other higher and higher up the trunk. Many climbing, trailing, and Epiphytal plants emit adventitious roots either from their joints, as in the runners of the Strawberry plant, or between the joints, as in the Ivy (fig. 99). The adventitious roots of Ivy serve more as a means of attaching the plant to rocks or trees than as organs of absorption. Their mode of growth, however, is that of true roots; and when the plant is trailing on the ground, they act as roots. The Couch Grass (fig. 100) possesses the power of emitting adventitious roots in a wonderful degree, and is in consequence a good sand-binding plant. In the Primrose (fig. 101) the original roots die off, and are replaced by adventitious roots higher up the stem, as in some Palms. The trunks of Tree Ferns are often completely covered with a dense mat of short roots. Many Orchids produce aerial adventitious roots (fig. 102), and also some Aroids, especially

forms until they reach a later stage of growth. Young seedling plants exhibit two distinct types of root, viz., the fibrous

species of *Philodendron*, which climb to a great height and send down long, cable-like roots from high up in lofty trees. In some Orchids, as species of *Angraecum*, they acquire a green colour, and perform, it is stated, the functions of both roots and leaves.

**DURATION OF THE ROOT.**—The duration of the root is not always of the same period as that of the plant itself, or rather what appears to be the duration of the plant. Many herbaceous plants which we regard as of perennial duration really renew their root-stalks annually, or probably sometimes less frequently, according to circumstances. Thus the tuberous roots of *Orchis mascula*, &c., are annual, or new ones are produced when the previous ones flower, or else the plant perishes. The tubercles formed this season are a reservoir of food for the flowers which proceed from it next season, and then they are exhausted and decay, but usually not before others have been formed at their side. These plants are therefore perennial in one sense, though annual in another. Sometimes the new tubercles are not, from some cause or other, sufficiently matured or vigorous enough to produce flower-stems, in which case leaves only appear. Many perennial plants renew themselves by spreading, or are perennial in the sense only that they reproduce themselves underground, for

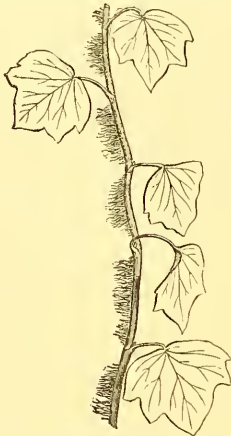


Fig. 99.—Climbing stem of Ivy with adventitious aerial roots.

as new parts appear the old die away. As explained elsewhere, the original roots of some Palms and the common Primrose die off, and are succeeded by adventitious ones successively higher up the stem. With some exceptions, then, it may be stated that the roots of woody plants are permanent, whilst those of herbaceous plants are either annual, biennial, or renewed.

**ROOTS OF PARASITICAL PLANTS.**—True parasites are distinguished from epiphytes, which merely grow on other plants, by the fact that they bury their roots in the tissue of the species upon which they prey. The Mistletoe is parasitical on the branches of various trees, from a Pine to a Poplar, and in section the tissue of its roots can be discerned with the naked eye when it differs in colour and density from that of the nurse plant. The Broomrape (*Orobanche*) are root parasites attached by slender threads to the roots of other plants. The most remarkable parasitical plants are the *Rafflesiaceæ*, which consist of little more than flowers and a few scales growing in the branches or superficial roots of trees. *Rafflesia Arnoldi* has the largest flowers of any plant, being upwards of 3 ft. across, whilst those of *Pilostyles* are small, thickly studding the branches of the shrubs and trees upon which they grow, and were formerly supposed to be abnormal flowers of the nurse plants themselves. The seeds of Mistletoe germinate on the tree, and it is the primary root that penetrates the

tissue and absorbs the nutriment required from the nurse plant; but seeds of Dodder (*Cuscuta*), another class of parasites, germinate in the ground, and as soon as their stems come in contact with a suitable nurse plant they attach themselves by means of adventitious roots called haustoria, the original root then dying away. The seedling Dodder dies quite young if it does not find a suitable nurse plant.



Fig. 100.—Couch Grass with adventitious roots. Fig. 101.—Primrose with adventitious roots.

**THE DEPTH TO WHICH ROOTS PENETRATE.**—Comparatively little is yet known, and less has been published on this subject, although one of great importance from a practical point of view. This is, perhaps, owing to the fact that opportunities seldom occur for ascertaining the depths to which roots penetrate, except at the death of a plant, when there is rarely a sufficiently strong inducement to take the trouble. In cultural operations deep tilth always tells its own tale and brings its

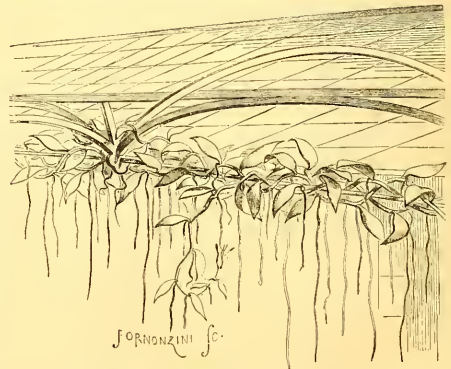


Fig. 102.—Vanilla stem emitting long, cord-like aerial roots.

profit, especially in dry seasons; and in this we have a clue to the secret of the value of deep roots. The roots are able to reach a much greater depth in search of water, and whatever it contains in solution; consequently, the plant is not dependent upon the moisture of the superficial layers of soil for its nutrition. Untilled soils also differ greatly in their nature and permeability, so that the production of roots and the conse-

quent age and size of a plant depend more upon this than the actual root-forming power of the plant itself. But there are some plants, both herbs and trees, which naturally root very deeply if not interfered with. It is especially such species that develop a large primary root or tap root that penetrates to a great depth in the soil; but it is not these alone, for the slender, fibrous roots of Wheat are often longer than the straw; and sand-loving and seashore plants have a relatively large root system. Trees that are raised in a nursery, and once or twice transplanted before being placed in their final destination, usually have their tap roots shortened as quite young seedlings, in order to make them produce a close network of fibrous roots. This is done to ensure success in transplanting, and in most cases a very large per-centage would die if they were permitted to form a large tap root. The tap root once cut or broken does not elongate any more, and it is replaced by two, or three, or more secondary roots, which eventually attain a large size, but probably never go so deep in the ground as the tap root would. Therefore the trees of artificial or planted woods and forests, whilst having the advantage of some amount of digging, suffer from the disadvantage of shallow roots. They are more easily blown down, and in dry seasons suffer from want of water, which enfeebles them and prevents them from over attaining large dimensions and great age. There is, then, something to be said in favour of sowing where the tree is to stand, when this is practicable, and where there is any danger of drought exercising an adverse influence. Among ordinary field crops there is none, perhaps, which roots on an average to so great a depth as Sainfoin. I once had an opportunity of tracing the roots of Sainfoin downwards in a newly-formed cutting for a railway. Some of them reached a depth of 7 ft. or 8 ft., and the average depth of the roots through the field was 5 ft. I have also traced the roots of Wheat to a depth of 7 ft., and there are records of it reaching a much greater depth. Thistles root very deeply in gravelly and chalky soils, and this would account for the enormous crops of these plants which often spring up where excavations have been made, as the smallest scrap of the roots of some species will grow when brought near the surface. This seems more probable than the turning up of seed from a depth. The Grape Vine sometimes forms roots of extraordinary length. Duchartre mentions that Lardier states they have been traced to a depth of 40 ft., as well as those of the Caper (*Capparis spinosa*); and we occasionally read in horticultural papers of Carrots, Parsnips, and Beet-root 6 ft., 9 ft., and even 12 ft. long. One striking example of the advantage gained by enabling crops to root deeply may be given. The summer of 1870 was exceedingly dry, and in many parts of the country there was not sufficient Grass in the meadows to be worth the trouble of mowing, although the price of hay was sure to be very high during the following winter. Drs. Lawes and Gilbert subsequently published an account of the effects of the drought on the crops of the experimental Grass plots, &c., at Rothamsted. These plots are variously manured (for the experiments are still continued), the same kind of manure being applied to the same plot year after year. There are also two plots which have remained unmanured ever since the experiments were commenced, about twenty-five years ago. In 1870 the unmanured plots yielded a crop of 5½ cwt. of hay per acre, or 17 cwt. under the average yield for fifteen years. A plot manured with sulphates of potass, soda, and magnesia, and nitrogen in the form of equal parts of the muriate and sulphate of ammonia, produced nearly 1½ tons, or more than a ton under the average. A third plot, manured the same as the last, with the exception that the nitrogen was applied in the form of nitrate of soda, yielded a crop of 56¼ cwt., or less than 1½ cwt. below the average of the previous fifteen years. These extraordinary results led to an investigation of the amount of water in the soil at different depths on each plot, and the depth to which the roots had penetrated. It was found that the herbage of the unmanured plot was relatively very shallow-rooted, and the herbage of the highly-manured plot to which ammonia salts were applied was not, on the whole, deeply rooted, nor was the clayey subsoil very much disintegrated. But the subsoil of the plot to which the nitrogen was applied, in the form of nitrate of soda, was much more friable and disin-

tegrated, and the roots had penetrated deeper in search of water. Those of *Bromus mollis* reached a depth of 4 ft. The soil was taken out in 9-in. layers to a depth of 45 in., and the lower layers of the unmanured plot were much more highly charged with moisture than those of the other plots, especially of that with deep-rooted herbage, which yielded nearly an average crop. These facts simply point to the importance of deep-rooting and certain manuring under exceptionally climatal conditions, but indirectly they reveal the advantages of intelligent, over-haphazard culture. W. B. HEMSLEY.

## THE FRUIT GARDEN.

### FORCING PEACHES AND NECTARINES.

THE culture of these under glass, so as to secure a supply of fruit from the middle or end of May until those on open walls are ready for use, is not an operation that necessarily shortens the lives of the trees thus forced, as our earliest house, in which an abundant crop is now stoning, contains as luxuriant and prolific trees as any need be—certainly altogether in better condition than trees on open walls. As Peaches naturally luxuriate in a much higher summer temperature than that of this country, what we call forcing, if carefully done, more nearly approaches their natural conditions than our open-air culture, where a continual struggle for existence against adverse climatic conditions is going on, for where a steadily progressive temperature is maintained under glass the growth is uniform and satisfactory, but on open walls the sudden fluctuations to which such trees are liable in the early stages of growth, when wood and foliage are in a tender, immature condition, so check the circulation of the sap and reduce the energies of the trees, that they are in the worst possible condition for resisting insect and other pests that invariably attend a weakened constitution.

We adopt the ordinary routine of culture with satisfactory results. We prune as soon as the leaves have fallen, and this important operation I always perform at two distinct seasons, viz. I go over the trees immediately after the fall of the leaf and cut out any bare or exhausted branches, shortening the young bearing wood according to its strength; and again, after the crop is set and thinned, I take out all the unfruitful wood that is not required for producing bearing wood, for one of the points to guard against is training in too much wood. It is not the quantity of shoots that can be crowded into a given space that will yield the most abundant crop, but the most perfectly matured wood, for if evenly distributed from bottom to top it will need but a very thin "set" of fruit to prove when fully matured an abundant crop, for, as a rule, Peaches would be vastly benefited by having one-half the bloom-buds removed before expansion. About this season the borders should be examined and, if at all dry, thoroughly watered and top-dressed with enriched new loam. Painting and cleaning of both houses and trees must be performed when the trees are dormant, and the temperature should be kept as low as possible in winter in order to ensure perfect rest, as the more thoroughly this is observed the more rapidly will the trees respond to the quickening influence of an increased temperature when the growing season has arrived. We usually shut up our earliest house the first week in December, but, unless the weather is severe, very little fire-heat is applied before the new year, for, owing to the trees having been gradually brought to an early period of active growth, they naturally start with but little excitement. A moist, steadily progressive temperature is what should be looked to until the blooms are expanded, when a light, dry, buoyant atmosphere of from 45° to 50° minimum to 65° maximum is maintained, with ample ventilation, but avoiding cold draughts and cross currents. The blooms are regularly looked over each day and fertilised with a camel's-hair brush, as, during the first six weeks of the year, bees and other ordinary fertilising agencies cannot be relied on to perform that work; we invariably get, however, as abundant a "set" of fruit in the earliest house as in the latest. The pollen of some kind (notably the small-flowered section) is much more abundant than in the case of large-flowered varieties, and in artificial fertilisation this can be as easily utilised

as by insect agency. As soon as the fruit is set a moister atmosphere is maintained, and a good drenching with the syringe after a bright day cleans the foliage, dislodges old blooms, and encourages rapid growth. Disbudding and thinning the fruit must be gradually performed until the crop is set out with methodical regularity; for, in addition to having the crop regularly distributed, the trees invariably swell off the fruits more evenly than if they were left thin in one part and thick in others. The distance between the fruits must be regulated by the size of the variety, but nothing is gained by overcropping, as a fine crop is much more valuable than an unlimited number of undersized fruits, either for home consumption or for market. The annual growth should be lightly tied to the trellis, so that the leaves may be fully acted on by light and air without shading the fruit too much.

Fly, both green and black, which is so great a pest on open walls, seldom affects trees in good condition under glass, but if observed, fumigation should immediately be resorted to. Great care must be exercised as regards temperature during the stoning season, when extremes of all kinds must be avoided; but after the fruit is stoned a higher temperature may safely be indulged in. Sun heat should be economised as much as possible, by shutting up early in the afternoon, and plenty of root and atmospheric moisture must be applied until the fruit commences to change colour, when a cooler and drier atmosphere must be maintained. Under such conditions the fruit will ripen off high flavoured and well coloured; any leaves overshadowing it should be gently turned aside, but on no account should they be taken off, except from soft, lateral growths.

As soon as the crop is gathered the trees should receive a good washing with the garden engine, and every means should be adopted to thoroughly ripen off the current year's wood. Selection of early or late varieties, according to the season at which they are most required, is of the utmost importance, as some of the best mid-season and late Peaches and Nectarines submit but indifferently to early forcing. JAMES GROOM.

*Henham.*

### ARCHED TRELLISES OVER GARDEN WALKS.

HAVING in a previous number of THE GARDEN advocated the desirability of having garden walks covered with these trellises, and having at the same time pointed out the method by which the system might be made available for almost every garden where espalier work is worth putting up at all, I intend to follow up the matter by describing a light, cheap, portable, yet sufficiently strong trellis—a trellis containing no more iron, yard for yard, than a well made iron hurdle, without even a rivet, the only mechanical appliance used being a few screws and nuts—a trellis which could be made and conveyed to any distance, and not occupy a tithe of the bulk and nothing near the weight of common hurdles, and one that may be put up and taken down with almost as much ease as a tent. The theory on which the above trellis is proposed to be constructed is this: that any material assuming the form of an arch is infinitely stronger than it is possible for it to be in any other form; hence a very light arch will sustain comparatively a very heavy weight. It would require a very strong trellis to stand 15 ft. high; but turn this height over as an arch, and it could scarcely be made too slight. Trees, too, having been trained and grown for some time on an arched trellis would almost be self-sustaining. Acting on these premises, let me now endeavour to describe a trellis which will meet such requirements. Fig. 1 represents strong wrought iron,  $1\frac{1}{2}$  in. square forming one-half of an arch, whose chord or width at bottom is 6 ft., and the height to the crown of the arch 7 ft. (the scale adopted is arbitrary, but trellises of less dimensions would be of little utility). The lower part, as will be seen at B, is rounded, and passed through a strong large block of timber (or stone if it be had on the place). A screw at the end with a strong nut, as at E, braces the bent bars and block firmly together, as on this half-arch, when joined to a similar one opposite (as at G, fig. 2), lies the strength of the whole structure. A strong stay or strut is added of the same strength, as at C, fig. 1, and screwed together as at D. This arch, which may be called the principal, being fixed, a similar one is put

up at the other extremity of the proposed trellis, which may be 40 yards or 50 yards in length. There are few walks in gardens of greater length than this without being intercepted

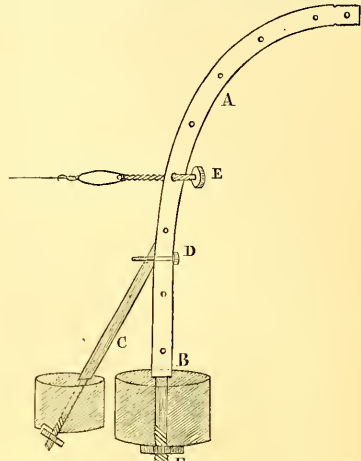


Fig. 1.—A, section of main straining arch of 1 in. or  $1\frac{1}{2}$  in. iron, perforated for tightening screws, as at E, screwed to a strut, as at D; let through blocks of wood or stone, C, B, screwed at bottom, as at F.

by a cross walk. At intervals of 6 ft. or 8 ft. throughout the whole length arched supports are placed (as at H, fig. 2). These are also made of two parts, and spurred as at I, fig.

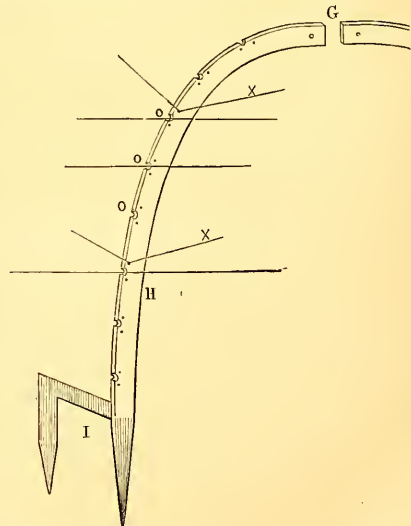


Fig. 2.—Section of bearing arch, H, showing how two are screwed together, as at G; spurred, as at I; grooved for wires to lie in, as at O O O; small holes for copper ties, with the wire shown, as at X X.

2, just as we see in a common hurdle. These supports are made of  $\frac{3}{4}$ -in. iron and 1 in. wide, or what is commonly used as the upright bar in hurdles; indeed, the end of a tall hurdle, bent over to form half an arch, will convey a tolerably good

idea of what I am describing. These supports are made with the iron edge upwards; this is important, as an arch made of iron in this manner will be as four to one in regard to strength compared with a similar arch with the iron flat. Another important reason for having these supports made with the iron edge upwards is, that the longitudinal wire forming the main training portion of the trellis is laid on the top, and not passed through holes in the supports, small indentures, 1 ft. apart, being made on the upper edge of the supports for the strained wires to lie in, as at O, fig. 2.

Let us now assume that the principal arches at the ends and the intermediate supports are truly and properly placed, good wire, such as that used for telegraph purposes, should be attached to the tightening screws at the end arch, as at E, fig. 1, and passed over the top of the supports to the straining arch at the opposite end, attached to the screws, and tightened, a sufficient length of screw being allowed for that purpose. Commence at the top of the arch and work downwards; each wire, when strained, should lie in the small spaces made to receive it, and should be retained there by a tie of pliant copper wire, two small holes being made for this purpose; this wire is shown at X, fig. 2. One simple crossing of the copper wire will be all that is needed, with a tightening twist or two

at the ends, which should be laid in on the under side of the iron support, and the trellis is complete. One advantage, and an important one, in this method is that the whole of the arches are made in parts. It will at once be seen that this must save a vast amount of labour in the manufacture compared with the trouble of having the arches of one piece. Given, the width of the walk, and the height of the trellis required, a templet or mould of wood, representing one

half of the arch, would be all that is required; and this simplification of the manufacture of the trellis must of course add to its cheapness. The transit of material would also be facilitated, as a very long length of trellis would lie in little space. The wire, of course, would lie in coils, and the half-arches would be braced together. Were these slender arches of one piece, they would be almost certain to get out of shape on a journey. Another advantage of the trellis is, in having the wires laid on the top of the arches instead of being passed through holes needle fashion, as is the case in wire fencing. Should a wire by any chance be broken, it will at once be seen how simply it can be replaced, and the neatness of the whole will depend on the exactness in grooving the arches for the wire, so that the latter may lie in straight, parallel lines. Of course, being put up so easily, it could, if necessary, in like manner be taken down; untie the copper wire, and loosen the screws, and the work is done. Light and airy though this trellis may appear from description, owing to its unity it is calculated to bear more weight than will ever be laid upon it; and although all the work of training, &c., will be done from beneath, still I should have no hesitation in scrambling over it, if necessary, from the simple reason that every pound weight brought to bear on any part of a wire is distributed over its entire length.—THOMAS WILLIAMS, *Ormskirck*.

## FERTILISATION OF STRAWBERRIES.

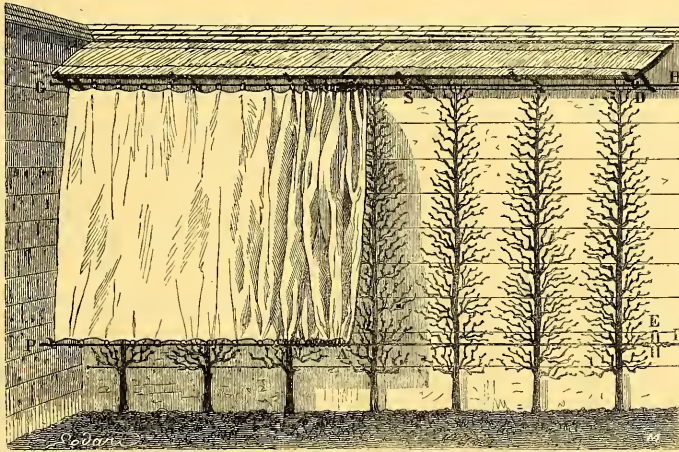
MR. HINDS in his remarks on this subject (see p. 307) forgets that all Strawberry growers are not circumstanced like himself, and that there are many who cannot either give their plants the time or the temperature that he speaks of, in which case the directions I gave with respect to artificial fertilisation would be applicable. He remarks that "anyone possessing ordinary powers of calculation, with a little practice, by making allowance, as regards time, by starting his plants earlier at the first, might do away with the necessity of giving high temperatures," and he sees in my suggestions on this head simply an inclination "to raise difficulties for the self-gratification of overcoming them," from all of which it may safely be inferred that Mr. Hinds is simply measuring his neighbour "a peck out of his own sack." It so happens that my remarks on the fertilisation of Strawberries were suggested by a letter which I had had from a gentleman who was anxious to force Strawberries, but had no better accommodation for them than the shelves of a hothouse, where the temperature had necessarily to be kept at a higher figure than was suitable for Strawberries, and my advice to him was similar to what I gave in THE GARDEN. I told him to compromise the matter as regards temperature as far as possible, and to be sure and fertilise the flowers. Such a state of things, it appears, Mr. Hinds had not contemplated. The practice of artificial fertilisation may be a century old, as Mr. Hinds states. I did not affect to be the discoverer of the

practice, but I think I am not far wrong in stating that Mr. Hinds' experience in that respect, in Strawberry forcing generally and as a horticultural writer, is confined to a very fractional portion of that period. As regards temperature, I do not know what Mr. Hinds means by a "strong heat," which would, he says, "simply be the ruin of imperfectly ripened plants," but I say that Strawberries will succeed perfectly in the temperatures which I have given in my former paper, and which were 60° at night, and from 75° to 80°

by day when in flower, provided fertilisation is resorted to, as I am prepared to demonstrate. C.

## FRUIT TREE PROTECTION.

THE following system of protecting fruit trees, devised by M. Cordival, is described in a recent number of the "Revue Horticole," from which the accompanying illustrations are taken:—"The hook L (fig. 2, enlarged) is fixed to the bracket by S D (fig. 1), and serves to hold up the canvas and keep it properly stretched. It is made of a thick piece of iron wire soldered to the bracket. The first and last rings of the upper portion of the curtain are naturally attached to the hooks of the first and last bracket G and D (fig. 1), the rest of the hooks being placed about 16 ft. apart (S fig. 1), and holding the iron rod upon which the rings run that support the curtain. Two screw rings, like those shown at G and P (fig. 1), are firmly fixed in each of the lateral walls running at right angles with those which are to be protected. It has not been thought necessary to show those in the wall on the right of the cut. To these four eyes are fixed the two rods H and B, over which the curtain rings are first run. Fig. 1 also shows at E an enlarged representation of the pin N (shown still larger in fig. 3), which keeps together the two loops of the wire, which has



M. Cordival's Mode of Protecting Fruit Trees.

been purposely broken in this place and rejoined by the pin N, as shown in fig. 3. The two other ends, F and F' (fig. 3), are fastened to the eyes in the parallel walls. The two loops of wire are placed just under the bracket D (fig. 1). The wire on the right side at the point P (fig. 1) must be left of sufficient length to allow of a hook being made in it to drop into the eye of the first screw ring. The same remarks apply to the other point B (fig. 1), where the curtain is intended to protect espaliers, the whole distance between one lateral wall and the other. A raiidisseur serves to stiffen the two wires H and B (fig. 1). The wire pin (E fig. 1, N fig. 3) serves to fasten the curtain when it is necessary to close it. One of the two rods takes the ring A (fig. 1), and the pin is placed in the loops. In order to fasten the upper rings to the hooks G S D (fig. 1) the stick with a ring hook is used. The curtain is opened by slip-

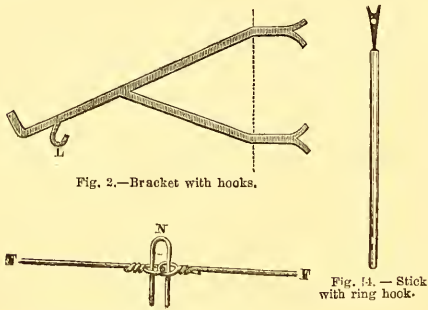


Fig. 2.—Bracket with hooks.

Fig. 4.—Stick with ring hook.

Fig. 3.—Iron wire with the pin in position.

ping the rings off the hooks, and pushing them along with the ring hook, and may be drawn and fastened by the same means. It may be added that the roof, so to speak, of the shelter is made of straw mats, but roofing felt would no doubt answer every purpose.

C. W. QUIN.

**Low Temperatures for Vines.**—Herewith I send you a recently-set bunch of Grapes and a leaf (Black Hamburgh) from a house where the temperature has been nearer 45° than 50° every night while the Vines were in flower. It will be seen that both are perfectly developed. After such experience, repeated year after year, I look upon the advice yet given by some writers, to give Muscats a temperature of 75° and Hamburgs only 5° less as a night temperature, as simply advice to burn coal to no purpose, which nobody should pay the least regard to.—J. S. W. [No Vines leaf could be more vigorous or healthy than that above referred to. It measured 13 in. one way and 1 ft. the other. The bunch, too, was as regularly and well set with berries as a bunch of Grapes possibly could be.]

**Fruit Gardens and Fruits of Turkestan.**—"Gardens," says Mr. Schuyler in his book on Turkestan, "constitute the beauty of all this land. The long rows of Poplar and Elm trees, the Vineyards, the dark foliage of the Pomegranate over the walls, transport one at once to the plains of Lombardy or of Southern France. In the early spring the outskirts of the city, and indeed the whole valley, are one mass of white and pink with the bloom of Almond and Peach, of Cherry and Apple, of Apricot and Plum, which perfume the air for miles around. These gardens are the favourite dwelling places in summer, and well they may be. Nowhere are fruits more abundant, and of some varieties it can be said that nowhere are they better. The Apricots and Nectarines, I think, it would be impossible to surpass anywhere. These ripen in June, and from that time until winter fruit and Melons are never lacking. Peaches, though smaller in size, are better in flavour than the best in England, but they are far surpassed by those of Delaware. The big Plums of Bokhara are celebrated through the whole of Asia. The Cherries are mostly small and sour. The best Apples come either from Khiva or from Sussak, to the north of Turkestan; but the small white Pears of Tashkend are excellent in their way. The Quinces, as with us, is cultivated only for jams and marmalades, or for flavouring soup. Besides Water Melons, there are in common cultivation ten varieties of early Melons and six varieties which ripen later, any of which would be a good addition to our gardens. In that hot climate they are considered particularly wholesome, and form one of the principal articles of food in summer."

## GARDENING FOR THE WEEK.

### Indoor Plant Department.

**Orchids.**—A house full of Orchids, with the greater portion in flower simultaneously, has a fine appearance, but with most people a succession over a longer period is preferable. Cultivators of these plants who have no experience in growing them for exhibition, and consequently have generally the whole of their stock coming into bloom without attempting to retard any portion, often complain that they have during the spring more in flower at once than they require, with a corresponding scarcity later on, yet are afraid of attempting to retard any under the impression that the plants may be thereby injured. A few hints on this subject may not be out of place at the present season, when the flowering of a good many species can be delayed for several weeks beyond the time the plants would bloom if allowed to remain in the houses in which they make their growth.

**Orchids that will Bear Retarding.**—As a rule it may be taken that all such species of Orchids as naturally rest after completing their growth before lowering will bear without injury being treated so as to retard their blooming; these include all such plants as flower from the ripened pseudo-bulbs in the way common to most *Dendrobies* and *Cattleyas* possessing the habit of the Mossia varieties, as *C. Skinneri*, *C. lobata*, *Chysis*, *Angulos*, *Brassias*, most *Epidendrums*, *Houllettias*, *Lælia purpurata*, *Lycastes*, some *Odontoglossums*, many *Oncidiums*, *Schomburgkias*, *Scuticarias*, *Stanhopeas*, *Trichopliasis*, and others of similar habit. These either flower from the preceding year's growths or push up their flowers from the young growths in the first stage, as in the case of *Odontoglossum citrinum*, *Chysis*, *Limnæoides*, *C. bracteata*, *C. cæca*, &c. Plants of such habit as these may always be kept back without injury by keeping them for some weeks beyond the usual time of their starting in as low a temperature as they can stand, at the same time using no more water either to the roots or in the atmosphere than is just sufficient to prevent excessive shrivelling. In the case of *Vandas*, *Aerides*, *Saccobulbiums*, *Phajus*, *Phalenopsis*, *Cypripediums*, *Cymbidium*, *Angraecums*, and other heat-requiring plants, all that can be done to retard their flowering is to defer increasing the temperature for a few weeks later in the spring than would be done if the plants were brought on in the usual way with an increase of heat as soon as solar heat increases; this can be done by placing a few of the plants at the extreme coolest end of the house in which they are grown, or in any house where the temperature can be kept 6° or 8° lower than the East Indian house, but with these warmer sections too low a temperature must not be risked. When the retarding process is carried out within reasonable limits, and confined to such kinds as will bear it, I have generally found that the plants, so far from suffering from it, grow stronger afterwards, and, by resorting to it, a much more even supply of flowers can be had.

**Orchids that do not Bear Retarding when their Flowers are Pushing.**—With all the species that bloom about the time of the season's growth completing, before going to rest, it is not safe to attempt retarding after growth has once commenced, further than that a portion may be grown a little cooler than the rest. But, although in the case of many species and families, this might often with advantage be carried out with whole collections, inasmuch as many are grown with more heat than is well for them, yet the cool treatment, especially in the case of plants that are growing, must not be carried too far, or the general growth will be deficient, and weaker than it ought to be. With plants possessing this habit the retarding process should be begun at the other end of the season, that is, in not letting them start into growth so early, by which means they will naturally flower later.—T. B.

**Conservatories.**—Azaleas are coming rapidly into bloom. Such as have been forced, and have done blooming, may be re-potted, placed in a warmer house, and syringed twice a day. *Rhododendrons* in conservatories that have been kept above 40° during winter are now in great beauty; such as are grown in pots, and are required to bloom at once, should be subjected to a little higher temperature than that in which they have been placed. Successions of *Cytisus racemosus* should be kept up by means of fortnightly introductions to the forcing pit. There is no difficulty now in supplying tallies in flower. If from the abundance of root and moisture is all that is requisite until the spathes are formed. Divide the roots of such as have produced suckers, and pot each separately; they should never be dried off. *Imantophyllum miniatum* is now in great splendour, and should receive a little weak manure water while in flower, especially if the roots are much confined. *Hebeclinium ianthinum* is one of the most desirable of conservatory spring-blooming plants, for its great *Ageratum*-like, lavender-coloured flower-brusses are very striking and distinct from those of its associates. It forms a large bush, and without making many leaves; therefore the roots should be kept within small bounds, and should be fed with manure water. The bright weather of the past fortnight has driven bulbous plants quickly out of bloom, except where well shaded. Liliiums of the speciosum section growing should be kept as yet but sparingly watered; a position for them near the glass is of immense importance in all cases, except in that for the latest supply, which may be set out-of-doors. Pot *Peperomia* in a warm mixed with some well-decayed manure; keep the soil moist, and shake the plants frequently to the roots. *Tropæolum canariense* makes a fine pot or dwarf trellis plant for a cool conservatory if sown in heat in March and potted on as required. The specimens of *T. tricolorum* that have done blooming may be turned out into a cool house; do not apply any more manure water to those still indoors, otherwise the ripening of the corrus

will be retarded. Plants of *Veronica Andersoni* that have been kept a rest for the past two months may now be shaken out, re-potted, and the shoots shortened back a little. A few plants of *Plumbago capensis* should be pruned, potted, and kept in a little heat until they make fresh growth. Train *Clematises* to trellises or rafters; these form magnificent permanent climbers either for indoor or flower garden purposes. *Fuchsias* should be started into growth as occasion requires. They like a moist heat, and the shoots should be pinched as they advance in growth. *Coleuses* must be kept near the light, potted as they require it, and pinched in order to maintain symmetry of growth. Prune, pot, and start *Daturas* into growth, and use the best ripened parts of their shoots for cuttings. *Salvias* make good indoor decorative plants, especially *S. splendens*; there is a rest back the branches, pot, and start the plants into growth in moderate heat.

**Hard-wooded Plants.**—Plants that have been potted recently will require close attention in respect to water. It is much more difficult to determine the condition of the soil as to its requirements in this respect with plants that have been recently potted than with such as are established. All the stock should be gone over every day, and it is quite as necessary to use water that is something near the temperature of the house the plants are grown in as it is in the case of stove plants. Every plant house ought to be provided with a tank sufficiently large enough to hold a supply of water for one day at least. This is all the more necessary where spring water is used. The larger-sized plants that are required for blooming later on ought, if possible, to be separated from the smaller stock, to give an opportunity of top-dressing and syringing them more freely in the atmosphere easily obtained by syringing in the afternoon in bright weather the paths, stages, and outside of the pots, and shutting up the house an hour or two before the sun is off the glass. This must be accompanied, except in the case of newly-potted plants, with all the light available, otherwise weak, attenuated growth will be the result. It is not good practice to syringe overhead, even during the season of active growth, any varieties of plants that are subject to mildew, for it has a tendency to increase the evil. Such plants as are not liable to its attacks, or to the ravages of red spider, ought to have the syringing done over them very lightly every evening after a sunny day during their growing season. This will apply to *Pimeless*, *Chorozeas*, *Eriostemons*, *Gompholobiums*, *Acrophylum venosum*, *Polygals*, &c. It frequently happens that a vigorous plant will throw up one or more strong shoots that have a tendency to impoverish the rest of the plant. These should be stopped in time by pinching their points out or bending down.

**Amaryllids.**—Plants of *Amaryllis* that are now pushing up their flowers must be well supplied with water; weak liquid manure will be of great assistance to them, especially the deciduous kinds, that make the greater portion of their leaves for the season simultaneously with the flower-stem; they should have plenty of light, otherwise the leaves will be drawn up, a defect which no subsequent treatment through the season can remedy, and it is upon the production of the greatest quantity of healthy foliage that the next year's flowering is in a great measure dependent. The nearly-allied *Valloia purpurea* will now be making its growth; the soil must not be allowed to become dry, or the plants will be much injured. This may be useful late summer and autumn, flowering plants we possess; it is also one of the best window plants that can be grown, requiring little space and thriving well in an ordinary sitting room. If a few plants could be placed in a *Vinery* at work, or in any position where they will receive a somewhat greater heat than they would in an ordinary greenhouse, they will flower earlier, and by subjecting another portion of the stock to cooler treatment they will afford a succession of bloom. *Valloias* may be increased very fast from the numerous offsets they produce, which are readily separated from the lateral bulbs without disturbing them. If these offsets be now taken off and inserted (six or eight together) half their depth in 4-in. pots filled with sandy soil and subjected to ordinary greenhouse treatment, they will grow on and make fine, healthy, blooming plants in the course of two or three years.

#### Flower Garden.

**Auriculas.**—These are, for the most part, in full flower, and in order to preserve them as beautiful as possible, the house should be kept cool and the atmosphere moderately moist. The largest proportion of flowers have to be content with the accommodation afforded by a cold frame or frames. Mr. Alexander Meiklejohn, for instance, who grows something like 1500 plants, has cold frames only to bloom his plants in and to grow them from November until October, and yet he has sent me pips of some of his sorts as fine as I have seen anywhere. Frames are very convenient for another reason, that one of them can be removed from the more exposed positions where the *Auriculas* have been during the winter and early spring to the shade of a wall facing north. When the plants are in bloom they may be placed in the shade, not before, else the pips of many of the sorts will not open kindly, notably *Yrue Briton* (Hepworth), *Lancashire Hero* (Lancashire), *Feveril of the Peak* (Walker), *Smiling Beauty* (Heap), *Charles E. Brown* (Heady), and many others of the very best sorts. The frames must be shaded with some light material, as the expanded pips of *Auriculas* thrive up if exposed to half-an-hour's sunshine. The plants are now making vigorous growth, and must be well supplied with water at the roots, taking care not to allow any to fall upon their beautiful mottled foliage, as it is very easily disfigured. Some of the varieties, such as *Miss Arkley*, *Maggie Lauder*, *Taylor's Glory*, *Topsy*, &c., have such beautifully frosted foliage, that even without the flowers they command admiration.

**Polyanthuses.**—These are in flower rather earlier than the *Auricula*, and require very similar treatment. I find they succeed best in a cool, shady position, making strong leaves of good substance. This fine old flower has been sadly neglected, and the varieties cultivated very nearly half a century ago were much superior to those that have been raised recently. I saw splendid examples of *Buck's George IV.*, one of the oldest sorts, placed in competition at Newcastle-upon-Tyne on April 3, and it stood superior to all the new sorts exhibited. *Cheshire Favourite*, *Crownshaw's Exile*, *Bullock's Lancer*, and *William IV.* are far behind it. I find that green fly is a very troublesome pest at this season, and when the nights become warm red spider attacks the leaves. I have destroyed both by dipping the plants overhead in soft soapy water. The flowers remain the longest in good condition if the plants be removed to a frame behind a north wall when the first pips on the trusses are fully open.

**Carnations and Picotees.**—We have not yet been able to remove these from under the glass lights, the weather being too cold to admit of it. The plants are not yet sufficiently advanced to require the sticks to be placed to them. When this is the case it is necessary to place them outside, as the sticks are in the way of the glass lights. The frames are a very welcome protection to the plants at this season, as the keen frosty winds, sometimes with snow or hail, does much injury to them. The plants require a fair supply of water, but cold rains or melting snow, when the roots have become more than they can absorb already, is about the worst way to apply it. As previously advised, keep the frames clean, remove all weeds from the soil, and decaying leaves from the plants.

**Pinks and Pansies** in beds should now be kept in a healthy growing state. Neither of them suffer from inclement weather if the soil is sweet, and in a condition to promote the growth of healthy roots. I have all the weeds picked out by hand, and the surface of the soil stirred up with a small Dutch hoe or light fork. Where sparrows are abundant, they pick off the young leaves as they are formed. If this is the case, they may be checked by stretching a line of white crocheted cotton along the rows about 6 in. or 9 in. above the ground. Rabbits are also very fond of Pinks, and the leather-coated grub does much damage to the plants. It feeds at night, and must be sought for with a lantern. Press the soil firmly round the neck of each plant with the fingers if it has been loosened by the action of frost.

**Hollyhocks** should now be planted out if they have been duly exposed to the open air a week previous to planting. I presume that the ground where they are to be planted has been prepared by trenching during the winter or even the previous autumn. This plant is a gross feeder and must have a good supply of rich manure in the soil, and at planting time I like to dig out a hole large enough to hold three or four spadefuls of rich, light compost; the plants seem to start away more strongly when they can grow into this. Place the permanent sticks to the plants at once; it will save time, and the roots will not be injured, as they might be if stout sticks were thrust through amongst them, when the plants have become so slenderly. If there be any traces of red spider upon the leaves it would be best to dip the whole plant in a pail of soapy water; or if this be not practicable, sponge them over. Spring-struck plants may not all be quite ready to plant out, but no time should be lost in getting them forward enough.

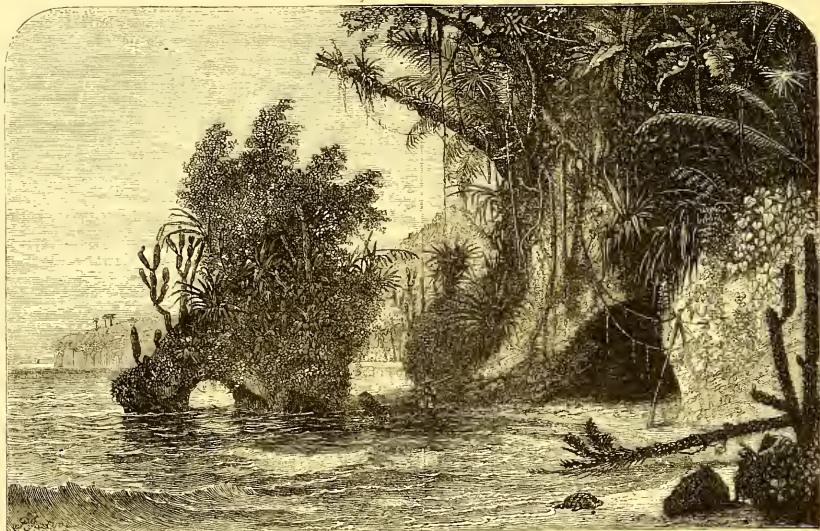
**Dahlias** are much more tender and will not stand frost. It is not possible to plant them out with safety until the end of May, but in other respects the same treatment as that advised for *Hollyhocks* will answer for them.

**Tulips.**—The beds ought now to be covered with the usual canvas covering, to keep the frost off, especially if the leaves be wet; the frosts are very keen, and will do injury to the wet leaves if the water be frozen in their axils. Those who have glass lights to spare will find them very useful protectors, as they may come on night and day.—J. DOUGLAS.

**Bedding Plants.**—If *Calceolarias* wintered in frames have not been transplanted farther apart in fresh free compost, do so at once, and pinch off all flower-spikes and tall shoots, it being necessary to encourage a dwarf growth. Such as were propagated in boxes in heat this spring and are now well rooted should also be transferred to frames and set farther apart than they have been. Well-rooted plants of *Polias* raised from cuttings, and seedlings that have been pricked off thinly into boxes, and which are now beginning to touch one another, should likewise be transplanted into a frame set on a hard bottom into which 6 in. deep of light rich soil has been put. *Ageratums*, *Topseulums*, *Verbenas*, *Gazanias*, &c., should be similarly treated, and care taken to protect them from frost at night. *Pelargoniums* should not be planted in this manner; on the contrary, they should be kept in pots in a cold frame; where two plants are growing in each pot, however, separate them, and pot them singly, and keep them in a close frame for a short time afterwards. The variegated-leaved kinds, such as the bicolors and tricolors, should be kept in rather warm quarters. The propagation of these may yet be proceeded with, and the cuttings potted singly before their roots are more than 1 in. long, otherwise they might get broken. *Dahlias* may still be increased by means of division of the old roots or from cuttings; after they are well-rooted, plant them amongst some rich free soil in a frame and protect them from frost. Keep *Echeverias* in cool houses or pits, or arrange the pots or boxes containing them on the floor of some cool Peach house or *Vinery*. Those increased by means of the side shoots, leaves, or seeds, could be raised carefully in a moderately warm place, so as to encourage a good growth before they are planted out. The little yellow variegated *Mesembryanthemum*, now so common in our flower gardens,

although tolerably hardy, thrives admirably in heat—a course that should be resorted to in order to have cuttings that will make good plants before bedding-out time. An ordinary greenhouse is, however, sufficient protection for it in winter and spring. Alternantheras are deservedly admired as carpeting plants. They should, therefore, be propagated for that purpose as expeditiously as possible, and the greener the foliage the more easily will the cuttings strike root. *A. amena* has this year been rather sparing of young wood; it is, therefore, difficult to obtain a stock of it. *Iresines* and *Coluseses*, especially *Verschaffelti*, should be propagated, potted singly, pinched, and kept near the glass in a warm frame or house. *Perilla* should be pricked out into boxes, and kept near the glass in any of the fruit houses in which there is a little heat. In the case of *Stocks* and *Asters* sown on gently-heated hotbeds or in boxes, the sashes should be tilted up a little night and day, and the seedlings shaded from strong sunshine. As soon as they are fit to handle, prick them out into other frames or into a well-sheltered south wall border, with a few *Broom* or *Spruce* branchlets stuck in front of them. *French* and *African* *Marigold*s and *Tagetes signata* *pumila* should be raised in heat, and, after they have come up, should be pricked off into boxes or pans, which should still be kept for a time in heat. Such hardy plants as have been wintered

*Mossy lawn* is liked by some on account of its elastic nature, but the great objection to it is that a dry spell of weather kills it, and gives it a sombre brown hue. There is no better season for destroying *Moss* than during the April showers; it cannot bear manure, and many kinds, such as super-phosphate, guano, &c. in small quantities, applied as surface-dressings, are recommended for destroying it, but such applications cause the Grass to grow too strong. Newly-slaked lime in a dry powdery state, mixed with an equal quantity of loam, is by far the best remedy. If a dressing of this be applied after mowing it will destroy the *Moss*, and will strengthen the Grass without causing it to grow too strong. Care must be taken that the loam with which the lime is mixed is fresh, or it may contain the seeds of weeds, and thus, in removing one evil another might be substituted. Keep the Grass regularly mown. Where a machine is used there is nothing saved in labour by letting it grow too long before it is cut, as the work is then double. Nothing is more common than to see these machines set too low, so that they cut the *Grass* in places right down to the very roots, giving the whole a patchy and unsightly appearance, and, when dry weather happens to set in, these close-cut places are almost bare of Grass. The machine should be set so as to avoid this.



A Tropic Beach.

indoors should be transferred to the open ground at the earliest convenience.

**Lawns and Pleasure Grounds.**—Take advantage of showery weather to have all the walks thoroughly weeded. Small Grasses are the worst to contend with on walks, but where they are removed before they have time to seed—and this they will do whilst very small—they can be kept under with little labour. The use of salt, either applied in a dry state or in the shape of hot brine, is often resorted to for the destruction of weeds on walks, but, except in localities near where it is made, it costs more than hand-weeding, and, however applied, its effects are objectionable in causing the surface of the walks to look black and damp. Keep the walks well rolled whilst moist, and an impression can be made upon them. Weeds such as *Dandelion* and *Plantain* will now show most objectionally on the Grass, and regular and persistent use of the “spud” is the best method of eradicating them. Some do not dislike to see the common *Daisy* on their lawns, but nothing looks so well as the *Grass* alone; and when these plants exist in numbers not too great to cope with, I advise their being cut out by the roots, for when the crown of these is destroyed they do not, like deep-rooted plants, push again as long as they have strength. If *Daisies* are found, even in small numbers, and are not kept down, they quickly increase to a serious extent where a mowing machine is used, for these implements throw the flower-heads over the ground, where, even in an immature state, the seeds will vegetate. A

#### Kitchen Garden.

An additional supply of *Broad Beans* and more *Peas* should now be sown. Of the latter, if *Champion* of *England*, *Veitch's Perfection*, and one of the tall kinds, such as *Emperor* of the *Marrows* or *British Queen*, are all put in at once, a successional crop will be obtained. Unless where the land is wet, *Peas* at this and subsequent sowings should be sown in shallow trenches, so that the soil covering the seed should be about 1 in. below the surface level at each side; this will admit of the liberal application of water, which, in dry weather, is necessary to them. To further assist them a quantity of manure should be worked in deeply at the bottom of the trenches. Do not sow too thickly. At this and the succeeding sowings half the quantity of seed required earlier, or when there was more to fear from the depredations of slugs and birds, will now suffice. More *Spinach* should be put in between the rows of *Peas* or any vacant spaces, and a little more *Turnip* seed, if required, should also be sown. Of *Seakale*, if a sufficient quantity of roots be not at hand for planting, seed may now be sown, making holes with a dibber, and covering it with 1 in. of soil. Drop three or four seeds in each hole, which should be 1½ ft. apart in the row, with a similar space between the rows, these distances asunder being best suited to the proper development of plants of this description.

**Box Edging.**—The principal objections to *Box edging* are that it affords a harbour for slugs and renders it difficult to apply salt to the

walks for the destruction of weeds, or to apply it as a manual dressing to the ground which the Box encloses; but apart from this there is no edging that equals Box in appearance when well kept. It is frequently allowed to become too large through inattention to cutting, or by permitting it to remain too long without replanting. The present is a good time for either replanting or making up any deficiencies that may exist through the Box having died in places; the latter mishap generally occurs where the land is of a heavy, wet, retentive nature, and insufficiently drained, or it is killed through vegetable crops being planted too near it. If the haulms of Potatoes overhang it during the summer, or if Cabbages, Beet, or anything of similar character be too close, it gets killed. Where any considerable portion of the Box is dead it is much better to take up the whole and replant, as where the dead portions are simply replaced it has a patchy look. A Box edging that is well planted in a workmanlike manner, and one in which the operation is indifferently performed, produce as great a difference in effect as that resulting from good and inferior work in any gardening operation. As many may not have had any experience in Box planting, a few hints may be of use. In the case of existing edgings in the usual position, viz., bounding gravel walks that require to be thus treated, the first thing is to remove all the gravel from the sides, placing it in a ridge in the middle of the walk; take up the whole of the Box, which should be heeled in to prevent the roots drying until the ground is prepared; commence at one end and dig over where the Box has stood and is to be replanted about 1½ ft. or 2 ft. in width, breaking the soil line as the work proceeds, leaving the top quite level or with a gradual rise according to the more or less sloping position of the ground. Care must be taken to have the surface thus dug off the right height proportionate to the ground which the edging is to enclose; if too high, it will have an awkward appearance, and if too low, it gets smothered through the rains washing the soil down upon it. This condition as to the requisite height is after it has been made solid by treading and beating with the back of the spade. Draw the line from end to end, quite straight or gradually curved as the course of the walks requires, with a spade open a trench cutting straight down so as to have it perpendicular on the off side, drawing the soil inwards; this trench should be the full depth of the spade, then commence with the Box, dividing it by hand, it will split up readily, and care must be used to secure a portion of roots to all that has to be planted; begin planting it in a thin continuous line with the tops about 2½ in. or 3 in. above the surface, filling in the trench as the work proceeds with the soil that was taken out to form it, treading it with the feet solid so as to make it lie quite close. After the planting on both sides of the walk is done, replace the gravel, adding more if required; a little practice will enable the operator to plant the Box in a continuous, even line all equal in height and breadth. All the subsequent attention necessary for some time will be in the matter of watering the Box in May or June if the weather be very dry.

#### Extracts from my Diary.

April 15.—Sowing Cottager's, Asparagus, and green Curled Kale; also the following sorts of Broccoli, viz., Snow's Winter White, Osborn's Winter White, Leamington, Carters' Champion, Knight's Protecting, Wilovee and Carters' Summer. Earthing up and putting sticks to French Beans in pots. Thinning out Carrots in frames; also Lettuces, Radishes, and Turnips. Getting frames ready for Melons that had previously been occupied by Radishes.

April 16.—Sowing Cox's Golden Gem, Golden Perfection, and Pragnell's Green Flesh Melons; also a collection of Everlastings. Pricking out Leeks, Chervil, and Borage. Potting Caladiums, Balsams, and young Vines. Earthing up Potatoes in frames; also putting a little earth over choice ones peeping out of the ground. Turning over gravel walks where they have become green, in order to give them a fresh appearance.

April 17.—Sowing Radishes; also Carters' Giant White Cos and All the Year Round Lettuces. Sticking Peas, and afterwards earthing them up a little. Getting all bedding plants out under south walls, to be taken as fast as they become fit for exposure. Hoeing amongst all growing crops at least as the weather will permit. Tying up radishes to blanch. Looking over Pines, giving them water, and tying up any that require it. Tying in shoots in every Peach house.

April 18.—Sowing two rows of Scarlet Runners in deep trenches, so that they may be easily protected from frost; also Nasturtiums, Mignonette, Larkspurs, and Convolvulus; and likewise a collection of Antirrhinums. Pricking out Lettuces, Celery, Asters, Stocks, and Tagetes. Planting out spring-sown Cauliflower plants; also Carters' Giant White Cos and All the Year Round Lettuces. Tying down young shoots in early Vineries, and thinning the Grapes where required.

April 19.—Potting plants of Scented Verbenas, Tricolor Pelargoniums, and Tomatoes. Shifting young Vines, just struck from eyes, into square blocks of turf for planting. Giving Cucumbers and Melons a little top-dressing, picking off all false blossoms, and stopping them where required. Clearing off Broccoli stumps and other vegetable refuse. Manuring the ground and getting it dug up as fast as is convenient.

April 20.—Potting off seedling Ageratum, Solariums, and Petunias; also Alternantheras, Coleus, Verbenas, Vegetable Marrows, and ridge Cucumbers. Mowing and cleaning up pleasure grounds, and rolling down all gravel and turf that require it. Hoeing between rows of Potatoes, Onions, and Carrots. Giving manure for Celery a final turning. Weeding, Box edgings, and cleaning up kitchen garden. Fruit in use for dessert: Pines, Strawberries, and Apples.

Dorset.

W. G. P.

#### A TROPIC BEACH.

In "At Last," Canon Kitegley thus writes of a Tropic beach (see opposite page) which he visited in Trinidad:—"I scrambled down on a gravelly beach, and gazed up the green avenues of the brooks. I sat amid the Balisiers and Aroumas, above still blue pools, bridged by huge fallen trunks, or with wild Pines of half-a-dozen kinds set in rows: I watched the shoals of fish play in and out of the black logs at the bottom: I gave myself up to the simple enjoyment of looking, careless of what I looked at, or what I thought about at all. There are times when the mind, like the body, had best feed, gorge if you will, and leave the digestion of its food to the unconscious alchemy of Nature. Whether on a Scotch moor or in a Tropic forest, it is well at times to have full faith in Nature; to resign yourself to her, as a child upon a holiday; to be still and let her speak. She knows best what to say. And yet I could not altogether do it that day. There was one class of objects which I had set my heart on examining, with all my eyes and soul; and after a while I scrambled and hewed my way to them, and was well repaid for a quarter of an hour's very hard work. I had remarked Palms unlike any I had seen before, staring the opposite forest with pale grey-green leaves. Long and earnestly I had scanned them through the glasses. Now was the time to see them close, and from beneath. I soon gessed (and rightly) that I was looking at that Palma de Jagua (Jessenia) which excited—and no wonder—the enthusiasm of the usually unimpassioned Humboldt. Magnificent as the tree is when its radiating leaves are viewed from above, it is even more magnificent when you stand beneath it. The stem, like that of the Coco-nut, usually carries the height of a man ere it rises in a shaft for 50 ft. or 60 ft. more. From the summit of that shaft springs a crown—I had rather say, a fountain—of pinnated leaves; only eight or ten of them; but 25 ft. long each. For three-fourths of their length they rise at an angle of 45° or more; for the last fourth they fall over, till the point hangs straight down; and each leaflet, which is about 2½ ft. long, falls over in a similar curve, completing the likeness of the whole to a fountain of water, or a gush of rockets. I stood and looked up, watching the innumerable curled leaflets, pale-green above and silvery-grey below, shiver and rattle amid the denser foliage of the broad-leaved trees; and then went on to another and to another, to stare up again, and enjoy the mere shape of its most beautiful plant I had ever beheld, excepting always the *Musa Ensete*, from Abyssinia. Truly spoke Humboldt, of this or a closely allied species: "Nature has lavished every beauty of form on the *Jagua* Palm." Once—I should know the spot again among a thousand—where we scrambled over a stony brook just like one in a Devonshire wood, the boulders and the little pools between them swarmed with things like scarlet and orange fingers, or sticks of sealing-wax, which we recognised, and, looking up, I saw a magnificent *Bois Châtaigne* (Carolinae insignis)—Pachira, as the Indians call it—like a great Horse Chestnut, spreading its heavy boughs overhead. And these were the fallen petals of its last night's crop of flowers, which had opened there, under the moonlight, unseen and alone. Then we emerged upon a beach, the very perfection of typical Tropic shores, with little rocky coves, from one to another of which we had to ride through rolling surf, beneath the welcome shade of low shrab-fringed cliffs; while over the little Mangrove swamp at the mouth of the glen, *Toucou* rose sheer, like McGillivuddy's Keeks transfused into one huge oresser. We turned inland again, and stopped at a clear brook, running through a grove of *Cacao* and *Bois Immortelles*. Afterwards we turned up into the loveliest green trace, where, I know not how, the mountain vegetation had, some of it, come down to the sea level. Nowhere did I see the *Melastomas* more luxuriant; and among them, arching over our heads like parasols of green lace, between us and the sky, were tall *Tree Ferns*, as fine as those on the mountain slopes. In front of us opened a flat meadow of a few acres; and beyond it, spur upon spur, rose a noble mountain, in so steep a wall that it was difficult to see how we were to ascend.

The Progress of Botany.—A Belgian journal of horticulture has given some curious figures showing the rapid increase in our knowledge of the vegetable kingdom. In the Bible about 100 plants are alluded to; Hippocrates mentioned 234; Theophrastus, 500; and Pliny, 500. From this time there was little addition to our knowledge until the Renaissance. In the beginning of the fifteenth century Gesner could only enumerate 800, but at its close Bauhin described 6000. Tournefort, in 1694, recognised 10,146 species; but Linnaeus, in the next century, working more cautiously, defined only 7294. In the beginning of this century, in 1806, Persoon described 25,000 species, comprising, however, several minute fungi. In 1819, De Candolle estimated the known species at 30,000. London, in 1830, gave 81,731 species, and in 1846 Prof. Lindley enumerated 66,435 diotyledons and 13,952 monocotyledons—in all 80,387; but in 1853 these had increased to 92,920, and in 1863 Bentley estimated the known species at 125,000.—"Lancet."

## ANSWERS TO CORRESPONDENTS.

Questions from correspondents who do not send their names and addresses in full (not necessarily for publication) cannot be answered. The questions are usually submitted to good practitioners in their several departments. Whether questions are answered or not in this department, we shall be greatly obliged to our readers who being able to help our correspondents, will kindly furnish answers. Questions cannot always be answered in the same week in which they are received.

**Scale on *Ceanothus rigidus*.**—I have two or three good plants of this *Ceanothus* against a wall which have done very well for the last six years, but they are now covered with scale, and the plants are going back very much in consequence. I shall therefore be much obliged if you will let me what to do in order to get rid of this pest.—A. B. W. [You had better prune the plant in closely, and scrub the remaining shoots with soft soap and Tobacco water, using a small stiff brush for the purpose. Apply a little rich soil to the roots in order to encourage vigorous growth, which will also still further be promoted by keeping the root well supplied with water in dry weather, and by frequently syringing the foliage.]

**Malformed Rose Bloom.**—I send you a malformed Rose blossom, and will be glad to hear if such has been noticed before. The tree is, I believe, a *M. lutea* *Eugene Verdier* (scotless), and has this year borne eight or nine good flowers. It is growing in a pot in my greenhouse (moderately heated), and is trained downwards, owing to its rampant growth.—J. R. S. [Such cases as that which you have sent are not uncommon. They show the close connection that exists between leaf-buds and flower-buds in certain stages of their existence, and are usually the result of sudden transitions of temperature.—M.]

**The Swamp Magnolia.**—I have recently purchased a few plants of *Magnolia glauca*, of which I am a great admirer, and shall be glad if you will kindly let me if it requires any special treatment. [*Magnolia glauca* like a peat soil and a moist situation, sheltered and sunny. The flowers are powerfully scented, their scent resembling that of the Lily of the Valley.—G. B.]

**Adiantum Farleyense and its Culture.**—Can you inform me why this Fern does so badly with me? I have tried it in the best peat and loam which I can get, but the fronds grow yellow, and the young ones come up very sickly. It is in a small house, kept at about 60° with other Ferns, which do very well. Wherein have I failed in reference to this one?—J. W. [Your best plan will be to shake the plants out of the pots they are now in, remove the greater portion of the soil without injuring the roots, and re-pot in good-sized pots one-third full of drainage. Use a compost of tarty loam, leaf-mould, broken crocks, and a little charcoal and plenty of sand. Keep the crowns of the plants a little higher than the level of the soil, and place the pots on a piece of slate. Shade from direct sunshine, pay strict attention to watering, always using it in a tepid state, and do not syringe too much water over the foliage.—S.]

**Crisp Celery.**—How can Celery be made crisp? Ours is beautifully white and well tasted, but decidedly not crisp. Frost, it is said, will do it, but we have had some pretty sharp frosts, and yet the Celery is flabby as ever, and I have eaten Celery elsewhere far better than ours.—M. [In order to grow crisp Celery the manure put into the trenches should be as rich and rotten as possible. [Crispness] be any straw or dryness in the manure, the Celery is sure to be pipy, and not crisp. Another great point is never to let the plants suffer from want of water or liquid manure, both when first planted out; and during dry, warm summers, some varieties of the dwarfer kinds of Celery are more rusty and crisp than the larger-growing sorts. Amongst whites, *Saintincham* and *Turnor's* are memorable belong to this class; and amongst reds *Sulham Prize Pink* and *Major Clarke's Red*.—W. T.]

**Heating Small Greenhouses.**—I am about erecting a greenhouse for Grapes about 15 ft. long, and am puzzled to know how to heat it in a convenient way. Would you kindly recommend the best kind of stove suitable for the size of house just named, and tell me whether it will be necessary for the well-being of the Grapes that artificial heat be kept up all the year round?—R. S. O. [Very few small stoves are quite satisfactory. As a rule, they make the air too dry, and gas is apt to escape either from the furnace or the pipes. The best which we have seen are those of *Watson, Read, Shrewsbury*, and others, in which the fire is surrounded by a water jacket, or there is a combination of stove and small hot-water pipes. *Read's* stove and hot-water apparatus, often advertised and illustrated in *The Gardener*, is one of the simplest, safest, and in the end cheapest methods of effectually warming such structures. For such hardy Grapes as *Hamburghs*, grown in a greenhouse, heat may be given from February to the middle of May, and again probably in September and October, which will be all that is necessary.—D. T. Fish.]

**Procuring Hardy Flowers.**—Will you kindly inform me where I can obtain the flowers recommended in "Hardy Flowers"? I have a large shrubby which I wish to plant with hardy pansies in a tub, such as you recommend in part 3, also a large piece of boggy ground; the difficulty is, where to obtain the plants named. [Your best course will be to visit some of the large London nurseries for herbaceous plants, or in any case procure their catalogues; see also our advertisement columns. It is to be regretted that our large districts of England and Ireland there are no nurseries where a good collection of hardy flowers may be obtained. Improvement is very much checked from this cause. We do not doubt that it would pay to devote "a quarter" to the very finest hardy herbaceous and Alpine plants only—a few hundreds of the best now known. Anybody who compares the interest now taken in hardy flowers with what was taken a dozen years ago may well be surprised at the change. We

believe that every year will see an increasing demand for these plants, and that the progress ten years hence will be far more marked than that of the past ten years. Nurserymen, however, as well as others, must help towards this end; indeed it is their interest to do so.]

**Spot on Pelargonium Leaves.**—The leaves of my Pelargoniums turn spotted. What is the cause of such a disaster?—T. F. [Oild and dano.—3.]

**The Silvery Cedar of Lebanon.**—Will any of your readers kindly inform me where I may purchase plants of this, of which there is a fine specimen in the Pinetum at Dropmore? I have tried to find it in a good many nurseries but in vain.—O. L. [This beautiful glaucous variety is, I believe, very scarce in the trade. Try Messrs. Lawson & Co, of Edinburgh; Mr. Richard Smith, Worcester; or Messrs. Barron & Son, Elvaston, Derby.—B.]

**Artificial Manures for Potatoes.**—1. What is the best artificial manure for early Potatoes (*Magpie's Prolific*) in a sandy soil? 2. What quantity of the manure is necessary per acre? 3. Should the manure be mixed with ashes or mould?—M. [1. Amies' chemical manure is said to be the best artificial manure for Potatoes. 2. I have grown good sound crops of early Potatoes on a light soil by using 4 cwt. of the best guano, mixed with 2 tons of dry mould or wood-ashes, but no coal-ashes should be used, as they produce rough scabby skins on the tubers. 3. Another good manure for Potatoes on light soils is a mixture of 2 bushels of salt, with 12 bushels of soil, and 1 1/2 cwt. of nitrate of potash to the acre. On light soils salt is an excellent fertilizer.—W. T.]

**The Blue Wood Anemone.**—I enclose a few blooms of *Anemone nemorosa corolla*. This appears to be of nearly the same colour as *A. Robinsoniana*, according to description of that variety, but it has not so many petals, nor does it appear to be so robust. Can you help me in this matter? After all, perhaps *A. Robinsoniana* may be nothing more than a selection from my variety. I had the pleasure of paying 2s. 6d. for 1 in. of root and one leaf of *A. Robinsoniana*, so I hope that a treat is in store for me, if I am spared a few years longer.—JAY AYE. [The plant which you send seems very like the form known in some gardens as *A. Robinsoniana*, but it is so much shrivelled that it is difficult to judge. It is much to be desired that plants sent by post should be wrapped in gutta-percha paper or tinfoil, in order to prevent evaporation.]

**Artificial Manures for Vines.**—What is the best artificial manure to obtain for making manure water for Vines? and in what proportions should it be applied? I have been recommended to use dissolved bones, and have tried the same without much apparent result. My Vine-brier is an outside one, but protected from too much wet and rendered warm by covering it with old cucumber frame lights, which I take to be a combination of the advantages of inside and outside planting.—W. [Genuine Peruvian guano is the best artificial manure with which we have yet met for Vines, being safe, permanent, and quick in its action. Two pounds of guano dissolved in 30 gallons of water will be found to be about the right proportion, though much depends on the strength and vigour of the Vines. In any case caution is requisite, in order not to overdose; better use it weak, and give an extra watering, than give a strong dose to, as it were, surfeit them.—W.]

**Moss on Gravel Walks.**—I am troubled with Moss growing on a gravel walk in front of my house. I believe that this is owing to the drains being old and out of order, and next autumn I intend renewing them. In the meantime I am recommended to put down salt to kill the Moss. Can any of your correspondents tell me if it will have the desired effect, whether this is a good time of year for putting it down, and if there be any special method of application? Or is there any other remedy? Weeding only keeps the walk clean for about a week.—B. P. [Salt will kill Moss on gravel, but this is not the best time of the year to put it on; later on will be better, and select a time likely to be dry for a few days, with sun-heat if possible. When rain washes the salt off before it lies on the walk for a time it is not so effectual in killing either weeds or Moss. Care must be taken not to spread the salt too near Box edgings or turf, or it will injure them. Perhaps the most effectual way of using salt for destroying weeds or Moss on a gravel walk is to put a quantity of it in a boiler with water, and when dissolved pour the liquid on the walk with a watering-can through a good wide rose, and let the water be as hot as possible.—W. T.]

**Names of Plants.—R. S. O.**—The *Spurge Laurel* (*Daphne Laureola*). Is the enclosed a species of *Anemone*? It is grown in a wild sort of shrubby here.—S. W. D. BANKS, *Argentea*. [It is the *Anemone Windflower* (*Anemone hepatica*).]—*F. F., Kent.*—*Now Zealand Flax*; it should be easily obtained among your good nurserymen. *F. A. L.*—*Grevillea juniperina*, an Australian shrub. *Mies M.*—*Anemone fulgens*. *T.*—The creeping *Forsythia*—*Nos* (*Opheodorus versal*). *JAY AYE*—We will try to ascertain. This genus is generally wrongly used. *H. W.*—It is very doubtful what species is meant. *J. G. D.*—*Anemone hepatica*. *W. P. M.*—We do not undertake to name more than three or four plants at a time, and we never name florists' flowers, such as the several forms of *Antirrhinum*. The sweet-scented florist is *Jasminum Sambac*, the *Rhododendron* with the large leaf *R. Falconeri*. The other *Rhododendrons* next week.

## THE KITCHEN GARDEN.

### SOWING MAIN CROP AND LATE PEAS.

TAKING one year with another, I suppose scarcely anybody has too many Peas much after July. No matter what kinds are grown, or what system of culture is adopted, a full crop cannot always be depended upon. Either a withering drought occurs and causes many of the pods to be abortive or only half filled, or the growth may be checked by mildew, which even the best culture, in some seasons and situations, fails to prevent; or else, on the other hand, the weather is damp and sunless, and the growth becomes lanky and weakly; and in either case the result is too many instances, with late-sown Peas, is far from satisfactory. Of course there are many things which the cultivator can do to encourage the crop and to counteract the difficulties which it has to encounter—such as sowing only on well-prepared land; placing the rows at considerable distances apart, with other lower crops intervening; planting in a fully exposed situation; and, above all, planting the Peas thinly in the drills. In this way the foundation is laid for a sturdy growth, that will in a difficult season not be without its influence for good. On porous soils, too, there is an advantage in planting in trenches in which 6 in. of well-decayed manure has been placed, and well mixed and blended with the soil. In no case should rank or long manure be used, unless the trenches are prepared some time previously, say two or three months before the Peas are sown. The word trench may perhaps to some minds convey a wrong impression. When the Peas are sown, the surface of the soil covering them need not be more than 2 in. or 3 in. below the natural level, so that trench in this case means a slight hollow just sufficient to retain moisture round the plants. Mulching with half-decayed manure is another valuable expedient for Peas or any other crop on a porous soil; in fact, with well prepared stations for the rows, and the mulching applied before the heat has drawn all the moisture from the land, there should not be much necessity for watering. I am disposed to think that, as watering in the kitchen garden is often done, it is too generally lacking in thoroughness to be of much benefit. In sowing successional crops of Peas, the common arrangement is to make the successional sowing just as the previous one is coming through the ground; and, as a rule, no doubt this acts fairly well. But for late Peas I am in favour of sowing freely, during April, such kinds as *No Plus Ultra*, *British Queen*, and *Emperor of the Marrows*, without attaching much importance to what has gone before or may come after, being guided entirely by the land at disposal and by the probable demand. If well and liberally treated, the Peas I have named, or such kinds as *G. F. Wilson* and *Veitch's Perfection* if dwarfier sorts be desired, sown in April, will do well; and if the pods be carefully gathered when fit for use, the plants will assume a perpetual or successional character, that gives better results than is often obtained from late-sown Peas of the large Marrow kinds. A moment's reflection will make this clear. The late Marrow, of which the *British Queen* may be taken as the type, requires a genial growing season to enable it to get a good grasp of the soil, and to build up its growth in a sturdy manner; but when sown much later than April, the heat forces it prematurely into bearing before anything like a full and natural development has been reached; hence it often perishes with mildew almost without bearing any crop at all. One of the best Peas for sowing in May and the first half of June is *Huntingdonian*. *Laxton's Supreme* bears well as a late-season Pea, although not of first-rate quality. *Standard* and *Marrow*, two of *Laxton's* recent seedlings, are also excellent, being very free bearers, strong in habit, and of medium height, or rather below if anything. I am not urging anyone to altogether discontinue the later sowing; I only wish to lay stress upon the importance of getting in a good breadth not later than April. Late-sown Peas may occasionally do well, but early-sown crops may invariably be relied on; and if at any time there should be a surplus, it is better to have them gathered and given away than permit them to remain on the plants to produce exhaustion; if this happen, the bearing powers will be effectually checked, as nothing weakens a plant so much as seed-bearing; therefore, to make the most of a crop of Peas, the pods must be gathered green.

E. HOBDAY.

### LABELLING KITCHEN GARDEN CROPS.

I FIND it to be an excellent plan not only to name each variety of vegetable grown in the kitchen garden, but also to add the date of sowing or transplanting, as by referring to these dates when the crop arrives at perfection one may get many useful hints for future guidance. For instance, *Cauliflowers* or *Broccoli* we have out from the open ground for years past with scarcely an interval or blank in the supply. But, in order to do this, the sorts must be well selected,

the dates of sowing and transplanting must be known to a certainty, and situations to suit various soils and seasons must be selected with care, or a protracted drought in summer will cause as great a failure as a protracted frost in winter, and the same applies to all crops. Peas may come in too quickly or at too long intervals apart, even if sown at what was supposed to be the most favourable date for ensuring a constant supply; and if we have no trustworthy reference to depend on, we cannot correct the error in succeeding operations. Celery and such crops as are liable to prematurely run to seed if sown too soon, and which we are also anxious to have fit for use as early as possible, can only be grown satisfactorily through close observation to apparently trifling details of culture, and by classifying for special purposes. The labels for all such crops should be at least 1 ft. 6 in. long and 2 in. wide, made of soft yellow dead planed quite smooth and painted white, and the name should be written in large characters with Wolf's garden pencils. Such labels defy the weather and remain perfectly legible as long as any crop will stand in one position. Herbs, salads, and medicinal plants ordinarily grown in kitchen gardens should have the name by which they are most generally known conspicuously placed on each bed or compartment, so that it may be readily found by the most casual observer. It is only by such means that one can satisfy oneself which varieties of vegetables are really distinct and which are not. A constant supply does not depend on the number of varieties which one may have, nor even on "complete collections," but on the best sorts in each class.

Henham.

JAMES GROOM.

### IMPROVED DANDELIONS.

THE leaves of the Dandelion, from the remotest time, have been used as a spring salad; but, being so plentiful in Corn fields, meadows, and on roadsides, the plant itself is seldom cultivated. Immense quantities of it are brought daily by rail to the Paris markets, coming occasionally from districts as far off as 300 or 400 miles. It is used in a green and also in a blanched state, the former from meadows, the latter the produce of roots buried in autumn by the plough. Occasionally, when rivers overflow, they leave a thick layer of rough mud, straw, weeds, &c., on the surrounding meadows, and when this deposit is raked off, Dandelions, beautifully white, are found under it. Lately, however, their cultivation has greatly increased, even in gardens where they are grown as an ordinary vegetable. Three varieties are now cultivated. 1. The common Dandelion, the leaves of which are all radical and lie nearly flat on the ground, from 2 in. to 8 in. long, deeply serrated, light green, dark green or brownish, according to locality and soil. Some botanists have supposed that there are several species of the wild Dandelion, but that is not the case. 2. Large-leaved Dandelion, the leaves of which are numerous and larger and more substantial than those of the common kind. The plants are also better furnished with foliage and produce a better crop. It is, in fact, an improvement on the common kind; but, nevertheless, it is seldom met with. 3. Cabbaging Dandelion, in which the centre or heart is entirely filled up with small leaves, which, as they increase in growth, show a tendency to turn inwards, like an *Endive*. By means of careful selection, this kind might easily be greatly improved.

Dandelions, we know, are not difficult to grow. They should be sown in April or May in a well-prepared bed in rows 4 in. apart. The young plants, if too thick, should be thinned out, and they should be kept clean by means of frequent hoeing. In October clean the bed and remove the greater part of the leaves, and spread over the whole from 3 in. to 4 in. of light soil, sand, or leaf-mould. As soon as the young leaves show themselves above the top-dressing, the crop is ready for use. The soil should then be removed, when the leaves will be found to be beautifully blanched. They should be taken up with the top of the root attached to them. The improved sorts should have a little more room than the common kind. Another and perhaps a better way is to sow in April or May, and to transplant into another bed the best of the seedlings, subsequent cultivation being the same as that described above. Sometimes the full-grown roots are taken up in October and transplanted close together in another place, an operation which does not disturb their growth, and the produce is the same during winter. Roots tied into bundles in October may be forced in a cellar, like the *Barbe de Capucin*, to the produce of which Dandelion has a great similarity. In America, where much attention is paid to the culture of Dandelions, after the

plants have become fully grown in the autumn, a frame is put over them, and some are even forced, in order to obtain an earlier crop. In the open ground it takes about a month to blanch the plants, much depending of course on the character of the soil and the weather.

Growers who care only for the roots sow in October in drills 1 ft. asunder, thinning the young plants to 3 in. apart. The following autumn the roots are taken up, cleaned, sliced, dried, and sent to market. The roots are ground and used as a substitute for or mixed with Coffee, like Chicory.

When Dandelion is used for salad it is dressed with salt, pepper, oil, and vinegar, or boiled and eaten with meat. The leaves must be washed and well dried before being used; this is very important if good quality is looked for. If got from a meadow, select, if possible, plants with short, deeply serrated, brown leaves, which are far superior to those having long, pale green foliage, grown under hedges or in the shade. Dandelions, I am glad to say, may now be seen daily in Covent Garden Market. Should the plants bought be faded, dip them in water, and in a few hours they will revive. D. GUIHENEUF.

**Ducks and Slugs.**—Some years ago ducks were tried for the purpose of destroying slugs in a garden in Berkshire in which I was employed; the result was not only complete failure as far as eating the slugs was concerned, but the destruction caused by their webbed feet was something enormous. It is astonishing the distance they will travel in search of worms; and, so far as my experience went, I found these to be their favourite food. Nearly everything in a small estate was either broken down or eaten by them. Some of the borders which were planted with herbaceous plants were thoroughly spoiled, and in one instance a large bed of cuttings of trees and shrubs which were very promising had hardly a bud left upon them after the ducks had promaded over them a few times. They also got into the frames when air was given, and did no end of damage. The consequence was, we had soon to disperse with their services and adopt the lime cure, the lime being, however, always mixed with soot, salt, and gas ashes, sown as one would sow Grass seeds about three times a week on those evenings on which we considered it most likely to find the pests abroad. The quantity sown was at the rate of three bushels per acre. The result of this application was through success as regards keeping the slugs within bounds, and I do not remember that anything suffered from its use. Under any circumstance we found it immeasurably superior in every way to the duck remedy.—CHARLES DENNIS, *Southwark Park*.

I can assure Mr. Smith (see p. 304) that it is no delusion that ducks eat slugs. We have five ducks that were hatched in the middle of August to run about in the autumn and follow the diggers in winter and spring. After the ducks are full-grown we keep them in the pen, only letting them out when wanted, and they seem to know their work as well as we do. We never feed them previous to letting them out. When uncovering the Asparagus beds a week or two back, the surface of the bed under the manure being pretty well covered with slugs, the ducks were let out, and they picked up every one, and so hunted the manure through that not one could be seen; in fact, our walks used to be alive with slugs on damp mornings, and now we seldom see one anywhere. We use no other means to destroy them, so I feel sure that we must give the credit to the ducks. Young ducks only should be used; the first lot should be hatched as early as possible, and the second in August; the latter will supply eggs to breed from for the August following. Where it is not convenient to have ducks in the garden I employ Mr. Garland's plan (see p. 304), which, though old, is a very good one. Salt put in the oven and dried answers equally well as quicklime.—JAMES SMITH, *Waterdale*.

There are "slugs and slugs" and "ducks and ducks." The slug which worries me most here is the one with a dusky brown or black back and yellow stomach; I forget its specific title at the present moment. It is a regular pest. Except on very warm, moist nights it lives some 6 in. or more beneath the soil, where it revels amidst patches of the rarest bulbs and roots of the choicest perennials, continuing its depredations with uninterrupted immunity throughout the winter, except in exceptionally severe weather, when the ground is frozen some depth below the surface. Lime is simply useless as a remedy against this slug, except on mild, moist nights. I have destroyed hundreds on such nights by scattering patches of bran about the borders and going round with a lantern and a tin basin after dark, into which I put the slugs and pour boiling water upon them. It is very back-breaking work, but effectual. Ducks do not fancy this slug; and if they did, could not get it, for it comes to the surface after they have gone to bed. They are fond of the

common grey slug, but they are very bad gardeners. I found that they browsed the Carnations almost as clean as sheep, picked off the heads of Primroses, Polyanthuses, &c., wholesale, and paddled about the beds till they looked like Cornfield paths. In fact, the cure was as bad as the complaint. Lime is very effectual when fresh, but it makes the beds look unsightly for a day or two. I stick to the bran and the basin and the 'bull's-eye lantern in spite of the back-ache.—H. HARPER CREWE, *Drayton-Beauchamp Rectory, Tring*.

While there is no doubt that lime on moist, warm nights must prove extremely useful in killing slugs, I think the remedy so liberally provided, and so effectually used by Nature in the shape of frogs, &c., is far more efficient than the lime nuisance, and also preferable to ducks, from the fact that ducks take daylight for their hunting time, while frogs use the night time; having a lively recollection of frog music in the Rice lands of Barmah, I cannot recommend them as songsters, but I think their merits as assistants in the kitchen garden are greatly overlooked. As a small amateur, who knows that night time will place his helpless enemies within the reach of a trowel, I can calmly walk round with a hand-lamp and spread them out; and I recommend this in preference to salting or liming.—LONDON STONE.

I quite agree with Mr. Smith's recommendation to employ ducks for the destruction of the slugs. I have also found that peewits are equally useful for the same purpose. I remember one instance in which a quantity of young peewits were obtained and kept in a common garden frame till they were old enough to run about. After cutting their wings, to prevent them from flying away, they gradually grow tame, and were very efficacious in devouring not only slugs, but all kinds of garden pests. During severe weather in winter they were kept in a frame at night and let out in the daytime, and a piece of ground was dug almost daily to supply them with food. Immediately on seeing a fork or a spade in use, they would run eagerly to devour whatever might be turned up. I prefer them to ducks, as they are not so unsightly, never in the way, and, last, but by no means least, they seldom interfere with growing crops.—O. H. KITCHING, *Cokethorpe Park*.

**Poisoned Seeds.**—"Prepare seeds before sowing with red lead to protect them from birds," &c. This advice, so often repeated in kitchen garden operations, seems to me to call for a protest. Considering the solvent powers of distilled water, and the fact that kitchen crops are generally gross feeders, such indiscriminate use of poison is likely to lead to unpleasant results, which could be avoided by the use of some safer pigment. Paris green is not the one I would suggest; and perhaps the Americans who advocate such a free use of it for the destruction of the Colorado beetle may yet find, with our gardening friends at home, that poisonous metals are not the safest things to place in the path of that active solvent of them, rain water. With regard to flowers, I think metallic salts, &c., open out a wide field for experiment, and in that direction I trust the arsenic and red lead sprinklers will be content to travel.—LONDON STONE.

**Vegetables for a Clay Subsoil.**—Situated as we are, under clouds of smoke and chemical vapours, with a subsoil of clay yards deep, it requires both time and attention to select the sorts of vegetables most suitable for cropping such a soil, as many of the better kinds do not yield even one-third of a crop. Allow me, therefore, to enumerate such varieties as may be relied upon to produce, with proper attention, satisfactory results, commencing with Broccoli, which depend so much on the character of the winter and the method of cultivation. Frogmore, Knight's Protecting, Dwarf Russian, and Brimstone we find to stand well. Brimstone is, however, most to be trusted. Amongst Cauliflowers, Autumn Giant is quite at home, and also Walcheren, for August sowing. Negro, or dark or pale-dun Kidney Beans answer well. Amongst Lettices, Wheeler's Tom Thumb and All the Year Round have proved to be very good, but all the Cos varieties under ordinary cultivation are poor. Peas, being most important, require extra attention, for if the seed get starved before it comes through the soil, a poor crop may be expected. A trench, a spade deep and about 1 ft. wide, should be taken out, and filled up with leaves or littery manure, and covered over with soil; on this sow the Peas, which will thus be kept dry and warm. McLean's Little Gem, sown thinly, three rows on a 4-ft. bed, with a few branches between the rows, produces good crops, and comes in early. In fact, it is a useful little Pea and well-flavoured, and as it only grows from 12 in. to 18 in. in height, it may be sown in any snug corner. Laxton's Alpha and Advance may be both sown on the same day, as the latter is eight to ten days later than the former; both are good in flavour, and abundant bearers. For the general crop, Champion of England, Yorkshire Hero, and Prince of Wales, peas should be selected; and for late crops, Ne Plus Ultra and Omega, combining, as they do, quantity and quality. Omega only grows about 3 ft. in height, and is very desirable where Pea stalks are scarce.—JAMES SMITH, *Waterdale*.

## OPENING OF THE GARDENS AT KEW.

SIR T. LAWRENCE at a recent meeting at Kew said, "Some time ago Sir Henry Peek and himself, accompanied by Mr. Marsh Nelson, went down to Kew Gardens and spent several hours with the assistant curator. Since then they had been in communication with various friends in the House of Commons, who would be likely to sympathise with their views and assist in supporting them. They came to the conclusion that the earlier opening of certain portions of the gardens was an entirely reasonable one. He strongly advised them, if they could gain the point of earlier opening, not to press unduly the taking down of the wall. He should do his utmost to support their views in Parliament, and he trusted that they would succeed." [It is pleasing to note that Sir T. Lawrence comes to the conclusion that must be evident to every one who, on the spot, looks into the question on its merits and with reference to the interests of horticulture generally. The question of the wall is local merely, and of little importance compared with that of the opening of the gardens at reasonable hours.]

— We find the following concerning this matter in the "Journal of Botany" for April. The testimony is peculiarly valuable, as coming from a gentleman occupied in the same way as what may be called the scientific portion of the Kew staff. As will be seen, the journal in question takes precisely the view taken by the various horticulturists who have written to us on the subject, that the closing of the gardens through the best part of the day is undesirable, and in the interests of science needless. It says—"The Botanic Gardens at Kew have hitherto been closed to the public till 1 p.m. This is found so troublesome by those chiefly interested that an effort is now being made by horticulturists and other semi-scientific people with little leisure to obtain an earlier hour of admittance. Up to the present time, however, this has been refused, the chief reason given being that it would seriously interfere with the strictly scientific work of the garden, which is carried on during the morning. Such is, at all events, the ground taken in a memorial sent round for the signature of botanists, emanating from two well-known lecturers, and advocating the continuance of the existing regulation. If such a result were likely to follow the public opening of the gardens in the morning, it would be in our opinion a sufficient reason for refusing to make the change; but we are convinced that the danger is wholly apprehension. Besides the officials themselves, we believe we are not wrong in saying that the number of persons engaged in any definite scientific work in the gardens at Kew (we do not speak, of course, of the Herbarium) is exceedingly small. Into the causes of this it is not necessary to enter, but it is obviously undesirable that everybody else should suffer in order that half-a-dozen artists and experimenters in fertilisation may be undisturbed. What more easy than to rail off any spot (it is not asked to have the houses open) where special work is going on? Besides, there is the new Jodrell Laboratory in the gardens, built expressly for the use of the very persons in whose interests it is sought to continue to keep the whole of the gardens closed till the afternoon. Wishing, as every botanist must do, to see the utility of the magnificent gardens at Kew increased, we cannot but think that their earlier opening is much to be desired on behalf of a large class of persons not likely to abuse the privilege; we hope, also, to hear of scientific work of an experimental kind being done in the new Laboratory."

— "Science," we are told, requires that Kew Gardens be closed to the public for half the day. Up to about luncheon-time the authorities inside the walls, whoever they may be, are supposed to be in a "brown study"—absorbed in abstruse speculations on such subjects as the accumulation of water in the stoke-holes, the manuring of the flower beds, and the spelling of plant names. If we could look over the walls we should no doubt see a multitude of students and philosophers walking to and fro in the grounds during the forenoon. About noon the *savants* betake themselves to their cells to ruminate upon their morning's experiences, and in order also that they may not be contaminated by contact with the ignorant public, who are then permitted to invade their sacred haunts. Seriously, we do not suppose anybody believes for a moment in the plea of "science" put forth by the Kew authorities. It is a serious inconvenience to horticulturists and others that the gardens should be closed during the best part of the day; and the public will, now that they have taken the matter up, no doubt insist upon them being opened at a reasonable hour in the forenoon, unless a better reason for keeping them closed, as hitherto, than has yet been given, is furnished.—The "Gardener."

— Last summer I was one Sunday afternoon in the Herbaceous Department in Kew Gardens writing down a few lines about a plant with which I met there, and in which I was interested, when the man on duty came to me and said, very politely, "Notes or remarks

in writing are not allowed in this department." On my remonstrating, he said, "It is the most stupid order I ever received, but, as it is my duty, I must see that it is observed."—A FRENCHMAN.

— It would be wiser for Mr. Gerard Noel to consent with a grace to the opening of Kew Gardens at ten o'clock in the morning instead of at one. The Richmond folk are resolved not to be agitating until their wishes in this respect have been complied with, and there is no valid reason why they should not be. The excuse that it would involve additional expense is really too absurd to be seriously urged. What would the cost of two or three extra keepers amount to?—"Truth."

— It will, no doubt, interest your readers to know that, through the exertions of the Kew Gardens Public Rights Defence Association, Her Majesty's First Commissioner of Works has consented to open these gardens at ten o'clock in the morning on all bank holidays. The public will therefore be admitted at that hour on Easter Monday next, when the Association hopes that visitors will show their appreciation of the boon by constituting themselves protectors of this valuable public property, and thus assist the association in its efforts to obtain further concessions.—CHARLES COLMAN.

The present agitation regarding the opening of Kew gardens to the public at an earlier hour than heretofore has drawn the attention of horticulturists to Kew, and some interest and curiosity have been manifested in the doings and functions of that establishment as a national institution supported by public money. It is claimed for it that it is a great scientific establishment—the greatest and best of its kind in the world, and no doubt it does accomplish a certain amount of scientific work, but it may legitimately be asked, Does it do all it might or ought to do in this respect, and has it ever taken that leading position, in regard to practical and scientific horticulture in this country, which such an institution might reasonably be expected to take? In a standard work on general subjects we find that a botanic garden is defined as "a garden devoted to the promotion of botany, and in which plants are collected and cultivated in order to scientific study. The various economical applications of botany, however, in agriculture, manufactures, medicine, &c.," the same authority states, "are almost always kept particularly in view; and one great object of a botanic garden is to bring to a country useful foreign plants, to determine the question of the suitability to its climate, and to introduce those which may be cultivated with advantage." Are these the functions of Kew? may we ask; and if so, how far has it fulfilled its duties? An answer to the question is as desirable as it would be interesting. As a matter of fact, but a very vague notion prevails at present among agriculturists and horticulturists as to the uses of Kew, and neither reckon it of much account in their respective lines of industry, and Kew manifests about an equal indifference in them. There is no institution of the kind about which the general public know so little as Kew; and were it not for the occasional notes that THE GARDEN and other horticultural papers publish concerning it on their own responsibility, multitudes would be absolutely ignorant concerning its doings. It is not to Kew nor to our botanic gardens that gardeners turn for information and instruction, but to the nurseries and private gardens throughout the country. Kew no doubt contains a very large collection of plants, and, so far as it goes, we daresay is a well enough conducted establishment; but what London said of it long ago is, we are afraid, still true to a certain extent. Speaking of botanic gardens generally, and Kew in particular, and its duty and obligations to horticulture and gardening in this country, he says "the policy of this garden for a number of years past is considered as highly reprehensible; being supported by the public, it ought to have been devoted to its service."

It is almost needless to suggest the uses to which such an establishment as Kew might be put as a scientific institution and great public garden. At present it may be described as a place where a great collection of plants correctly named, perhaps, is maintained, and where a disproportionately small amount of scientific and other instruction is imparted, but concerning which exceedingly little is known. In addition to this, of course, the public have admission to the gardens under certain restrictions, but a comparatively small section only can take advantage of the privilege. To those who live at a distance from London, Kew is an institution known little more than by name. Other public societies and institutions publish their transactions,

but how often do we hear anything about Kew? Probably, it is "the greatest" institution of its kind in the world, but does it do a proportionate amount of good work? In speaking of work we do not, of course, allude to the superficial gardening done at Kew—its "bedding" and ornamental gardening, or its lessons in garden culture. In the first, it always has been a mere copyist, and it is well known that nobody goes to Kew to get a lesson in plant culture. We find, on reference to works on such subjects, that the Garden of Plants in Paris is invariably spoken of in high terms as an institution which may be regarded as holding a first place on the Continent "both with reference to the strictly scientific study of botany, and to the care bestowed upon the introduction and diffusion of useful or beautiful plants from all parts of the world. There exists in France," we are told, "what may be called a system of botanic gardens—one at least in every department to which plants are sent from the Jardin des Plantes, and from which, as they continue to be multiplied, they soon find their way into the hands of nurserymen and private cultivators." One can easily imagine the good that might have been accomplished in this way by our own botanical gardens under a similar organisation, but such work has, in this country, been left to horticultural societies and private enterprise. Chiswick and the Royal Horticultural Society has now and then made a spasmodic attempt to fulfil a similar duty; but from it, and from all other kindred societies, Kew has stood coldly aloof. The *exclusiveness* of Kew has, in short, ever been a drawback so far as gardening is concerned. The same impartial authority quoted above regarding the Jardin des Plantes, without intending any satire, briefly describes Kew in the same page as a British national institution "possessing one of the richest collections of plants in the world, and one of the chief glories (?) of which is now its immense Palm house finished in 1848, and which is 302 ft. in length, and the central part of it 100 ft. wide, and 66 ft. high." This is all the impartial chronicler has to relate concerning it. If we turn to another hook on Paris, we learn something of the more useful features and arrangements of the Jardin des Plantes, and which, it would appear, might be copied with advantage by similar institutions in this country. It is there stated that although the Jardin des Plantes "is quite inferior in point of beauty to any of our large British botanic gardens, it contains some features which might be introduced to them with the greatest advantage. Its chief merits are that its plants are better named than in any other British garden. It possesses several arrangements which enable the student to see conveniently and most correctly all obtainable useful plants infinitely better than in any British botanic garden, and it displays very fully the vegetation of temperate and northern climes, and, consequently, that in which we are most interested, and which is the most important for us." In addition to its remarkable collection of Pears, a large division, we are told, "is devoted to the culture of plants used as food and in commerce. The chief varieties of all garden crops, from Radishes to Kidney Beans, are to be seen; the various species of Rhubarb; all important varieties of Lettuce; in a word, everything that the learner could desire to see in this way. It is not merely the plan of the thing that is sensible and good, but the way in which the work is carried out. The annuals are regularly raised and put out, the ground is kept perfectly clean, and it is, in fact, the best place I have ever seen in which to become acquainted with useful plants. Such arrangements, well carried out and cut off by judicious planting from the general verdure and chief area of any of our great public gardens, would be of the greatest service." Another division, the same writer states, is "chiefly devoted to medicinal and useful plants of all kinds, arranged in a distinct way. First we have the Sorghums, Millets, W heats, and cereals generally—all plants cultivated for their grains or seeds. Then come plants cultivated for their stems, from *Polymnia edulis* to *Ullucus tuberosus*. Next we have the chief species and varieties of the Onion, such plants as *Urtica utilis*, the Dalmatian *Pyrethrum rigidum*, and, in a word, almost anything likely to interest in this way from *Lactuca perennis* to the esulent *Hibiscus*." If in one or more of our botanic gardens in each of the three kingdoms such an arrangement as the above could be carried out, even on a moderate scale, what

good purposes horticulturally and agriculturally might it not fulfil! Looking at botanic gardens generally in Great Britain, they may truthfully be described as the sleepest horticultural institutions in the country. Some of our so-called "botanic gardens" are indeed a libel on the name—mere gaily grounds they are, and absolutely barren of interest in either a scientific or horticultural point of view, and which have hardly, at any time, assisted or promoted the interests of horticulture, though ostensibly existing for that purpose. In fact, our botanic gardens both great and small have stood still, comparatively, in their isolation, while horticulture in all its branches has elsewhere been advancing with rapid strides. J. S. W.

**Espalier Apple Buds Killed on Galvanised Wire.**—The cause of the buds of Apple trees being killed on galvanised wire (see p. 282) can scarcely be attributed to lightning, inasmuch as in many of our best gardens the greater part of the fruit trees are trained on galvanised wire. There are miles of such wire espaliers in use in different parts of the country, and, as far as can be judged generally, no harm results from their use, whether they be covered with fruit trees, Roses, or other plants. Even if lightning were the cause one year, it is improbable that it would be so every year.—C. S.

—Mr. Lamond's idea (see p. 282) of galvanised wire and lightning is incorrect. The solution of it is that, in the course of time a portion of zinc wears off from the wire, and then it at once becomes, under moisture, a miniature form of galvanic battery, and this current is fatal to vegetation. For example, place round the edge of a lawn, on the Grass, a few lengths of croquet hoops. After a time the Grass will die wherever it is placed; of course, I refer to the galvanised iron wire.—WILLIAM SOPER, 283, Clapham Road.

**Our Fruit Crops.**—The weather still continues harsh and cold, with the wind due east, or nearly so. For a few days after the sharp frosts of April 1 the weather promised to relent, the wind veered round to the south, and the air felt soft and balmy. Soon, however, a hard east wind set in, accompanied by the brightest sunshine—about the very worst possible weather for the frost-bitten trees. It is pitiable to note how much harder the petals of Peaches, Apricots, and Plums are than their pistils; the former are as hardy as ever, while the latter are dead since April 1. A great many of the Plums are also utterly black in the hearts, and, of course, also killed. Apples seem to have escaped for the present. With the experience of recent years before us, it is of no use ignoring the fact that no fruit is safe until after the middle of May.—D. T. FISH, *Bury St. Edmunds*.

**Fruit Prospects near London.**—In the market gardens round Isleworth and Hammersmith the fruit trees now in bloom present an interesting sight. Plums, especially early kinds, such as Prince of Wales, are literally covered with fully-expanded blooms, which, as yet, do not appear to be seriously injured by the frosts which we have lately experienced. Apple blossoms seem even more plentiful than last year, and there are reasonable hopes entertained that this may prove a plentiful fruit year, at least, as far as the London market gardens are concerned. Gooseberries are in full leaf, and the fruit does not appear to be injured. Peach trees on walls are in full bloom, and many of them have set their fruit.

**Transparent Gage Plum.**—How many cottagers' hopes of a crop of Apricots are blighted by the present weather, whereas if they had planted the Transparent Gage Plum, which blooms later and is more hardy and prolific, in all probability a good crop would have been secured, as well as an equally valuable fruit both for home consumption and for commerce.—W. N., *Newark*.

**Mulching for Fruit Trees.**—For many years past I have mulched fruit trees with the long manure as brought from the stables. In the matter of bush trees, such as Gooseberries and Currants, it serves two or three purposes: first, it manures the land; secondly, it keeps the soil cool and moist; and, lastly, it keeps the fruit clean. The heavy summer rains, unless the trees are mulched, splash the fruit and make it useless. Peaches, Nectarines, and Apricots all share in this annual dressing, which, I believe, does much good and saves watering.—R. GILBERT.

**The Weather at Bury St. Edmunds.**—A little mistake occurs (see p. 308) in reference to the weather. I am made to say "this is the lowest temperature experienced here since the last day of December, 1874, when it fell to 16°." This ought to have been 6°. I wrote it with a clypher prefix, thus 6°, which is usual with meteorologists to prevent mistakes in summing up, &c., to obtain mean or average temperatures.—P. GAYLE.

No. 335.]

SATURDAY, APRIL 20, 1878.

[Vol. XIII]

"This is an art  
Which does mend Nature: change it rather: but  
THE ART ITSELF IS NATURE."—Shakespeare.

### MY WILD GARDEN.

We find Crocuses to be very effective in the wild garden, and by having some of them in shady places their flowering season may be prolonged; in fact, they will grow almost anywhere. We have them peeping through deep tufts of Saxifrages, and beautiful, too, they are grown in this way. Single tufts, such as one generally sees in ordinary flower borders, should be avoided. The Hepatica, like the Crocus, is also quite at home in the wild garden. We select a place for it under an Oak tree, trench it two spits deep, and let it lie undisturbed for a month. The trenching is then repeated, mixing with the soil some stones of various sizes, and some leaf-mould. When the flowering season is over we plant the Hepaticas from 1 ft. to 18 in. apart, then place some loose stones partly round each plant, and in autumn the falling Oak leaves collect in sufficient quantities amongst the stones to keep the plants warm through the winter. In spring the flowers push through the leaves, which we never remove. A few Primroses, Scilla sibirica, Star of Bethlehem, Dog's-tooth Violet, and similar plants might be intermixed with the Hepaticas. Pheasants are enemies to Crocuses, and rabbits to Hepaticas. To protect the latter, the best plan is to surround the group with  $\frac{1}{2}$ -in. mesh galvanised wire netting. Hepaticas, particularly *H. angulosa*, like, just now when in bloom, the flickering shade of the Oak branches, and in summer the leafy boughs are not too dense for



Crocuses in the Wild Garden.

them; on the contrary, they afford just shade enough to moderate the scorching rays of the sun. Two or three groups of them in the wild garden are very attractive, and it is only by having them massed in this way that their beauty can be fully seen. Not less than from 100 to 200 plants should be put in a colony, and should they not appear to grow well for the first two or three years, be patient, and do not disturb them; they will ultimately thrive, as a permanent home will promote their happiness. What may, however, flourish well in one place may not answer in another. There are varieties of climate, aspects, and soils which practical experience alone can teach one best how to appropriate. The most eligible ground for the wild garden is that with an undulating surface, and if it contains rocks and water so much the better—in fact, any place possessing a wild character, even an old quarry. Deciduous forest trees are most necessary, and so are evergreen ones, especially Conifers. Under the boughs of a Silver Fir, for instance, might be planted *Oxalis Acetosella*, from  $\frac{1}{2}$  ft. to 2 ft. apart. This is not too wide, as in a couple of years the ground will be well nigh covered all over with it right up to the trunk of the Fir, and all the attention that it requires is when any weeds appear to exterminate them. Take another Fir and plant under it *Linnaea borealis*; then select a deciduous tree and plant under it in like manner the sweet-scented Woodruff; and under another tree plant Aaron's Beard. Again choose another tree of the Fir tribe and plant under it the major Periwinkle, and amongst it a few common Ferns, such as *Lastrea dilatata* and others. In about three years the ground will be quite covered. Under

another tree plant the lesser Periwinkle; the single blue and white are better than the double kind. Some Crocuses and Daffodils introduced amongst these have a pretty effect. If none of these Periwinkles be at hand, purchase a dozen or two, and plant them on a piece of ground in the kitchen garden, where they will grow vigorously; and, by cutting the shoots off as they grow, they can be made into cuttings. Put them in beds 4 ft. wide, in rows 4 in. apart, and let the cuttings be 1 in. asunder in the rows. By attending to this for a year or two, Periwinkles may be had by the thousand. If there be an evergreen shrubbery for a background, for shelter, or to check any current of wind, a mass of Periwinkle or Aaron's Beard, from 4 ft. to 6 ft., extending outwards from the base of the shrubs with an irregular outline, has a fine appearance, especially if the shrubbery contains flowering plants, such as Tree Paeonies, *Kerryas*, *Weigelas*, or flowering Currants.

TWENTIS.

### FREE-FLOWERING CACTI.

I HAVE much pleasure in complying with Mr. Fish's request (see p. 335), and will begin with the so-called night-flowering Cereuses, the blooms of which rank amongst the finest of those of all Cacti. The plants belonging to this class are climbers, and do best in a stove or warm greenhouse, in a soil consisting of good rough loam and peat, with a dash of sand in it. Where it is necessary to move them about, a good plan is to grow them on an old Fern stem, or to get a wire cylinder and fill its centre with Moss and peat for them to root in; and if managed in this way they will do well in very small pots. To ensure their flowering give them plenty of light, and do not fall into an error, which is unfortunately too common, viz., that of starving these plants. A drop of manure water at times will be found to be a great help, as will also surfacing the pots with some dried cow manure, and the syringe should be freely used during the summer time. The best flowerers are *Cereus McDonaldia*, creamy-white; *C. triangularis*, the same in colour and one of the largest; *C. grandiflorus*; *C. hamatus*, cream-coloured; *C. Schrankii*, rose; and *C. pterogonus*, a dwarf climber, with white flowers, the purest white amongst the Cactus tribe. Next come the *Phyllocacti*, all of which do well in a greenhouse temperature. They may be trained on a trellis or in pots, with wires or sticks, but I find sticks best, as the iron rusts and injures the roots. They like a rough but strong soil, and plenty of water when growing, but when they have made their growth they should be well exposed to light and air. The best sort are *P. crenatus*, white; *P. Ackermannii*, deep red; *P. Edwardsi*, rose; *P. phyllanthoides*, rose; and *P. nitens*, cream coloured. In this section there are many hybrids, but I have not seen anything to equal the *Cereus speciosissimus*, which ought to be placed amongst *Phyllocacti*. At Sudbury House we have many hybrids, but the raisers have aimed only at producing large flowers without symmetry. To the more rigid forms of Cacti, *Cereus validus*, a kind with flowers of a pale rose colour, is a grand addition, and possesses a most delicate scent. All the kinds of *Echinopsis* have good flowers, and they are plants which can be grown very easily. *Echinocactus Ottonis*, yellow; *E. mammillosus*, white; and *E. bicolor*, rose and purple, are gems only requiring to be seen to be admired. "Cacti are more curious than beautiful," says one; "What freaks of Nature these are!" says another, alluding to the plants in the Succulent House at Kew; but, for my part, I think all Cacti beautiful. I am acquainted with several who grow all of these plants, and I know from experience that they derive as much pleasure from them as do other amateurs from collections of other kinds of plants. When Mr. Fish asks if I have no facts to offer as to the momentary glory or luminosity in the Queen of the Night, he touches a cord, which leads me to say, "Yes." But will people believe them to be facts? Well, never mind. I have noticed the emanations to which he alludes in the *Cereus triangularis* and *hamatus* especially many times; so have I also in some Orchids and Rhododendrons. Luminosity is most apparent in the more delicate tints, such as white, pale, rose, and yellow; and it is most vivid when the flowers are fully expanded.

J. CROUCHER.

Sudbury House, Hammersmith.

## NOTES FROM KEW.

**Hardy Shrubs and Herbaceous Plants.**—The more genial weather that has prevailed since the last notes were written, the less intense night frosts and the increasing power of the sun which the lengthening days of April bring with them, have, notwithstanding a modicum of east winds, had a favourable effect upon shrubberies and out-door plants generally. The Lilacs and other well-known shrubs are rapidly putting forth their leaves, while the yellow flowers of *Berberis* or *Mahonia Aquifolium*, and the *Forsythias*; the brilliant crimson or reddish-pink of the Ribes, and, above all, the orange-coloured flowers of *Berberis Darwini* are striking indications of the rapid approach of spring. Prominent also among the shrubs or dwarf trees is the purple *Magollia* (*Magollia purpurea*), a deciduous plant of Japan, with fragrant flowers, the inner segments of which are white, while the outer are tinged with purple. This is not a handsome plant in itself; its deciduous character makes it less valued as an effective shrub than many of its fellow species, who retain their glossy leaves throughout the year, and whose flowers are far more handsome. In some parts of the gardens the Larch trees are just now very beautiful with their soft, dull crimson female catkins, and the delicate green of the young leaves. Amongst herbaceous plants that are now pushing their way through the ground and developing their flowers, in some cases before their leaves, *Anemone pennina* claims notice. It is a pretty little plant of Southern Europe, and has become naturalized in a few localities in Britain. The flowers are numerous, of a light bluish colour with a slight tinge of lilac. *A. Hudsoniana*, a North American species ranging from Hudson's Bay to the Western declivities of the Rocky Mountains, as well as in several other parts, has small flowers varying in colour from white, purple, deep red or yellow. The Kew plant is a splendid deep crimson, and is most attractive at a time when showy out-door flowers are scarce. *Hepatica acutiloba* is also a North American ranunculaceous plant, growing in woods and on the sides of hills and mountains. The leaves are cordate, with from three to five entire, acute lobes, and the flowers are small and white. The whole plant is used in medicine in its native country. *Sinapis arvensis*, an Algerian crucifer, in a neighbouring bed, is producing in abundance its yellow flowers, the general appearance of which is so characteristic of plants of this great family. A charming little Wallflower is *Cheiranthus mutabilis*; the flowers are borne on an erect stalk about 6 in. high, and in colour and general appearance much resemble the purple Candytuft. A very pretty dwarf roseaceous shrub is *Spiraea Thunbergii*. It is a native of Java and Japan, and grows to a height of from 3 ft. to 6 ft. The Kew specimen is of a much smaller size. The leaves are narrow and pointed at both ends, sharply toothed towards the apex. The little white flowers are plentifully produced, and the whole plant has some general similarity to a *Deutzia*. An interesting plant is *Potentilla* alb., with its thread-like procumbent stems, and its oblong leaflets in fives on the lower leaves, and threes on the upper; its pedicels are axillary and terminal, and the flowers, as its specific name indicates, are white. The plant is a native of Middle and Southern Europe and the Caucasus, and has been recorded, but with doubt, as having been found in Wales. Amongst the *Boraginaceæ* two plants attract our notice: the first, *Lithospermum orientale*, has ascending stems branching out at the base and spreading over the ground. This gives the plant a very ragged appearance, and were it not for the small, golden yellow, star-like flowers, it would have little to recommend it. The flowers are prettily arranged in leafy, terminal clusters. The other plant referred to is *Anchusa sempervirens*, the evergreen Alkanet, a well-known inhabitant of waste ground in many parts of England, but, though well known, none the less beautiful, or even less suitable to occupy a place in the garden; for its salver-shaped beautiful blue flowers make it an attractive plant at this time of the year.

**Greenhouse Plants.**—In the beds and on the shelves of the Winter Garden many interesting plants are already in flower. An Australian proteaceous plant (*Hakea acicularis*) attracts notice from its irregular or twisted perianth, the tube of which is curved under the limb. This is a character of the *Hakeas*, which, added to the flowers being borne in sessile, axillary clusters, as in the species under consideration, and the silky pubescence of the pedicels, together with the rigid foliage, make these plants striking objects in collections; this species is found in New South Wales, Victoria, and Tasmania, and grows to the size of a tall shrub or small, bushy tree. Another shrub or small tree, native of the same colonies as the preceding, is *Pomaderris elliptica*, belonging to the Order *Rhamnaceæ*; the leaves are elliptical, smooth on the upper surface but clothed on the under side with a very short white tomentum. The flowers, which are cream-coloured, are borne in umbellate clusters. A very fine plant of the well-known *Sparmannia africana* is growing in the Winter Garden; it is thickly clothed with its large, heart-shaped leaves, and, for the foliage only, is a noble plant. The white, long-stalked flowers, with the golden filaments tipped with purple

anthers, make this plant a valuable one where there is sufficient room for it to grow to any size. *Myrsine africana* is a low, much-branched shrub, bearing copious, globose, sessile clusters of small red flowers in the axils of the leaves. It is a native of the mountains of Abyssinia and the country of the Nile, and is found also at the Cape. *Fuchsia procumbens*, as its specific name indicates, is a prostrate plant; it is a native of New Zealand, in the damp forests of the Northern Island, and in Middle Island on the Canterbury Plains. It has very small, broadly-ovate, or almost rounded leaves, and axillary, solitary flowers set on long, slender drooping peduncles.

**Stove Plants.**—*Aesclepias curassavica* is flowering freely in the new range. It is a very pretty Swallow-wort, native of the West Indies and Tropical America. The bright orange-red flowers are both attractive and singular; the five petals are bent down towards the stalks, and within the petals are five peculiar cup or boat-shaped processes, which form the corona; from each of these is a curved projection, within which are the five stamens; the filaments unite into a tube, at the summit of which are five anthers adhering to the stigma. The plant is called *Ipecacuanha* in the West Indies, in consequence of the roots being used by the natives as an emetic. Two very beautiful species of *Scilla* are *S. cupaniensis* and *S. natalensis* var. *sordida*. The flowers spike in the first-named species is about 1 ft. high, and the flowers are arranged in a cluster at top. The second has a long, slender, erect spike of about 1½ ft., upon which the delicately-formed and splendid pale blue flowers are arranged alternately along the sides spirally with mathematical precision. *Pelargonium lobatum* is worth cultivating for the sake of its peculiar little flowers, the petals of which are blackish, with a slight metallic lustre edged with yellowish-white, the anthers standing up in the centre of the flower against the dark background.—†.

## DEGENERATION OF DOUBLE CINERARIAS.

In the spring of 1875 I purchased from a leading London nurseryman half-a-dozen named varieties of double *Cinerarias*, which had been propagated by him by means of cuttings taken from the best and most distinct and fully double of a batch of seedlings raised from the seed sent out, I think, by Messrs. Hasage & Schmidt, of Erfurt, in the previous year. Of this half-dozen varieties only one, named *King Alfonso*, was really double or worth anything, the others having all reverted and already degenerated into either inferior single or worthless and irregular semi-double flowers. The one variety above named, however, was a really good double flower, resembling a fine purple double Groundsell (for which flowers, indeed, the first batch of cut blooms of these double *Cinerarias* were actually mistaken by the London nurseryman to whom they were sent by the Erfurt firm before he had read their accompanying and explanatory letter). This variety I continued to propagate by cuttings in the autumns of 1875 and 1876 with perfect success; the young plants flowering the following spring, and remaining fully double, were much admired. I therefore imagined that in this variety, at least, I had a perfectly constant double *Cineraria*, and last autumn again got half-a-dozen healthy cuttings off the old plants, which had been cut down after blooming. When, however, these came into flower in my greenhouse this spring I found, to my great disappointment, that the degeneration was after all only a question of time, and that *King Alfonso* was no better than his fellows, as on all the half-dozen plants there was not a single fully double flower. It is therefore, to my mind at least, pretty evident that those who want double *Cinerarias* must grow them each year from seed, out of which, if carefully saved, they may always expect a certain varying proportion of double-flowered varieties, but the perpetuation of these from year to year cannot be depended upon with any certainty whatever. W. E. G.

**Fraxinea magnifica** as **Small Plants.**—Frequently the *Fraxineas*, when grown at all, are found in the shape of old straggling plants, and although they flower freely under these conditions, they are much more beautiful when seen in the shape of vigorous young plants full of bloom. In the large conservatory at Pine-apple Nursery there is now a number of plants of several new seedling kinds grown in 4-in. pots. They are about 6 in. high, and each bears eight or ten large purple blossoms or buds. The foliage is large and healthy, rendering the plants very effective.

**Cyanophyllum magnificum.**—This beautiful decorative stove plant is not generally found in such good condition as it might be. It is very subject to mealy bug, and its leaves often become dry and torn and the beauty of the plant spoiled. In Messrs. Low's nursery, at Clapton, there is just now the finest display of plants of this *Cyanophyllum* we have ever seen. They are growing in small pots in a moist, warm temperature, and appear to grow as rapidly as a common *Fuchsia*.

## NOTES OF THE WEEK.

**Prizes for Asparagus.**—With a view to improve and extend the culture of Asparagus throughout the United Kingdom, it is proposed to give a series of annual prizes, extending over a period of seven years. These prizes will be given in London, Edinburgh, Dublin, and the north and west of England in consecutive years. They are given with the object of having thoroughly tested in all parts of the country the plan adopted near Paris of planting wide apart, and without much expensive preparation. This system may be carried out in the smallest gardens, in fields, or fruit gardens, without the considerable preliminary expense and preparation usually considered necessary for the formation of Asparagus beds. The competitors will, however, be free to adopt whatever plan of culture they may think most suitable to their soil and locality. It is, however, wholly impossible to produce Asparagus of the first quality by the crowded system of planting in use in private gardens throughout the United Kingdom, and there is reason to believe that much rich manure given before planting is not only needless, but injurious. In the Paris system little or no manure is given at the time of planting. The plants—one-year seedlings—are planted in shallow trenches 3 ft. apart in the line, and the lines about 4 ft. apart. There is no loss of space under this system, as a light crop is taken off the ground between the lines when the plants are young. In free, loamy soils of fair quality many excellent growers make no preparation of the ground before planting. In England the plantings may be best done in April and in May, according to locality. Manure is not usually given till the plants are established, and then only over the roots. Asparagus is also grown as single plants, and also in single rows. As large single plants it is often grown in the Vineyards, or here and there among small fruits, or in any open spots of ground. In these cases the plants are often several yards apart, or sometimes quite isolated. Equally suitable places are offered by our squares of ground occupied with small fruits, not to speak of many other positions. In single rows is also a good way, the plants in this case being 3 ft. apart. With a view to give sufficient time to all who would like to compete, the first series of prizes will be given three years from the present planting season, and will be continued annually till 1887. The prizes will be given under the auspices of the horticultural society in each locality named. In the sixth and seventh years of the series, viz., in 1886 and 1887, the competition will be held in London, and will be open to American, French, Dutch, and all other Continental growers in addition to those in Britain. The prizes at each annual competition will be as follows: For the best hundred heads, first prize, 5 guineas; second, 4 guineas; third, 3 guineas; fourth, 2 guineas; fifth, 1 guinea. Extra special prizes will be added, open to all comers, in the international year's competition. A full and well-illustrated account of the mode of culture these prizes are designed to encourage, with particulars as to places of meeting, dates, &c., is in preparation for gratuitous distribution, and will be duly announced in the horticultural and agricultural journals. The essential thing to be done now is the planting, which may be pursued during the present month in the south of England, and in May in the north. The prizes are offered by Mr. W. Robinson. The judges will be appointed by the horticultural authorities of the respective shows. Each competitor will be requested to state in a form, which will be furnished to him, the nature of the soil and sub-soil, age of the plantation, and other conditions under which his Asparagus is produced. Each competition will be open to growers in any part of the United Kingdom.

**The Yellow Dog's-tooth Violet.**—This pretty plant, common in America, is now flowering in our correspondent's ("Oxon") garden at Henley-on-Thames. It is very seldom seen in flower in this country, though there would seem no reason why it should not be plentiful. It was one of the plants that was almost annihilated during the height of the bedding mania, and probably very few sound roots have been since introduced.

**General Index to "The Garden."**—In reply to several correspondents who suggest the desirability of having a general index to all the volumes of THE GARDEN already published, we may state that we propose to publish a general index to THE GARDEN at the end of each twenty volumes—at the end of the last volume for 1880, and on the completion of every subsequent twenty volumes. Considering the very full weekly and half-yearly indexes which we now publish, anything further would be unnecessary and confusing. The half-yearly indexes of the first twelve volumes are all in print, and if bound up together would supply the place of a general index.

**Lecturing and Music at Kensington.**—The sounds of loud voices and loud music are no addition to the attractions of the conservatory of the Royal Horticultural Society's garden at Kensington—certainly not in the case of those who go there to see any

new or rare plants, and who may desire to speak to their friends about them. The council room is the place where new and rare plants are seen to best advantage, so long as the noises above referred to are generated in the conservatory. It is a great mistake to allow the distractions of either music or talking to exist where people wish to have undivided attention for the plants. There is no reason why they should not be elsewhere in the same garden.

**Blandfordia grandiflora.**—This is flowering with me. Has it ever blossomed in England? I have been told it has not.—MAX LEICHTLIN, Baden-Baden.

**Moss Roses in Covent Garden.**—Trusses of blossoms and partly-expanded buds of the Moss Rose may now be seen in the central avenue of Covent Garden. It is evident that these have not been produced in the open air, a fact which suggests that these most beautiful of Roses might be had in abundance at this season by growing large plants of this Rose in tubs or pots placed in an orchard house or similar structure. Their treatment merely consists in keeping their weak growths thinned out yearly, and in occasionally removing some of the old stems. They are easily increased by means of layers or division.

**Dendrobium luteolum.**—Messrs. Low & Co., of Clapton, have now a fine display of this desirable Orchid in their nurseries. It is a plant of easy culture, light and graceful habit, and for two or three months in succession yields an abundance of delicate sulphur-coloured unique blossoms. When fully expanded its flowers last in a cool temperature for several weeks. Wherever Orchids are grown at all this Dendrobium should find a prominent place.

**Rhododendrons at Chelsea.**—In Messrs. Veitch's nursery there are just now several of the tender Rhododendrons in full flower, and which make a striking display. Among them *Henriana* is bearing a profusion of large bell-shaped blossoms of the purest white, delicately spotted in the throat with yellow; *Countess of Haddington*, delicate blush; and the ivory-white *Jasminiflora*, still one of the best in its class, is laden with sweet-scented blossoms.

**The National Rose Society.**—The schedules of the coming shows of this Society, to be held at the Crystal Palace on June 29, and at Old Trafford, Manchester, on July 6, have come to hand, and, as far as we can judge, the prizes and other arrangements are in every way satisfactory; it may therefore reasonably be hoped that this year the finest displays of Roses ever witnessed will reward the labours of this Society.

**Gentiana verna in Pots.**—The blue *Lobelia* and many of the *Campanulas* are often grown in pots for decorative purposes, but none of them are so beautiful as the hardy *Gentian*. If grown well in a cold frame near the glass, and in good, rich, sandy loam, this *Gentian* may be made to form pretty little tufts of bright blue blossoms in spring, and would supply a colour of which there is at this time of year a scarcity. We lately saw some grown in pots in one or two of the principal London nurseries.

**Rudaea macrophylla.**—A quantity of plants of this now make a good display in the Pine-awlet Nursery, St. John's Wood. They are grown with single stems 8 in. or 9 in. long, furnished with glossy green, Magnolia-like leaves, and surrounded by large clusters of white, woolly blossoms. In a bud state the flowers resemble those of the Orange, but when expanded they are in shape like those of a *Stephanotis*, but of course much smaller. This plant, which is sometimes seen under the name of *Psychotria leucantha*, is old but by no means common, and is one which should be grown extensively where good flowering plants are in request. It requires an intermediate temperature, liberal culture, and it never fails to yield large masses of blossoms, which last for many weeks in perfect condition.

**Hybrid Daffodils.**—The collection of hybrid Daffodils shown by the Rev. J. G. Nelson, of Norwich, at South Kensington on Tuesday last, showed forcibly what excellent results, in the way of effect, may be gained in our gardens by planting varieties of even the commonest of hardy flowers. The blossoms of many of the kinds shown were equal to many of the choicest Orchids, and some of them were so large and pure as to form no mean rival to the handsome *Encharis amazonica*. Their colours varied from the purest white and the most delicate cream colour to the brightest golden-yellow; and in size and form they were in every respect perfect. Such kinds as these, besides being the most valuable subjects for planting in masses on borders, or in isolated clumps on lawns and bare places, are well worthy of being planted or otherwise cultivated in the cool conservatory. Brought into bloom early, their blossoms would probably be even more delicate than when produced naturally in the open ground, and they are much more worthy of having attention and trouble bestowed upon them than many of the common *Narcissi* generally used for pot culture.

## GARDEN DESTROYERS.

## CATS v. MICE IN GARDENS.

SOME of your correspondents appear to be in a state of considerable perplexity as regards mice and their depredations, at which I am but little surprised. Nature has ordained that we should be plagued by mice, but she has likewise provided us with a remedy in the shape of a cat. I should like to know what offence cats have been guilty of that they are put on one side by the gardening world, and their places filled by more or less clumsy contrivances which our little enemies are much in the habit of treating with contemptuous indifference. Let those who may be overrun with mice cast traps on one side and put the case into the hands of cats, and they will never have occasion to repent of misplaced confidence. No garden should be without its cat, one or more in proportion to its size. These cats should be accustomed to travel about the whole establishment. It is, however, a common practice to keep cats out of the houses or frames. This is wrong, and occurs often under the mistaken notion that they will cause some damage, which, however, will never occur if they are not driven or frightened. I have often been amused to see the delicate care with which a cat will tend its way amongst plants, never so much as disturbing a pot. Some may say, this is all very well, but cats do not always go where they are most needed, and before they get scent of the mice the damage is accomplished. My answer is, make them go where they are required, which can be easily done in the following manner:—Always keep in stock a red herring or two, and wherever it is suspected that the enemy is at work, strewn a few small pieces about in the evening. Repeat this two or three nights in succession and there will be no more mice thereabout for some time, as the cats in searching for the herring (which will invariably attract them the first night) will be sure to catch them. Many have doubtless noticed one peculiarity as to the depredations of mice, and that is, whatever they attack they persistently return to and make an end of it before touching anything else. It is sometimes in vain to bait traps in the most tempting manner, or place poisoned baits in their path. They will often completely ignore all such inducements, and return again and again in the most exasperating manner to the one thing of which they have thoroughly got a taste. It was a case of this kind which first induced me to try the herring cure. A pit of Strawberries was attacked, and although every means was tried in the way of trapping and poisoning it was of no avail. As a last resource the frames were left partly open, and the pit strewn with small pieces of herring, and in two or three nights the mice had entirely disappeared. In this case I had to depend upon neighbours' cats, but it was a lesson by which I so profited, that I have never since needed to set traps to any extent. Whether it be Peas or Cress beds, or Strawberry plantations, they may be entrusted in this way to the care of the cat; and by persistently following out this system, the plague of mice will be reduced to a minimum.

By/lect.

J. CORNHILL.

## SPARROWS IN AMERICA.

SPARROWS, since their introduction into America, have, it seems, been petted and fed regularly by the authorities in the cities and large towns, under the impression that when they increased in numbers they would keep down the legions of caterpillars and canker-worms that infest the trees in the public parks. It is, however, reported that the caterpillars and larvae are left to multiply on the trees untouched by the Sparrows, and that they are as busy amongst the buds of fruit trees and in Wheat fields as in the old country. They are also said to drive away all the native song-birds, such as the Baltimore and Orchard Orioles, Blue-birds, Purple Martins, and Cat-birds. Mr. Allen, one of the most celebrated of American ornithologists, states "that the rapid increase of the Sparrows in America will soon call for legislative action to hold them in check, and that the introduced Sparrow is to a greater degree gregarious than most of our own species of the same family, and subsists only upon an insect diet exceptionally. With their known predilection for the buds of fruit trees and for ripening grain—to say nothing of other depredations they are known to commit, respecting which we have testimony from the Old World as well as at home—have we not burdened ourselves with a tenfold worse pest than the caterpillars prove to be? The Sparrows are hence a needless and deleterious addition to our fauna it may be no easy task to eradicate. Instead of being pampered and protected, they should be, if not at once expelled, at least left to take their chances in the struggle for existence without the advantage of the shelter and food they now find so abundantly for them by unwise human foresight." It may be remembered that, in one of the back numbers of THE GARDEN, I

mentioned that the introduction of the Sparrow into America would turn out to be a great mistake, and they are now finding this out.

Welbeck.

WILLIAM TILLEY.

**Destroying Slugs.**—In the gardens of which I have charge I am happy to say slugs are scarce, but with a neighbour they are just the reverse, and it is a hard matter to keep them down, though many reputed remedies for them have been tried. Lime has been used abundantly, and at the most favourable times. Leaf traps have been laid for them, and I have seen as many as two gallons collected in this way; notwithstanding this, however, they are as plentiful as ever. Salt is another remedy which has been tried. After a square of ground is cleared of the Cabbage tribe a good dressing of salt is given just before it is dug, with the view of destroying the eggs under the surface. In the gardens under my care last autumn I had all vacant ground dressed with a heavy coating of the best lime which I could get; it was turned in with the spade as hot as it could be used. The lime was employed in preference to manure, with a double object in view, i.e., destruction of all insects with which it came in contact, and the prevention of clubbing. This last is my greatest enemy, and the best remedy which I have found for it is trenching, and I hope also to derive great benefit from the lime.—A. J. SAUNDERS *Bookham Lodge, Cobham.*

—There are gardens and gardens. No doubt the "duck on 'r" might suit the rough-and-ready style adopted by some, but would hardly suit those who have borders of choice Alpines, perennials, &c. From considerable experience I can testify to the efficacy of Mr. Harpur Crewe's remedy, given in THE GARDEN (see p. 350), viz., bran traps. The plan adopted by me is this: Pieces of glass about 4 in. square are set at intervals of about 10 ft.; every afternoon a pinch of fresh bran is placed on each. A tin bowl, containing a little water with a handful of salt in it, is taken round about ten o'clock, and the slugs are just swept off into the bowl. The process is very simple, and about fifty traps can be cleared easily in half-an-hour. It is very important that the traps should remain in the same position, as those slugs that arrive after the nightly visit are sure to be early the next one. On a favourable evening the average will be from ten to twenty on each trap. If the traps are not going to be visited, they should, without fail, be set, as our enemies are then enticed from their more natural food, and our favourites are spared. Mr. Harpur Crewe is right about the backache, but this plan reduces that to a minimum. It is well to use only a small quantity of bran, as the birds are rather apt to scatter it during the day. The traps, if judiciously placed, are not unsightly.—A. K., *Eastcott Cottage, Pinner.*

—I have been sadly troubled with slugs, and lime, soot, and ashes were for a long time my only remedy. Now I use Kennet salt, which I find to be both a good manure and a complete cure for slugs. It answers well for Onions, and Carrots and Parsley are very much benefited by using it as a top-dressing. It is also a deadly enemy to wireworm.—D. LAMOND, *Arthursstone, N.B.*

**Popular Remedies for Snake Bites and Scorpion Stings in the East.**—There are a number of plants growing in Greece and other parts of the Levant which, owing to their bearing more or less resemblance in form or colour to a snake or scorpion, are in accordance with the ancient doctrine of signatures which still obtains amongst the common people, supposed to be remedies for their bites. They are called by the modern Greeks *phidhrostanta*, *phidhokhrita*, or *phidhorice*, that is to say, snake plant or snake root. Most of the snakes in Greece are harmless, the only ones whose bite may lead to fatal results being the *amodytis* and a kind of viper known as the *ekhidna*. Amongst those plants which are known to have the greatest efficacy in cases of snake bites are the *Solanum melongena* or ordinary Aubergine, *Heliotropium hirsutum* and *supinum*, *Scorpiurus elnata* (the beautiful Scorpionides or Scorpion plant of Dioscorides), and *Arum Draconculas* (the *Drakonotum* of Hippocrates). The leaves and fruits of these plants are made into a poultice and applied to the wound. Whenever these plants are found anywhere in a decaying state they give off an odour resembling that of putrid meat, which is perceptible at a great distance. The *Arum Draconculas*, whose stem is spotted like the skin of a snake, is also used both as a remedy and as a preservative against snake bites.—X. LANDEER, *Athens.*

**The Elder Bush Cure for Gooseberry Caterpillars.**—Some years ago I became acquainted with a simple plan of keeping the Gooseberry caterpillar at a respectful distance, namely, that of planting here and there amongst them a bush of the common Elder. I was at first sceptical, and waited until I watched the result for three years, during which time there was not in the garden, under my observation, any caterpillars, while in others roundabout, minus the Elder bushes, they abounded.—T. SMITH, *Wexley.*

## THE FLOWER GARDEN.

## ROSES ON PALINGS.

ONE of the prettiest and most useful purposes to which the Rose can be turned as a climbing plant is to cover palings or iron fences. The accompanying illustration represents a portion of a long fence in the Waltham Cross Nurseries, formed of common deal lathes, which, otherwise bare and cheerless, is made attractive and beautiful by a covering of Roses, which, when well-grown and judiciously encouraged by careful pruning, gracefully entwine themselves in and out the pales. The varieties best adapted for this purpose are to be found amongst the Noisettes, Hybrid Chinas, and Tea-scented classes, together with some few of the Bourbons. If the exposure be northerly or the fence high, many of the Boursault, Ayrshire, and Evergreen Roses will be found very suitable. The following list embraces all shades of colour, and will give a succession of flowers throughout the summer and autumn:—*Noisettes*—



Roses on Palings.

Celine Forestier, yellow; Fallenberg, crimson; Aimée Vibert, white; La Biche, flesh; Reve d'Or, coppery-yellow; Bouquet d'Or, salmon-yellow. *Hybrid Chinas, &c.*—Blairi No. 2, blush-pink; Charles Lawson, rose; Chenedolé, bright crimson; Madame Plantier, white; Paul Ricaut, crimson; Vivid, bright red. *Tea-scented*—Gloire de Dijon, salmon; Belle de Bordeaux, pink; Belle Lyonnaise, canary-yellow; Madame Berard, salmon-yellow; Sombreuil, white; Madame Trifle, salmon. *Bourbons*—Souvenir de la Malmaison, pale flesh; Sir J. Paxton, bright rose. When pruned the plants should not be much cut back, but rather have the weak shoots removed altogether, as it is masses of flower in preference to individual fine specimens that are to be sought after.

ARTHUR W. PAUL.

**Pruning Roses.**—The method of pruning Roses usually adopted cannot be considered a good one; for, instead of the trees increasing yearly in size and vigour, they are, when established, kept nearly at

the same size. What plant is more lovely isolated on an open lawn than a spreading, naturally grown Rose? The best I ever saw had simply their heads relieved of the weakest shoots, the strong branches being allowed to grow at will. In a few years large branching heads, furnished with long garlands of blossoms, were the result.—C. S.

## ROSES AND THEIR CULTURE.\*

THIS is a little book on a well-worn subject, suitable for amateurs who are desirous of excellence in the art of Rose growing. The coloured plates are, however, not so successful as could be desired, and not equal to the letterpress. Amid the great confusion that reigns as to the distinct species of Roses, it is not surprising to find that *Rosa villosa* and *Rosa rubiginosa*, in the chapter on "leading species of Roses," are put down as separate species instead of being placed under the heading of *Rosa canina*, from which they hardly differ, excepting in their scented leaves; while *Rosa indica*, *borboniana*, and *sempervirens*, the origin of our autumn Roses, are classed as belonging to the summer-flowering *Rosa canina*, from

which they differ very greatly. The various lists of Roses towards the end of the book are most carefully compiled, and worthy of all praise, but it is to be regretted that the author's evident friendship to one eminent nurseryman should blind him to the equal excellence of Roses raised by other English growers. The old plan, too, of training Roses horizontally on wires—espalier fashion—as one would fear trees, is surely at the present day unworthy of recommendation. These slight defects once mentioned, we again repeat that the book is full of information and experience, and may be read with interest.

E. H. W.

## PLANTS FOR INTERMIXING WITH ROSES.

Roses are unsurpassed in their attractions by any flowering plants in cultivation when in bloom, but they have an uninviting appearance when their principal display for the season is over, which is not compensated for by the limited number of flowers which even the most continuous bloomers among the Hybrid Perpetuals, assisted by the Chinese and Noisette varieties, produce. This, of course, is not apparent in the case of

\* By W. D. Prior. London: George Routledge &amp; Son.

such plants as are introduced into mixed borders, where the rusty condition which their foliage assumes in the after part of summer is not so prominently noticeable as when they occupy beds or borders by themselves. But to do full justice to Roses they require such liberal applications of manure as will not agree with the majority of flowering subjects, yet much may be done to render Rose beds and borders attractive from early in spring up to the end of autumn without in any way interfering with the flowering or general well-being of the Roses.

**Appropriate Flowers for Planting amongst Roses.**—In the selection of such plants as are adapted for this purpose it is necessary to consider not only the habit and form of the subjects chosen generally, but it is of equal importance that they are such as either possess an immunity from the principal insects with which Roses are so much infested, or that are easily kept clear from their depredations.

**Perennials Suitable for Mixing with Roses.**—In beds of Roses where the plants were pegged down I have found nothing more effective than the common White Lily (*L. candidum*), and the different varieties of *L. canadense*, three or four bulbs planted together in the openings between the Roses. They are equally suitable for using in this way amongst half or full-sized standards, but when associated with these the Roses should not be planted very close, or the Lilies are liable to be in the way of anyone moving amongst them for the purpose of attending to their requirements. To follow these, Gladioli are in every way adapted, as to the time they will come into flower, succeeding, as they do, both the Roses themselves and the Lilies, should they be used as well, and like them, their erect, non-spreading habit of growth, and the ease with which green fly can be destroyed by syringing should it get from the Roses to them, adapts them well for growing in this way. Gladioli for the purpose should now be planted; the Lilies when the tops have died down. Single plants of *Campanula pyramidalis*, at intervals in the spaces between the rows of Roses, are also very effective. These should be raised from seeds sown in May out-of-doors in the open ground, and grown on through the summer; they should then be taken up, potted singly, wintered in frames, and planted out amongst the Roses in May.

**Annals for Mixing with Roses.**—The best of these that I have found adapted for the purpose are Ten-week Stocks, sown about the middle of April, and again at the end of the month, grown on three or four plants together for a time, in 4-in. or 5-in. pots, and then planted out without disturbing their roots. The rich condition of the soil necessary for the Roses keeps the Stocks growing and flowering longer than under ordinary treatment. French and African Marigolds are especially suitable for this purpose. They can be flowering long, grow freely, and are proof against aphides or other insects, as far as I have ever observed. These should be sown at once, a few seeds each in 5-in. pots, and planted out about the middle of May. Mignonette, either sown now in pots and afterwards transferred to the Rose beds, or sown at once where it is to remain, will, by keeping the plants thin enough, continue flowering till near autumn.

**Suitable Plants for the Margins of Rose Beds.**—For the outer edges of Rose beds, in addition to spring bulbs (Snowdrops, Crocuses, Narcissi in variety, and Scillas), Pansies, Myosotis, Violas, and Daisies, kept in the reserve ground, and now, when the Roses have been pruned and mulched, planted at suitable distances apart, will keep on making a display for a considerable time; but it is with the plants that come into flower when the bloom of the Roses begins to wane that the best results will be derived, and by employing such as I have named above, Rose beds need not have the shabby look which many so often present when the first flush of bloom is over. As will be understood from what I have said, there should be no attempt to plant so as to cover the ground, as this would interfere with the ordinary work in attending to the Roses, as well as with gathering their flowers; but enough may be done to give the ground devoted principally to Roses a cheerful appearance all through the season without much cost in either labour or material.—T. BAINES.

#### RICE-PAPER PLANTS.

SUB-TROPICAL gardening has been objected to by many because the plants used in it are of such a tender nature that they are destroyed by the first frost; or, if preserved, require much room and heat to keep them successfully during the winter. But, however, much this may apply to some, it certainly does not to *Aralia papyrifera* and Sieboldi, both plants of stately beauty and grandeur of foliage. *A. Sieboldi* is not only an excellent decorative plant for prominent positions, such as the centres of circles or as single specimens on lawns, but it is likewise a most valuable subject to use in a small state for the embellishment of room windows, halls, or staircases, where, owing to its hardy, enduring character, and the great substance of its elegantly-divided glossy leaves, it will stand for months without in the least becoming shabby or appearing to suffer in any way. As this most useful variety admits of ready increase by means of seeds, and may be raised and grown in any ordinary frame, it is a plant within the reach of all; and, if sown now, will form a good decorative subject for next winter's use, and come in capitally for planting out the following spring. There

is scarcely a shrubby border anywhere but what might be greatly improved by having a few *Aralias* interspersed among the Evergreens, where their fine bold outlines and distinct character would do much to add to the effect of any herbaceous plants growing in front. In most districts the *Aralia Sieboldi* is perfectly hardy, so that there need be no hesitation in leaving it out if the positions in which it is placed are at all sheltered and exposed well to the sun, so as to ripen and harden the growth. The variegated form of this *Aralia* is an exceedingly ornamental plant, having beautifully-marked creamy-white edges to the leaves; but, as it does not come true from seed, and can only be slowly propagated by cuttings, it is as yet unfortunately scarce and dear. Its merits, however, are such that no one who sees it will begrudge its price, as it is one of those really good plants that there is always a satisfaction in possessing. Not only is the foliage of these *Aralias* of a most pleasing form and colour, but after they attain size and strength, they annually produce fine heads of bloom; and, being laden with crystal globules they sparkle when the light shines on them like so many diamonds, and are a great attraction for bees. The best way to increase the variegated variety is to make an incision partly through the stem, and then to bind up the cut with some Sphagnum or common Moss mixed with fibry peat, which should then be kept moist to encourage the formation of roots. As soon as these have got well hold the head may be severed, which, if then potted, will soon make a handsome, well-furnished plant. Once the top is removed in this way, the old stem will break again, when all the side shoots, except one of the strongest and best situated, may be taken off with a heel, and treated as ordinary cuttings by being placed in sharp sandy soil, and kept close where they can get a gentle heat. I have tried seedlings of these several times, but, like variegated Hollies, they always come up Albino and die off; and an attempted cross has as yet led to no satisfactory result. Where sub-tropical gardening is attempted, *A. papyrifera* is almost indispensable, as it is one of the most strikingly ornamental plants that can be used either for groups or masses, or as single specimens in conspicuous places; but, as its leaves are of immense size, it should be so placed as to be out of reach of strong winds, or they get lacerated or blown about, and bruised in such a manner as to cause much disfigurement. Like all plants of similar habit and with large-spreading foliage and of quick growth, *Aralias* are gross feeders; and, in order to induce a full development and bring out their beauty, rich deep soil should be afforded, and, when the weather becomes warm, plenty of liquid manure administered—to prevent the escape of which by evaporation it is a good plan to mulch around the stems with horse or old Mushroom manure, leaf-soil, or anything of the kind that will not have an unsightly appearance. The readiest way to propagate *A. papyrifera* is to make use of all the larger portions of the roots, which may be cut up into pieces from 2 in. to 3 in. long, all of which, if buried in sandy soil and put into a hotbed, or where they can get a little warmth, will start and make fine young plants by bedding-out time if kept gently growing on. Although perhaps not so serviceable as *A. Sieboldi* for indoor decoration, on account of its woolly leaves taking up dust and being difficult to clean, *A. papyrifera* is a grand looking object in large conservatories during the winter. It is likewise useful, in smaller sizes, to stand out among others on the stages of a greenhouse. Being a native of the island of Formosa, it is much too tender to endure our winters in the open air; but, although this is the case, so tenacious of life is it that it may be stowed away almost anywhere with safety, so long as it is out of the reach of sharp frost! Any shed, therefore, will do, as the worst that can happen is the loss of a few leaves, which are soon renewed when planted out, and which grow all the stronger for the few months' rest they get when so treated. In France, where great numbers are grown, they are wintered in caves and turned out in spring, after being started and gradually inured to the light, after which they soon grow away at a great rate, and become clothed with fine foliage.

As a town plant for windows, and one that will endure almost any amount of hardship, I know of nothing better or more cheerful-looking than *A. Sieboldi*, and the wonder is it

is not grown more extensively and sold for the purpose. A sponge or brush may be quickly run over the leaves, which are then made free from dust, and have a bright, polished appearance. S. D.

OPEN-AIR VEGETATION IN MARCH, 1878.

DURING March the thermometer was fifteen times at or below the freezing point, indicating collectively 132°. The six lowest markings were on the mornings of the 9th, 15th, 26th, 27th, 28th, and 29th, when 23°, 23°, 24°, 23°, 20°, and 18° were indicated; while the six highest morning temperatures were on the 1st, 2nd, 3rd, 4th, 11th, and 21st, when 45°, 43°, 45°, 47°, 43°, and 44° were indicated. During the last twenty-three years 1252° of frost were collectively registered during the March months, the average of these months being 54°. The greatest amount of frost was during March, 1877, when 130° were registered, and the lowest was during March, 1861, when 22° only were recorded. The weather in the early part of the month was particularly fine and agreeable, and open-air work and vegetation progressed favourably; but the latter part of the month was cold and frosty, accompanied with frequent hail and snow showers, but with little or no rain. It is much feared that considerable damage will be done to the fruit crops by recent frosts, as happened last year, many trees being in blossom, owing to the previous fine weather. In my notes on open-air vegetation for February I stated that numerous plants, Alpine, herbaceous, and shrubby, were in bloom; 118 species and varieties were collected in flower on the 12th of March; but on the 31st of that month only eighty-five species could be procured, and of these many were in a miserable condition. All open-air Rhododendron flower beds, chiefly the varieties of R. Nobleanum, have been destroyed, as well as the young leaf-buds on the larger central growths of many of the finer or Sikkim sorts, which are expected to produce flowers for the following year. Of these many, which are quite black in the heart, will ultimately fall off, and the smaller side buds or growths will afterwards come forward; but the latter are never sufficiently strong to produce flower-buds, unless all superfluous shoots be removed, which is rarely done. This neglect as to disabudding is the cause of many of the Sikkim Rhododendrons originally raised from seed getting into a dense or twiggy condition, which is much against their flowering. Many trees and deciduous shrubby plants are far advanced in leaf; Roses, both pruned and unpruned, are much out up; the effects of the sun after frosty nights is telling on them, as well as on many species of Conifera, particularly the genus Pinus, the leaves of which have had a severe browning.

On the rock garden seventy-five species of plants flowered during the month, but of these many were of short duration. The most interesting were *Corbularia nivalis*, *Fritillaria avanensis*, *Iris reticulata*, *L. persica*, *Chonodoxa Forbesi*, *Paschkinia scilloides*, numerous *Scillas*, all the known varieties of *Saxifraga oppositifolia*, *Corydalis angustifolia*, *Primula*, *Epigaea repens*, *Soldanella montana*, *Hutchinsia alpina*, and *Polygala Chamæobuxus*. It is curious this year to observe the *Leucojum vernum*, *Galanthus plicatus*, and *G. nivalis*, as well as other early bulbous plants, covered with fruit evidently caused by the fine dry weather experienced while they were in bloom.

Of the forty-two plants whose time of flowering has been recorded for these last twenty-eight years, the following sixteen flowered during March:—

	1878.	1877.
<i>Bulbocodium vernum</i> . . . . .	Mar. 1	Feb. 16
<i>Arabis albidæ</i> . . . . .	" 1	Mar. 17
<i>Theris Gibraltarica</i> . . . . .	" 2	" 18
<i>Scilla bifolia alba</i> . . . . .	" 4	" 8
" " taurica . . . . .	" 4	" 4
<i>Rhododendron Nobleanum</i> . . . . .	" 4	Feb. 23
<i>Narcissus pumilus</i> . . . . .	" 7	Mar. 12
<i>Orobuch vernus</i> . . . . .	" 8	" 27
<i>Iris reticulata</i> . . . . .	" 8	" 10
<i>Erythronium Dens canis</i> . . . . .	" 10	" 23
<i>Symplocarpe foetida</i> . . . . .	" 11	" 27
<i>Madragora officinalis</i> . . . . .	" 15	" 17
<i>Corydalis solidæ</i> . . . . .	" 16	" 28
<i>Symphytum caucasicum</i> . . . . .	" 16	April 5
<i>Narcissus pseudo-Narcissus</i> . . . . .	" 18	" 8
<i>Hyoscyamus physaloides</i> . . . . .	" 23	" 16

**Ferdinandia emimens** as a Flowering Plant.—People have hitherto only looked upon this as a fine-foliated plant for sub-tropical bedding, but it bears very pretty flowers at this season, and has the

additional merit of blossoming in a small state, and the flowers last a long time either left on the plant or cut. Last spring I had a number of late-struck plants left when the planting was completed. As they were looked upon as surplus stock no particular care was taken of them, and they consequently remained in the small pots in which they were potted from the cutting pots. They were moved into a greenhouse in the autumn; in March they commenced flowering, and their large clusters of Daisy-like blossoms springing from the top of each plant have quite a unique appearance. It was no doubt the perfect ripening of the wood that has caused them to flower so freely.—E. HOBDAV.

**What is *Primula altaica*?**—Some years ago I bought a plant of *Primula altaica* of Mr. Wheeler, of Warminster. I have long since lost the original plant and progeny, but have had sundry seedlings from it, all of which are gone, with the exception of two plants. At one time I had a very fine seedling, which I called *altaica atropurpurea*. I have an impression that the plant I originally bought at Warminster was the true *P. altaica*, as it was so different in habit and size of flower from the ordinary *Primrose*; and you are aware that at one time all the choicest herbaceous plants were carefully hunted up by Mr. Wheeler. I do not think that the plant now sold under the name of *P. altaica* has any right to be so called. Last Saturday I called at the Warminster Nursery, and found there were still two or three plants under the old name, but they seemed to me to be much degenerated. I brought away a plant, and enclose you blooms (1) of same; also of the only seedling I have left (2), and one which appears to be a hybrid (3). You will observe that the foliage is much smaller, as well as the flowers, and that each petal has a small blotch on it. I shall be glad to have your opinion as to this being the true *P. altaica*.—JAY AYE. [Neither of the plants in question have any resemblance to the true *Primula altaica*, though they have for years been erroneously called so by horticulturalists; they are merely forms of *P. vulgaris*. The true *P. altaica* belongs to the *P. farinosa* section of the genus, and is intermediate in appearance between *P. farinosa* and *P. sibirica*. It has narrow, oblong-lanceolate, leaves, sub-entire or slightly dentate, and a many-flowered umbel of small, pinkish flowers, turning paler with age (carneo-albescens). The outer flowers of the umbel are drooping, and, so far as I am aware, it has never been introduced. It is, as the name implies, a native of the Altai Mountains, in Central Asia. I would just remark that, from the now increasingly common practice of calling the Japanese or Chinese *P. cortusoides amœna* simply *P. amœna*, there is great danger of another equal mistake developing. The true *P. amœna* (which is a native of the Caucasus) belongs to the *P. denticulata* section, and is closely allied to *P. purpurea* and the provisionally named *P. pulcherrima*.—J. BACKHOUSE, York.]

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

**Neglected Plants.**—Mr. Fish's question (p. 301) about the neglect of *Fuchsia* may be enlarged to many other plants, and particularly to the *Catalpa*, to which reference has lately been made in THE GARDEN. The *Catalpa* has grown in Gray's Inn Gardens to a large tree; and also at Sunbury, adjoining the high road, and it has always surprised me that it was not propagated and made as common as the Chestnut. I may also ask Mr. Fish why he never mixes the *Deutzia scabra* with *Fuchsia*; it grows like a Willow, and is propagated simply by sticking slips in the open ground; and every cottage garden might have it, but you seldom see the plant. The gardeners have literally shelled it, because *gracilis* is tender and needs their attention. In about 100 years it will become common!—KENSINGTON.

***Clematis indivisa* Out-of-doors.**—Mr. Alfred O. Walker, Nanty Glyn, Colwyn Bay, Conway, writes, in the "Gardeners' Chronicle," as follows:—Notwithstanding suwosters and cold winds, *Clematis indivisa* is in full bloom on the side of my house facing S.E. and unprotected. It has hundreds of flowers expanded, and I need not say is a most beautiful object. I suspect it is much harder than is generally supposed, and being evergreen and growing very rapidly, it is no exaggeration to say that it is one of the finest climbing plants ever introduced.

**Auriculas as Table Plant.**—Alpine Auriculas make charming table plants, and are worth the special attention of those amateurs who love to take a good plant into the house and change it quickly for another before damage is done by dust, fires, and gas. I was amused the other day on entering an artist's studio to find that he had fitted up a garden in a skylight by putting shelves on each side, and he put up a ladder and brought down to me some of the most delicate Alpine Auriculas, as clean and perfect as if just ready to compete against Mr. Turner's Alpines at a show. We have always a few thrifty plants that are grown in the greenhouse with *Lachenalia* and such-like expressly for the table, and they give no trouble and pay as well as any plants of their class. It is a very easy matter to raise a stock from seeds, but those named are cheap, and give the assurance of the finest qualities without the risk attending the raising of seedlings.—S. H., in "Gardeners' Magazine."

\* Read by Mr. James M'Nab before the Botanical Society of Edinburgh, March 11.

## TREES AND SHRUBS.

## THE WILD BLACK CHERRY.

(PRUNUS SEROTINA.)

My attention has been called to the capabilities of this tree for economic planting by finding it growing at various points on the New England coast, in the most exposed situations, on the poorest soil, and often within the direct influence of the salt spray. Naturally the wild Cherry extends over a wide territory; it is found from the Great Slave Lake in the north to Florida, and from the Atlantic to the Mississippi. Through all the Northern and Middle States it is a common forest tree; but, in the rich lands watered by the Ohio and its tributaries, the wild Cherry attains its largest size, and develops its best qualities; and it is still not uncommon to find in the less thickly settled portions of the west specimens 80 ft. to 100 ft. high, and from 3 ft. to 4 ft. in diameter. A slow-growing tree on the poor soils of the seaboard, the wild Cherry increases with great rapidity in the rich deep lands which it prefers. An examination of many specimens cut from trees grown in Northern Illinois and in other portions of the West shows an average annual increase of wood over  $\frac{1}{2}$  in. during the first twenty years; beyond that age the growth is naturally less rapid; but on this point I am unable, from want of sufficient material, to speak with exactness.

The wood of the wild Cherry is comparatively light, the specific gravity of the dry wood being but .454, while that of Black Walnut equally dry is .539 (the average of two specimens), or 18 per cent. heavier. It is close grained, compact, and not liable to warp. Of a dull, light red tint, which deepens with age, it in time almost rivals the best mahogany in colour. For these qualities, and because it works easily and advantageously, the wood of the wild Cherry is highly valued by the cabinet maker. It is also now largely used for interior finish; and it is the only American wood employed in making what is known as "ebonized" work, that is, furniture dyed black in imitation of ebony. Cherry is still considered the best wood for window sashes. The application of wild Cherry to the finish of expensive interiors is of but recent date, and promises a large demand for this wood, while for cabinet-making the annual consumption is rapidly and steadily increasing, although still far behind the more popular Black Walnut, which, in spite of its sombre colour, still supplies the material for fully three-quarters of all the hardwood furniture made in the United States. The following table of the actual prices in the Boston market of the principal American woods employed in cabinet-making will show the comparative estimation in which they are held, and will furnish an intimation of the probable supply of first-class material for this purpose:—

	£	s.	d.
Black Walnut	15	12	6 per 1000 ft.
White Oak	13	10	0
Cherry	12	10	0
Butternut	10	8	4
White Ash	8	6	8
Sugar Maple	8	6	8

The wood of the wild Cherry when dry burns well, without snapping, but it is soon consumed, and, from its lightness, is inferior to nearly all American hard-woods commonly employed as fuel. In heat-giving qualities, Hickory, the American standard, is 84 per cent. its superior. The amount of ash left after wild Cherry is burned is remarkably small, being only eighteen hundredths of 1 per cent. of the weight of the dry wood consumed.

The facility with which young plants of this tree are raised from seed, the ease with which they may be transplanted, their hardiness, rapid growth, and power to resist rough usage, render the wild Cherry a valuable subject for forest-planting on a large scale, while the great and increasing demand for the wood insures a certain and profitable sale for all that can be raised. In many portions of New England the wild Cherry can be successfully cultivated, and, wherever the soil is moderately deep and rich, it will be a safe and profitable tree to plant. In the Middle and Western States it will, I think, be found one of the most satisfactory and useful timber trees that can be employed in forest-planting, and, although not a native of the States beyond the Mississippi, its great hardiness and adaptability to various soils lead me to hope that the wild Cherry will succeed in the treeless regions of Kansas and Nebraska as well as the less valuable trees which have generally been planted there. The fact that the wild Cherry is the favourite home of the American tent caterpillar, which preys on its foliage, and, unchecked, finally injures its growth, is the one serious drawback to this tree. Great as this objection is, says Mr. Sargent in his "Notes on Trees and Tree Planting," it will disappear before energy and concerted action.

## A NEW JAPANESE TREE.

(PTEROSTYRAX HISPIDUM.)

WE have the rare pleasure of introducing to our readers figures of the fruit and flowers of a new shrub or low tree of the highest value for our gardens. They are shown life-size in our illustration, as sent to us from Mr. Luscomb's richly stored gardens in Devonshire. They fall in graceful clusters of creamy-white, and have a delicate and grateful odour. The leaf outlined on our plate is also life-size, and shows that the foliage—at least that of young plants—is large and handsome. The fruit sent to us by the Rev. H. N. Ellacombe from his garden at Bitton

Fruit of *Pterostyrax hispidum*.

has been drawn by Mr. Hyde. Mr. Ellacombe states that with him the plant is perfectly hardy, and that it grows rapidly, making long shoots each year.

## CAMELLIAS IN JAPAN.

HAVING read in THE GARDEN some remarks on "Camellias in the Open Air," I thought that it might interest your readers if something was said respecting Camellias in Japan. I therefore put some questions to my son-in-law, who resided for ten years, as an engineer, in Japan, and he has answered them as follows:—I have seen Camellias in a wild state in the south of Japan from 31° lat. to 35° lat., and at about 1180 ft. above the level of the sea. At Ikouno (35° lat.) they withstand, in winter, about 13° Centigrade below the freezing point. The climate there is very damp in summer and very dry in winter, and the ground where they grow is generally covered in winter with from 13 in. to 4 ft. and even 5 ft. of snow. In summer the heat does not exceed 34° Centigrade above the freezing point in the shade. These Camellias are generally single, but some are semi-double, red, white, and shaded. They grow in shaded parts of the woods around Ikouno, Province of Tasma (where I resided), amongst other trees and shrubs. They do not grow very tall in the woods just named, but at Nagasaki, Province of Satsuma, I have seen a wood planted with Camellias, the stems of which were 1½ ft. in diameter and about 26 ft. in height. They are also cultivated in the open air as far as 40° lat. north. I



A New Japanese Tree (*Pterocarya hispidum*). Flowers creamy white.

have seen them at Kouhota, Province of Aquita, on the west coast, near the sea, which is frozen there every winter from fifteen days to a month, the temperature, of course, falling as low as 15° Centigrade below zero, and they receive no artificial shelter; but there the snow covers the ground nearly the whole winter. The *Sasanqua* is the hardiest, and blooms before the others. The ordinary *Camellia* begins to bloom about the beginning of January, according to the latitude. The maximum cold is from Jan. 15 to the end of February. Those in the shade are not at all affected by the cold. I have seen, at Ikouno, the expanded flowers covered with snow in the morning before sunrise, and the snow melt under the influence of the sun, without affecting the flowers. But in open situations the cold makes the petals drop when the flowers are half expanded. It is in the Isle of Kiusiu that *Camellias* are most numerous.

JEAN SISLEY.

*Lijons.*

### FENCES FOR PUBLIC PARKS.

In the matter of fences for public parks and recreation grounds what should be aimed at is—first, durability; secondly, utility; and, thirdly, appearance. If possible, however, these three qualities should be combined. Among the different kinds of fences which we see in use are—post and rail, post and chain, close and open palings, ornamental wood, and wire fencing in great variety—some with wooden posts, others with iron standards set in wood blocks or concrete—some, from their peculiar shape, simply put into the ground and tightly rammed—some with the wires free, and others in which the wires are fixed to the standards with wedges. Then we have many kinds of iron fencing—some on low walls, others fixed in stone—continuous rod and bar fencing, iron hurdles, and, lastly, walls ornamental or otherwise. All these have separate uses—some adapted for one position, some for others. As must be patent to everyone who will give the subject close attention, it is useless to erect a fence in a place to which the general public has access, either for its lightness or its ornamentation. Such fences are sure to be destroyed within a very short period, and are a continuous source of expense and annoyance. Durability and utility, therefore, demand primary consideration, and, as it is doubtless difficult to choose a fencing possessing these qualities, a short description of the different kinds in use may in some degree assist those who are unacquainted with the matter.

Commencing with the simplest form, viz., post and rail or chain fencing, I may state at once that the only quality requisite in this case is that the posts should, if of wood, be perfectly sound, *i.e.*, free from shakes or sap. They should be 3 ft. or 3 ft. 6 in. above ground, and at least 2 ft. 6 in. or deeper in the ground, in proportion as the soil is solid or otherwise; and they should also be well rammed, kept in an upright position, and placed at from 10 ft. to 15 ft. apart. The iron rails must not be less than 1 in. square, and they should be sufficiently long to reach three posts, *i.e.*, two spaces of 10 ft. or 15 ft. They should be run through the posts about 6 in. from the top, holes having been previously made for that purpose, or they may be fixed in grooves on the top and fastened with iron straps. If chains be used, they must be either carried through the holes or placed on the top of the posts, where they should be wedged or fixed with staples or T-pieces. The use of such fences is to prevent riding or driving over turf, and also as a protection at the margin of rivers, lakes, ditches, or other dangerous places. This, or similar fencing, made entirely of wood, is also used to protect newly-planted trees both in open spaces and private parks. The next kind which we have to consider is what may generally be termed wood fencing, of which there are many varieties, some plain, cheap, and durable; others elaborate and expensive. Let us take first closed fences and open fences, made of cleft Oak palings, and sawn posts and rails. These consist of posts, and two, three, or four rails morticed into them, according to the height which it is necessary the fence should be. To the rails are nailed the upright palings, and it will be found that what are called patent rose-headed nails are the most suitable for this purpose. Nails are sometimes galvanised to prevent oxidation, but this, in my opinion, is a

mistake, inasmuch as they draw easily, whereas those not so treated retain their hold much more surely. It is true, the oxidation in some instances causes the wood to become stained, especially when not well seasoned, but the advantage gained by the firmer hold more than compensates for this in public parks, where fences are so liable to get damaged. This kind of fencing is much used as boundaries for private parks, for dividing cottage gardens, and for similar purposes. The open palings are generally employed for protection to plantations; they are materially strengthened by having a band of hoop-iron nailed along the uprights staves parallel with the rails. These fences, when made of thoroughly seasoned materials, are very durable, and the cost moderate. Wood fencing of an ornamental kind is generally open, consisting of a top-rail, sometimes protected with iron work. Examples of this kind of fencing may be seen in Regent's Park and elsewhere. Ornamental fences are also used for the front gardens of villas, &c., but for such purposes they are not so suitable as iron.

We now come to wire fencing, which, except for boundary or outer fences, is suitable for almost every position in the park or pleasure ground, whether public or private. Such fences are light, handsome, durable, erected with facility, can be made of any reasonable height, close enough to keep out cattle, &c., and, last, though not least, are remarkably cheap. Wire, like wood, fences are made of various forms, but there are qualities in some kinds which render them preferable to others. The stability of a fence, and the facility with which the wires can be loosened, in order to allow cartage of materials, &c., when necessary should never be overlooked. In this particular some have the advantage of others. As before mentioned, some fences have their standards fixed in wood blocks or concrete, others simply in the soil well rammed; and here again I maintain there is a great advantage, as any ordinary labourer can repair, refix, and put in an upright position any posts or standards which may have become deranged. It must be evident that when the wires are wedged in the standards or these latter are fixed in concrete, the matter is not so easy. It must not be supposed because the standards of some fences are simply put into the ground that they are not so stable as others; the peculiar shape renders them very firm indeed. Wire fences are, as a rule similar to wooden ones in regard to one point; that is, they consist of standards having holes for the wire strand to pass through. At one end a retaining pillar with stays is solidly fixed; at the other it is what is termed a winding pillar, provided with pins for winding the wire up tightly. These pins should be so made that the work of tightening or loosening may be done with dispatch. The length of wire between two straining posts will depend upon the straight or curved character of the fencing. When the curves are very sharp it is necessary to fix stays to the standards, as additional support against the strain. Where gates are required it will be found necessary to fix suitable posts. When standards are fixed in concrete the character of lightness is often carried too far for the sake of appearance, necessitating the wedging of at least two wires in a fence 3 ft. 6 in. in height. This, I do not hesitate to say, is a great disadvantage, rendering the fence difficult and troublesome to repair, and forming a rigid and impassable fence, so far as wheel traffic is concerned. The inconvenience of this will be better understood when I state that 600 ft. or more are sometimes strained in one length, and it must always be borne in mind that fences in public parks are subject to heavy strains and rough usage, being therefore very liable to damage. These fences can be made from 1 ft. to 8 ft. in height, or even more, and the only further remark I need make respecting them is that I think they are worthy of the consideration of those in whom the control of public parks and similar institutions is vested. Another kind of fencing about which little need be said is what is named continuous rod and bar fencing. It is easily fixed, and consists of standards with forked feet, which are driven into the ground at regular intervals, every fourth or fifth being stronger than the intermediate ones. These standards are bored to receive the bars; the top one is usually made round and in various lengths, the ends of which are placed in a thimble fixed in the stronger standards and pinned. The thimbles are made sufficiently long to take the ends of two bars. The flat bars below are simply lapped end on end and

wedged. I would never recommend this kind of fencing for public parks or similar places, as it soon gets out of order if submitted to pressure.

Another and most important kind of fencing, one which I would strongly recommend to the notice of those who have the care of public or private parks, and, indeed, all similar places, is iron hurdles. I cannot too strongly recommend these where a rigid and most durable fence is required; one which an ordinary labourer can fix and remove. I know of few fences more suitable for many positions, such as to encircle plantations, as protection for outer belts of trees and shrubs planted at the margin of parks, round trees in exposed situations, &c. They are not very ornamental, but, as regards durability and utility, they will hold their own against any others; they will bear any amount of rough usage, are easily repaired, and, if coated over occasionally with black varnish, have a very fair appearance. Iron hurdles are usually 6 ft. in length, have three standards and five round bars. The two end standards have forked feet, and the centre one pointed. Care should be taken to have the bars strongly riveted, as the stability of the fence will very much depend upon this. The end standards are bored for small bolts, so that when fixed they really form a continuous fence. The hurdles should be made very strong, and capable of bearing great pressure.

We now come to another kind of fencing more varied, perhaps, than any of the preceding; I allude to iron fencing. This is made in a most simple, and also in a most elaborate, way, and the cost is in proportion. This kind of fencing is usually adopted for boundaries of parks, private residences, &c., and is fixed in various ways, viz., on low walls, on stone bases or in concrete, and level with the ground. It is usually put up in panels and fixed in the stone with metal. These fences are intended to be thoroughly protective, and should therefore be made very strong. High strong stays should be added on the inner side to each standard, and ornament should not be added at the expense of strength. In exposed situations the ornamental portions are sure to become damaged. Where light ornament is needed it should consist of wrought iron, and in no instance of cast. Some idea may be formed of what a strong fence should be by noticing the one opposite the Temple on the Thames Embankment, at Buckingham Palace, and in Park Lane. Examples of light fencing are frequent enough, and do not need description.

As to walls, they are not very desirable features in landscape gardening, but they may be necessary in some situations, as, for example, to hide very objectionable objects, and they should in all cases be clothed with Ivy or other climbing plants; thus treated, they are much improved in appearance. Walls may be either plain or ornamental, and should harmonise with surrounding objects.

There are many places, also, where either high or low live fences may be desirable, such as Thujas, Euonymus, Box, Privets, Quicks, &c., and when neatly kept, these are very ornamental. All fences have their particular uses, but I think it will be found that some are far more suitable for public parks than others. To recapitulate, we want durability and usefulness, combined with as much ornament as is consistent with the surroundings. One word with respect to gates. Whether at the entrances or within the park, they should always be made with due regard to strength, especially as respects locks and bolts. As a rule, this is very much neglected; and, assuming the gates to be well and strongly made in other respects, it depends entirely upon these to render them perfect for the purpose for which they are intended. When gates are very heavy, they should run on a rail to prevent wearing.

Southwark Park.

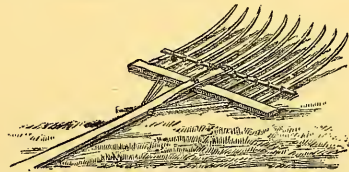
CHARLES DENNIS.

**Rhododendron occidentalis** and **Pickeringia montana**.—These are two of the most beautiful flowering shrubs of California, and are found on the summits of the low hills to the north of the bay of Monterey, generally among other shrubbery, but in the shade. The *Rhododendron* is deciduous, the latter evergreen; the former bearing large masses of sweet-scented white flowers, which are often shaded with yellow, and rarely with pink; growing in rather dry ground, it sends down large deep roots, which supply it with abundant moisture, though blooming in a rainless summer. It sends

up numerous shoots from a knotty root crown, and from its appearance would seem to be hard to transplant. My experience, however, is to the contrary; for, after hacking a plant to pieces with an axe, I managed to get a few stems, each with a piece of the crown and a stray rootlet, and after being carried two days on horseback, they were potted in old cans; now, a year afterwards, they have filled their cans with a mass of fine roots, and having just shed their leaves, show a fine lot of buds for next year. The *Pickeringia* blooms similarly to *Swainsonia*, but the flowers are much brighter and the racemes longer. I believe it blooms six months in the year, and where it does well is very handsome, often growing 8 ft. high; its leaflets are about the size of those of the *Clinanthus*, and are glaucous-green; the stem is beset with thorns, and if the plant would submit to trimming, would make a fine hedge. I have been able to find but three seeds (says a writer in the "Gardeners' Monthly") in several years' experience with the plant, though as its immense truncate roots seem to sprout freely wherever they are exposed, I presume it might be propagated by the root.

### A LEAF FORK.

The fork shown in the annexed engraving is made of tough Ash, with ten teeth, 3 ft. long, and slightly turned up. The head into which the butts of the teeth are inserted is 30 in. long. A light cross bar of tough wood is fastened to the teeth, about 8 in. from the head, by



means of copper wire and a screw to each finger. A handle is provided and fixed in its proper place, being flattened somewhat to keep it from turning in the hand. The handle should be braced by two strong wires. With such a fork leaves may be loaded very easily and rapidly.—"American Agriculturist."

**Larix Knapferri**.—Is this species hardy? A plant I had last year perished though in a good dry position. Have any of the plants of it distributed formed good specimens near London?—J. B. [This may be said to be hardy under ordinary circumstances, although it often loses its leading shoots through growing on too late in autumn. It is of very slow growth when young; even when in permanent quarters, and in favourable situations it makes only moderate progress. There are no large specimens of it in this country, and even young fair-sized plants of it from 10 ft. to 15 ft. high are scarce. A warm, dry, sunny site should be selected for it if possible.—G.]

**Shrubs for the Sea-shore**.—I live on the west coast of the county of Ayr, and my experience enables me to state that I would plant, next to Sea Buckthorn and Australian Pines, common Hollies; then evergreen Oak, Arbutus, Noble or Sweet Bay, and the finer evergreens, Pines, &c., all of which will live and thrive, notwithstanding the salt in the air, if they have only protection from the wind. The evergreen Oak (on a dry soil) grows with us into a splendid tree, and should be planted more extensively than it is in England. The *Araracia*, *Taxus*, and *Cypress* tribe will not form specimens without shelter from the wind, although 20° degrees of cold do no harm whatever.—D. M. J., in "Field."

**Arbutus tomentosa**.—Two plants of one of the *Arbutus* family—a species not common in private collections in this country, so far as I know—are now in good bloom in the Glasnevin Botanic Gardens. *Arbutus tomentosa*, or the hairy *Arbutus*, is the shrub to which I invite attention as well worthy of addition to collections of ornamental evergreens. The first description which I read of it is in the volume of Curtis' "Botanical Magazine" for the year 1834, where a coloured plate of it is given, t. 3320. There we are told that the plant was found at the mouth of the Columbia River, and was noticed by Mr. D. Douglas growing in different rocky places, extending from San Francisco in the south of California to Puget Sound in the north. It first flowered in Great Britain in the Glasgow Botanic Gardens, in December, 1833, in a conservatory. One of the plants mentioned above as now in bloom at Glasnevin has been for several years against a wall in the experimental enclosure, and the other is in the open ground in the bed with other kinds of the same group; and both are many feet high. The shrub has copious foliage and abundant small bunches of white flowers, in size and shape like those of many well-known Heaths; and it seems to be as hardy as others of the *Arbutus* family familiar to us in Ireland. Why its culture has been so much neglected in this country I can understand, by knowing that a like fate has befallen many other lovely ornaments.—J. ADAIR, in "Gardeners' Record."

## PLATE CXXIV.

## ANNUAL ASTERS.

(WITH COLOURED FIGURES OF TASSELLED VARIETIES)

Drawn by F. N. FITCH.

SEEDSMEN offer under the term *Victoria*, *Pæony*-flowered, *Crown*-flowered or *Cocardeau*, *Chrysanthemum*, *Bouquet*, *Emperor*, *Porcupine*, and *Quilled*, some two dozen kinds of these *Asters*, that are largely increased in each case by several diversities of colour, so that a complete collection of all the kinds offered by any one Continental grower would probably comprise some 200 or more forms or hues of colour. So much variety is bewildering rather than otherwise, inasmuch as it is scarcely possible to select the best kinds at a guess, or to grow all in a circumscribed space. There are several distinctive methods by which the *Aster* may be classed, such as comparative height, habit, character of flower, suitability for exhibition, for pot culture, or for bedding. Tall *Asters* comprise the fine *Pæony*-flowered, the tall *Chrysanthemum*, the *Emperor*, the tall *Victoria*, the *Quilled*, and a few others. Kinds of medium height are found in the dwarfer forms of the *Victoria*, the *Cocardeau*, the *Rose*, and the *Porcupine*; the dwarf forms comprise the short *Chrysanthemums*, the dwarf *Pyramidal*, and specially the dwarf *Bouquet*, which is one of the most beautiful of all for pot culture. The best bedding kinds are found in the medium-growing *Victorias*, the *Rose*, and the dwarf *Chrysanthemum*, as these vary from 9 in. to 12 in. in height, and form good bunches of blooms on each plant, and collectively fine masses of colour. The dwarf *Bouquet* kinds, whilst specially good for pot culture, are also valuable as edgings to beds of taller kinds. For pot culture for exhibition the best are the medium-growing *Victorias*, as these, if of a good strain, possess unequalled quality, and present handsome and even heads of bloom. The distinctive forms, as found in these flowers, are those in request for exhibition purposes, as it is the custom in schedules to invite exhibits under the heads of *Incurved*, *Reflexed*, and *Quilled* flowers, or in some cases it is expressed as *flat-petalled* and *quilled*, and in others as *French* and *German*, the *French* including the *flat-petalled* kinds and the *German* the *Quilled*. These latter distinctions are, however, too arbitrary, and are giving place to those previously named being more easily comprehended. The best examples of the incurved flowers are found in what is popularly known as *Truffaut's Pæony*-flowered *Asters*, formerly esteemed a grand exhibition strain, but which has given way, to some extent, to the more even and massive *Victoria*. An incurved flower shows all the tips of the petals converging inwards, as is seen in a *Chrysanthemum*, and the more solid and rotund the form of the flower, the better its prospect on an exhibition stand. All of these have flat petals, and, as a rule, have broader petals than any other kinds have. Examples of these are seen in the two flowers on the left in the accompanying illustration; not flowers drawn to order, or painted as florists think they ought to be, but as they really are, truthful to Nature, and showing no attempt to improve upon it. The grand bloom seen in the centre of the plate is a true type of the *Reflexed* or, as it is sometimes termed, *Tasseled* flower. This is further an exact type of the best forms of the *Victoria Aster*, which, regarded as a show kind, or for general decorative purposes, is perhaps the best of all *Asters*, and one that will give to all who grow it entire satisfaction. The two *Asters* depicted to the right are very good representations of the *Giant Emperor* kinds, which are, to some extent, intermediate between the *Pæony*-flowered and the *Victoria*, as some of the blooms are partially incurved. Other *Reflexed* kinds are the *Chrysanthemum* and the *Rose*. Good exhibition blooms of these kinds should have full centres, size, bright and varied colours, and a compact, dense body of evenly-laid petals. Where, as is sometimes the case, twenty-four varieties of *flat-petalled Asters* are scheduled, it is neither possible nor desirable to find all the twenty-four kinds exactly as typified in the centre flower. Variety is essential, and this can only be had by the introduction of some flowers of the incurved form. This, however, serves farther to show in striking contrast the relative beauties of the distinct forms of flowers. The most complete examples of solidity and perfection of form

are found in the *Quilled* varieties, as these would appear to be made rather than grown. Though not more than half the size of the *flat-petalled* kinds, they present a mass of *quilled* petals most evenly set, and in outline almost semicircular. One is almost inclined to believe that such perfection of evenness could only be obtained by artificial means. It is, however, but the result of that constant care in seed selection which is ever the aim of the grower, who prides himself in putting before the public things that are of the finest kind, and of the most meritorious quality. The *Cocardeau*, or *Crown*-flowered, *Asters* are partly *flat-petalled* and partly *quilled*, the outer margin of the petals being of a dark red or blue, and the centre disc of pure white. These are grown more for their novelty than as presenting special decorative features. This bi-coloured form is, however, also found in some of the finest show-*quilled* kinds, rendering them both valuable and attractive. The charming *Bouquet Asters* are also of a semi-*quilled* character, the petals being stiff and closely set. The blooms are of medium size and very compact, and most acceptable for nosegays. For this latter purpose, however, those who grow the *Victoria* forms will find that the later blooms that start out from the main stems are admirable, the clear bright hues and excellent forms being exceedingly effective however employed.

*Asters* usually bloom through the months of August and September, and are therefore most fittingly described as autumn flowers. The date of blooming can with some degree of accuracy be secured by the time of sowing the seed, which should range from the end of March to the end of April, as may be desirable. Classed as a tender annual, although in reality fairly hardy in the autumn, it is necessary to sow the seeds under glass, and if a gentle warmth can be given to assist the germination of such as may be imperfectly matured or are rather aged, so much the better. Sown in pots, pans, or shallow boxes, in fine sandy soil, in any frame or cool house, at any time in the month of April, good seed should germinate freely; and it is most necessary, to ensure a robust blooming plant, that the young seedlings should be pricked out into a frame or other sheltered place as early as it is safe to do so, that the plants may get strong and stout before being placed in their blooming quarters. *Asters* like rich soil; they are, in fact, like the *Balsam*, gross feeders, and prefer both manure and moisture. A rich soil induces robust leafage and rapid root action, and when so excited, the flower-stalk is not so soon developed. If properly treated, the *Aster* should always be well established in its positions before the upward direction of the stem of the plant is developed. *Asters* make fine bedding masses, and admirably succeed some of the late spring-flowering plants that bloom freely until midsummer. When too late for ordinary bedding plants a good body of *Asters* removed with balls of soil from the bed where first pricked into and well soaked with water soon makes a fine mass of colour, and such a brilliant and varied display of bloom is produced as scarcely any other bedding plant can give. Although it is a common rule to write of some kinds as best adapted for pot culture, yet it is by no means a good plan to give to any pot culture, as the *Aster* lifts even when in full bloom better, perhaps, than any other annual. Given the size of pot to be filled, and three or six plants may be lifted from the open ground with small balls of soil and be packed in as close as possible together in the pot, the soil fixed firmly around them; let the plants stand for a short time in a shady place, and not a bloom will hang its head or a plant flag, and once established these will continue fresh and beautiful for several weeks. Six good plants with some five or six expanded flowers on each, packed into a 10-in. pot, form grand bunches for the verandah or corridor, or, indeed, for any situation where not too much exposed to heat or wind; whilst from nine to twelve plants of the beautiful *Bouquet Aster* may be planted thickly in pans or vases. These latter, grown in any fashion, are so very neat and effective that no garden should be without them in the late summer months. The cultivation of the *Aster* for exhibition purposes renders more than average care and attention necessary. The soil should be deeply and heavily manured, the plants strong, robust, and free from all aphid or other insects, water freely during the hot months of July and August, and especially at the blooming time if drought prevails. The plants should be placed in lines at sufficient width apart to enable the required attention



NEW TASSELLED ASTERS



in the shape of watering, mulching, tying up to sticks, thinning, shading, &c., to be given. Each stem should have its separate support, as it is of the first importance to keep the blooms from damaging each other. The centre bloom should at all times be removed, as this is invariably coarse, and a strong plant not allowed to carry more than five flowers; four perhaps would be better. A week before the blooms are required for show temporary shades made of card, linen, or similar material, should be placed over the blooms, as the desired purity and freshness of colour depends much upon the exclusion of the sun's rays or heavy rains for several days before the time of cutting. Asters may be set up on green painted, sloping boxes in lines of three or four deep, as may be desired. Nest, circular pieces of white paper—sometimes these have ornamental edgings—should be used to back up each bloom, as these undoubtedly lend a certain air of elegance and refinement to the group of flowers. Exhibition blooms should show good size, fine form, full centres, solidity of petals, and variety of colour. The saving of good seed by home growers is not a matter of difficulty; indeed, it is not that Continental growers excel us in quality but in quantity, as it is too frequently the case that we get heavy rains just about the blooming time. As the massive double flowers absorb much moisture, it is difficult during dull weather to expel this until too late to save the flower from rot or decay. Seed that will reproduce blooms of the finest quality may be saved here, and, indeed, is saved, as all our finest Quilled Asters are the products of home-saved seed. Experience has shown that, because of the lesser quantity of petal with which the Quilled Aster is loaded, the seed is much more freely produced by them than with the Victorias or other fine flat-petalled strains. The blooms should be thinned, and seed saved from the best flowers only, and should not be cut until the seeds are showing signs of ripeness; then laid out to fully dry on sheets of paper. They may soon be cleaned out, and the seed extracted and stored. Asters, as a rule, sport but little, this element being most found in the bicoloured flowers.

A. D.

[The blooms from which the annexed plate was prepared were supplied by Messrs. Saltmarsh & Son, of Cheltenham.]

**The Patent Perpetual Mouse-trap.**—Allow me to direct Mr. Fish's attention (see p. 278), as well as that of other readers of THE GARDEN, to this excellent mouse-trap. The bait, which may be a Pea or Bean, a bit of meat, or, what is possibly best of all, a bit of toasted cheese, is temptingly fixed to a peg in full view; this is approached by a kind of bridge or inclined plane, balanced at the centre, and as the mouse passes over it it tips up and encloses him. This circumstance naturally somewhat alarms him, and he feels indisposed to partake of the bait for which he has risked so much, and at the same time finds that he cannot possibly retrace his steps; but he perceives an aperture to the left, and through this he quickly passes and finds himself in a somewhat commodious compartment, from which, however, unfortunately for him, there are no means of exit whatever. In passing into this compartment, too, it is so arranged that he must necessarily tip up the inclined plane or bridge, and the trap is again set and the bait exposed to the view of his friends outside, who, envying him on account of his supposed good fortune, are by no means slow to follow him, and one after another find themselves immured in the same dismal chamber, from which only death will set them free. To make matters even worse for them cannibalism appears to flourish among their manifold vices, and, like the historical cats of Kilkenny, only the tails of some of them are to be found in the morning to tell the tale of their sad fate. Alive and dead, I have taken out as many as six at a time.—P. GRIEVE, *Culford, Bury St. Edmunds.*

HERE is a specimen from a volume just published by Hulme:—

And to himself he drew a Bramble spray,  
And in its study passed some hours away;  
Its setose stem and ternate leaves, the leaflets cuspidate,  
The prickles small, and foliage so evenly serrate,  
All seemed to point it out to be the *Rubus glandulosus*,  
And not, as he at first had thought, the *Rubus fruticosus*.

The author is very pleased with them, and considers they combine "the poetic element with the strictest analysis of the professed botanist."

## GARDEN BOTANY.

(Continued from p. 341.)

**THE FUNCTION OF THE ROOT.**—The function or office of the root in the economy of plant life is to absorb the elements which, after undergoing certain chemical changes, form the nutrient matter required for building up the plant; and as nearly all the food of plants is taken up through the roots, it follows that the elements necessary must be within their reach. This is more fully explained in the paragraphs relating to the feeding of plants. Roots also serve to attach or fix plants in the medium whence they draw their nourishment. Some few aquatic flowering plants are not fixed; amongst them our native Duckweeds (*Lemna*) and the tropical Water-weed (*Pistia stratiotes*). But these plants are almost confined to stagnant water, and therefore they move only with the wind. Sometimes the root acts not only as an organ of absorption, but it also serves as a storehouse for the assimilated food for a certain period. This may be seen in many biennial plants, such as the Carrot, Parsnip, Parsley, each of which forms a large tap-root during the first season, in which is stored a quantity of nutrient matter. Early in the following season the plant throws up its flowering stem, using for this purpose the accumulated food in the root. The tuberous roots of our native Orchids answer the same purpose. The liquid nutrient is absorbed through minute superficial cellular outgrowths, termed root-hairs, and not mainly through the spongy tissue of the root-cap, as was formerly supposed.

**ROOTLESS PLANTS.**—There are few really rootless plants, but *Aldrovanda vesiculosa*, an aquatic plant belonging to the Sundew family, and a native of the south of Europe, is entirely destitute of roots. The leaves are furnished with little bladders, which serve to float the plant, and also, it has been asserted, to entrap insects, which are dissolved and absorbed for the nutrition of the plant. This assertion cannot be received as a proven fact. Among our native plants the Utricularias, or Bladder-worts, are rootless; and *Epipogum* and *Corallorhiza*, two rare Orchids, have no true roots, though they are replaced by fleshy excrescences. The rare and minute Duckweed (*Lemna arbuscula*) is also rootless, and *Pistilotum triquetrum*, a Lycopodiacean epiphyte, is in the same condition. In these cases absorption of the nutriment must necessarily take place through some other part of the plant.

## Root-stocks.

**DEFINITION.**—We have seen that it is impossible always to separate stem formations from root formations, because we frequently have to speak of a combination of stem and root. Root-stock being a term used by gardeners, and also by many botanists in botanical descriptions, it will here be employed generically, and tubers, bulbs, rhizomes, &c., as so many species of root-stock. The term is also applicable to the perennial part of all herbaceous plants, inasmuch as it consists not only of roots, but also of the crowns or buds from which the stem or leaves spring. Root-stocks differ widely in their nature, both when in active growth and when dormant in winter; and the same kind of root-stock when growing and when not growing. It may consist of roots and crowns, the latter being reduced to the base of the stem, just sufficient to hold the roots together, as in the *Dahlia* (fig. 103), or of stem alone, as the tuber of a *Potato* (fig. 93), or of roots and stem more equally developed, as in the rhizome of *Solomon's Seal* (fig. 116). The above-ground stems of all root-stocks produce flowers only one season, and then die down, to be renewed the succeeding season. Their vegetative period is brief, as in many bulbous plants, or it may extend over two-thirds of the year, as in the underground *Artichoke*. The root-stock usually makes fresh roots, too, as well as stems, the previous ones being perennial or dying away annually. Further than this, the whole of the underground root-stock, whatever its nature, is gradually renewed and replaced by new growths, the old parts decaying and disappearing; so that no herbaceous plants are permanent in the sense that woody plants are, though they may be perennial. The principal forms of root-stock desirable to distinguish in practice are separately described, beginning with those in which the root portion predominates, and proceeding through the various modifications until we reach those which are mainly

stem formations and partly above ground, forming the connecting link between root-stocks and true stems. What may be termed the ordinary root-stock consists of crowns (buds) and fibrous, fleshy roots, and it extends itself by lateral shoots, which make a short horizontal growth, forming independent roots, and then grows erect. At the end of the season they die down almost to the roots, leaving the axillary buds of one or more of the lowermost leaves, and from these buds the ensuing year's growth proceeds.

**BIENNIAL TAP-ROOTS.**—The root-stocks of such herbaceous biennial plants as the Carrot, Parsnip, &c., have a tap-root of considerable dimensions, surmounted the first season by a crown of leaves only, or occasionally it may throw up a flowering stem the first year, but in the ordinary way a large quantity of food is stored up in the tap-root the first season, after which the leaves die; and the following spring a new tuft of leaves appears, from the centre of which the flower-stem rises, and numerous fibrils are emitted from all parts of the tap-root. As the fruit approaches maturity the substance of the root is exhausted, and it finally perishes. The root-stock of the Turnip and some varieties of Mangel Wurzel is partly above ground, differing only in this from the Carrot, &c., though some writers regard it as a tuberised stem.

**TUBERCLES.**—Tubercle is the name often applied to the tuberised branches of tuberous roots like those of the Dahlia,

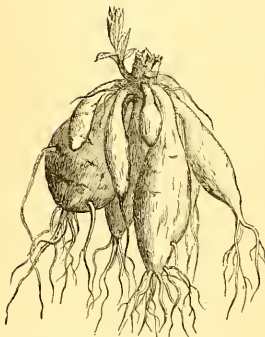


Fig. 103.—Root-stock of Dahlia with tuberised roots.

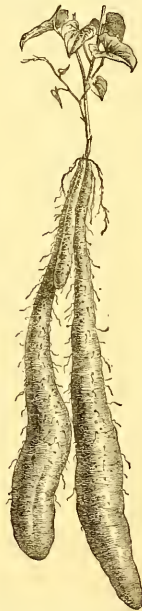


Fig. 104.—Root-stock of a Yam (*Dioscorea*), showing the tuberised branches (tuber-cles) of the root.

many of the terrestrial Orchids, &c., to distinguish them from true tubers; and perhaps no better term can be devised. The club-shaped tubercles of the Dahlia (fig. 103) are the most familiar of this kind of root-stock. New ones are formed each season, and the contents of the previous year's tubercles more or less used up in the spring growth of the stems, the remainder decaying. It will be seen that not all the roots become tuberised; and fibrous rootlets proceed from the base and other parts of the surface of the tubercles. The roots of some species of Dahlia, though fleshy, are not at all tuberised. In the Yam (fig. 104) the tubercles are exceedingly long, often 3 ft. or 4 ft., and

the fibrils are scattered, not principally collected at their lower extremities. The root-stocks of our native species of *Ophrys* and *Orchis* have two, variously shaped, tuberised roots. In some species they are lobed and somewhat hand-shaped, and are termed palmate, and in others they are spherical. These tubercles are of annual duration; and when the plant is in flower, the one from which the flower-spike proceeds has already begun to shrivel, whilst the other is plump and smooth. This is the new tubercle from which the next year's flower-spike will rise. It is an offset growth with a bud at its apex which grows out the season following that during which it is produced, and in due course it gives birth itself to a new tubercle. When growth commences in spring a number of slender roots are formed at the junction of the bud and tubercle. Tuberous roots are not uncommon both among dicotyledons and monocotyledons, but they are always easily distinguished from tubers. The root-stocks of *Pig-nuts* (*Conopodium denudatum* and *Carum Bulbocastanum*) have only one tubercle.

**CORMS OR SOLID BULBS.**—A corm is a solid expansion of the base of the stem, enclosed in a tunic or coat, differing so much as to afford characters for distinguishing species or groups of species. The *Crocus* (figs. 105 & 106) and the *Gladiolus* bulbs are



Fig. 105.—Corm of *Crocus*, with several corms in course of formation on the top, and a tuft of roots at the base.

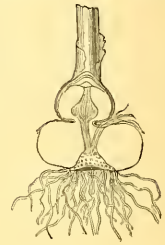


Fig. 106.—Vertical section of the lower part of a *Crocus* plant, showing the roots attached to the remains of the old corm, which is connected with the present corm, and on the latter at the base of the leaves the new corm is in course of development.

of this nature. The corm is of annual duration and throws up one or more tufts of leaves; and as many new corms are produced on the top of the old corm of a *Crocus* as there are tufts of leaves (see fig. 105). In fig. 106 we have a section of a corm bearing only one tuft of leaves. At the base is a cluster of roots issuing from the remains of the old corm; above this the present year's corm, bearing the leaves and the beginning of next year's flowering corm. The renewal or reproduction of the corm of *Gladiolus* is similar, so that each successive corm is formed on the remains of the old one, and is nearer the surface of the ground. The corm of *Colchicum* is different; it throws up a tuft of leaves in spring, and after these have decayed in autumn the flowers appear. In this case the renewal bud is lateral, near the base, and the leaves form the beginning of the new corm. Occasionally buds appear on other parts of a corm. Though the corm in itself is essentially annual and flowers only once, it is not monocarpic (once-flowering) in the sense that *Groundsel* and *Agave* are, because each successive new corm is a continuation or ramification of the same axis. It differs from a rhizome in its vertical instead of horizontal growth, and in dying off earlier at its older end, and from a tubercle in the new part being formed at the base of the flower-spike.

**BULBS.**—A variety of very differently constructed root-stocks are popularly known as bulbs. They are stem formations, and are usually produced underground, sometimes near the surface and sometimes at a depth of several inches; but some are partly above ground, or almost wholly above ground, as the *Onion*. Like corms, some bulbs are annual and flower only once, but the old bulb is replaced by a new one formed on the same axis, and therefore the axis is polycarpic (flowers more

than once). On the other hand, some bulbs themselves are of perennial duration.

**TUNICATED BULBS.**—The Hyacinth bulb (fig. 107 to 109) is a perennial bulb consisting of the concentric sheathing bases of the leaves, attached to a short discoid stem or axis, at the base of which fresh roots are annually produced. It is enclosed in membranous coats, hence this kind of bulb is called a tunicated bulb. The flower-spike is not quite central, as in the Onion, which only flowers once, but proceeds from the axil of one of the leaves. In the Hyacinth the leaves appear at the same time as the flowers, but in some other polycarpic bulbs, as *Amaryllis*, the leaves are often produced at a different season



Fig. 107.—Tunicated or coated bulb of Hyacinth, with a new bulblet near the base.

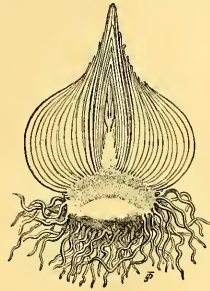


Fig. 108.—Vertical section of a Hyacinth bulb, showing the discoid stem, from the lower part of which the roots proceed, and from the upper part the closely sheathing bases of the leaves.

from the flowers. This kind of bulb reproduces itself from little buds, which are formed in the axils of some of the concentric scales or leaf-bases close to the axis. These buds are similar in appearance and structure to the parent bulb, and, in course of time, as new leaves are formed in the centre of the bulb, and the outer ones decay and the bulblet grows, it is pushed outside (as seen in fig. 107). Finally it becomes detached, and commences an independent existence. An Onion bulb does not differ materially in structure and reproduction from the Hyacinth, but it is monocarpic (flowers only once), and the flower-stem is terminal from the centre of the bulb. It flowers the second season, and in flowering the substance of



Fig. 109.—Cross section of a Hyacinth bulb, showing the concentric sheathing bases of the leaves.

the bulb is absorbed. The Tulip bulb is tunicated and of annual duration, and the scales or plates are closely applied to each other, so that the bulb is almost solid. Like the Hyacinth bulb, the Tulip has roots only from the base, but the flower-stem proceeds from the centre of the base of the bulb. When this dies down, the flowering bulb for the next season may be found on one side of its base, and within the same tunics, and also the rudiment of the second year's bulb. These bulbs flower the third season. In some species the accessory bulbs thrown out from the bases of the old ones are sessile, whilst in others they are borne on short branches.

W. B. HEMSLEY.

**Venus' Looking-glass.**—This, the *Campanula Speculum* of old authors, has been produced with double flowers. It is said to come true from seed.

## GARDENING FOR THE WEEK.

### Indoor Plant Department.

**CAMELLIAS** will now be making their growth, and must be well supplied with water at the roots and also syringed overhead freely. Many do not succeed well with these plants, which get into a yellow unhealthy condition, in which state they make little growth and few flowers, and, where such is the case, although they will bear a deal of bad treatment without dying outright, it is a somewhat difficult matter to bring them round. One of the principal causes of this state of things is often attributable to their receiving an insufficiency of water, especially a whilst making their growth. At no season, however, will the *Camellia* bear getting too dry, the large amount of leaf surface which the plant possesses causing the moisture to evaporate with great rapidity. Moisture must be applied through the roots, which, if in too dry a condition, fail to perform the work required of them. It is not advisable to pot *Camellias* at the present season, unless they are suffering seriously for want of root-room. Moving them now is sure to interfere more or less with their flowering. If it be absolutely necessary, avoid as much as possible interference with the roots. In potting, whether the soil used be loam or peat, add as much sand as will keep it from becoming sour, especially as it will be necessary to ram the new soil so to make it as close as the existing ball of the plant, otherwise the water afterwards given will escape through the new soil. Whilst making growth shade is indispensable. Attend carefully to plants that are intended for summer flowering. Large *Fuchsias* should be supplied with a stout central stake to support them, and the shoots should be stopped, so far as is required, to furnish the plants and give them when in flower a dense well-furnished appearance. If in small pots the application of weak liquid manure once a week will assist them, but for these plants it must not be overdone, or it may have an effect of causing both the advancing flowers and leaves to fall off. Young *Fuchsias* that have been struck during the autumn and winter should be moved into their flowering pots. These plants will succeed the larger ones in blooming. *Petunias* should be kept stopped so as to make them bushy. These are useful for summer flowering, as they bloom for a length of time after flowers are scarce. *Azaleas* now in flower will require shading from the sun; and this is also the case with *Cinerarias*, *Amaryllids*, *Acacias*, *Cytisus racemosus*, *Hotenias*, *Deutzias*, and other similar plants. If aphides make their appearance, fumigate at once. Amongst a general collection of plants this requires constant attention. Slight and frequent fumigations are much the best, but if two or three gallons of Tobacco water be kept at hand in a vessel, so that any small plants that are affected can be dipped, and larger ones syringed, a considerable saving of both labour and material in fumigation will be effected, and the disagreeable smell of the Tobacco be avoided. Where means exist for forcing flowers in winter provision should at once be made to have the necessary plants coming on for the purpose. *Epacris*, *Acacia Drummondii*, *Cycloclonus*, *Genistas*, *Abutilons*, *Bouvardias*, *Polypodiums*, *Coronillas*, *Mycas*, *Convolvulus*, and the sweet scented *Daphne indica*, if encouraged to make their growth early in the summer, and their wood is well ripened in the autumn, can, with little heat, be brought into flower through the winter. If mildew happens to exist on the ripe wood of last year, it will most likely attack the young growth as soon as the plants begin to move. This applies to such plants as *Boronia pinata*, *Hederaea tulipiferum*, and *Leschenaultia hiberna*. If such should occur dust with sulphur at once. *Azaleas* that have been much affected with thrips last summer would be much benefited by a good washing with Tobacco water now, as the eggs that were deposited in autumn will soon come to life under increased temperature. To such stove plants as are in active growth give water freely both at root and overhead, and keep the atmosphere moist by frequent sprinklings on all available surfaces. A little shade, when necessary, prevents scorching. Air should be given in the morning, and the house should be shut up early. Pot a few *Gesneras*, *Gloxinas*, *Achimenes*, and *Caladiums*, and place them in heat to succeed those previously started.

### Indoor Fruit Department.

**VINES.**—Insects are liable to make their appearance in Vinerias in the hot weather advances, for heat and fresh air seem to favour their development as well as that of the Vine. Red spider is frequently a very troublesome pest, and when once established it is difficult to eradicate. If it appears on the Vines at an early stage of their growth it is certain to do a great deal of harm before the wood and fruit are matured, and it is best to use every endeavour to prevent it, if possible, from gaining any footing at all. A sweet, humid atmosphere, and a consistent state of damp at the roots, assists greatly in keeping it down. Indications of its presence are shown by the leaves on the lower side becoming somewhat dingy or brown. It requires careful examination to see them where only a few exist. As their number increases delicate veins are run from vein to vein on the back of the leaf, and they are then more easily seen. Thrips is another miniature Vine pest, capable of doing a considerable amount of evil. It is larger in body than the spider, but somewhat long and very slender. The young are white, and the old black, in colour, and they fly from one place to another. Their favourite resorts are the points of young fresh-growing shoots; they eat small holes in the tender leaves, and some parts become almost transparent where they have been at work. The growth of the part which they attack is generally arrested, and this assumes an unhealthy appearance. Syringing is of some use, but to exterminate them from the house in which they are must be fumigated with Tobacco smoke for two or three evenings in succession, the house should be filled until the smoke is so dense that the hand cannot be seen at a

distance of 2 ft. from the eyes. A washing with the syringe or garden engine should be given to the leaves after the fumigation is discontinued. Mealy bug, when established, is one of the worst insects to clean from Vines. Little or nothing can be done towards its destruction while the Vines are in leaf. A look-out should be kept for it throughout the growing season, and the Vine marked, wherever it is seen, for cleansing when the Vines are pruned and dressed. The same remarks apply to young Vines in pots as well as old-established fruiting ones. None of the insects except from their intrusions, but are all generally liable to their ravages. Phylloxera vastatrix might be mentioned in addition to these enemies; but the comprehensive descriptions of it already given in THE GARDEN render more than a passing allusion to it unnecessary.

**Pines.**—Whilst insects infest the wood and leaves of many plants, the Pine is all but vermin proof. When care is taken not to place any other plant near them years may elapse before a single insect is seen upon one of them. Stove plants are sometimes set about spare corners in the Nursery, and in such cases bug and scale are not slow to change their quarters. It is very difficult to remove the bug from amongst the foliage, especially if it finds its way down about the base of the leaves. It is preferable to destroy a few plants to get rid of it, if the others are clean, rather than keep all and have the whole infested. Small suckers may be washed with a brush and soap and water, when they are taken from the plant and before they are transferred to their sucker-pots. Brown scale is an enemy common to many Pines. Its presence appears to do little or no harm, and is more inclined to attack itself at the apex than further down the leaves. It may be brushed off; and, if the plant be dipped into water heated to 130°, the scale will not survive. The white scale is more destructive than the other, and is considered the worst pest which affects the Pine. It eats the leaves, and has a very irritating influence on the plant. It multiplies fast, and spreads to every nook and corner to which it can get the slightest access in a very short time. The remedy recommended for the brown scale will do much towards keeping the white kind in check. Where this fails it is doubtful if the house will be perfectly clean until an entirely new stock is introduced.

**Peaches.**—Where Peaches have stoned the houses may be kept warmer and the moisture increased so as to push on the second swelling of the fruit; this is the period when lost time can safely be made up by extra forcing if ripe fruit is wanted by an early date. The trees should be gently syringed early in the morning and about three o'clock in the afternoon. With the sun early on the glass ventilation must be seen to in good time, or the heat will be too strong at the apex of the house and will damage the foliage. A good watering may now be given with guano water or other liquid manure, or the manure may be spread on the border and washed in by watering, which must be done thoroughly, as the want of sufficient moisture will cause the fruit to look pinched, and finally to fall off; it will also cause the fruit to gum at the second swelling, disfiguring it, and totally spoiling its appearance for dessert. In houses where the stoning process is in progress it is equally to be remembered that the trees at this period must be indulged in, and care must be taken that the number of fruits is not in excess of the capabilities of the trees to mature them thoroughly. Trees that are overtaxed this year may show it the next season by refusing to yield a crop. Early York is still one of our best early Peaches; Royal George and Noblesse, in the same house, are equally good, though later. Attention may be given to pinching and training in the young wood in early houses, overcrowding being avoided. It is not necessary to be rigidly particular in tying in early; the growth may be allowed considerable freedom for a time while the fruit is swelling, but it should be tied down before the ripening period, so that the rays of the sun upon the ripening fruit may not be obstructed. No more spray should be allowed to grow than is absolutely necessary. In unheated houses the syringe may now be freely used during all fine after-noon weather. Dishwashing requires attention, and if small colonies of black aphides should make their appearance in places, and it is not thought worth the expenditure of Tobacco to thoroughly smoke the houses, a few puffs of Pooley's Tobacco powder will be found effectual for a time; it should be applied after the trees have been syringed. Although it is not so effectual a remedy for fly as fumigation, it is the safer one while the young foliage and fruit is still tender. The set of fruit in cool houses have been remarkably rapid this season, the first anthers which burst being sufficient in each flower to fertilise the future fruit, the rest of the anthers withering immediately and not bursting at all. This we attribute to the very favourable weather. Proceed to thin the young fruit in good time, and do not waste the energies of the trees upon a mass of useless fruit grown to the size of Peas before they are thinned out.

**Melons.**—We do not wait for a full crop of fruit to set on the earliest Melon plants, but are content with two or three on a set to begin with, and when these have half swelled, more will set in abundance. It will be necessary to impregnate by hand the blossoms in the earliest house, choosing the middle of the day, when ventilation is active, though the process may be equally effective in the morning or afternoon, even when the house is saturated with steam, provided the flowers are not actually washed with water. So that there be no lack of moisture at the root, especially when the fruit is swelling, as dryness will be the sure forerunner of rot, and of badly-swelled and badly-flavoured fruit. Do not unnecessarily wet the necks of the plants at the surface of the soil, a pot split into two halves, which are inverted and placed round the stem of the plant, so that it comes through the hole of the pot, will be found a good safeguard against wet from the syringe or heavy watering. A succession should now be planted, and more plants raised from seed to fill up pits by-and-by when bedding plants have been removed.

## Flower Garden.

**Bedding Plants.**—Such sub-tropical plants as Cannas, Solanums, Wigandias, Chamapucee, and Humex elegans should be well attended to; these are free-growing subjects, and, if allowed to become pot-bound, some time must elapse before they move freely after being planted out. Golden Pyrethrum, variegated Arabia, Golden Thyme, and similar plants may with advantage be at once planted out in the places they are to occupy, if the beds are at liberty; this will be so much done when the time for a general planting out arrives, and the plants will thus be getting gradually established, and be rendered sooner effective. Where sub-tropical plants are grown, two of the best and most distinct for standing side by side, and forming an effective contrast, are *Acacia lanthana* and *Sisyrinchium*. These should be largely employed, but, even here, seasons should happen to be unfavourable for this sort of planting, these two never have the forlorn appearance that some subjects have. Nor should the old *Ricinus communis* (Castor-oil plant) be lost sight of; it is a plant which looks well in any situation where it is not too much exposed to the action of wind.

**Transplanting Evergreens.**—It will now be necessary to push forward the transplanting of these as vigorously as possible. Operate first on those that are most advanced; Hollies, Yews, and the majority of the Conifers that make their growth later, may be left till the end of the month, as the season is not an early one, and some shrubs are backward. The longer Hollies are left, provided they are transplanted before growth actually commences, the more certain they are to succeed. The thing is to catch them just as they are on the move, and before the wood buds burst; if the roots strike very rapidly, through the soil, the plants, by the growth of young wood and leaves, will be liable to rot, the state of the atmosphere should be watched, and, if possible, dull, damp weather chosen for the operation. This is the more necessary if the plants have to be carried any distance, as a dry state of the atmosphere would cause them to flag, and the tender roots would be liable to injury if allowed to get at all dry. It is of the greatest importance, therefore, that the plants should not be kept out of the ground longer than is absolutely necessary for their removal from place to place. When there are large numbers to transplant, the men engaged at the work may with advantage be divided into two gangs, the one in digging and preparing the holes, planting, watering, &c., while the others are engaged in lifting and forwarding the plants. In this way the work can be carried on rapidly, and large numbers may soon be disposed of. Before filling in see that the soil is well washed among the roots, and allow all to settle for a night or so before finally filling up with dry soil. This will prevent the moisture from escaping, and keep the roots in a much more favourable condition than if they had been entirely covered in before watering. Indeed, this is a bad practice, as the soil is sure to crack open, and let in large volumes of dry air that soon absorbs all the water that may have been given at the time of planting. To prevent this, and to keep the roots in a generally uniform state, they should receive a good mulching of half-rotten litter. The importance of this to newly-planted trees and shrubs cannot be overrated; and we would urge on all engaged in planting not by any means to neglect this very necessary precaution if they are desirous of ensuring success.

## Kitchen Garden.

Cabbages and Cauliflowers have started actively into growth; the hoe must, therefore, be kept at work amongst them, as nothing is more productive of good to vegetables than a clean and frequently-stirred surface. Make a general sowing of Cauliflower, and prick off into a warm corner or border those sown last week, as soon as they are fit to handle; and, in the event of cold or wet weather occurring, hand-lights, frame sashes, or hoops and mats may be employed for their protection. The main crop of Beet may now be sown; but in warm countries, towards the end of the month will be soon enough. It likes an open situation and trenched ground that has been manured for the previous crop. Thin Parsnips when they appear, but not finely; some growers prefer sowing early in this month, but even about London Parsnips are sown at the same time as the spring Onions, for they take a long time to germinate and they are not liable to rot. Where Chicory is held in estimation as a salad plant a sowing of the seed should now be sown in rows, 13 in. or 15 in. apart; drop a few seeds at intervals of a foot under the end of the row, and, when up, thin the plants out to one in each place. By thus giving them room enough the roots acquire double the strength which they attain when grown thickly; one good plant produced in that way will furnish as many leaves fit for use as three small ones. All the attention required afterwards through the summer is to keep the hoe going sufficiently to destroy weeds as they make their appearance. Of Chervil a little should now be sown thinly on well-prepared soil, and covered lightly. In 13 in. or 15 in. apart, and Scotchzera may all be sown towards the end of the month, in rows 14 in. apart, putting the seed in thin, and still further thinning the plants if too close when up. Through the summer keep the surface well stirred with the hoe. For mere appearance sake, to make the ground smooth, the rake is often used immediately after the hoe; but amongst culinary vegetables this need never be done, unless it is necessary to remove weeds that have got much larger than they ought to have been allowed to grow before the hoe was used. Ground rakes, when used, when not become hard and hot by dry weather and sun, lose moisture by evaporation much faster than that which is loose and open for 1 in. or 2 in. deep, a condition that also best fits it for absorbing the falling rains. By frequent surface stirrings, too, the crops get the full benefit of any manure that may have been applied, instead of helping to support, as it often does, a vigorous weed growth.

## Extracts from my Diary.

April 22.—Sowing G. F. Wilson, Veitch's Perfection, and Sutton's Giant Emerald Marrow Peas; also Carters' Mammoth and Long Pod Beans. Pricking off Asters, Poppies, Stocks, and Viola. Potting off Dahlias, Verbenas, and Heliotropes. Clearing of the stumps of green Curled Kale and other Greens. Manuring the ground and getting it dug up for other crops.

April 23.—Sowing Veitch's Autumn Giant Cauliflower; also Veitch's Autumn Self-protecting and Snow's Winter White Broccoli. Putting in cuttings of Alternantheras and Coleas. Potting on Melon plants, Capsicums, and Tomatoes. Removing bedding plants from pits to convenient places to harden. Thinning Carrots and Radishes on early borders. Renovating linings round frames. Taking the guards off Peas somewhat advanced and putting them over newly-sown ones.

April 24.—Sowing Radishes, Mustard and Cress, French Marigolds, Celosia japonica, and Cockscombs. Planting out Golden Feather Pyrethrum into rough frames. Looking over Pelargoniums and other bedding plants, and stopping them where required. Thinning out Lettuce plants and planting out the produce of an earlier sowing. Watering all the Potatoes and Carrots in frames that require it. Getting out trenches for early Celery and hoeing amongst growing crops.

April 25.—Sowing Turnips, Spinach, and Melons. Potting off Alternantheras, Coleus, and Mesembryanthemms. Looking over all Straw-

berries that are well set, and picking off all weak blossoms and deformed fruit. Earthing up Potatoes in frames. Thinning out Turnips and hoeing amongst them. Looking over Peach and Nectarine trees on walls and washing them with Quassia-chip water to kill green fly. Sticking Peas and earthing them up a little.

April 26.—Potting off a collection of Gourds, Sweet Basil, and Marjoram. Pricking off Snow's Winter White and Veitch's Autumn Self-protecting Broccoli; also Autumn Giant Cauliflower into frames. Giving all Rose trees that are infested with green fly a good washing with Quassia-

chip water. Earthing up Beans in pots. Looking over Cucumbers and Melons, picking off all false blossoms, and stopping them where required; also fumigating them in order to kill green fly.

April 27.—Potting on ridge Cucumbers and Vegetable Marrows. Looking over Vinerias and tying down shoots and thinning the Grapes where required; also tying in all young shoots in early Peach houses and Fig houses. Mowing and cleaning up the pleasure grounds and rolling down all gravel and turf that require it. Forking amongst early Potatoes and turning over manure for Celery. Thinning out Spinach and tying up Lettuce. W. G. P.

Dorset.

## A FINE DAY IN JUNE.

By T. A. AUGUIN.

A GLANCE at this pretty print convinces one of the appropriateness of the title. What a blaze of sunshine! how everything seems to swim in the burning heat! while scarcely the faintest cloud hangs near to veil the sun's intense rays. Irresistibly the mind returns to the blinding glare and clear heat experienced in the south of France in the month of June, and recalls, perhaps, many such a scene where the river, shrunken to half its winter size, slowly winds along under some rocky

bank crowned with scanty evergreen Oaks, the more distant hillsides, planted with Vines and Olives, basking in the fierce heat, which to them is so grateful. To have such a picture to gaze upon some cold, dark, winter's day is indeed a treat, and helps us to remember that "behind the cloud the sun is shining." Mons. Auguin may be complimented on so faithful a rendering of that which in England, at least, is welcomed as a prize without alloy—a summer's day in June.

E. H. W.

## THE KITCHEN GARDEN.

## LOW WINTER TEMPERATURES FOR CUCUMBERS.

THE growth of Cucumbers is now an established commercial enterprise of considerable magnitude; therefore, any change that will reduce the fuel bill, without deterioration in point of produce, will be welcomed alike by the market gardener and private grower. To the latter a few shillings more or less is comparatively unimportant when there is any object at stake,

but to the former every shilling tells when accounts come to be balanced up. Therefore, if a reduced temperature both at top and bottom answers as well or better than a high one, a point of some importance is gained. Omitting cases that might be termed exceptional, for which no hard and fast line can be laid down, the cultivation of the Cucumber might with advantage be worked on a different principle from that which is

generally adopted, but, in order to avoid misconception, it would be well to remember that experience, recommended in general terms, is not always applicable to circumstances of a purely individual character.

If Cucumbers are to be grown for a particular purpose, it is best to set about the matter by timely forethought than to have recourse to mechanical pressure. For example, the month of August is a good time to make provision for an autumn supply, September for mid-winter, and a planting in October will yield a supply for the following March. In the case of private growers, two plantings might be made, viz., one early in September for winter, and another in October for the following spring. Much, of course, depends on means at command. The autumn-grown plants should be kept quite hardy by giving plenty of ventilation, and using little fire-heat until absolutely necessary. The trellis should be completely covered, and the plants in vigorous health, with abundance of Cucumbers in various stages of growth by the end of October; and the bottom-heat would be best regulated on the same principle as that which governs the top. A confined, burning, dry bottom-heat is as bad for the roots as the same conditions



A June day.

would be for the portions above ground. A neighbour, who is an extensive grower for market, has pulled away the brick wall in front of the bottom-heat pipes in all his houses, thus allowing a free circulation of heat equal alike at top and bottom. Where the pulling away of the wall would be an eyesore, "traps," if not already there, might be put into the wall, that might be opened to allow the heat free circulation. The night temperature should range at from 60° to 70°, just giving sufficient warmth to keep the plants moving and the Cucumbers swelling slowly, and in case of boisterous weather, when heat radiates rapidly, the temperature may safely be permitted to fall to 55°, say at six in the morning. A high dry temperature harbours red spider, and a high moist one is the forerunner of blotched leaves and deformed fruit. Plenty of warmth and moisture should be given only when circumstances are favourable, thus retaining, if possible, the hardy character induced by the conditions recommended for autumn culture. A good command of heating surface is, however, always desirable. The soil in which Cucumbers succeed best, either in summer or winter, is a rich loam that has been stacked up for at least six months with alternate layers of cow manure; the latter, of course, in proportion to the quality of the loam. Add to this a liberal mixture of horse manure and rough leaf-mould; the two latter encourage the formation of roots, while the stronger elements feed them. In order to secure a good supply of Cucumbers in March there is no plan equal to planting a house in October, and in winter barely keeping them moving till the turn of the year. The night temperature will be high enough at 60°, say at ten in the evening, and it may safely be allowed to fall to 50° at six in the morning. With the turn of the year heat and moisture may be increased, and on every favourable day advantage should be taken of every ray of sunshine to raise the temperature to 85°, having the atmosphere at saturation point at the same time; a speedy return will thus be effected. It is considered sharp work in our climate to cut fruit from seedling plants raised in spring by the first or second week in April. The seeds are sown from Christmas onwards, but there is little gained by making a start before the 1st of January. The plants from which we are cutting fruit just now (April 6) were planted early in September last, and supplied Cucumbers all through the winter. The night temperature seldom exceeded 60°, and was often as low as 55°, and even 50°, at six in the morning. Eight or ten weeks ago one-half of the plants were cut in close to the main stem, as they seemed to be distressed. In a week or so they showed signs of activity, and were then hurried along with heat and moisture. They are now as green as Leeks and fruiting in bunches at every joint, while plants raised from seed last January are barely showing fruit. Not only do I think we waste heat unnecessarily in winter, but I also think plants that are in vigorous health are impaired, and in some cases ruined by it. A high temperature for Cucumbers between November and February is not required, because in reality all that is requisite is to keep the plants in motion. Real progress must take place either before November or after January; therefore by means of forethought much heat may be avoided, making allowances for individual circumstances.

W. HINDS.

#### THE FRENCH MUSHROOM TRADE.

The epicure who enjoys so much a *croûte aux champignons* does not dream of the amount of work which has been gone through in order to gratify his tastes. There are in the neighbourhood of Paris from 250 to 300 Mushroom growers, who live underground at a depth of from 60 ft. to 100 ft. below the surface. This subterranean world is reached by shafts furnished with upright ladders, up and down which the labourers are constantly passing. It is also down these shafts that the manure for the beds is thrown, and when spent it is sent up again in buckets by means of a rope and pulley. In some of the galleries the labourers can work upright, but there are others which are barely 4 ft. high. In these latter the labourer is obliged to work half doubled or on his knees, pushing his wheelbarrow full of soil or manure before him in the same posture. He also has to look after the beds and gather the Mushrooms lamp in hand, and work his way cleverly along the narrow paths between the beds, many of which are barely 8 in.

or 10 in. in width, without once straightening himself. When the beds are made, trimmed, and "soiled," the watering has to be regularly performed, no easy task when it is remembered that every drop of water has to be brought to the foot of the shaft from above, and then carried by hand along the galleries often to the distance of 600 ft. or 900 ft. The life of the Mushroom grower is really a hard one, and the Mushroom eater, while swallowing his dainty productions, rarely gives him sufficient credit for his efforts. It is not all profit either for his employer. First of all, he has to pay a heavy rent for his quarry, from £6 to £24 per month, according to its size. The cost of the manure and its transport form a large item of expenditure, and his crops very often fall through one or other of the causes detailed above. Luckily for him, the Parisian epicure is excessively fond of Mushrooms, so that, profiting by this amiable weakness, the Mushroom grower often manages to bring up and educate a large family, and yet be able to lay something by for old age. We know one Mushroom grower who owns property in Paris, but all his brethren are not so fortunate. The daily production of Mushrooms in and around Paris may be reckoned at 25,000 kilogrammes (about 25 tons), which at 1 fr. per kilogramme gives 25,000 fr. or £1000 per day, or close upon £400,000 per annum. The whole produce goes to the market, to the preserved vegetable manufacturers, or to the provinces. Formerly Mushrooms were sold in the markets in sieves or small flat baskets. M. Bourget, of the Rue de la Petite-Truanderie, agent and manufacturer of preserved provisions, was the first to introduce the system of selling them by weight. His firm uses over 200,000 kilogrammes, *i.e.*, 200 tons, of Mushrooms per annum, either for preserving or for sending into the country. His country orders for fresh Mushrooms often reach as much as half a ton per day. Growers make special arrangements with preserved vegetable manufacturers at a price all round of from 120 fr. to 125 fr. per 100 kilogrammes, *i.e.*, from about £2 to £2 10s. per cwt., the contracts being for six months or a year. In the markets they are sold by auction as they arrive. Mushrooms are sent into the provinces in baskets holding from 15 kilos. to 20 kilos. They are carefully packed in hay or straw, so as to keep them from breaking or chafing. The baskets are carried in special vans, which travel the whole distance, so that there is no need to disturb the baskets during the journey. A few figures will give an idea of the importance of the Mushroom-growing trade of Paris and its neighbourhood. M. Gérard, a grower at Houilles and the quarries near St. Denis, employs nineteen horses and fifty labourers. His daily expenses amount to 500 fr. (£20). He has 8000 metres (4 miles 160 yards' run) of Mushroom beds in his different quarries. M. Renaudot, of Méry-sur-Oise, occupies the most important Mushroom quarries of this district. He receives from Paris a vanful of manure every day, or about 300,000 kilogrammes (300 tons) per month. He has 3500 metres (a little over two miles run) of beds, and sends 18,000 kilogrammes (18 tons) of Mushrooms to the Paris markets every month. We may also mention M. Poussart, at Gouvieux, in Picardy, who employs ten horses and thirty workmen; M. Monin, at Les Moulineaux, ten horses and ten workmen; M. Brique, Paris, two horses and eight workmen; M. Moutin, Paris, ten horses and thirty workmen; M. Victor Grillet, at Vitry, has two horses and six workmen. He has 12,800 metres (about 6 miles' run) of beds in his three quarries. M.M. Gardien, at Vendôme; Busse, at Saumur; Baloché, at Caen; Dupuis, at Lille, produced large quantities for the supply of their own districts. In order not to be troubled with the details of the daily sales, the larger Mushroom growers make contracts for six months or a year with one of the agents of the markets. The agent engages to take the whole crop at from 100 fr. to 125 fr. per 100 kilogrammes (£2 to £2 10s. per hundredweight) according to the season, for the price of Mushrooms falls sensibly when the new year's vegetables begin to arrive in the market. The Mushroom grower, on his side, guarantees a certain minimum of production, and binds himself not to sell to other agents. There are in Paris fifty agents who have the monopoly of this trade, and who supply the groengrocers' shops and restaurants, the stalls in the markets, the manufacturers of preserved vegetables, and, to a certain extent, the provinces.

M. LACHAUME.

## CULTURE OF THE PARSNIP.

It may be stated generally that all edible plants grown for their underground roots alone, such as Parsnips, Carrots, Salsify, &c., do best in a deep, loose, not over rich, or at least not recently manured, soil. If manure be used at all for these crops, it should either be buried deeply, or be of such a nature that it will easily blend and mix with the soil. I have never found any disadvantage to arise from the moderate use of artificial manures, or soot, lime, salt, or any other substance of a similar nature, whose tendency it is to become quickly absorbed and distributed in the land; always, of course, supposing the land required such aids, and that is a question which must be left to individual judgment. Parsnips in garden culture are a good successional crop to autumn Cauliflowers or Broccoli, or, indeed, any crop that can be cleared off before Christmas to give time for the thorough preparation of the land. This is a matter of the greatest importance for root crops. A soil that has been deeply worked and freely exposed to the fertilising and enriching influence of the atmosphere is immeasurably superior for all root crops to ground that has lain dormant and sealed up through the winter; but it should not be worked when the surface is wet, as land, especially if of an adhesive nature, if trampled when wet takes a long time to recover its natural tone, such as the roots of plants delight to spread in. From the middle of February to the middle of March—according to season and locality—is the most suitable time to sow Parsnips, selecting a time when the soil is in good working order; for to put seeds of this kind into the land in wet weather is usually the prelude to an indifferent crop. Sow in drills 1 in. deep and 15 in. apart, and thin out the young plants to from 6 in. to 9 in. apart in the rows. The more space the plants are given, the larger the roots will grow; but large roots, except for some special purpose, are not always the best for the table; nor will they in all cases give the best result in bulk of crop according to the area of land occupied. The most useful crop is composed of regular, medium-sized roots, and these are more likely to be secured by thinning moderately. As soon as the young plants appear, run the Dutch hoe through the spaces between the rows to break up the crust; and in a few days draw a small-bladed hoe through the drills, leaving the plants in small patches 6 in. or so apart. In another week or ten days they may be singled, drawing out all weak plants. This is a better plan than singling out at the same time the hoeing is done, as removing at one operation all the shelter which near association with each other has given them sometimes checks and retards those that remain, especially if the weather be cold. Frequent stirrings of the surface soil until it is covered with the growth of the plants will be exceedingly beneficial, and cannot be overdone. The frost in our climate is not severe enough to injure Parsnips, and it is a common practice to leave them in the ground till after Christmas; but they keep equally well if taken up in November and pitted as Carrots, Beets, &c., commonly are; and it gives an opportunity for getting the land prepared for the next crop in good time. I do not know how it is, but Parsnips have never received the attention they deserve, either as a garden or field crop. They are very nutritious—more so, I think, than either Carrots or Turnips; they certainly occupy the land rather longer than the latter, but that is scarcely a disadvantage, and could easily be managed in arranging the rotations. I certainly think they would pay the small occupier who kept cows, for stock of all kinds (including poultry) eat them readily; and they do not, when given to milch cows, impart that disagreeable taste to the butter that Turnips do. They are much less subject to insects or diseases than most other crops, and seldom or never fail in producing a good crop on well-prepared land. Four pounds of seed will be sufficient for an acre; and, if labour were scarce and dear, by having the drills a few inches further apart, most of the surface stirring and clearing of the crop could be done with the horse hoe; and in field culture they fit in well, in place of Potatoes or Carrots, for a change. H.

## COMPARISON BETWEEN THE DUTCH AND ARGENTUEIL ASPARAGUS.

ACCORDING to M. Lieben, a large number of persons do not yet understand the difference between the Argentueil Asparagus and the most celebrated kinds grown in other localities, such, for instance, as the Dutch variety. The following comparative calculations will enable us to consider the matter in a clearer light than before. The trials were on thirty fine stools of each variety, all of them being of the same age (seven years), and grown side by side in the same soil, and under the same conditions of culture. In the case of the Early Argentueil variety, the first gathering was made on April 3, and the total crop produced by a stool in 42 days consisted of 29 heads, weighing 3 lb. 6 oz. The value of this quantity at the ordinary rate of the Paris market would be as nearly as possible that of half

a bundle, the whole bundle generally weighing from 6 lb. 10 oz. to over 7 lb., but of the 29 heads there were 10 small ones, 11 of medium size, and 8 large ones, which would fetch about 2s. 5d. in the market, or say 1s. 3d. for the value of the half bundle, but as the latter do not fetch so high a price as the former, this sum must be reduced to about 10d.

DUTCH ASPARAGUS.—In the case of the Dutch Asparagus, the first gathering was made on April 20, and the total crop produced by a single stool in 42 days consisted of 24 heads, weighing only a little over 1 lb. 5 oz. The value of this quantity at the ordinary rates of the Paris market would be about that of one-fifth of a bundle. The heads were not very fine, 8 being very small, 10 medium size, and 6 rather large. The ordinary price for Asparagus of this quality would be about 1s. 2s. per bundle; the value of the crop, therefore, would be only about 3d., instead of 10d., as in the case of the Early Argentueil variety. M. Lieben, wishing to carry his experiments further, made the following calculations with respect to the amount of edible matter contained in the heads of each variety. He consequently weighed about 3 lb. each of the Early Argentueil and the Dutch varieties, with the following results.—*Early Argentueil Asparagus*—Gross weight, 3 lb.; weight after trimming, 2 lb. 5½ oz.; ditto after cooking, 2 lb. 5 oz. These heads were served at table, and, after having been eaten, left 14 oz. of some edible stalk. We may therefore fix the total of eatable matter at 2 lb. 2 oz., taking the gross weight as our starting point. The heads took 12 minutes in cooking, and were tender, sweet, and savoury. *Dutch Asparagus*—Gross weight, 3 lb.; weight after trimming, 2 lb. 5 oz.; ditto after cooking, 2 lb. 4½ oz. When served at the table, these heads left 1 lb. 8½ oz. of uneatable stalk. The total amount of eatable matter in the 3 lb. of this variety was only 1 lb. 7½ oz., as against 2 lb. 2 oz. of the Argentueil sort. They also took 5 minutes longer to cook, and were somewhat stringy and very bitter. As a table vegetable the Argentueil variety is worth nearly half as much again as the Dutch kind, and, as a marketable commodity, it is worth more than three times as much, besides being so much better in flavour. In addition to this, the Dutch variety requires a richer soil and double the quantity of manure. C. W. QUIN.

**Leeks for Use in Spring.**—At this season of the year, when old Onions are getting past their best, and autumn-sown ones are scarcely fit for use, Leeks become especially valuable, and by many are preferred to Onions on account of their mild flavour. The seed should be sown at once, and as soon as the young plants are large enough they should be transplanted in shallow trenches, like Celery, two or three rows abreast, so as to allow of soil being worked amongst them. If planted on level ground deep holes should be made and the plants dropped in, with just sufficient soil to cover them, afterwards earthing them up as they grow. I find the London Flag and Ayton Castle excellent varieties for general purposes.—J. Groot, *Enhnam*.

**The Alpha Early Potato.**—I planted in large pots this early variety of American Potato in the beginning of January, and I find that it is now a good size for use, being as large as an ordinary-sized hen's egg. I put three tubers in a pot when planting them, and they were grown in a pit in which the temperature was only high enough to keep frost out. Altogether I planted from three to four dozen pots, and the same number with the early Kidney variety named Mona's Pride, but on trying the latter, the young tubers are still very small, although grown in the same pit as the Alpha. Alpha was also the earliest to ripen in the open air last year; and although not so well flavoured as the early Ashleaf Kidney, it might be of great use in crossing some of our round early varieties, so as to get early-ripening sorts with better flavour. Alpha, like all the American varieties, is a good cropper, and has a short haulm.—W. TILLERY, *Welbeck*.

**Cross-fertilisation of the Cabbage Tribe.**—I have recently experienced a remarkable example of the extreme difficulty in saving seed of the Brassica family, as mentioned by Mr. Baines in his excellent paper upon the above subject. A very pretty conical-headed plant of a Colewort was allowed to run to seed, but nothing else of the same family was known to be in flower for a distance of at least several hundred yards. The produce was saved and sown, and has been furnishing food for the table during the past winter; but what a progeny! Some were reproductions of the seed parent, but larger, and proved very handsome early Cabbages; others were very fair Coleworts; others had examples of Cotager's Purple Kale, others Green Kale, whilst others resembled sprouting Broccoli, both green and purple. One plant was an exact reproduction of the once popular Dalmatian fronds, and there were many other plants that admitted of no classification. It is probable that bees, which travel long distances, had somewhere found some sprouting Broccoli in flower, and had brought pollen from those to the Colewort plant in question.

Canflowers are not subject to these dangerous crossings, as they bloom in the summer at a time when no other members of the Brassica family do. I have saved seed of the Meroball Canflower for the past six years, and have not at any time found that the produce has in any way departed from its normal character. Where very large breadths of Broccoli, Cabbages, &c., are grown for seed, of course only one kind is grown in a locality, and even if any crossing does take place it is minimised on such a large bulk, but in the case of a single plant the danger of crossing is immensely increased.—A. D.

**Mushrooms in the New World.**—The importance of the Mushroom as an article of diet has never been properly understood

sary to interdict. Particular pains have been taken to represent the types of the edible Mushrooms of America as fully as possible in the Washington Botanical Gardens, a number of collectors having been employed for the purpose in various parts of the United States. Among these may be mentioned Professor Peck, botanist, of New York State, who, in that State alone, gathered specimens of no less than eighty species of Mushrooms, including several new to science.—Report of U. S. Commissioner of Agriculture for 1876.

**Late Celery.**—Something depends upon the kind grown; something also depends upon the time of sowing, but far more, in my opinion, depends upon the attention given from the moment the seeds are committed to the ground until the plants are earthed up. To



Jardinière in Bronze with Flowers and Fine-leaved Plants intermixed.

in the United States, nor is it generally known how abundant our supply of edible Mushrooms is. Many of those popularly supposed to be poisonous are not merely innocuous, but highly nutritious, containing, as they do, many of the elements of animal food. In France, Germany, and Italy the Mushroom forms so important a part of the food of the people, that one distinguished writer has spoken of it as "the manna of the poor." In Transylvania, the oyster Mushroom is so abundant and is so largely used, that tons of it may often be seen in the markets; and in some parts of Germany the Morel Mushroom is so popular, that the people, finding it to grow best on a soil treated with wood-ashes, were accustomed to burn down portions of the forest in order to secure favourable spots for its cultivation; a practice which the Government ultimately found it neces-

have Celery as late as possible without "bolting," the sowing should not take place before April 20, and from that time, whether sown in a frame or on a prepared bed in the open air, it should be grown without checks either from loss of roots in transplanting, or from drought through being insufficiently supplied with water. When the young plants appear thin then out by removing a few at a time, gradually giving them more room as they require it until they finally stand 2 in. apart, and then (if not already done) prepare the trenches, and before the plants rob each other too much lift them carefully and plant them in the trenches. Well water and shade them, taking the shading off in the evenings and replacing it on bright days as long as the plants need it. The planting should be done either early in the morning or late in the evening, or else during a dull day. The soil

should never be allowed to become dust dry. Celery is a marsh plant, and although it may not bolt much before its time if kept too dry, yet there are evils almost as bad as bolting, such as soft pithy stalks, which are mainly the result of checks improperly given. I have at different times grown a good many kinds—so called—but for late use I do not at present know any better than Major Clarke's Solid Red and Sutton's Sulham Pink Prize.—E. HOBDAJ.

### SUBSTITUTES FOR SPINACH.

In situations where Spinach in summer quickly runs to seed, a trustworthy substitute often saves trouble and annoyance. The Perpetual Spinach, or Spinach Beet as it is sometimes called, may always be relied upon, no matter how hot and dry the weather may be. It does not possess the peculiar sooty flavour of the true Spinach, and it is hardly so dark in colour, but otherwise it is a most wholesome vegetable, and is exceedingly prolific, and one sowing will last the year. Sow about this time in drills  $\frac{1}{2}$  in. deep and  $1\frac{1}{2}$  ft. apart. When the young plants appear, thin gradually, using the young succulent leaves, until finally they are left 8 in. or 9 in. apart in the rows, and afterwards the leaves should be gathered in the same way as Spinach. The Spinach Beet is a biennial, and will not flower till May or June of the following year. It is much sought after in some parts of the country, and used with Parsley and Thyme for stuffing salt meat. For summer use only, the New Zealand Spinach is invaluable. It is a half-hardy annual, and, to have it early, should be sown in March in a hotbed. As it does not transplant well, it will be better to sow it in small pots, two or three seeds in a pot; harden off, and plant out in a sunny spot, 3 ft. or so apart, in May, towards the latter end of the month. It may be sown in the border at once, but will not be ready for gathering so early. It is very productive. Two dozen plants will supply a large family, as, when once well established, it grows with great rapidity, especially if it can have a good soaking of manure water occasionally. It will grow on the hottest and sunniest spots, but the leaves are larger and more succulent when well fed. I do not think this plant is so tender as it has been commonly represented to be. We had it quite green here last winter till Christmas (to be sure, the season was unusually mild, but we had several degrees of frost before the bed of Spinach showed any signs of distress), and the seeds, I know, will lie in the ground all winter and grow freely the following spring, as they come up every season on the site of the old bed of the previous year. Lee's Giant Orach may be usefully employed as a substitute for Spinach. It should be sown now in good deep land, and be thinned to at least  $1\frac{1}{2}$  ft. apart. H.

**The Jerusalem Artichoke.**—At the present time many would have found it an advantage to have had a good plot of Jerusalem Artichokes in their garden, since they are now paying a high price for Potatoes, and not very good samples either. The Artichoke has before now been recommended as a partial substitute for the Potato, and, according to authorities on the subject, it is the best that has yet been proposed, because its flesh-forming and nourishing qualities generally are as nearly as possible equal to those of the Potato. Then the plant is very hardy, and, though it always well repays generous culture, it will grow and thrive in almost any soil and situation, and is not subject to any serious disease. If there be a waste piece of ground anywhere in a garden, it is usually allotted to the Jerusalem Artichoke. To some the tubers are not so palatable as the Potato, being more watery; but when properly cooked the Artichoke is an excellent vegetable, which cooks in gentlemen's establishments use only a little less often than the Potato. It is not, of course, proposed to substitute the Artichoke for the Potato; but it is a very desirable kitchen garden crop. In large and small gardens alike a piece of ground might generally be devoted to it. It might, in fact, be planted in some gardens as a hedge to protect other crops, or as dividing lines. In cottagers' allotments, which are often exposed on all sides, it might be used to afford shelter with advantage. Its culture is simple. As has been stated, it is not particular as to soil, but if the ground be deeply dug and manured, as for the Potato, all the better. February and March is the time to plant, and the sets may be planted 4 in. or 5 in. below the surface, about 1 ft. asunder, and 2 $\frac{1}{2}$  ft. or 3 ft. between the rows, which should always run north and south, for the sake of admitting the light to the ground. Little attention is required after the crop is planted, except hoeing between the rows occasionally. At the end of the season, when the stems decay, they may be cut down, and a little earth may be drawn over the rows. The tubers are best used fresh out of the ground; but in case of frost a portion may be lifted from time to time, and stored in dry cell in a cool shed.—H.

### WINDOW GARDENING.

AN interesting lecture was delivered on this subject in Sheffield the other day by Mr. W. K. Marples. In advocating the culture of window plants, said Mr. Marples, I am aware that all who live in large towns labour under many disadvantages. To many, the greatest obstacle is how to grow them, and the want of convenient windows. If I did not know that certain plants, with a little care and attention, might be made to grow in the windows of towns, as well as in country mansions, I would never have undertaken this task. As with man cleanliness is maintained to be next to godliness, so with plants cleanliness is essential to healthiness. Therefore, whatever plants may be growing in the window, the dust of the dwelling must not be allowed to accumulate on their leaves week after week. They should be carefully washed every now and then, with a sponge and tepid water. This should be done carefully leaf by leaf, so as not to injure the plant. This sponging not only keeps the leaves free from dust, but also from insects. Window plants require air, food, light, watering, and rest. To keep plants pout up for weeks and months without any air but what comes bouncing in when the door is open, or whistling through the keyhole when closed, is not the way to keep plants healthy. All plants require air more or less, and although the freshness of the air may be said to be very seldom felt in our large towns, yet, by keeping the leaves of the plant clean, they are the more able to breathe what there is. We now come to the food of plants—soil and water. Of course window gardeners cannot pay the same attention to the food of plants as is practised by professional gardeners. To meet the case, I would tell you that a soil most suitable and most comfortable for all window plants to grow in can be found in any locality where there is a hedge growing. Pull up the first big tuft of Grass from the side of the hedge by the roadside, shake the soil from it, add a handful of sand, and the mixture will suit almost any window plant requiring soil for its cultivation. In potting plants be sure to give them good drainage. To effect this, before putting the soil into the pot, fill up about one-sixth part with rough pebbles or broken brick. This will enable the water to run freely from the soil, and so prevent the roots of the plant getting sour. Press the soil evenly and firmly round the plant, and you have now the chief features in potting all plants. With respect to watering, in summer the plants will require to be almost daily watered, and all soft-wooded plants, before coming into flower, are much benefited by having their leaves well besprinkled with clean water several times a week. This brings us to the training. Plants of the Pelargonium tribe should never be allowed to become leggy; try to keep them as bushy as possible and near to the pot. This can easily be accomplished by nipping off the points of the young shoots after the plant has been potted in spring, and made some progress in growing. This induces it to throw out other young shoots. We now come to the rest of plants. Nearly all plants under pot culture require rest in due season, and that season is usually after they have done flowering. All plants that have flowered during summer, such as Pelargoniums and Fuchsias, are rested by being kept moderately dry at the roots all through the winter. In fact, the Fuchsia should be taken out of the window altogether during that season and placed away in some dryish cellar or shelf, free from frost, to remain there until spring comes round. It should then be brought forth, re-potted in fresh soil, set in the window, and away it goes on the journey of life. Thus, it will be seen, to keep window plants healthy, the leaves must be kept clean; they must have plenty of air, must be potted in good sandy soil, well drained, and have a sufficiency of water during the growing season. Train them carefully, and, after the exertion of flowering, give them a rest.

**The Giant White Runner Bean.**—During the last three years I have grown the Giant White Runner Bean, and have found it so profitable that it is well entitled to the most widely extended culture, and I would certainly recommend those who have not yet given it a trial to do so in the forthcoming season. It does not, let it be understood, supersede the old-fashioned Scarlet Runner, and I have certainly no intention of suggesting that it should take its place, excepting to a very limited extent. My practice has been to sow, instead of say four rows of the Scarlet Runner, two of that Bean and two of the Giant White, and I think this plan might be adopted in many gardens with great advantage. The Giant White is similar in character to the Scarlet Runner, but it differs from it in being more robust in growth, in producing white flowers and larger pods, and in being later in coming into bearing. The pods are remarkably fleshy, as well as being of a great length and width, and are exceedingly tender and delicate in flavour. One of its chief recommendations is its lateness, for in August, when the other Runners sown at the usual time are giving out, it is at its best, and the supplies are then very acceptable. I have grown both sorts mentioned in this note in the same row with considerable success, but, excepting in small gardens where only one good row can be had, it is much the best to keep them separate.—G. S., in "Gardener's Magazine."

## OPENING OF THE GARDENS AT KEW.

It is considerate on the part of Mr. Colman to inform you that Kew will be opened to the public at ten o'clock on bank holidays, but surely *this* cannot be considered a "concession" as regards horticulturists and students who for long years and deliberately have been excluded from the garden. The plan of the Kew authorities is evidently to assume that only the great holiday public are clamouring for admission, this holiday public being at the same time declared to be disturbing for the students supposed to be inside! But the real cause of complaint is not that the holiday public is shut out. This section of the community manages to amuse itself by dancing on Kew Green till the gates are opened. Horticulturists, being of a more serious turn, cannot be expected to kill time in that way; any of them simple enough to go to Kew in the morning or forenoon resort to "hanging about Kew Green." I quote an elegant expression I see in one or two of your contemporaries, who, though lending themselves to the Hookerian desire to keep Kew as much as possible a quiet family retreat, have published a few notes from correspondents who objected to passing their time in a manner so unprofitable and undignified; and that outside the gates of the national garden for *seven and even eight hours* after botanic and national gardens both on the Continent and in the United Kingdom are open to the public freely. As for the recently proclaimed facilities for students, they serve merely to show the narrow-minded spirit with which the question is looked at, and are wholly unsatisfactory. I for one shall never consent to run the gauntlet of whatever flunkey or porter happens to be near the curator's gate to beg so abjectly for what is my simple right. As for the plan of seeking for two householders to certify that the applicant for admission to see the national garden in the forenoon is a *bonâ fide* gardener, whatever that may mean, after one has laughed at it, one asks if the Kew authorities can really value their own or other people's time properly while suggesting such a puerile way of wasting it. Surely a simpler way is to open the gates at all reasonable hours.

J. F.

— The Commissioner of Works, it appears, has sanctioned the opening of Kew Gardens at ten o'clock on bank holidays. Now, while we ought, no doubt, to be grateful for small things, I cannot help thinking that in view of the very general expression of public need for the earlier opening of the gardens all the year round, it is hazardous, not to say unfair, to open only on so special an occasion as an Easter Monday, that is, if the conduct of visitors be intended to be taken as a criterion of the wisdom of early opening. I think it would have been much fairer to have opened them at nine or ten o'clock every day during Easter week. We should then have tested more effectually the merits of the recent agitation. In any case the relieving Kew Green of a crowd of holiday-makers a little earlier than usual on a bank holiday has nothing to do with the question of opening the gardens in the morning of every quiet day. On such days there would be no greater numbers present in the gardens than now on an ordinary afternoon, but the public would have the satisfaction of knowing that the national garden and its contents were open to them whenever they choose to go.

T. G. A.

— The "Pharmaceutical Journal," while as tender with the President of the Royal Society as one might expect, nevertheless tells the truth about the "student" plea. When the plea is put forward that it is necessary that the gardens should be closed during the early part of the day to enable students to pursue their studies unmolested, we do feel warranted in asking whether such facilities are afforded to a large number of students as might be expected? For instance, the Royal Botanic Society acts in a most liberal manner towards students wishing to study in its gardens between the hour of opening and one o'clock, and the privilege is widely appreciated; but we know of no analogous facilities afforded in the public gardens at Kew. It is true that it has been stated that some such privilege is granted upon proper application, but it is evident from the number of failures that have been recorded that there is at least considerable obscurity as to the form in which the application is to be made. Again, there is another direction in which we think the services rendered to science by the establishment at Kew might be profitably extended. For the proper illustration of the numerous courses of botanical lectures now delivered in the metropolis and its neighbourhood, in connection with medical and pharmaceutical schools and other institutions, a large supply of typical plants is requisite. For this we believe lecturers in the metropolis are chiefly again indebted to the liberality of the Royal Botanic Society at Regent's Park, and in some measure to the Apothecaries' Garden at Chelsea, but we are

not aware of a single instance in which these wants have been supplied from Kew. This may be contrasted with the fact that in one of the suburbs of Berlin there is a garden under the control of the educational authorities, from which upwards 4,000,000 of fresh plants are supplied to the schools during the year. In our case no special garden is required, as in the immense grounds at Kew there is room for the cultivation of an ample supply for present requirements. In conclusion, we need scarcely say that these opinions are not put forth in a cavilling spirit, but because we believe that the arguments of the Kew authorities would have been stronger had they rested on a wider basis.

The First Commissioner of Works has consented, it appears (see p. 351), to open Kew Gardens at ten o'clock in the morning on all bank holidays; but the opening of these gardens a little earlier on such occasions can be regarded as no concession whatever to horticulturists, for on such days all who cared to go for the sake of the plants themselves would be sure to keep out of the way. The Kew authorities and certain writers who promulgate their views confuse the interests of the holiday crowds with those of the much less demonstrative persons who go to the gardens for the sake of observation, and who certainly would give no trouble to the authorities. One is a question of a few days, when there may be unmanageable crowds; the real question is that of opening the gardens to quiet people at any reasonable hour they can spare to visit them.—H. M.

Any one would think, from "J. S. W.'s" remarks (see p. 351), that no such arrangements are to be found in the three kingdoms as those which he says may be seen in the Jardin des Plantes, in Paris; but if "J. S. W." should ever happen to be in the neighbourhood of Dublin, and will visit the Botanic Garden, at Glasnevin, he will find an arrangement similar to that of which he speaks, *i.e.*, plants arranged according to what they are used for. In the Jardin des Plantes, if I mistake not, the plants are arranged in their Natural Orders, and the different coloured labels only indicate what they are used for. At Glasnevin one part of the garden is devoted to the chief varieties of garden crops. In the same part of the garden may also be found an excellent collection of plants used in the arts and manufactures, such as those that yield dye and colouring matter, oil, fibre, grains, and forage; also a collection of British and foreign Grasses, and pastures and meadow Grasses. Close to the large Palm house may be found medicinal plants, arranged in their Natural Orders, and a little further on are British plants classed according to their Natural Orders; and there is also an arrangement of plants at Glasnevin, which I have never noticed in any of the other botanic gardens in the three kingdoms, not even in the Jardin des Plantes in Paris, that is, plants arranged according to the Linnean and Natural Systems.—U. G. J.

## OBITUARY.

PERMIT me to place on record the removal of another name from the roll of patriarchal horticulturists. Henry Baines, who for upwards of fifty years or more held the position of Curator of the Museum Gardens at York, passed away on the 3rd of April at the ripe old age of eighty-five, thus severing one more of those links which connect the present with the far distant past. Amongst the elder section of your readers many will, doubtless, have personal reminiscences of this fine old Yorkshire gardener, whose deeply-chiselled, rugged features presented a type of face between our modern Carlyle and the old Greek philosopher Socrates. In the wide county of Yorkshire his name and fame were both well known, and it has been the lot of few to enjoy more respect than he did in his residential city of York, where his name was a household word not only amongst horticulturists, but also amongst archeologists and entomologists. As a sound, practical botanist, his "Flora of Yorkshire," which had gone through several editions, will stand as a memento of his zeal and industry in that special branch of his profession; and those who secured, and they were by no means few, his services as clericone through the archeological treasures of the Museum, or through the quaint and historically-interesting corners of the old city and its world-renowned Museum, must have been struck with the vast store of information which he had accumulated. For the past two years he had been superannuated, and for the last three years almost confined to the house, so that his death will scarcely leave such a gap amongst his old circle of friends as it otherwise would have done, and in truth few of his earlier associates would be left. As we ascend the bill of life friends increase, but as we descend assuredly do they become fewer and fewer till we ourselves, possibly all but alone, pass away. To the many lovers of Alpine and herbaceous plants who peruse your columns it will be interesting to know that he was an ardent lover and cultivator of this class of plants throughout his entire life, and the last time that I saw him, some two years ago, his mind, though then sadly failing, brightened up at the mention of some of his old pets with its youthful glow, and the enjoyable days which we spent when he used to pay his periodical visits to Hull came vividly before his mind. An intimate acquaintance of many years' standing, and a high appreciation of those fine manly qualities which, coupled with his scientific knowledge,

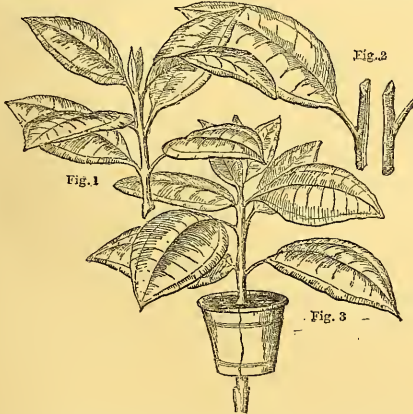
have won for him the right hand of friendship with many, amongst whom I have always felt proud to rank myself, have induced me to pen these few remarks as a tribute to his memory.

JAMES C. NIVEN.

Hull Botanic Gardens.

## PROPAGATING.

**CYANOPHYLLUM MAGNIFICUM.**—This noble-leaved stove plant is increased in three ways. First, take peat and sand finely sifted and fill well-drained pots with it; the cuttings being large, use 3-in. pots. Make the cuttings either as shown in fig. 1, which is a top, or as in fig. 2, which is a single eye; the wood must not be too hard. Cut it down the middle with a sharp knife, place the cuttings firmly in the pots, give a good watering, and plunge them in the cutting box on a brisk bottom-heat. If eyes be used, put four in a pot, with a smaller pot inverted on the top of the sand to hold up the leaves and keep them steady; they must be kept close, moist, and warm, with an occasional opening of the glasses for an hour or two. Fig. 3 represents a good plant if a fine specimen be required without loss of foliage. The pot or box must be cut in half, and a little Moss should be put in the bottom; fix the stem in the centre, and fill in with soil, keeping it moist. A piece of copper wire will bind the pot together. As soon as the roots are seen coming through the



bottom cut the stem half way through; if the top shows no sign of flagging in a week or so cut the other half off. February is the best time for this operation, but if later shade with a sheet of newspaper and syringe overhead two or three times a day.

H. H.

### The Fittonia as a Covering for Stove Beds and Walls.

—There are two varieties of this plant in cultivation—*F. argyro-neura* and *F. Verschaffeltii*. The first has light-green leaves, closely netted with lustrous silvery veins; and the last dark-green leaves, netted with bright-red veins. Both kinds are extremely easy to grow. Cultivated in pots, and treated in the pinched way one often sees the plant, it does not appear to thrive very well; but planted out on the bed among the pot plants, or below shelves, along the margins of paths, it grows strongly, and does not seem to be particular as regards soil, but will succeed either in peat or loam. In one place here it is growing on the floor in common soil, and in another part in the common sand of the bed where the plants are set, and it would be difficult to say which thrives best; but both grow rapidly, and the foliage is both large and fine. Little or no care is taken of it; the stove plants are just set on it or amongst it when moving them about, and it is allowed to take its chance, and quantities of it are cut at times for decorative purposes.—S., Hereford.

## THE FRUIT GARDEN.

### RETARDING FORCED STRAWBERRIES.

FORCED Strawberries, like Grapes and other fruits, need holding back sometimes, but I have always thought it a bad practice to check their progress in the middle of the swelling period. It seems to check development and induce premature ripening, and the consequence is fruit of smaller size than it might have been. It is easy to keep the plants back before they come into flower, but after that period they should be kept growing, if slowly. If it be desired to keep the crop back at a later stage, it should be when the fruit is about finishing colouring, that is to say, if the plants be then moved into a comparatively cool house, they will come on slowly and be better flowered; but, still, they must have a growing temperature. In a temperature of 40° or 45° or thereabout, early in the season, the half-matured fruit makes no progress and deteriorates in flavour. I find it the best plan about this season to let the fruit grow and ripen in not too low a temperature (after it has got to a certain stage), and when it does get ripe, or nearly so, to move the plants into the fruit-room, and keep them cool and dry. Two years ago we almost filled our fruit-room shelves with plants on which the fruit was quite ripe, and it kept until it was all used, which was nearly two weeks. At the present time, in consequence of the movements in our establishment, we have had to place above 100 plants of Black Prince, on which the fruit was dead ripe, in the same place, and they seem to be keeping perfectly. The plants receive no water after going into the fruit-room, but they are in a moist condition before they are taken there, and the fruit-room is aired regularly and kept sweet and dry.

J. S. W.

**The Fruit Crop.**—I have this day (April 12) had a thorough look round my walls with the following result—Apricots, a capital set of healthy fruit; Peaches, as far as can be seen, have also set well; Pears are thinly set with blossom buds, but what there are look promising; Plums are one sheet of fine plump blossoms; Apples, although not open, promise well; Gooseberries are in full flower, but of these we have always abundance.—K. GILBERT, *Burghley*.

—At last we have had a welcome change in the weather in North Notts as far as regards a warmer temperature. Instead of having a rainfall at the date of the deluge in the southern counties, only twenty-eight parts of an inch have fallen here since April set in; the soil, in consequence, is in a very dry state, and on strong soils baked quite hard. On April 17° of frost were registered in the morning, and great injury has been done to fruit trees on walls that were unprotected. Of hardy bush fruits the Gooseberries have been injured the most, all the young fruit on the tops of the bushes being destroyed. Currants were not far enough advanced to receive much injury. Apples, Pears, Plums, and Cherries had been kept back by the cold weather in the last week in March, and I believe have received little injury as yet, and there is abundance of bloom on them to open. It will be very disheartening should there be another failure in these crops this year like the last. We are, however, of late years never safe till the first portion of May is over, for I remember in one year on May 1 that 8° of frost occurred and destroyed the young Apricots, Peaches, and Nectarines on walls, although they were at the time as large as Peas.—WILLIAM TILBERT, *Walbeck*.

—A general look through the large market orchards of this locality shows a magnificent bloom upon Plums and Cherries, nearly all of which is now expanded. On Pears there is a moderate amount of bloom; enough, however, if left unhurt, to furnish a crop. Apples will be finely in flower in a couple of weeks. All the trees look healthy, and the blossom is vigorous. So far, fruit prospects are good, but a drawback must be allowed for the mischief already done by the severe frosts to the earliest Pears, the buds even unexpanded having, to a large extent, been frozen through and the germs destroyed. Under the most favourable conditions, therefore, not more than half a crop can be looked for. Some of the earliest Plum bloom has also suffered, but even on the earliest trees a quantity remained unopened, and doubtless enough of that remains sound and fertile. The Gooseberry crop has very materially suffered, as was inevitable where the fruit had developed sufficiently to be frozen through and through again and again. Some of the Currant blossoms also have suffered, but it will probably be a fair estimate to say of bush fruit generally that there will be, if the weather be favourable, a useful, moderate crop. Apricots are more plentiful than was at first supposed could be possible, and Peaches are not, even on unpro-

teated trees, so much injured as was anticipated. With a continuance of the soft spring weather that now prevails, good crops of Apples, Plums, and Cherries may be looked for, and also moderate crops of Peas and the various kinds of bush and wall fruit.—A. D., *Bedfont*.

### ANSWERS TO CORRESPONDENTS.

**Removing Large Evergreen Oaks.**—Will you be good enough to inform me if I may venture to remove several large Evergreen Oaks which are too near my house, but which I should not like to destroy.—E. W. S. [These are very difficult to move successfully when large] without the aid of a powerful transplanting machine. Far better leave them where they are, unless they have been previously prepared for transplanting by root pruning, and the services of a practical man and a transplanting machine can be procured in the neighbourhood.—B.]

**The Chinquapin (*Castanea pumila*).**—Can any of your readers tell me if this very small species of Chestnut, common in some parts of North America, is in cultivation, and, if so, how it behaves? It is much spoken of in America as a dwarf, edible Chestnut.—W. W. L. [This was introduced into England as far back as 1690. It is quite hardy, but is of very slow growth—in rich, deep soils only attaining the height of a low or very dwarf tree; while in poor and dry soils it does not exceed a height of 6 ft. or 7 ft. Plants of it are probably scarce in the trade. Perhaps in some old-established nursery, such as Messrs. Osborn's, at Fulham, or Mr. Wheeler's, at Warminster, plants of it might be had.—B.]

**Fasciation in Hollies.**—The enclosed was sent from the middle of a variegated Holly tree at Christmas time; can you explain the cause of the growth? Is it confined to Holly alone, or are other trees affected in the same way? and is it a common occurrence?—A. Sussars. [It appears to be a case of early cohesion. Fasciation is common in many trees, especially the Ash, a singular example of which is illustrated in *THE GARDEN* (see Vol. XI, p. 394). It seldom occurs in the Holly.]

**Rhododendrons on Chalk.**—I wish to grow Rhododendrons, but the soil is unfortunately on the chalk. I have heard that they can be grown by digging out basins in the chalk and filling them with peat. Can you give me any idea of what size and depth the basins should be in order to grow the Rhododendrons to a good size in a park?—A. C. [Under such circumstances we should never attempt the culture of Rhododendrons at all, having witnessed miserable failures in the face of much expense and pains. Some of our correspondents may help you.]

**Tree Carnations.**—I shall be obliged for any information you can give me respecting the treatment of these.—F. A. J. [After the plants have done flowering, say in June or July, plunge them in their pots in a shady place, and layer their shoots either into small pots filled with loam, rotted manure, and sand, or in the surrounding soil. When well rooted, pot them into 5-in. or 6-in. pots. When cold weather sets in place them in a cool house or pit, and introduce a few at a time into a heat of from 55° or 60°. By this means a good succession of bloom may be secured. If early flowers be not wanted, the plants must of course be kept in cool airy quarters all through the winter.—E.]

**Badly-grown Marechal Niel Rose.**—What can I do with a Marechal Niel Rose which I have in a pot (in a small house)? About 6 in. from the pot it breaks pretty well, then for about 3 ft. it does not break at all, while above that it is showing bloom. What is the reason of this? The top has been cut off to try to make it break, but it has not done so.—E. A. D. [It is not easy to say why your Marechal Niel does not break satisfactorily. This Rose is very subject to such breaks when grown in pots, but when planted out in a border, it will ramble over the rafters in a greenhouse in a short time, and, owing to the drooping habit of the flowers, they show themselves to the best advantage. Perhaps a shift into a larger pot might throw more vigour into the plant and induce it to break from the bare stem, that is, if there be no border in which to plant it out.—W. T.]

**Wild Gardening.**—I want to know how to get a succession of wild flowers masses on a wooded bank of Beech trees, such as Cowslips, Anemones, or anything that will grow and flourish amongst Grass on a southern exposure? Would it be best to sow seeds on the bank or plant the seedlings out, after being raised, in a border; and what kinds would suit? There are abundance of Snowdrops, common Primroses, and Adonis. Would the blue Anemone do here?—D. H. E. L. [Among Grass it would be best to plant strong seedlings raised separately. The blue Anemone would do well. The summer Snowflake at the spring Snowflake if it can be obtained in sufficient numbers will also do. For a very early flower the yellow Aconite is good. In the case of tubers they are best planted soon after they have died down. Others will do so select the plants you like best, and then choose those that bloom in succession, and they will flower in the Grass.]

**Bitter Broccoli.**—Can any reader of *THE GARDEN* inform me why it is that much of the Broccoli sold in London has a disagreeably bitter flavor? Is it a question of kind, of locality, or does it result from the length of time the heads are cut before they come to market? Or is it owing to the manure used in certain districts? Can any of the good kitchen gardeners whose contributions I notice in *THE GARDEN* enlighten me, and tell me if this bitterness is observable where Broccoli is used fresh from the garden?—Queens.

**Names of Plants.**—J. D., *St. Paul's*.—The stalks had fallen away from the flowers when the latter reached us, and therefore the numbers were

detached, so that we cannot name them. The best way is to send them to some nursery where a good collection is grown. The blooms are very fine; the large red one is the finest and most massive flower we have seen. Its name is *Chandleri elegans*. *Debatteille*.—Apparently *Notelia longifolia*.

**Hardy Plants.**—E., *Richmond*.—Your letter is an advertisement. **Linum viscosum.**—Did not your artist make a mistake in the *Linum* figured in *THE GARDEN* of March 23? It was named *L. viscosum*. Should it not have been *L. salicoides*? The *L. viscosum* which I have grown is pink.—H. HARPER CARWY. [Yes, it was wrongly named; it should have been *L. salicoides*.]

**Wireworm.**—I should be glad of advice on the following matter: I am interested in a garden near Birmingham which is completely infested (not merely infested) with wireworm. Every root of every plant of the Cabbage tribe is simply a hollow tube filled with these pests. Carrot and other root crops cannot be grown. The owner has tried soil, lime, gas-lime, and with no result. Can any of your readers suggest a remedy? Trapping is out of the question, as there are millions of them in every part of the garden. Would the plan of burning the whole soil be the only remedy? and would this be very deleterious, as the soil is light and the subsoil gravel?—W. A., *Gloucester*. [Try nitrate of soda, which is used in quantities by farmers in this locality with the best results. Wherever patches in the Corn crops show a yellow tinge they know that the wireworm is at work, and top-dress the places with nitrate of soda. In the case of garden crops I have no doubt that, if well mixed with the soil in digging the ground, it would help to kill or banish wireworms. They are often brought into gardens with fresh turf loam brought from the fields or roadsides, and I am very doubtful now about fresh soil of such a kind without being well examined, especially for potting purposes.—W. J.]

**Strawberry Culture.**—Which is the most simple way of growing Strawberries? I am told so many ways, each one the best, that I am fairly puzzled. I am told that to plant them in the first instance in a line, like planting Box, and 3 ft. between each row, letting the runners root themselves in the 3 ft. spaces—which they will do, and fruit the following season—is the simplest; of course rooting out the old plants. This is certainly very simple, but I should be afraid they would be overcrowded by this plan; but I am told they produce a plentiful crop of fair-sized fruit. I am told runners that root themselves make the best plants. As I cannot afford much time to be given to pricking out the runners, please tell me if this plan is a good one, or of a better one if equally simple; also if the small-foliated plants are best for a moist climate such as this; and if so, the names of such? I have no space for succession beds—beds for one, two, and three-year-old plants. If the runners were always out, away and the old plants kept, the fruit would get smaller each year, even with manuring highly, I suppose.—H. S., *Argyleshire*. [No; the mode of culture named is not a good one, and ought to become obsolete as soon as possible. Moreover, we must remind you that good Strawberries cannot be had without labour or space in which to grow them. The following is a plan which we have found to be most successful: The earliest runners are selected and layered on pieces of turf let into the ground. As soon as they are well rooted they are severed from the parent plants and transferred to permanent quarters, on well-enriched and deeply-dug ground. They are planted in rows 2 ft. apart, and 1½ ft. asunder in the row. All the runners are kept pinched off during summer and autumn, and the following year they produce a few very fine fruit, but the second year they bear prodigiously, yielding fruit of the largest size and finest quality; the next year they deteriorate somewhat, and after fruiting a third time they are destroyed, thus necessitating successional beds; and, no matter how limited your space may be, you must resolve to have successional beds if you wish to have good fruit. We never yet saw fruit worth the name that had been grown year after year on the same plants and ground. The following are free-bearing kinds, hardy, and good, either for dessert or preserving, and will, we think, do well in your climate, viz., *Vicomtesse Héricart de Thury*, President, *Sir Charles Napier*, and *Sir Joseph Paxton*.—W. W.]

**Seed Adulteration.**—A bill, intitled "An Act to Amend the Adulteration of Seeds Act, 1869," introduced the other day by Mr. Clare Sewell Read, runs as follows: "1. This Act may be cited as 'The Adulteration of Seeds Act, 1878,' and shall be construed as one with 'The Adulteration of Seeds Act, 1869,' and together with that Act may be cited as 'The Adulteration of Seeds Acts, 1869 and 1878.' 2. From and after the passing of this Act section 2 of 'The Adulteration of Seeds Act, 1869,' shall be read as if, instead of the words 'The term "to dye seeds" means to give to seeds by any process of colouring, dyeing, sulphur smoking, or any other artificial means the appearance of seeds of another kind, there were therein inserted the words "The term "to dye seeds" means to apply to seeds any process of colouring, dyeing, or sulphur smoking.' This will prevent prosecutions failing from an ambiguity as to the meaning of the word "kind."

## SOCIETIES AND EXHIBITIONS.

## ROYAL HORTICULTURAL SOCIETY.

APRIL 17.

Owing to the mild weather which we have experienced, exhibitors were enabled on this occasion to bring out the most tender exotics without fear of injury, and the result was the best show that has been held at South Kensington this year. Its most interesting features were banks of pot Roses, Clematises, and Rhododendrons, from Messrs. Veitch & Sons, and an admirably-arranged group of Orchids, Gloxinias, and other choice flowering plants, together with Palms and other similar graceful-leaved subjects, from Mr. John Wills, of South Kensington.

First-class Certificates were awarded as follows:—

**Amaryllis E. Pilgrim** (Williams).—A superb flower of good form, having smooth petals of a brilliant scarlet, the base of the mid-rib being pure white. One of the best Amaryllids that has been shown for a long time.

**Dietses Huttoni** (Green).—An Iris-like plant, with curious yellow three-petalled flowers.

**Wallichia zebra** (Williams).—A distinct species, having long graceful leaves of a deep green colour, the foot-stalks being zebra-striped.

**Caltha palustris fl.-pl. minor** (Parker).—A double, yellow-flowered, hardy species, well suited extensive culture on water margins.

**Davallia fijiensis** (Bull).—One of the most valuable introductions among Ferns that has been made for some time. It resembles *D. canariensis*, but the fronds are much more finely cut and graceful.

**Megasea purpurescens** (Parker).—A fine kind with glossy green leaves, and bright, rose-coloured, drooping blossoms, borne on fleshy stalks 6 in. or 7 in. above the foliage.

**Grevillea robusta filicifolia** (Rollison).—An elegant plant, with a drooping habit and long, spreading, finely-cut leaves. One of the best plants in cultivation for table decoration.

**Adiantum tetraphyllum gracile** (Bull).—A dwarf Fern, the fronds of which somewhat resemble in colour and form those of *A. pubescens*.

The same award was also made to Messrs. Veitch & Sons for *Crinum bracteatum*.

**New Plants.**—Groups of these were shown by Messrs. Veitch & Sons, Williams, and Bull. In the group from the first-named firm were several new *Gloxinias* of a meritorious description, the best being *Eloipse*, a well-formed, upright flower, of a velvety crimson colour. Mr. Bull had, in addition to plants which received first-class certificates, an elegant *Croton*, from New Guinea, with long, narrow, bronze leaves, elegantly marked with fiery crimson; also several varieties of *Odontoglossum Cervantesii*, and several new *Alcocalcias*. Messrs. Osborn & Sons contributed a new *Draecena*, named *D. Parri*, which appears likely to prove useful for window decoration; it has large, glossy leaves edged with crimson. Messrs. Paul & Sons, the Old Nurseries, Chestnut, sent examples of the golden-leaved *Avellana anrea*. Mr. Wills showed a remarkable, fine variety of *Odontoglossum Andersonianum*. Messrs. Rollison & Sons furnished several new Ferns and Palms; and from Mr. Charles Turner, Slough, came two new Indian *Azaleas*, named respectively *A. Madame de Grove* and *A. Comte de Chambord*, both light-flowered kinds, well worth a place in every collection.

**Roses in Pots.**—A magnificent group of these was shown from Messrs. Veitch & Sons, Coombe Wood Nursery, the plants throughout being well furnished with healthy deep green foliage, and an unusual amount of bloom. Conspicuous amongst them were grand specimens of *Madame de St. Joseph*, one of the best Roses for pot culture; *Amie et Anton*, well supplied with rose-coloured blossoms; *Souvenir de l'Ami*; *Duchesse de Vallombrosa*, and the pale yellow *Marie Van Houtte*, so useful in a bud state for bouquets. *Rubens*, a delicate cream-coloured kind, was much admired, as were also the bright flowers of *General Jacquemont* and *Beauty of Waltham*.

**Cut Roses.**—Messrs. Lane & Sons, Great Berkhamstead, showed excellent bouquets of these. Amongst them were fine blooms of *Mdlle. Marie Rady*, *Baroness Rothschild*, *Boule de Neige*, *Edward Morren*, one of the largest of *Roses*, *Paul Nerou*, the beautiful yellow *Madame Falcot*, and the pure white *Niphotos*, so largely grown for sovent Garden, where it is considered the best of white *Roses*. Mr. J. Walter, Finsane Croft, furnished stands of *Marshall Niel* of the finest description; the blooms were unusually large, well formed, and of the richest golden colour; the same exhibitor also sent good blooms of *Gloire de Dijon*, *Souvenir de la Malmaison*, the pure white *Lamarque*, and other good kinds.

**Orchids.**—These were represented by attractive groups from Sir Trevor Lawrence and Mr. Williams, Holloway. In the first collection was a magnificent plant of the rare *Cymbidium oburneum*, furnished with numerous chaste, ivory-white blossoms, and an example of the curious *Cypripedium cadaverum*, bearing nearly twenty large blossoms, the tails of which measured quite 2 ft. in length. Associated with these were well-flowered plants of the brilliant orange-scarlet *Loelia cinnabarina*, *Odontoglossum radiatum*, a finely-bloomed plant of *Masdevallia Harryana* of unusually bright colour, graceful plants of *Odontoglossum circhosum* and *O. Alexandra*, and a plant of the beautiful *Trichopilia suavis*, which bore nearly a dozen large waxy blossoms. From the same exhibitor also came

numbers of plants of *Freesia Leichthiania*, furnished with abundance of creamy, golden-spotted blossoms. In Mr. Williams' group of *Orchids* were beautifully-flowered plants of *Aerides Fieldingii*, *Vanda tricolor insignis*, the graceful *Dendrobium Falconeri*, and *Masdevallia Lindenii*.

**Amaryllids.**—Groups of these were shown by Mr. Williams and Messrs. Veitch & Sons. They contained both seedlings and well-known kinds. Among the most noteworthy from Mr. Williams were *Eratinum*, an orange-scarlet flower striped with white; *Dr. Hogg*, a large-flowered variety, with broad, bright scarlet petals; *Eloipse*, a well-formed flower, of a brilliant crimson colour; and a light-flowered kind named *strata superba*. In Messrs. Veitch's group were well-flowered plants of *Junius*, an exquisite flower, with smooth, well-formed petals of a maroon-crimson colour; and *Attraction*, an unusually showy kind, with medium-sized flowers of a bright salmon colour, the base of the petals being pure white.

**Clematises.**—These were well shown by Messrs. Veitch & Sons. The plants were in 8-in. pots, and trained, but not too stiffly, on small, conical-shaped trellises, or they were completely hidden with blossoms. For conservatory or room decoration such plants as these are unequalled, and the wonder is that the *Clematis* is not grown more extensively as a pot plant than it is. Among the best varieties in this group were Mrs. S. C. Baker, a good-habited kind, with white-tinged flowers shaded with pink; *Miss Bateman*, a sort with well-formed, pure white flowers; *Justus Victor*, with transparent violet blossoms; *Lady Londesborough*, of delicate mauve; and *Sir Garnet Wolseley*, a variety with showy purple flowers having crimson veins. Associated with these were standard plants of the elegant, green, cut-leaved *Maple Acer polymorphum palmatifidum*.

**Miscellaneous Subjects.**—A group of hardy flowering shrubs from Messrs. Veitch attracted perhaps more attention than anything else that was exhibited, on account of their somewhat novel character. They consisted of double and single-flowered white and scarlet *Thorns*, miniature trees of the common *Laburnum* furnished with abundance of blossom, variegated *Maples*, *Ghent Azaleas*, *Lilacs*, and early blooming *Rhododendrons*. For effect in the conservatory such plants as these are when in flower better than many more difficult to cultivate. Mr. Wills' group, which was an excellent one, contained well-flowered plants of *Odontoglossum circhosum*, *O. triumphans*, and *O. gloriosum*, associated with numerous plants of *Anthurium Scherzerianum*, well furnished with bright scarlet spathes, choice *Azaleas*, and *Lily of the Valley*. These were intermixed with Ferns, *Palms*, *Crotons*, *Draecenas*, and *Cupanias*. The beauty of the group was enhanced by masses of cut blooms of *Marshall Niel* *Roses*, intermixed with *Stephanotis* and *Lily of the Valley* cushioned in Moss. Mr. B. S. Williams sent a valuable group of plants, in which were noticeable large and well-flowered specimens of *Azalea major*, *Rhododendron Comtesse of Haddington*, *Francisca calycina* *maior*; also well-grown plants of new *Draecenas*, *Aralias*, and *Palms*, the beautiful *Leucostemone*, *Gloneria*, *Psychotria lucubra*, and the new Fern, *Microlepia hirta cristata* from the South Sea Islands. Messrs. Rollison & Sons contributed plants, among which were *Arrophyllum apiculatum*, furnished with from twenty to thirty spikes of rose-coloured blossoms, the brilliant semi-double *Azalea Charles Leirens*, and well-flowered plants of *Azalea tuberosa*, and *Tetrachaea ericoides hirsuta*; associated with these were also brightly coloured specimens of *Draecena Baptisti*, the narrow-leaved *D. elegantissima*, and *D. salomonii*, all of which are among the best *Draecenas*. Messrs. Cutbush & Sons furnished a collection of hard-wooded and other plants, among which were profusely-flowered specimens of *Polygala Dalmanii*, choice *Azaleas* and *Rhododendrons*, the beautiful blue-flowered *Hovea Celis*, and a narrow-leaved *Draecena*, which has been shown on previous occasions. Mr. Aldons, South Kensington, also sent a group of decorative plants, consisting of well-bloomed *Heaths*, *Pinks*, show *Pelargoniums*, and brightly-coloured *Cinerarias*, intermixed with Ferns, *Palms*, &c., but they were altogether too crowded to be effective. Mr. Parker, Tooting, exhibited a group of hardy, bulbous, and herbaceous plants, in which were *Androsace coronopifolia*, a profusely-flowered plant, with small white, *Forget-me-not*-like blossoms, a good potful of *Gentiana acaulis*, well furnished with flowers, the elegant *Fuchsia macrophylla*, and several *Irises* and *Saxifrages*. Messrs. Barr & Sargent had an extensive display of *Daffodils*, in which the best known kinds were represented, as well as many valuable seedlings, for which a gold Banksian medal was awarded. The Rev. J. G. Nelson, Norwich, also sent remarkably fine blooms of *Leeds'* seedling *Daffodils*, also cut blooms of seedling *Anemone pulgens* and the double *A. coronaria*. An excellent group of *Auriculas*, *Polyanthes*, and *Primulas* was shown by Mr. R. Dean, among which were many new and well coloured. Mr. H. Hooper, Vine Nursery, Widoombe, sent some good cut blooms of *Pansies*. Mr. Charles Turner, Slough, exhibited a plant of *Polyanthes Orange Gem*, a profusely-flowered kind, valuable for border planting. Messrs. F. & A. Smith, Dulwich, sent cut blooms of *Cinerarias*, exquisite in form, colour, and size. Messrs. Veitch contributed a group of *Obolite* *Oranges* grown in 6-in. pots, each bearing no fewer than twelve to fifteen ripe fruit. Mr. Wildsmith, Hackford, sent a dish of *Heriarte de Thury Strawberries*; the fruit was of large size, well coloured, and of excellent flavour.

**Royal Horticultural Show at Preston.**—A third meeting of the Local Committee of the Royal Horticultural Society was held the other evening at Preston to receive a deputation from the Council of the Society

at London. Mr. Shuttleworth briefly introduced Mr. H. J. Elwes (a member of the London Council) to the meeting, and that gentleman proceeded to explain, at considerable length, the views of the Council on the subject of the show to be held at Preston, and also entered fully into the large amount of labour which it would involve, stating that it would tax the resources and the energy of the Local Committee to the utmost. He was very much pleased, he said, with the beauty of the grounds at Farington Hall, and also with the spot selected for the show, which would, weather permitting, he believed, be a complete success.—Mr. Shuttleworth produced a lengthy list of patrons, which was partly read.—Mr. Elwes announced a grant of £1000 had already been subscribed in London, and that more would be forthcoming if required. With the £500 already guaranteed by the Preston Nursery and Pleasure Gardens Co., however, he thought a sufficient sum had been obtained. He urged upon the Committee the necessity of commencing at once to make a complete and active canvass, for the purpose of providing the necessary funds for the prize money offered in the schedule and the preliminary expenses, and concluded his remarks by stating that the London Council would do all in their power to render the show a perfect success, and a credit to the county and Preston in particular. All details relating to the fixing of the tents were settled. One of them, it may be remarked, will be of such a size, that it will cover about three-quarters of an acre. The real work of this great undertaking may therefore be said to have commenced in earnest, and we do not doubt that the most perfect success will attend the labours of the Committee.

#### SPECIMEN ALLAMANDAS.

THE Allamandas are alike remarkable for their conspicuous yellow flowers and for their bold, distinct foliage, affording an effective contrast to most other kinds of flowering and fine-foliaged plants with which they are ordinarily associated. As exhibition plants they are in their way unrivalled, and a well-grown specimen of an Allamanda is a most telling plant in a collection. Employed as climbers in stoves, they efficiently clothe the pillars, walls, or spaces of roof, and are not only beautiful from a decorative point of view, but afford plenty of flowers, which are often found extremely useful in a cut state. It is one of those plants which liberally repays generous treatment; and in order to display its true character it must be well nourished, and be grown in a congenial atmosphere. Like the generality of climbing plants, it succeeds best in a good, free root-run in a tolerably rich and stimulating soil. If it can be afforded these advantages its culture will be attended with satisfaction. If planted out, it will naturally attain greater luxuriance than when the roots are confined to the narrow limits of a pot; although it may be safely affirmed that flowers of the highest quality can be produced by pot culture. In the formation of specimens it is best to commence with quite small plants, and if they can be had in 3-in. pots, so much the better. Specimen growers, as a rule, like to begin with plants as near the cutting state as is possible, as they are thus better enabled to lay the foundation of a healthy specimen. As much of the vigour of manhood depends upon the care exercised in infancy, so will the future existence of the specimen depend upon the management of the plant in its primary stages of growth. We will therefore suppose that the young plant is well rooted, and the soil well permeated with fibres. In that case it may in March be shifted into a size larger pot, using an open, porous compost of half turfy loam and peat. Let the soil be well sanded in the first stage of growth, as the main object is now to secure a good foundation by multiplying the root fibres as much as possible. Water moderately, and place in a position where there is no lack of light, and where air may be given on favourable opportunities, at the same time avoiding cutting draughts or checks of any kind. In order to lay the foundation for a well furnished specimen, it is necessary to give early attention to stopping the young shoots. It is not, however, advisable to commence this operation until the growing wood is sufficiently robust to admit of its pushing strong laterals when pinched back, for, although, as will be well understood, it is necessary to promote the formation of young shoots, it must not be done at the expense of strength and solidity. It is as well to let the plant grow on until it is well established in a 6-in. pot before stopping, and then pinch back to about six eyes. This will ensure vigorous breaks, which will naturally form strong healthy wood when shifted on. By the end of the season they will have become thoroughly established in 8-in. pots, and should, towards the end of the growing season, be placed where they may get a free circulation of air in order to ripen off the wood. During the winter they

will have to be kept moderately dry, not, however, allowing the fibres to perish for want of moisture. They are to be rested, but not dried off. If a plant is allowed to stand dry for any length of time, it will have the effect of considerably impairing its vital force. Want of vigour when the plants break may often be traced to this cause. The best place in which to winter them is the coolest portion of the stove, or in an intermediate house, keeping them as far removed from the pipes as is possible, for the colder they can be kept consistent with safety, the more strongly will they start into growth again. Early in spring they should be shifted into the pots in which they are destined to bloom, using a good sweet compost of equal portions of loam, turfy peat, and decomposed manure. The shoots should all be pruned back, the number of eyes left to be determined by the strength of the shoot. The generally accepted form of training for this plant is that in which a balloon-shaped trellis is made use of, the shoots being so directed that they cover it with foliage. Some growers, however, merely support the shoots by means of stakes, allowing the plant to assume a more regular and natural outline. The summer treatment will correspond to that which is recommended for the young plants, but as soon as growth is completed, they must have sufficient air and light admitted to them to admit of a thorough maturation of the wood. This is best effected by their removal to an intermediate house. In the case of Allamandas planted out, they should receive as much air and light as is compatible with the health of the other inmates of the structure in which they are growing, for although it is not difficult to induce a strong growth, it must be borne in mind that perfect maturation of the wood is the grand essential for the production of an abundant bloom.

*Bylect.*

J. CORNHILL.

**Ixias in Pots.**—Few spring-flowering bulbs give so little trouble and are at the same time so full of grace and beauty as these; either in pots in the greenhouse or in frames, or in protected beds merely for their flowers for cutting they are alike valuable. They should be potted freely in autumn, six bulbs in a 6-in. pot, in sandy loam and leaf-mould; place the pots in a cold frame or on a shelf in a cold part of the greenhouse; keep the soil dry at first, but give water more freely when the plants are in full growth. In April most of the varieties will flower, and will be very useful, as they are quite different in appearance from most plants at this season. When they have done flowering gradually dry them off, and allow them to rest till autumn, when they should be re-potted as before.—E. HODDY.

**Shakespeare's Own Garden.**—Every one who, under the tuition of the Rev. Mr. Ellacombe, has learnt something of what gardens and gardening were in the time of Shakespeare, will, I think cordially agree with the following passage from the "Athenæum" of March 23:—"Before passing from Shakespeare, we should like to call the attention of the directors or managers of New Place to the absurdity of the garden, which they are supposed to keep up in remembrance of Shakespeare. We chanced to visit it last summer, and, instead of finding an Elizabethan garden with flowers associated with Shakespeare and his times, we saw little but a miserable ribbon border of starveling Calceolarias, scrubby Pelargoniums, and miserable Perillas. Such a garden is a mockery, and would be more suggestive and more pathetic if left wild to the growths of Nature." It is very satisfactory evidence that a salutary turn has taken place in the tide of public taste, when a purely literary journal, such as the "Athenæum," speaks thus, whatever a clique of geometrical garden, clippers may say to the contrary. In the same article occurs the following additional testimony:—"The English garden of to-day still awaits its laureate, and, except where, in Mr. Allingham's 'Therapia,' 'Vase and plot burn scarlet, gold and azure,' we scarcely know of a description of modern 'bedding out,' and we sincerely hope that the present fashion may disappear before the thankless task is undertaken."—G. S. BOULGER, 11, Burlington Road, W.

**Produce of the Seed of Variegated Phormium tenax.**—It is a very singular fact that whereas the seedlings of *Phormium tenax variegatum* all come up green, and nearly devoid of any variegation whatever (see p. 335), those of the beautiful *Phormium Colensoi* invariably come up all white or cream-coloured; and, being totally devoid of chlorophyll, or the necessary life blood of plants, cannot live, but necessarily dwindle away and die after they reach the second or third leaf from the seed leaf. Why these seedlings, being thus destitute of life blood, should thus vegetate or come up at all is a problem yet to be solved.—W. E. G.

"This is an art  
Which does mend Nature: change it rather: but  
THE ART ITSELF IS NATURE."—*Shakespeare.*

### GRAVEYARD GARDENS.

WITHOUT endorsing all that "A. D." says in reference to this subject (see p. 334), I think he has done well in calling attention to it. Sooner or later the subject must have an interest for everybody. I write only as an inquirer, and I shall be very thankful for any hints or corrections that may be given to me. In working out the problem, however, and wishing (to use "A. D.'s" language) "by the culture of flowers to perpetuate a sentiment for the dead which should ever be that of fond remembrance," I would suggest that the following points be attended to: 1. The plants chosen for this sacred use should be of very easy management, for those which are not so will very soon die, or at all events look unsightly, in our hot and parched cemeteries, or in our too often ill-drained and ill-kept churchyards. 2. They should be successional. If there be any pretence of growing flowers over a grave, there never ought to be a time during the whole course of the year when there is not some fresh blossom springing into life. This can easily be managed, but it requires that there should be a proper selection of plants; and there must be relays of some of them in pots in addition to those which remain continually in the ground. 3. The flowers ought as much as possible seem to be growing naturally in the soil, and not just stuck in in a careless, or even in an artificial manner. 4. There ought, I think, to be no glaring colours or startling surprise where our dear ones are lying. No ribbon border is admissible for a moment, but only that which is soft and tender should be used. Though it cannot always be so through the year, yet white should predominate as much as possible over every colour. Drooping flowers are by far the best for a grave. 5. Plants of a compact habit should be chosen, for the space is small; and one plant should never crowd out another. This makes bulbs to be especially eligible, as they can be so easily taken out of the ground and put back again. If these ideas are right, I should be thankful for the names of any desirable plants and bulbs for this purpose, and especially of those which would not occur at once to one's mind. It is easy to think of this plant or of that, but I want to make out a list of those which meet all the five requirements which I have named in the highest degree. The Snowdrop is, of course, just what is wanted, and *Galanthus Imperati* is better than any other species that I know of for use in this way. *Triteleia uniflora*, *Fritillaria Meleagris alba*, *Scilla nutans alba*, *Allium neapolitanum*, *Viola semperflorens*, and *Convallaria majalis* are all appropriate, and succeed with but little care. *Anthericum Liliastrium majus* is an incomparably beautiful and pure white flower, which will soon be coming out. *Lilium longiflorum* and *L. candidum* will do in some places; *Gladiolus communis albus* will be very helpful in summer, and *Cyclamen hederifolium album* will follow in the autumn, with *C. Coum album* to come after and blossom in mid-winter—even while the snow is on the ground. Some of the Hellebores might be added if they could be kept within bounds. I would just say that in my opinion the white Bluebell (*Scilla nutans alba*), which is in blossom at this time, is as good as any plant that can be named for the resting-places of the dead. Its drooping habit, which makes it look as though it were weeping over the grave—its few and easy requirements, and its compact way of growth, seem to say that it should always be found in the churchyard, though I do not remember to have seen it there in a single case. Let any one who mourns over the loss of those who are not lost but have only gone before study how he can best adorn their resting-places here with flowers, and I do not think it is at all out of place to say that his labour will not be in vain. E. F.

received seeds from a correspondent in Japan, bearing only the Japanese native name as above written. From it the Japanese extract the gum or oil with which they render waterproof the paper umbrellas, so much used by all classes of the natives of that country. He describes the culture of this plant as exceedingly simple and easy if sown during the present month in a frame, and, after being pricked off into pots when large enough, ultimately in the month of May or June planted out in the open border of the kitchen garden, where they grow very rapidly, and attain a great size. The flowers appear towards the end of August, and seed ripens thoroughly by the end of September, the plants remaining green till destroyed by the frost. This plant, which belongs to the Labiate family, attains a height of about 3 ft. 3 in., and the foliage is highly aromatic, resembling in appearance that of a gigantic form of *Ocimum Basilicum*. The production of seed would have been very abundant had not the high winds at the commencement of October greatly broken and damaged the plants; still, enough was saved to enable M. de Lunaret to offer a few to any reader of the "Révue" who would like to experiment with the plant, an offer of which, doubtless, many will avail themselves. It is not stated from what part of the plant the oil is obtained, but in all probability it is by crushing the seeds. Perhaps some of the readers of THE GARDEN who have been in Japan may recognise the plant, and be able to tell us more about it.—W. E. G.

### PRIMROSES FOR WASTE PLACES.

The Primrose is undoubtedly the most popular of all our native plants, and, I believe, has given its name to more localities than any other native plant. Every Cockney has heard of Primrose Hill, and I know of one in Shropshire and another in Cheshire, and there are doubtless others. Everybody, too, has read of the sensation caused by the first pot of Primroses which appeared in Australia, and the welcome given to the



well-remembered flower. There are four British plants that grow gregariously that may be said to be national, that is, that give a charm and a character to English scenery, viz., the Furze, when seen by the acre, clothing with gold many of our heaths and commons; the wild Hyacinth, or Blue-bell, covering, as it does, miles of our shady woods and forests; the Wood Anemone, silencing with its million stars our open woods and groves; and, lastly, the Primrose (with a colour truly its own), making the wilderness rejoice, and giving a charm to thousands of barren and waste places. The Primrose is a bank-loving plant, while its relative, the Cowslip, delights in damp meadows and pastures. The Primrose is most at home on steep clayey banks, scars, ditch banks, and sloping, open woods. In Cheshire and Gloucestershire I have seen miles of steep railway banks quite yellow with it. Where this plant exists in profusion, people must be content to see it in its wild state; but there are hundreds of steep banks, pit sides, and open woods, near drives, to which it might be effectually introduced, and its introduction would give a charm to many an otherwise uninteresting spot. Surely the Primrose, and not the Rose, should be the emblem of England! Everybody loves the Primrose, and more poetry has been written about it than about any other English flower. It is astonishing to see the tens of thousands of these plants that are rooted up and carried from the country to our large towns and suburban gardens. No matter how fine a garden may be, or how many flowers people may have, they always seem greedy as regards Primroses. If we go into the country on a fine day in spring, we are almost certain to meet the "squire's daughter," or the "young ladies from the rectory," with a trowel and a gipsy basket loaded with Primroses. Finding the first Primrose and hearing the cuckoo for the first time are among the pleasant events of the year. THOS. WILLIAMS.

*Ormskirck.*

New Japanese Plant, the Zi-Goma.—In the last issue of the "Révue Horticole" a correspondent from Montpellier, M. Leon de Lunaret, calls attention to the above-named interesting plant, of which he had

## NOTES FROM KEW.

**Outdoor Plants.**—Plants of this class are now making rapid progress. Almost daily, especially after warm rains, some fresh shrub or herbaceous plant may be seen in flower. As if by magic, the blossoms of the Greater Periwinkle (*Viola major*) have pushed their purple flowers above the winter carpet of shining green formed by the abundant growth of leaves. The remarkable mildness of the past winter is well exemplified in the shrubberies at Kew, for on all sides the flowering shrubs and trees are plentifully decked with blossoms. Of the numerous *Berberidaceae* shrubs in cultivation, always excepting *Berberis Darwinii*, referred to last week, *Mahonia fascicularis*, when well grown, presents a handsome appearance; its very large and dense clusters of yellow flowers, equally distributed all over the plant, and set in a background of reddish-green leaves, makes it a most useful and showy addition to any shrubbery. Amongst the *Scimmias*, *S. fragrans* is worth a passing note; in habit it is more erect and compact than *S. japonica*, while it produces its flowers with equal freedom. Dense masses of the peculiar *Orobanchaceae* parasite, the Greater Tooth-wort (*Lathraea Squamaria*) are now to be seen springing direct from the Grass at various spots, within a few yards' radius of the Temple of the Sun. In the herbaceous ground several of the *Boraginæ* are now looking their best. *Pulmonaria mollis*, a native of shady places in some parts of Europe, extending from Germany and the Pyrenees into Siberia, is a dwarf, compact plant covered with short, soft hairs, and well furnished with flowers, which are red before expansion and bluish-purple afterwards. Another species now in flower, and equally worth growing, is *P. caucasica*. Several species of *Iris* are now in flower in the border. *I. pumila* is a very dwarf form, with cream-coloured or dingy yellow flowers; it is a native of Central and South-eastern Europe. *I. virescens* also bears dingy white flowers, but *I. aphylla* is a much finer and more attractive species, the flowers being larger and of a fine purple colour. *I. biflora*, from Portugal, also bears purple flowers streaked with white. On the old rockwork are several good plants at present in flower. *Trillium grandiflorum*, with its large, three-lobed, shining green leaves, and its long, pure white flowers, is very ornamental, as are many of the *Primroses*, notably amongst them being *Primula denticulata*, an East Indian species, with a clustered head of small purplish flowers borne on a slender stalk about 8 in. high. *P. oiliata* var. *purpurea* is a dwarf species, with large purple flowers on a very short stalk. A very fine plant for damp situations is *Caltha radicans*; it forms a good compact mass of foliage, and is well covered with large yellow flowers.

**Greenhouse Plants.**—A very ornamental plant for a cool house is *Lavandula dentata*; its leaves are oblong, linear, or lanceolate, bluntly and pinnately toothed, and covered with a short pubescence. It bears loose spikes somewhat tufted at the apex, and the flowers are purple, somewhat similar to those of *L. Stœchas*. The plant is a native of Southern Europe and the Mediterranean region, extending into Northern Africa. *Cornilla glauca* is a plant always worth growing for the sake of its compact shrubby habit, its small leaflets, and its numerous yellow flowers. *Cytisus canariensis* is another Leguminous plant equally ornamental. *Gnidia carinata*, a *Thymelæaceae* plant from the Cape of Good Hope, is also attractive on account of its bunches of yellow flowers, as is *Epacris miniata grandiflora* for its reddish-pink, white-tipped blossoms.

**Stove Plants.**—In the new range climbing up the rafters of the roof several species of *Clerodendron* are finely in flower. Besides the well-known white and red flowers of *C. Thomsonii*, *C. splendens*, a *Sierra Leone* species, attracts notice for its dense masses of brilliant red blossoms and its thick deep green leaves. *C. volubile*, a native of New Guinea, is also very attractive for its white flowers, which have a tinge of pink in the throat, and long recurved and twisted stamens. The showy flowers of these plants are well set off against the deep opaque green of the leaves of all the species. The singular gonytistemmed *Euphorbiaceae* plant *Jatropha podagrica* is more remarkable than beautiful; nevertheless, the orange-red flowers are sufficiently handsome to make it useful for mixing with other plants. Most of the *Gardenias* are well worth cultivating for the extreme beauty of the flowers as for the delicious perfume emitted by them; and *Gardenia intermedia* is no exception to this rule, the flowers being about 1½ in. across and pure white. A decided contrast to this, but equally beautiful from another point of view, is *Scutellaria pulchella*; from the habit of growth, the healthy green of its leaves, and the long spikes of fine blue labiate flowers it has much to recommend it. Amongst *Achimenes*, *A. longiflora alba* is a good variety; its flowers are white, prettily streaked with purple, with a dash of yellow in the throat. Another attractive *Oscareaceae* plant is *Soldanella digitaliflora*; it is fleshy-green throughout, covered with soft hairs, the tube of the flower reddish on the upper side and white on the under; the five lobes of the corolla are folded quite back on the tube, and are of a

light green colour, dotted all over with brown spots; the bifid light green stigma projecting considerably beyond the mouth. Among *Mesembryanthemum* there are but few yet in flower. *M. filamentosum*, however, attracts notice for its numerous, flesh-coloured, star-shaped blossoms. In the *Cactus* house, *Bulbine latifolium*, a *Liliaceae* plant from the Cape of Good Hope, has long spikes of delicate yellow flowers. In this house, also, is a fine-flowered plant of *Sempervivum aureum*. It is a native of Tenerife, and bears its golden-yellow flowers in tufts or heads at the ends of long, fleshy stalks. *Libertia formosa* is a fine *Fridæaceae* plant, with long, Grass-like leaves, and white, three-parted flowers, borne at the end of long spikes. It is a native of Chili. In the *Economic House*, *Carica cundamarcensis* is both in flower and fruit. The plant is almost of the size of a small tree. The flowers are green and inconspicuous, and the fruits are, when ripe, of a yellow colour, about 2 in. long and 1 in. thick, five-lobed, and pointed at both ends. It has an agreeable perfume, and a sweetish, Pine-apple flavour.—†

**Linum candidissimum.**—In a recent contribution to THE GARDEN by Mr. J. C. Niven, on the Alpine and dwarf species of *Linum* (see p. 261), a reference is made to the above plant which is likely to mislead your readers, and which, as no one else has yet drawn attention to it, I beg permission to point out. It is stated in the paper in question that *L. candidissimum* is of South European origin. Considering that the plant is, as Mr. Niven states, undoubtedly but a slight form of the New Zealand *L. monogynum*, the name being a mere garden appellation, it would be a very remarkable thing that the two varieties should occur in localities wide as the Poles asunder. But, as a matter of fact, they are both natives of the same distant islands. About the time the seeds of *L. candidissimum* was first offered, or soon after, I procured a packet of Mr. Arthur Henderson, of the Pine-apple Nursery, who personally informed me that he received the seeds from a surgeon residing in New Zealand. As I have found it harder than the typical *L. monogynum*, it is not improbably a native of the Southern Island, but I have no direct information on that point.—W. THOMPSON, Ipswich.

**Our Woodland Primroses.**—Just at the present time acres of country are completely carpeted with *Primroses*, and no one who cares to admire their quiet beauty can fail to be impressed with the manner in which native plants establish themselves in positions suitable to their individual wants. Even the *Primrose* in its uncultivated state is far better located than it is in gardens. The soil in deciduous woodlands, where *Primroses* are at home, is invariably surfaced with Moss or dwarf herbage that effectually preserves the delicate blossoms from being splashed by heavy rains, while as yet almost leafless branches shelter them from rough withering winds, conditions difficult to obtain for cultivated varieties. I have lately observed some very fine varieties of the wild *Oxlip*, or what is locally called in some places *Ladies' Fingers*. These are usually found growing with the *Primrose* under partial shade, while the *Cowslip* invariably locates itself on open greensward. At this Easter season the common *Primrose* forms one of the most pleasing and natural-looking objects in church decorations, now so universally carried out about this time. Beds of Moss on window-sills, or at the base of the font, with large bunches of *Primroses* gathered with their own foliage interspersed, have a very pretty effect. Tin or zinc tubes for holding water are inserted in the Moss, and in the still atmosphere and subdued light of a church the flowers maintain their freshness and sweetness for a considerable length of time.—J. GROOM, Henham.

**Asparagus in English Gardens.**—THE GARDEN is none too soon in taking the matter of *Asparagus* culture in hand, for there is nothing in the way of vegetable growing in this country that so much needs popularising. By the million, *Asparagus* growing is always regarded as involving a vast amount of labour and expense, a task only to be undertaken by the initiated, and by those to whom expense may be no object. Hence the reason why this delicious esculent is commonly regarded as a luxury. *Asparagus* should be in every garden, and would be if it were generally known how simply it may be grown. Many defeat their object by excess of pains at planting time. An instance of this came under my notice, where money and labour were expended in the production of a huge mound of earth and manure upon which the plants dried up. This mistake originated in the belief that something must be done in a very exceptional manner in order to ensure success. Had the operator only known that he needed merely to draw a drill, and set his plants therein, relying upon after care and management, he would have certainly been spared much expense and mortification, and would have had plenty of *Asparagus*. It is to be hoped that the prizes now offered may tend to dispel the general illusion respecting the difficulties attending the production of good *Asparagus*.—J. CORNHILL, *Duffield*.

## NOTES OF THE WEEK.

**The Rosemary in Spring.**—This shrub is not without value in ornamental planting, and yet it is almost confined to cottage gardens and the herb garden. Some spreading bushes of it now in flower on a bank in the pleasure grounds at Kew, and associated with some bushes of the Double Furze, have a very pleasing effect. This is apparent at some distance, notwithstanding the modest colour of the flowers when examined individually. In the position above named the plant spreads naturally on a Grassy bank, and not on one of those ugly ding surfaces on which no shrub ever can look happy.

**Narcissi at South Kensington.**—Messrs. Barr & Sagden's collection of Narcissi exhibited the other day at South Kensington deserves more than a passing notice. It was the finest and most complete display of its kind possibly ever made in this or any other country. In addition to the better known sorts, there were numbers of fine varieties, many of them real gems, with which the gardening world, as a whole, have but a very limited acquaintance. The delicacy of their tints was only equalled by their fragrance. The exhibition will, I understand, be repeated at the next meeting.—B.

**Caltha palustris minor fl.-pl.**—Under this name we find one of the best varieties of Marsh Marigolds with which we have yet met. It is dwarf in habit, and will stand transplanting without fear of injury. Its flowers are very double and of a showy golden-yellow, and for spring gardening it is, without doubt, the best yellow-flowered plant which can be grown. It is, of course, perfectly hardy, and requires a moist, deep soil. If plants of it be divided in autumn, winter, or spring, it grows freely, and yields a profusion of blossoms for months. At this time of the year all soil is moist generally, and its early flowering character renders it a most desirable plant. It is now flowering freely in Mr. Parker's nursery, at Tooting.

**Dendrobium Falconeri.**—Amongst the different families of Orchids none surpasses in beauty and elegance the genus *Dendrobium*, a genus in which *D. Falconeri* stands at the head, possessing, as it does, a combination of colour and form unsurpassed by any known species. Usually, however, it is a shy bloomer, but, seen as it was represented by a plant in Mr. B. S. Williams's fine group exhibited at South Kensington on April 16, it is one of the most charming subjects ever produced. The plant in question was, as usual, growing on a long thin block or piece of cork, and its small, delicate, drooping, Grass-like, pseudo-bulbs were literally clothed with such a number of flowers as to have the appearance, a short distance off, of a wreath of blossoms suspended in the air. When flowered as this plant was nothing could be more beautiful.—B.

**Hardy Shrubs for the Conservatory or Dwelling House.**—While endless trouble and care are bestowed upon many tender plants, and those difficult to cultivate, in order to bring them to the highest state of perfection, for the embellishment of our conservatories or entrance halls, many of the most effective and most easily grown plants are lost sight of. The group of hardy flowering shrubs shown by Messrs. Veitch & Sons, at South Kensington, on April 16, served to show how even the commonest plants may be made to play an important part in decoration. The white and scarlet, single and double-flowered Thorns, the common Laburnum, Lilacs, and Rhododendrons are easily cultivated, easily brought into bloom early, and for effect they are equal to many of the choicest greenhouse plants. Then there is the *Wistaria*, the beautiful *Magnolia conspicua*, Almonds, Prunuses, and which any one having the most meagre means may grow. With these might be associated many of the hardy Irises, Gentians, Saxifrage, Anemones, Daffodils, and other hardy flowers, and any one having even such a small glasshouse might make one of the best possible displays in spring, at little cost and still less labour.

**The Royal Horticultural Society's Fortnightly Meetings.**—The adverse influence of a previous indifferent reputation has seldom been more unmistakably apparent than in the extremely meagre attendance of the public at the Royal Horticultural Society's fortnightly meetings which have been held during the present spring. Apart from the one or two principal shows held each season, there has never hitherto been anything to equal the rich, varied, extensive, and thoroughly interesting displays now brought to South Kensington at the fortnightly gatherings, and which are likely to be continued, if the subscribers and the public generally will only show by their presence that the meetings are appreciated. But it is uphill work both for the Society and the exhibitors, private as well as commercial, who evidently strip their establishments of all that is attractive in the shape of rare and costly Orchids, stove, greenhouse, hardy plants, and forced shrubs, comprising, as they do, quantities of beautiful plants that are not, and never can, be seen later in the

season. At the last three meetings, especially in the large Conservatory, there has been such a display as has never at this time of the year been made before. Some six or eight of the leading nurserymen exhibited groups so varied and extensive, that any one of them would well have repaid a visit. Yet the visitors came not, and the reason is not far to seek. For some years, at these fortnightly meetings, prizes were given for particular plants then in season, the competition for which was often of the most miserable description; frequently in half the classes in which prizes were offered there were no exhibits, yet these meetings were dignified by the name of shows, and were advertised and placarded accordingly. People came, and after seeing the ridiculous little that was to be seen, often asked, in their solicitude, the way to the show. I have heard many complain, in anything but complimentary terms, not only of the money spent for admission, but also of time lost, and those who said nothing generally bore on their countenances that silent protest quite as ominous as words. Such people naturally kept away afterwards and recommended their friends to do the same. It is, however, to be hoped that those who take a delight in flowers, especially the many beautiful subjects that are forthcoming early in the season, will now support the Society in its endeavours to make these meetings both interesting and instructive.—T. BAINEZ.

**The Variegated Single Kerria.**—*Kerria japonica variegata*, the single-flowered form now in flower in the winter garden at Kew, is one of the most charming of bushes for a cool greenhouse or for planting out in the conservatory. The effect of the numerous golden flowers among the silvery leaves is quite novel.

**Winter Garden for Sweden.**—Messrs. Shanks & Son, of Arbroath, have for some months past been engaged in constructing a winter garden for Gothenburg, in Sweden. It consists of five separate houses, composed of iron and glass, into which the Palms of Africa, the rare exotics of the Tropics and Australia, the Lilies of Equatorial lakes, and a miscellaneous collection of plants will all be placed, each house being heated to a temperature corresponding with that of the countries to which the plants are indigenous. Two of Messrs. Shanks' boilers connected in nearly 2 miles of 4-in. pipe, will be used in heating the houses; while about 40,000 ft. of glass will be used in the roofs and sides. This structure has been designed by Messrs. Shanks, and the material weighs in all nearly 200 tons.

**Wood of Wellingtonia.**—Specimens of the wood of this tree, smoothly planed and varnished, have been sent to us from the gardens at Pain's Hill, Cobham, Surrey, by Mr. Clements. They are exceedingly light for their size, and prettily grained, but the wood, being somewhat knotty and otherwise faulty, does not seem to be of much value as timber. The specimens in question are, however, interesting as examples of home-grown Wellingtonia wood.

**Cinerarias at Forest Hill.**—Messrs. Carter & Co. have sent us, from their Crystal Palace Nursery, out blooms of Cinerarias, as examples of their "strain" of this popular decorative plant. They consist of excellent kinds, with rose-coloured centres, surrounded by white, and broadly margined with brilliant crimson and other colours. One bloom measured 2½ in. in diameter. The selfs were especially good, the colours in some others being of the deepest blue, purple, and magenta, whilst in others they are pure white with a rosy centre. For furnishing out blooms these selfs can be highly recommended.

**The Waverley Market Flower Show in Edinburgh** seems to have been a great success, judging from photographs of it which have been sent to us. They represent a spacious hall 336 ft. in length, and 122 ft. in width available for the show, the total length being 356 ft., and the width 150 ft. In a building of such large dimensions, and well lighted from above, the show, which was an unusually good one and well arranged, had a fine effect, and visitors could see it without being uncomfortably crowded. Flowering and fine-foliated plants were abundant, and there were two fine collections of Conifers—one from the Lawson Seed Company, the other from Messrs. Methven & Sons.

**Saxifrage purpurascens.**—This rare Saxifrage is now in bloom in Mr. Parker's nursery, at Tooting. It is dwarf in habit, its foliage is compact and of a glossy green, and its flowers, being of a bright purple, and produced in masses on stout stems 6 in. or 8 in. in height, render it one of the most valuable Saxifrage for border planting which we possess. It is perfectly hardy, and should therefore become popular.

The number of visitors who paid for admission to the gardens of the Royal Horticultural Society at South Kensington on Easter Monday was 6792 at 2d. each.

### QUALITY *v.* QUANTITY IN PLANT CULTURE.

It is a fact well-known to all lovers of horticulture that well-grown plants, both large and small, are no rarity in this country. A visit to any of the London or large provincial exhibitions, or a glance into any large nurseryman's establishment, will prove that no pains are spared to ensure perfection of growth. In the case of those who grow for sale it is easy to understand that every effort should be made to secure a saleable article, and it is in order to facilitate this object that growers for market are apt to drift into specialities; and a man naturally concludes that if a plant pays him in a small quantity, it will pay him still better if grown upon a larger scale, and he finds that by restricting himself to certain species or genera, he is enabled to so arrange his accommodation as to meet, with the smallest amount of trouble, the peculiar wants of those plants which he may desire to cultivate. In private establishments, where variety is wished for, it is not easy to ensure to each plant those conditions which are most favorable to it. In large places, where there is but scanty accommodation it sometimes taxes the resources of the grower to the utmost. There is, however, one mistake which is often committed, and that is, needlessly multiplying the number of subjects grown. It often occurs that, because a plant happens to be more than usually pretty or striking, that a good lot of cuttings are made to ensure a stock. A good strike being sometimes the result, they are all grown on until it is found that there is not sufficient space for them to develop healthfully. In that case the proper course would be to sacrifice some to ensure the future welfare of the remainder. But oftener the natural reluctance to discard anything in the shape of a healthy plant prevails; they are all kept growing on, and the consequence is a tangled and weedy growth. I have often seen houses crammed in this fashion, not a single plant showing its true character, where the weaker-constituted must eventually succumb—a true case of the "survival of the fittest." Crowding is always bad policy, whether applied to fruit or flower culture; it is certain that whoever may practice it will inevitably pay the penalty in a diminished or inferior produce. How much more satisfactory to possess one plant, sturdy, full of healthful foliage, and, if of a flowering nature, covered with a well-developed bloom, than a number of weakly, debilitated subjects, none of them conveying any true idea of what the plant should really be. And then, again, if we turn to fruit culture, taking, for instance, the Strawberry, the great object would often appear to be to introduce as many plants as possible in a given space. How mistaken this system is anyone may readily convince himself. Take any number of plants, and divide them into two equal portions; the one half shall stand so that they never touch each other during the growing season, the others to be allowed to intermingle their foliage to some extent. Let the produce when gathered be compared and weighed, and the evils of crowding will at once become apparent. There is one rule by which every plant grower may be guided, *i.e.*, keep each plant perfectly free from its fellows; as, even if the full sun and light cannot be admitted to each portion of it, a constant circulation of air is maintained around it, without which substance and vigour cannot be maintained. Those who possess but a limited space for the shelter and growth of plants in pots should be very firm and resolute in this respect; better far to throw away a few plants (which, however, is not at all necessary, as plenty may always be found to whom the gift of a plant is a boon) than, by retaining them, run the risk of spoiling the entire collection. It often occurs that, owing to the efforts at propagation, in which most amateurs delight during the summer, there is at housing time some difficulty in finding proper accommodation for everything. It is then that the great mischief is committed; the plants, looking young and fresh and sturdy, are placed upon the shelves and stages in close and serried ranks. The immediate effect is, of course, charming; a bank of verdure is formed, which looks pretty well up to the time when the days come to their shortest, and inclement weather precludes the possibility of thoroughly ventilating this closely-packed mass. Then comes damping off; the under foliage in some instances dies away, and even plants of a hardier nature become so weakened that they cannot come up to time when the growing season again arrives. Many have to be weeded out and consigned eventually to the rubbish heap. How much better to have made a more vigorous selection at housing time, when each plant, getting its fair amount of air and light, would have been preserved in good health, and would have been a source of real pleasure! One or two plants of a sort will as well afford variety as a larger quantity, and the smaller the amount of glass possessed the more thorough and resolute must the selection be. A collection of the most varied nature, in which hard and soft-wooded plants are indiscriminately mixed, may be kept up in good health by simply attending to these rules, which will equally apply to stoves, Ferneries, &c., as to the ordinary cool greenhouse. Many of the more tender inhabitants of

warm houses fail to preserve their vigour and fresh appearance during the winter owing to their not having received sufficient air and light during the growing season. In the way of bedding plants, where grown upon a large scale, it is much more satisfactory to grow sturdy, bushy plants, each one of which, when planted out, is in a great measure made, and, being full of vigour and health, becomes quickly established, and makes an effect at a much earlier period than small, weakly plants could possibly do. In this, as in every other branch of plant growing, the best policy will be found to consist in systematically placing a restriction upon the quantity, so that the quality may be thereby improved. J. CORNHILL.

*Byfleet.*

### POTTING AND TREATMENT OF CAMELLIAS.

It is sad to see Camellias in a sickly state. I do not know whether it is owing to the way in which the plants are propagated or to early mismanagement, but it is a fact that vast numbers of plants, especially imported ones, die after they are sent out of the nursery, in spite of all that skill and good management can do for them. There are two periods at which the Camellias may be shifted or re-potted, and about which some difference of opinion exists. Here I can only point out the advantages and disadvantages of the two plans. One is to pot the plants as soon as they have made their growth, and before they have matured their flower-buds; and the other is to pot before they have begun to grow, and not when the plants have done flowering. For my part, I prefer the first plan, because growth buds are insured before the plants are meddled with; while by the second plan, unless the plants are very vigorous, there is a chance of their making feeble growth, not to speak of possible accidents. However, both plans succeed well enough in good hands, or when the shifting of the plants is intelligently performed. As to compost, there are plenty of fine examples of Camellias to be found growing in pure, or almost pure, loam, which should in all cases form at least the staple of the compost, and perhaps equally good specimens are to be seen in a compost consisting of loam and peat, or loam and leaf-mould, or all three together. It has yet to be proved, however, that the Camellia naturally grows in anything else but loam with what manure is afforded by the annually shed leaves of the plants, and of the trees under the shade of which they thrive in their native habitat. As regards the operation of potting or transplanting, it should be performed with great care. It should first be ascertained whether the roots are dry in the centre of the ball—a thing exceedingly likely to occur in the case of old pot-bound Camellias; and, if they are, the whole ball of roots should be immersed in a tub of water, and left to soak for four and twenty hours, or longer if necessary. Afterwards the plant should be lifted out, and the ball allowed to drip in some shady corner till it is in a fit condition to operate upon and pot. If the roots are found to be abundant and active at the outside of the ball, they must not be molested much, but the soil may be loosened all over with a blunt peg, just to disentangle the rootlets and induce them to push into the fresh soil. Should, however, the roots be poor and decayed, the effete soil should be carefully removed until active roots are found in considerable quantity. The plant should then be potted in a smaller pot than before; but I do not consider it advisable to reduce Camellia roots in this way under ordinary circumstances. In potting, the soil should be made tolerably firm under the roots and rammed, not hard, but with moderate firmness, round the sides, taking care to leave plenty of room for watering. In tubs and large pots we leave from 2 in. to 3 in., and in smaller pots seldom less than 1 in. Much depends on this, as we have invariably noticed that the work of watering is much facilitated by providing as much space for water as will soak the roots thoroughly at one watering, instead of at twice or three times, supposing the man in charge to take the trouble to go back over his plants so often on the same day, when he has many other things to attend to. If possible, rain water should be given to Camellias, and it should at all events be free from lime. Liquid manure may be given, weak and often, to healthy-growing plants that are known to have plenty of healthy roots; but weakly or newly-potted ones are better without it for a time. Under ordinary circumstances the Camellia needs no special treatment, but will grow and thrive well in an ordinary conservatory or greenhouse where the temperature does not often fall below 40° or 46° in winter, nor rise above 80° in summer. As to shading, I have a conviction that the sun's rays should never directly reach the leaves of the plants at any time, but should always be broken by a thin shading of some kind. We paint the glass in April with whitening, inside if possible, where it will not be washed off, and leave it on till November. In one of the finest houses of Camellias with which I am acquainted the roof is glazed with obscured glass, and that is all the shade the plants get. J. W.

## THE FRUIT GARDEN.

## JOSEPHINE DE MALINES PEAR.

In a recent number of *THE GARDEN* I was pleased to find a few brief notes on some of our more popular winter Pears. The figures are quite accurately drawn, and serve equally well for the respective varieties as grown here. At the head of the list your correspondent places the Josephine de Malines, and it is of this only that I shall now speak. He calls it "a real good Pear" and "the best," and so I think it is in this country. It is, perhaps, not as well known here as with you, and yet we have grown it for many years, although its general dissemination has been singularly slow, and to-day it is quite rarely found in American gardens. But, wherever known and rightly managed it is highly esteemed. Some of the finest specimens of it which I ever saw grew in my grounds here on the Hudson River, a few measuring  $3\frac{1}{2}$  in. in diameter, and weighing over 9 oz. In shape it is flattish conic oblate, irregularly undulated, and frequently approaching hexagonal in the largest specimens; skin yellow when ripe, and minutely and evenly dotted with russet. When perfect it often wears a tempting blush of delicate, inviting red. The stalk is 1 in. or more in length, stout, and obliquely set in a slight cavity; basin large; calyx open; flesh light salmon in colour, especially toward the centre, buttery, sweet, melting, aromatic, very juicy, and having a most exquisite flavour that lingers to bewitch the palate. Many of our pomologists regard it as an early winter sort, but I find no difficulty in keeping it far into April, and even until May, in fine eating condition. As I now write, April 6, I have some fine specimens of it that show no signs of decay. It is, however, very important that the fruit should remain on the tree as long as possible, and then be gathered very carefully and placed in a cold, darkened upper room. In fact, all winter

fruit should be kept in a dry, cold atmosphere—just above the freezing point if possible; it will thus remain unchanged for months; and in the case of Pears, when needed for use, so many as are wanted should be placed in a moderately warm room and kept in the dark, when in a few days it will be found beautifully coloured, and very luscious. In packing, it is well to use dry chaff, fresh dry Maple leaves, or some similar inodorous absorbent, not allowing the fruits to touch each other. No winter Pear can be properly ripened for eating without some care, and doubtless many of our best varieties are thus either indifferently regarded, or unjustly condemned. The tree is commonly a rather slow grower, though very hardy and a great bearer; and yet I have it on large stocks where it grows vigorously enough. It is best, therefore, to work it on vigorous, thrifty roots. The wood is light coloured and close jointed, and a great point in its favour with us is its entire freedom from blight. The fruit is borne in clusters, and a well-laden tree presents a fine appearance during the autumn months.

Kingston, N.Y., U.S.A.

H. HENDRICKS.

**A Palmette-Verrier in Bearing.**—This is a form of tree considered very good for strong soils, and also sometimes for kinds that will not do well on the Quince. In such cases the small forms, such as the cordon and the trees with a few branches trained upright, are not large enough. This Palmette, which, to a very great extent,

has replaced in France the old horizontal tree, is considered one of the best of the large forms. The engraving is from a photograph of a specimen about ten years old, growing in M. Jamin's garden at Bourg-la-Reine.

## THE INDOOR GARDEN.

## ROOF AND WALL CLIMBERS PLANTED OUT.

CLIMBERS form a by no means unimportant feature in conservatories and plant houses, inasmuch as they not only ornament portions of such buildings which could not in any other way be utilised, but, by careful training, they may also be made to act as a partial shade to subjects grown beneath them that require some such protection from bright sunlight. Artificial shadings are all more or less unsightly, and in the case of curved roofs difficult of adjustment. But a living screen may be cut in close before winter, so as to admit a maximum amount of light when most required; or it may be carefully thinned and trained during the growing season, so as to modify or subdue the sunlight to suit the requirements of the various inmates. Wires for training the main shoots should be fixed at regular distances apart, but all appearance of formality should be obviated by allowing a good proportion of the current year's wood to hang down.

Long, pendulous sprays of such subjects as *Passiflora princeps*, *Tacsonia Van Volkxmi*, &c., have a lovely effect, and are seldom destitute of bloom. But the subject to which I wish particularly to direct attention is the advantage of planting out such climbers in an unlimited root-run compared with the restrictive root system attending their culture in tubs or boxes. It is surprising that we should find such unsightly objects either tubs or boxes in houses of modern construction; yet they are not uncommon, and all sorts of screens have to be extemporised to hide



Pear Tree in Palmette-Verrier form.

them, while they would be much better sunk below the ground-level. By making provision for the roots of climbers when the house is first made, as is usually done in Vineries, a permanent root-run is secured, in which the plants grow more vigorously than they would in boxes or tubs. The latter, too, wear out and fall to pieces just as the roots get well established; and, except great precaution be taken as regards a regular and abundant supply of root moisture, insect pests will multiply very fast, owing to the plants being predisposed to their attacks through their growth being checked. Another advantage also attends the planting out of subjects of a permanent character in house decoration, and that is, that the quantity of soil will in a great measure compensate for its quality, for whereas in the restricted area of pots and tubs one is compelled to supply a rich compost to many plants, the same subjects, if planted out in soil of a medium quality, will grow with surprising luxuriance. I am aware that over-luxuriance in many cases tends more to leaf growth than the production of flowers, but if I did dispense with tubs and boxes I would provide bricked compartments, by means of which the roots could be partially restricted, if that were needed, or special provision could be made as regards soil and treatment and the application of moisture equally well as in tubs or boxes, the presence of which detracts from the general effect, and they occupy space that could be more usefully and ornamentally utilised. JAMES GROOM.

### ROSES FOR EARLY WINTER FLOWERING.

Pot Roses that are managed with a view to produce the earliest flowers in winter under glass, that is, such as are well furnished with unexpanded buds out-of-doors in open quarters before being taken indoors, need little forcing; they simply require the protection of a house or pit, slightly above the temperature of an ordinary greenhouse, to induce them to expand. Where Rose flowers are required all the year round there are none that play a more important part than these, filling up as they do the gap between the latest-opened flowers produced out-of-doors and those that come in under the influence of more heat later in the winter. The ability of the plants under consideration to produce flowers at the time required will, in a great measure, depend upon the way in which they are treated at this time of the year. The flowers which they furnish, as will be evident, are not the production of wood made after they are taken under glass subsequent to being more or less pruned, but simply the result of matured buds already formed, with no pruning at all practised in the autumn, this being deferred until the present time. The plants, when done flowering, are removed to a cold pit or house, where they will more readily receive protection. They should now be pruned, the operation being confined to cutting out all weak, worthless wood and shortening the strong shoots proportionate to the size and strength of the plants, remembering that the larger they get the greater the amount of flowers they will produce, and that a score of good specimens in 11-in. or 12-in. pots will furnish not only a far greater amount of flowers than almost an unlimited number of small plants, but that the proportion of large blooms is much greater than from plants of smaller size.

**Potting.**—After being pruned, all that require it should be potted at once, giving more root-room where needed. The soil used should be strong loam with a sprinkling of sand and some good rotten manure, but no leaf-mould or light material, such as is sometimes employed, and which is quite unfit for Roses. See that the drainage is sufficient and well secured against the soil getting down into it. In potting these, which will principally be Tea varieties, it is scarcely possible to ram the soil too hard, neither must the pots be filled so full as not to allow sufficient water, of which they will require a daily application through the summer, enough being given to moisten the whole at once. All such plants as do not need larger pots should be turned out; the drainage should be examined, and as much of the old surface soil should be got away as can be done without interfering with the roots, replacing it with new material, which should also be well rammed in, so as to make it quite solid. Previous to potting the plants would be all the better for being laid on their sides and syringed freely with Tobacco water, to which has been added some Gishurst. I have found this the best wash for Roses, as it not only kills green fly and red spider, but the sulphur which the Gishurst contains is equally destructive to mildew.

**Treatment after Potting.**—The plants, after being potted, should be placed in a cold pit, deep frame, or under the protection of loose lights, in a warm, sheltered position, where they will commence growth, gradually exposing them fully to the air as the roots begin working in the new soil. Later on they should be plunged in a good bed of ashes, sufficiently far apart to prevent any crowding, and to permit of their being attended to with water; the plunging is necessary to prevent their drying up so quickly through the summer, which would occur if the sides of the pots were exposed to the sun and air; there should also be 3 in. or 4 in. of ashes under the pots to prevent the ingress of worms. I much prefer coal-ashes to Cocoa-nut fibre, spent tan, or other material frequently employed, as all these afford a harbour for worms, which the ashes do not. Roses, more than many plants, appear to suffer by their presence in the pots. A few of the strongest branches should be bent down and tied out in a way that will cause them to break from the lower eyes and keep the plants in shape, not with a view to their being formally symmetrical, but so as to induce the production of strong wood from the base, and admit of air and light getting through each plant. As the whole object with this portion of pot Roses is to furnish flowers at the time already stated, all buds that make their appearance through the summer should be picked off as soon as they are formed. The plants must receive regular attention as to the root moisture they require, and should be liberally supplied with manure water, so as to induce the formation of all the strong wood possible; to still further encourage this, insects and mildew must be assiduously sought for and destroyed.

**Potting Autumn-struck Roses.**—Rose shoots taken off early in autumn, and at that time made into large cuttings 6 in. or 8 in. in length, and inserted deeply in cold frames, will by now, if all has gone well, have formed a considerable amount of roots. Those that are required for pot purposes should be taken up very carefully, so as

not to break their newly-formed fragile fibres, and at once potted; 5-in. pots will be large enough, draining them well, and using the soil a little lighter and more sandy than such as is advisable when the plants have got better established, at the same time making it firm. As the plants will have pushed their shoots a considerable length, they should for a few weeks yet be kept in frames, gradually giving more air as the roots lay hold of the soil, and when they are fairly established transfer them to the open air, plunging them in ashes, as recommended for the large specimens.

**Layering Roses.**—One of the chief objections raised against Roses on their own roots is the longer time it occupies to get strong plants, though this does not occur when strong large cuttings are used, put in in the autumn in the way that I have advised; but there is no means by which stout-blooming plants on their own roots can so quickly be had as by layering. Where dwarf Roses are grown, either on their own roots, grafted, or budded low, and the shoots pegged down for flowering in the way recently described, a large number may be had by the end of the season on their own roots without much interfering with the blooming during the present year by layering. Supposing the shoots so pegged down have been left about 2 ft. long and a tongue is made by cutting with a sharp knife one-third of the way through the shoot in a slanting direction towards its point, and about 9 in. from the end, and the shoot at this point is pegged down in the soil, removing the latter so as to get the shoot at this juncture about 2 in. below the surface, using a stout, hooked stick that will hold it securely in the position, covering it up so as to leave two or three eyes at the point bare, these will make strong shoots, forming the head of the future plant, which, during the summer, will push plenty of roots at the point where tongued. Nothing further will be required, except severing from the parent plant in the autumn. The lower portion of the shoots so pegged down, as well as the portion at the point left above ground, will produce strong-flowering growth through the summer; and in this way, as I have already said, the quantity of Roses may be increased to an extent only limited by the number of strong shoots available with very little loss as to the amount of flower during the present season.

T. BAINES.

**Sweet Peas as Basket Plants.**—Baskets of Sweet Peas, suspended in the greenhouse or conservatory, even when not in flower, are elegant objects, so gracefully do their trailing stems and foliage fall over the basket on all sides. To have them in bloom early the Peas should be sown in November in a greenhouse and placed near the glass to induce vigorous growth. About twenty Peas in each 4-in. pot will be sufficient; and when the young seedlings are up and require more space they should be turned out of the pots and planted in the baskets—three or more pots in each, according to its size. The baskets should be thickly lined with green Moss, and the soil used should be rich and light. As the Peas grow liquid manure should be given freely, and the baskets must be hung near the glass.—E. HOBDAV.

**Anthurium Scherzerianum.**—The number of stove plants is now considerable; but the number of really good ones which are at the same time of easy culture is not so great. The above fine species may, however, be included amongst the latter, for we should say it might be grown by anyone who can command an ordinary stove temperature in any of their glass houses. It thrives in a compost of fibry loam, peat, and sand, mixed with a few broken potsherds, and it should have plenty of drainage. In such a compost, with plenty of water during the greater part of the year, it will grow without much trouble. The magnificent and altogether unique scarlet spathe of the plant are attractive objects in a stove, and, either cut or on the plant, they endure the trying atmosphere of rooms for a long period without showing much sign of injury. The plant is frequently raised from seed; consequently, there are quite a number of varieties in existence, the flowers of which differ both in colour and size; but the large-flowered and deep-coloured variety is much esteemed. The plant does not require much shade in summer, except in very bright weather, and great care should at all times be taken of the thick, leathery leaves—the larger and finer they are the finer will be the flowers. When they are young and soft and just pushing up, they are sometimes molested by aphid; but it is hardly necessary to fumigate the plants, as the affected leaves may be easily cleaned with a soft brush.—H.

**Double Cinerarias.**—These, when perfectly double, are very beautiful. They appear to be a little later than the single kinds, and they continue much longer in bloom, sometimes as much as two months. They will in a great measure supersede the single sorts, i.e., if due attention be paid to save the seeds only from such kinds as are most double. They are quite as easily grown as the single sorts, and, if anything, they are more floriferous.—EDMUND A. SAUNDERS, *Abergavenny.*

## PROPAGATING.

## THE ART OF PROPAGATING PLANTS.

WE last week (see p. 375) published the first of a series of notes and articles on propagation, which we believe will prove interesting and useful to a great number of our readers. We hope to illustrate not only the usual way of propagating each plant, but also the various ways in which it may be done, and this on the same block, so that the reader may see the various ways at a glance. The articles will be written and illustrated by propagators in some of our best nurseries. We believe this to be the first systematic attempt to explain the propagator's art, and we shall be grateful to any reader who will henceforward contribute short notes to this department. Questions sent to us on difficulties in propagating rare plants will be forwarded to the best authorities, and answers to them printed in this department of THE GARDEN.

**CAMELIAS.**—These are best increased by grafting (figs. 1 and 2) and inarching (fig. 3). The months of September and October are best for grafting. Get the stocks into the house a fortnight before the operation, cut the scion, as in fig. 1, and make the incision, as in fig. 2; place the graft in such a position as the



Fig. 1.



Fig. 2.



Fig. 3.

bark will meet at the edges, and tie all firmly with matting. If the stock and scion be selected, as in figs. 1 and 2, they will unite quickly and neatly. Put them in a close frame on a gentle bottom-heat in the propagating house. When they have been there three or four weeks the top of the stock may be shortened to throw the sap into the buds. Inarching may be performed in the greenhouse. In the case of a large plant of a good variety which it is desirable to increase, erect a temporary stage on which to place the stocks so that they may not be shaken about; cut off the bark and a small portion of wood, as shown in fig. 3; hold them close together, and bind them round tightly with matting or worsted. Nearly three months must elapse before they are cut away, which must be carefully done with a sharp knife. March is the best month for inarching Camellias.

H. H.

**The Best Baits for Insect Traps.**—M. E. C. Carrière has lately been trying a number of experiments on the best baits for insect traps, and gives an interesting account of them in a recent number of the "Revue Horticole." The results arrived at effectually disprove the truth of the old saying, that we may catch more flies with a spoonful of honey than with a gallon of vinegar. A number of glass fly traps, filled with different liquids sweet and sour, were placed under some fruit trees which were subject to the attacks of flies and other insects. The traps were baited with honey, weak wine and water, beer and water, vinegar and water, pure beer, pure wine, crushed Pears and water, and other liquids; and the victims were counted, after the traps had been exposed for three weeks, with the following results: The trap containing beer and water stood at the head, and contained 850 flies and other insects; pure beer stood next with 631, the crushed Pears, weak wine, and pure wine coming next, pure honey being at the bottom of the poll, with only 17 sufferers. No doubt the odour of the beer and water, which was in a strong state of fermentation, had a great deal to do with attracting the insects.—C. W. QUIN.

## THE FLOWER GARDEN.

## FROM THE BIRTH TO THE DEATH OF THE LILY.

I HAVE said that a Lily is not an annual, a biennial, nor a perennial. Then what is it? It may be said to be somewhat like two biennials joined together, but overlapping one another in their growth, that is, the one portion blooming this year, while the other is growing preparatory to its blooming next year. This apparent anomaly I propose to explain by laying before the readers of THE GARDEN the details of a course of experiments, the most interesting of all that I have made, by tracing the underground growth of the Lily, month by month, from the birth of the germ, throughout its transformations, until the end—the death of the flowering bulb. The best Lilies for an experiment of this kind are those which bloom from June to July; as we have thus the summer and autumn before us for carrying out the more delicate parts of the experiments—the birth of germ, with all such early-flowering bulbs, taking place in July. So that, in marking off by months the existence of such early-flowering Lilies, it will be necessary to commence with July and end with the month of June in the second succeeding year, making in all two years. In order to carry out the experiments in a satisfactory manner, the experimenter should have at his command some fifty or sixty blooming bulbs, which may have been planted singly at the same time in the previous year. The object of this is, that in lifting one or more bulbs every month for dissection, they may all show the true comparative growth that has taken place during the additional time they may have been permitted, one after the other, to remain in the ground.

To begin then with July, we lift a Lily that has just bloomed, and though the scales of the old bulb are now beginning to decay, a number will still be found to be in a comparatively fresh condition, though somewhat loose, flabby, and discoloured. In the midst of these loose scales will be found the new bulb, with its scales closely packed one upon another, clean, fresh, and crisp. We take this new bulb and carefully break off the scales that are opposite to the old flower-stem until we arrive at the young flower-stem with its rudimentary leaves and flowers, which will be found in the centre of the new bulb. At the base of this young flower-stem is the germ, just beginning to wake into life, but so minute as not to be discernible by the naked eye. This must not, however, dishearten the inquirer, as we can bring to our aid a powerful microscope, combined with a vernier-micrometer, and by the assistance of these instruments we can find what we are in search of, namely, the veritable germ itself, little more than the 200th part of an inch, or about the thickness of the paper on which THE GARDEN is printed. We are now introduced for the first time to the true origin of the Lily, and it is here that Nature permits us to contemplate some of her wonderful works, but without as yet enabling us to comprehend the strange mystery—an infinitesimally small object, which, after a time, will reveal itself to the observer in all its loveliness as the counterpart of its queenly parent. Here, too, we ought to pause and reflect on what a mere thread the life of the successional bulb at this time depends; and here also we might very pertinently inquire

## Can Late Planting Injure the Growth of the Germ?

Mr. Groom has drawn our attention to the fact that to the drying-off process, in reference to imported bulbs, must be attributed the cause of so many of them speedily dying out. In this opinion I most heartily concur. But there is also, in my opinion, an additional and a very different cause, to which, I venture to think, no writer in this, or in any other gardening periodical, has as yet given a thought, and that is, the pernicious effects which late planting in imported bulbs has on the growth of the germ itself, and, consequently, on the successional bulb. It is admitted that, according to the present system of collecting and transmitting, we cannot get a supply of these bulbs early enough to enable us to plant them before the spring; and it is also admitted by Mr. Stewart Hardy and other correspondents that, even with the aid of artificial heat, many of these Lilies come into bloom so late as to "have their flowers destroyed by the early frosts." Now it is to this important point that I would wish specially to direct the attention of the reader. It is an ascertained fact that the bulb will not liberate a germ, nor, if liberated, will it begin to vegetate without a considerable degree of heat, and that in its native place the heat, during the blooming and germinating season, is very great indeed. This being admitted, because it cannot be denied, M. Duchartre says, "That all the species of Liliium may be grown in this country in the open air, provided due care be taken to protect the bulbs of the more delicate sorts from frost." Now, among all the known species of Liliium that have ever been introduced into this country there has never been a bulb more delicate, by many degrees, than the infant germ of the most common bulb—a mere film—that has required our summer heat to awaken

into life. And yet, if we desire to make the most of imported bulbs in the open grounds of this country, we are compelled to plant them so late in the season that the flowers are, in many instances, cut off by frost. If, then, the flowers themselves are subject to being destroyed by frost, what is to become of the tender and delicate germ? for it cannot even have any existence until after the flowers have faded in their natural way. June, July, and August is allowed to form the hottest portion of our year, and it is during that period that the different classes of bulbs, according to the dictates of Nature, liberate their germs in this country. Is it reasonable, then, to expect that an object so minute and delicate as the germ will be awakened into healthy life in the midst of cold and frost? The new bulb, or that which Nature intended to be the parent of the germ, is at this time, when the old bulb is blooming, fully developed, that is, it has within itself a young stem composed of rudimentary leaves and flowers. These were destined to be the above-ground portions of the plant next season; but whether they may succeed in blooming more or less favourably, or not at all, must depend on how they may be able to get through the winter. But where, at this time, is the germ—the origin of the plant that should bloom the year after next? In all probability the cold and frost prevented it from being liberated, or, if happily liberated, prevented it from vegetating; and thus the plant, in a very large proportion of cases, dies out the third year. Can we wonder, then, at the complaints that are made that only a portion of the thousands that annually arrive in this country bloom the first year; that they bloom in less proportion the second year; and that, by the third year, we see them no more? It would be contrary to the laws of Nature to expect anything else. We are favoured from time to time with the experience of those who have the means of growing Lilies under glass. But while we admire what they do, and can do, we should not overlook the wants of those who desire to grow Lilies in the open air; for their name is Legion; and they no doubt search the columns of THE GARDEN for guidance on the subject. It must, then, I think, be very reprehensible in any man to advance for such a purpose mere theoretical opinions without the shadow of a single experimental fact to rest upon. I am induced to say this because I have observed for some time that those who adversely point their remarks at me are among themselves entirely at variance with one another, differing in opinion as well as in theory, no two agreeing entirely on any one point, thus proving by the most undeniable evidence that, though this is the year 1878, the time has not yet come when the organic structure of the Lily is to be considered an understood and settled question.

I have enlarged so fully on the Lily during the first month of its existence that little is left to say about the second. All that can be said is that the parts increase in size, but increase so very slowly, though never dormant, that it is not until the end of the third month that we begin to be able to discern the germ or seed-bud, as I would now call it, by the naked eye. During this time the young stem, composed of rudimentary leaves and flowers within the new bulb also increases in size, pushing out the scales of the new bulb, which become more and more consolidated, increasing the size of the new bulb and adding considerably to its weight. This slow proportional increase in all the parts of the bulb goes on during the fourth and fifth months, and it is not until the sixth month that we can have the view of the interior, which is faithfully represented at p. 143, in the woodcut engraved from a photograph of the parts themselves, after having dissected a number of bulbs which were taken up for the purpose on Jan. 1, thus showing the seed-bud when it was just six months old. Hitherto I have written as if the new bulb liberated only one germ or seed-bud; but, as it is a known botanical fact that "plants, like animals, are organised and living beings," and that in the animal creation there are sometimes twins or two at a birth, and sometimes, but very rarely, triplets or three at a birth, so, in like manner, a Lily bulb will sometimes liberate two germs at a birth, and another will, but very rarely, liberate three germs at a birth. In such cases, as I have said in a former paper, these germs spring up close together, and as they grow they spread outwards, making room for their separate growths, and, when fully developed, they show two or three separate crowns, as the case may be, contained apparently within one bulb, as may be seen on inspecting a large number, but, when dissected, they expose two or three separate and distinct new bulbs, nourished, however, by only one set of roots. It is thus that these phenomena have given rise to very mistaken ideas on the subject, as they have often been described as central and side buds. With respect to these two but distinct classes of buds, the experimentalist knows where to find the central bud, even before it becomes visible to the naked eye, but no man can tell beforehand where a side or accessory bud may make its appearance. Central buds I call legitimate germs or seed-buds, side buds I simply call very young offsets, the former always flowering in the fullest manner within two

years from their birth, the latter taking two years or more before they can produce a single flower.

At p. 252, where I am glad to see M. Leichtlin's name, we are favoured with some remarks from him on the subject, but which, for want of space, as I suppose, they appear, to my great regret, to be somewhat ambiguous. At one place he says: "As to the majority, or perhaps as to all Lilies of the Old World, 'Dunedin's' theory seems to apply exactly, as far as the formation of the next year's bulb from the side buds is concerned, but not in relation to the entire decay of the old bulb." M. Leichtlin admits, however, at the same time, that he has carried out few experiments by dissection. Had he done so to any reasonable extent, I think he would have been compelled to admit that my theory, as he calls it, is founded on the action of the legitimate central germs or seed-buds, and not at all on anything that can by any possibility be called side buds, as these, though they may, by cultivation, be made to propagate or multiply the species, have nothing whatever to do with the legitimate or hereditary succession of the old bulbs. At another place he says:—"As to *L. giganteum* and *cordifolium*, I must openly say that I have made no dissections in regard to them, but, from studying these plants in the shape of hundreds of bulbs, as far as growth is visible, it seem obvious to me that these species do not produce annually a new bulb from a side bud, but that the old bulb is enlarged annually by the scales growing larger through the growth accumulating from a central bud; and that during summer, when vegetation is active, another central bud is developed to grow next year." Now, the careful reader cannot but see that this, in a great measure, supports my doctrine. But, as I have stated in the columns of THE GARDEN on various occasions, it is utterly impossible for any man to form a correct opinion of the organization of the Lily by merely examining the outward or visible appearance of any bulb; and, in this case, M. Max Leichtlin frankly admits that he has gone no further. M. Max Leichtlin closes his remarks by saying:—"I am of opinion that 'Amateur' (see p. 198) is right in his views, and that he will certainly be able to prove that the old bulb does not decay every year." I must confess that I am very greatly surprised at such a remark, coming, as it does, from M. Max Leichtlin, my opinion on that point being entirely in accord with that of Mr. George F. Wilson, when he says: (see p. 252) "If 'Amateur' can flower *L. giganteum* twice from the same bulb, he is a fortunate man." I will even venture a step further and say:—"If 'Amateur' will prove that he can flower any one of the Old World Lilies twice from the same bulb, he will prove himself to be a man of no ordinary standing among Lily growers."

At p. 227 "E. H. W." says, "The different ways of reproduction in Lilies are so marked that alone it would afford subject matter for endless remarks and controversy." This is entirely contrary to all my experience, for I have always observed a most interesting and singular similarity in the organisation of all the kinds coming under the denomination of the Lily proper. I therefore feel convinced that if "E. H. W." were to begin with the Old World Lilies, the greater part of which can be had in quantity and at comparatively little expense, and make careful experimental dissections at different times during the year, and then go on to the newer, the rarer, and the more expensive kinds, he would find that what he has now said on the subject would require to be entirely altered; for, as the matter stands at present, his remarks have not carried the subject a single step beyond "the theory which terminates in mere speculation," but rather adds to the "endless remarks and controversy," already going on with so little real benefit to the inquiring Lily grower.

I now come to a remark made by Mr. Groom, which I should like to have cleared up before we get wider apart. At p. 252 he says, "The only point to which I took exception was that of cutting down the flower-stems before the leaves had faded. 'Dunedin' will himself see that there is a wide difference between cutting the stems down in full and fresh bloom and waiting until ten days after the bloom has fallen to perform that operation." As I believe that there is here some misconception, I would take it very kind if Mr. Groom would point out to me the page and passage which has led him to make this remark. I have said somewhere that I have cut down Lilies in full bloom without affecting the growth of the new bulb; and I have also said that, as soon as the bloom is perfected and decaying in the natural way, the new bulb may be transplanted with perfect safety, as at that time it is pushing down its own roots, which are quite sufficient for its nourishment without any aid being required from the old leaves or stems. Mr. Groom will see that I have never professed to illustrate the distinctions that exist between "bulbs of all kinds" and the Lily, but have endeavoured to explain the nature and organisation of the Lily bulb itself, and, as I think, so clearly, as may enable Mr. Groom and other able horticulturists to draw the true line of distinction themselves. This much I know, that great stress has always been laid upon the fact that the foliage

of other bulbous roots should be allowed to grow until it decays in a natural way. But the Lily, I venture to say, is an exception to this rule, though not in general considered so. DUNEDIN.

### BUSH ROSES.

THESE are, as a rule, not nearly so effective as they might be. The usual course is to prune and simply to allow them afterwards to grow in what form they may choose to take. On their own roots, in genial soil, they yearly acquire strength such as necessitates, at the time of annual pruning, the specimens being allowed to get to a larger size, especially in height, the result of which is that the strong shoots, from which the greater portion of the flowers are produced, grow to a considerable height, at which point most of the blooms are borne, leaving the plants comparatively thin and bare at the base. Although it is anything but desirable to train Roses in a way that gives any approach to formality, still such an arrangement of the shoots may with advantage be employed as will keep them well furnished with a fair proportion of vigorous growth and full-sized flowers down to the ground, at which point in-



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A Bush Rose.

dividual plants have the greatest breadth, gradually tapering up to the top, as in the accompanying illustration of a well-managed bush Rose, wherein, as will be seen, the form is devoid of undue stiffness, yet such as to produce an effect not possible where the plants are left to themselves. To produce the effect exemplified in the illustration it is necessary to have strong, vigorous plants established for years on their own roots; at the time of pruning, or soon after growth has commenced, a portion of the strongest shoots should be bent down and tied out horizontally to a few sticks stout enough to keep them in position allowing the remaining growths, shortened back to different lengths, to assume the position such as will lay the groundwork for the specimen which later on will be clothed with foliage and flowers. The central branches, according to the more or less strong-growing erect habit of the variety, may require a few sticks to hold them in their places, but the whole of such supports will be effectually hid by the foliage, and no trim outline should be attempted. The illustration is not an ideal conception, but simply a representation of a well-managed vigorous bush Rose. It will be easily understood that it is not desirable to attempt the training of Roses in this way in positions of all descriptions, or where they can much more appropriately be left to assume a wild form; but for beds in the immediate vicinity of a mansion in the more highly dressed portion of the grounds, where they will be in keeping with the surroundings, they at once produce an effect in every way

unexceptionable. By the side of a broad walk either straight or winding, where something is wanted to relieve a too even surface, rows of Roses at intervals more or less far apart, so trained, are infinitely superior to the naked-stemmed, mop-headed standards, so generally used in such situations; in addition to their shape, satisfying the eye in a way not possible with the standards, it is much easier to get a number of bushes sufficiently equal in their growth to keep up the requisite uniformity in the whole than it is with standards, which, when placed singly in rows, are so provokingly subject to a portion growing freely, and the others very little. T. BAINES.

### CUTTING DOWN LILIES IN FULL BLOOM.

I REGRET that "Dunedin" should have misunderstood my remarks about cutting down Lilies. I said nothing about *Lilium candidum*, which, though a Lily, has no analogy whatever, as regards treatment and growth, with many other Lilies. The only safe and sure way to speedily raise good, large, sound, white Lily bulbs is to cut away the flower-stems as soon as they appear aboveground, every inch of growth weakening the bulb; and they should always be transplanted, if they are to be removed at all, the very moment the last flower has faded, cutting away the old stem as low as possible. I had supposed this was so old and well known a custom that I did not allude to it. I wrote: "After thirty years' experience with thousands of bulbs of *L. speciosum* and its varieties." It does no more injury to cut away the flower-stem of *L. candidum* when in full bloom than it does to cut off the flower-spike of a Hyacinth, the flower-stem of a Gladiolus, the flowering-shoot of an Amaryllis, or the bloom of the Guernsey Lily. The leaves are all left, and these are all that are needed to produce a sound and perfect bulb. If this were not so, it would have been discovered long ago. With the Lilies, however, that have no leaves, only such as grow upon the flower-stem, it is quite another and totally different thing. Nature points this out. If the flower-stem of *L. giganteum* be cut away as soon as it makes its appearance, the leaves and bulb will increase in size; but if allowed to grow and bloom it so absorbs the nutriment of both, that nothing but weak offsets are the result. It is the same with the Century plant. When the Hyacinth growers of Haarlem tell us the bulbs are just as good if the foliage be all cut off, or the Gladiolus cultivators of France that cutting away all the leaves does no harm, or the Amaryllid growers destroy all the leaves, and the Guernsey Lily cultivators say the bulbs will flower just as well without making any foliage, I shall believe that cutting down such Lilies as make no root or bulb leaves does no harm. As to *Lilium candidum*, when the flower-stem is cut away the bulb is really greatly benefited, as "Dunedin's" experiment proved, just as removing the flowers or buds from any plant increases its growth and vigour. The leaves all remain, and it is these that nourish and sustain the root. If "Dunedin's" practice be correct with Lilies which have no bulb leaves, then we must have new rules for bulb culture, and the old custom of securing a vigorous, strong, and healthy foliage must be discarded. Boston. C. M. HOVEY.

**Santolina Incana.**—This is one of the most useful of plants for forming edgings or divisional lines, and, being of a whitish-grey tint, it may be employed in many varying combinations. Its habit of growth is neat and compact, and, being hardy, it especially commends itself to those who have but a limited amount of glass structures. Cuttings of it put in under hand-glasses or lights in September make excellent little bushy plants for furnishing beds in spring. By having a good supply of this, and such plants as *Violas*, *Polemonium cornutum*, *Golden Thyme*, and similar plants, bedding-out, as it is called, becomes a more reasonable affair than when all the subjects employed are tender.—J. G.

### NOTES AND QUESTIONS ON THE FLOWER GARDEN.

**Tree Pæonies and Frost.**—By way of answer to "B. S.," Rutlandshire (see p. 323), who is desirous of ascertaining the effect of the recent frost on Pæonies, I may state that here they suffered so severely that I don't think they will recover this season. A few Roses that were pruned early were also cut down, and the leaves of Violets were scathed, as if scalded. Anemones, which were in full bloom, had the latter greatly discoloured, but they are again in full beauty. Frost does not appear to affect the herbaceous Pæonies, and though we had from 7° to 10° for several nights, with blinding snow-storms, herbaceous plants generally withstood the storm bravely.—N. FULLER, *Downton Castle, Ludlow.*

**Aquilegia viridiflora.**—As a rule green flowers are not worth growing, but this Columbine is an exception; the sage green of the flower and delicate tint of the leaf form a striking contrast.—A. K., *Eastcott Cottage, Finner.*

## THE KITCHEN GARDEN.

### SMALL v. LARGE KITCHEN GARDENS.

It will be acknowledged by many, we have no doubt, that kitchen gardens are, as a rule, too large—as regards the vegetable quarters at least—for we doubt if any one would willingly curtail the extent of walls devoted to fruit culture; hence some arrangement that would give us the necessary extent of these without extending the area of open vegetable ground is what is needed. Such an arrangement would, of course, depend largely upon circumstances and situation; but that which secured the greatest amount of shelter to growing crops would no doubt be the best. Our own experience would lead us to prefer a greater extent of south wall and, consequently, warm borders, and also an extended northern exposure, to either east or west walls, though we have less objection to the latter. There can be no doubt, we think, that south walls produce the most remunerative crops, if well managed, while their northern aspect can, as every cultivator knows, be utilised for producing later or succession crops of such fruits as Cherries, Plums, and particularly Gooseberries and Currants, which succeed admirably on such an aspect; and north borders can always be turned to excellent account in vegetable culture. This, however, by the way; it is the vegetable grounds of which we wish to speak.

At some places, where the demand is not so very great, the kitchen gardens are frequently five or six acres in extent inside the walls, with a proportionate amount of walks, edgings, and borders—all proportionately expensive to keep, without providing anything like an adequate return. In such places, where the outlay is not measured by a debtor and creditor account, and means are provided to keep the place in good order, it is all very well; but the rule is that such large gardens are not well kept, nor thoroughly economically cropped. They will not bear comparison with any ordinarily well-cultivated market garden, where every inch of ground is cropped and cared for as it should be. Of course we are aware that the two cases are hardly parallel, but there is not so very much difference between them either. Large gardens are not cropped so economically as small ones, for in the former the ground is only filled once, perhaps to the latter's twice, and sometimes three times during the year. In the first, the Potato, the Pea, the Onion, and other large quarters are allowed to stand vacant, or are only partially cropped, while in the latter the crops have to be hurried off the ground at the earliest moment, in order to make room for something else; and, except in the case of crops which come off the land too late in the season to permit a following crop, no ground is ever left vacant. We think every portion of a kitchen garden, including borders and margins, should be cropped. It is a sheer waste of time and money to keep ground vacant on the score of mere tidiness. What, we ask, can be more creditable to a cultivator than a garden well cropped in every part? We have had some little experience on the subject of which we write. Our 3-acre kitchen garden here, inside the walls, has been encroached upon to the extent of at least one-third by hothouses, pits, frames, and other structures, while there has been no decrease, but rather an increase, in the demand for all kinds of vegetables. As a consequence, more economy had to be exercised with the space that remained. The first improvement was to do away with about 1200 ft. of walks, with borders and alleys on each side, which had never been a necessity; and the next was the removal of all the large fruit trees to an orchard field, where they are out of the way and better off, their places being turned into vegetable ground; by these, and various other curblings here and there, we gained about as much ground as we had lost, without increasing the labour of working it—quite the reverse, in fact, for we had fewer walks to keep. To still further extend our accommodation, we do not allow such crops as Greens, Brussels Sprouts, and Savoys, Leeks, &c.—which always necessarily occupy a large extent of land—to remain on the ground till they are quite over. After they are hearted, they take no harm if in spring they are lifted and laid closely in rows by the heels. The Greens are all topped first, of course, and it is only sprouts which push afterwards. As regards the Brussels

Sprouts, they are lifted just before they run to seed, which checks their growth and prolongs the supply. None of the other subjects are injured by lifting, and the ground is cropped as fast as it is cleared. But for this practice, it would be impossible for us to get in our Potato and other crops in time, for we have rarely any fallow ground, unless it be a piece reserved for Onions or the Celery quarter. Manuring and trenching, to a great extent, obviate the necessity for adhering strictly to the rotation of crop principle. Just a word in regard to walks in kitchen gardens. They must be both roomy and convenient, but not many are required, even in the largest gardens. Nothing hinders the working and economical cropping of the ground so much as numerous walks, cutting the ground into small plots. The broader the quarters and longer the rows, the better; and we should never have more than one walk running through the centre of the garden each way, and a walk all round between the fruit borders and the vegetable quarters. Narrow alleys, that can be made or unmade at pleasure, will provide for all other means of communication with the different crops.—“Field.”

### GATHERING MUSHROOMS.

Mushrooms are gathered as they come to perfection, a condition which must be determined by the purpose for which they are intended. The Mushrooms intended for the Paris market must not be under the size of a 2-franc piece on the cap, nor above that of a 5-franc piece. The enormous Mushrooms of 8 in. and 10 in. in diameter, which find so ready a sale in Covent Garden would be a drug in the Paris market, being considered by the French *chefs de cuisine* to be less delicate in flavour than the small ones. The gatherings are made in the quarries at a very early hour. At one o'clock in the morning the Mushrooms are gathered, which at a later hour are sold in the open market. The Mushroom gatherers are each provided with two large baskets, which they carry on their backs knapsack fashion—one to receive the Mushrooms, the other to contain the soil with which to fill up the gaps left in the beds after the gathering. The proper way of gathering a Mushroom is to seize it in one hand by the cap, at the same time giving it a slight twist and pulling it gently upwards, so as to detach it from its roots without disturbing the little Mushrooms that are growing round its base. The gathered Mushroom is dropped into the empty basket, and the hole which it has left behind it is filled up with a pinch or two of soil from the others. In some quarries the gatherers pick the Mushrooms and leave them in little piles on the pathways, or on the beds themselves. They are followed by women, who pack them into baskets, and by men, who fill up the gaps left in the beds. The beds are then smoothed down with the hand, and if they appear to be too dry they are watered. The Mushroom-baskets should be covered over with a cloth, to avoid all contact with the air, which is apt to turn them brown. The contents of the smaller baskets are then packed into larger ones, holding from 10 to 15 kilos. (23 lbs. to 35 lbs.), and sent off to market. Mushrooms of good quality are sold wholesale at 1 fr. 70 c. to 2 fr. per kilogramme, according to the season (1s. 5d. to 1s. 8d. per kilo.). The gatherings are continued daily, but do not yield the same quantities regularly. For instance, a crop of 300 kilos. may be succeeded by one of only 50 kilos, for the Mushrooms require a certain time to acquire a marketable size. The time that one kind will continue to bear depends on the materials employed and the manipulation to which they have been subjected. The inside and outside temperature has also a great influence. In quarries with a low roof the temperature is always high, and vegetation is consequently more rapid. The duration of the crop is from forty to sixty days, and the yield rapidly diminishes towards the end of that time. In quarries with high roofs, or which open on to the level road, the currents of air are weaker and the temperature lower; the vegetation is, therefore, less active and the bed lasts longer, owing to the manure being consumed so much more slowly. In some high-roofed quarries the beds will bear for three or four months. In low-roofed quarries they continue to yield the same amount even when the outside temperature is low; but in those with high roofs a marked check in the production takes place under those circumstances.

In practice, a thick clump of Mushrooms all growing on the same spot is called a rock, or *rocher*, by the French growers. When the whole of a rock has been gathered, there remains in the place where the ends of the stalks were inserted a fleshy mass, forming a kind of platform, round which are generally growing a number of stunted young Mushrooms which have not had sufficient space in which to develop themselves. If this fleshy mass be cut open, we shall find that the inner portion is formed of a semi-ligneous substance, the fibres retaining enclosed the morsels of stone contained in the mixture of mould and quarry rubbish with which the beds were soiled. These stumps or rocks must not be allowed to remain in the beds, but must be cut away carefully, and the gap filled up with soil.

These clumps often interfere with the yield of the bed. First of all, the Mushrooms which spring up on the edge of the clump are generally stunted, or, as the growers say, they lack sap, while others are subject to disease, the first symptom of which is a black spot on the cap. We have dissected several Mushrooms attacked by this disease, and examined them under the microscope. The skin of the cap is spotted with stains of a black or dark brown colour, having spaces of an ochry tint. The cap of the Mushroom is often flattened or otherwise depressed, and when cut open shows a number of black stains, which extend from the inner to the outer surface. The flesh is yellowish-grey as far as the base of the stem, although the skin of the latter preserves its usual colour. The odour is no longer that of the Mushroom, but of a body in a state of putrefaction. The cause of this disease is said to be the want of sap and the wasting away of the nutritive elements of the Mushroom. We must be careful to remove all clumps which show signs of having been attacked by this disorder, which would spread itself over the rest of the bed in a very few days.

The cleaning or stumping of the beds is the removal of the stumps as the Mushrooms are gathered, until nothing remains but the empty soil. This operation is performed by passing a knife around the spot, so as to separate the stump from the bed. The stump is thrown on to the pathway or into a basket, and another workman fills up the gap with soil in the usual way. The holes left where single Mushrooms have been gathered must also be filled up and the paths carefully swept, so that no foreign matters capable of fermentation may be left about. Above everything, care must be taken to remove all scraps of Mushrooms affected with disease, otherwise the infection would spread through the quarries in a very short time. In the case of beds cultivated in the open air, the gatherings are made as in the quarries, with the exception that the Mushrooms intended for the morning's market are generally picked the evening before, taking care to keep them from the light and air, so as to preserve their fruit. The private grower, who gathers for his own table, picks them at his own, or rather at his cook's, convenience, knowing well that the fresher the Mushroom is before going into the pot the more delicate will be its flavour. From a trade point of view, it is most important to gather the Mushroom at the exact moment. If it is too much grown, the stem becomes spongy, and the cap opens and spreads out like an umbrella, and the rose-coloured gills turn brown. In this condition the Mushroom is no longer saleable in the Paris market at any price, although in Covent Garden the large and more open Mushrooms are more eagerly sought after. It is not exactly poisonous, but it is very indigestible. It is not only in the bed that the Mushroom reaches its full size; I have seen Mushrooms which, when gathered, were in a perfect state open up and assume the appearance just described after having been exposed to the air for two days and a half. M. LACHAUME.

**Salt as a Manure for Potatoes.**—Allow me to direct attention to "W. T.'s" reply to a correspondent (see p. 348), where he recommends 20 bushels of salt (half a ton) per acre for Potatoes on light soils. Messrs. Lawes and Gilbert's experiments on salt as a manure prove that 5 cwt. of salt per acre is the largest quantity that should be applied to Mangold Wurzel (which is a marine plant), and 3 cwt. for any other crop; and Dr. Voelcker's experiments also carry out this principle. The Potato contains but a very small amount of

salt in the form of chlorine, and if an acre produced 10 tons of tubers, then about 10 lb. of chlorine (equal to about 20 lb. salt) would be abstracted from the soil by the plant, so that half a ton would be likely to last some few years as a manure. Of course, the principal advantage of applying salt to light soils is that it prevents premature ripening of the tubers on account of its power of attracting moisture, but 2 cwt. or 3 cwt. per acre would be quite sufficient for that purpose, and half a ton would be most decidedly injurious.—JAMES PINK, *Lee's Court, Faversham.*

## THE NATIVE COUNTRY OF THE POTATO.

By ED. ANDER.

THE Société Centrale d'Horticulture de France, at the beginning of 1877, received a communication from M. A. Lavallée on the subject of the history and original habitat of the Potato. M. Lavallée adopts the view taken by M. De Candolle in his "Geographic Botanique." Like the latter, he is satisfied that the Potato was not introduced into Europe either by Hawkins or Drake. They brought home the *Batate* (Sweet Potato) only. Sir Walter Raleigh, who brought the true Potato from the east coast of North America in 1563, did not find it in its native country, but in a region where it had been previously introduced by the Spaniards. The tuber was known in Spain and Italy before Raleigh's day. It is now established beyond dispute that the "Conquistadores" found this *Solanum* cultivated in Peru under the name of "Papa," which it retains there to this day. The historian Acosta is accredited with the first mention of it, in the year 1509. Just as the companions of Quesada, Belalcazar, and Fréde-mann introduced into the New World domestic animals and poultry, which they had brought with them from Spain, and could not find heart to kill even when themselves dying of want, so it is equally certain that they took back from thence to Spain the Potato, which they found cultivated in the cold region of the Andes, and saw to be of great value to the aboriginal population. I agree with M. Lavallée so far as concerns the historic part of his note. But during my travels in the Cordilleras of the Andes I collected some facts which enable me to correct and complete the latter half of his memoir. It is scarcely necessary to add that it is not to M. Lavallée's logic, but to certain of the sources of information on which he relies, that I have to take objection. For a long while it was impossible to discover the native home of the Potato. Humboldt declared that he had searched for it in vain, and had found no such tuber either in Chili, New Granada, or Peru. Ruiz and Pavon, who thought they had discovered it in the last-named country, really only found *Solanum immitte*. In 1822 Messrs. Caldicleugh and Cruikshanks saw *S. tuberosum* growing wild in Chili. Meyer and Claude Gay afterwards collected it in Valdivia and Juan Fernandez. M. A. De Candolle and Lavallée appear to have concluded that *S. tuberosum* does not grow spontaneously in New Granada and Peru simply on the negative testimony of Humboldt that he had not seen it there. I have been more fortunate. I have found authentic specimens of *S. tuberosum* growing spontaneously in three different localities under circumstances which could scarcely mislead a botanist. The first time was on the summit of Quindío, Columbia, near the volcano of Tolima, at an altitude of 3500 metres (11,400 ft.) above the sea-level, and in 4° 34' lat. N. The plant was growing in the form of small tufts in the vegetable humus, almost in the shade of the woods, and amongst the stunted bushes of this Alpine region. The long stalks were half buried and white, and the tubercles at their extremities, or, to be more accurate, the swollen subterranean ends of the haulm, were about the size and shape of small, oblong Nuts, feculent, and rather bitter. The flowers were white, scarcely tinged with purple, and smaller than in our cultivated species; but I attribute their scarcity and want of colour to the impoverishment of the plant in so severe a climate, only 3000 ft. below the eternal snows of Tolima. The second instance was in the Cauca, in the slopes adjoining the Union Mountain, in 1° 33' lat. N., that is to say, close to the Equator. The altitude here is very different from the first case. It did not exceed 1900 metres (6200 ft.). The plant, too, was growing in full beauty in the midst of a luxuriant vegetation of *Siphocampylus*, *Sciadocalyx*, *Ageratum*, *Alonzoa*, *Lamourouxia*, &c. This was in May, 1876. The stalks of *S. tuberosum*, of which I gathered a good many for my herbarium, threw upwards, support ing themselves on the neighbouring trees. Their foliage was vigorous, and magnificent umbels of large-sized flowers, of a deep purple, hung from them. Around the villages in this region the cultivated Potato does not appear under this aspect. It forms low, stalky heads, as in the Potato fields of Europe. The wild plants were numerous, far apart, remote from spots whither they might have been brought accidentally by the agency of man, and had all the appearance of plants "at home." The third case occurred

not very far from Lima, in the Amancaes Mountain, where the *Amaryllis* of the same name grows, and where, in the midst of a very scanty vegetation, the Potato is found growing in abundance. It is equally common in the island of San Lorenzo, near Callao. In both these places it may, of course, have been introduced by human agency, but would it not have been planted it on the most inaccessible and barest declivities where the foot of man had no call to tread? The seeds of the Potato, we know, are not amongst those easily borne along and disseminated by the winds. On the specimens I collected in Peru the flowers were all a pale lilac, the tubers small, oblong, and rather tasteless. I believe the plant to be there in its native home, but this I cannot positively affirm. The original specimens of the plants above referred to are in my herbarium, and at the disposal of those interested in the subject. It seems to me that Humboldt's opinion by itself is wholly insufficient to disprove the existence of the Potato in Peru, Ecuador, and New Granada, and I firmly believe that further investigations will show it to exist in other localities as well as in the same countries.—"Illustration Horticole."

**Leeks for Spring Use.**—I fully agree with Mr. Groom's remarks on this subject. About the middle of May last year an order came from town for plenty of Onions, Turnips, Celery, and Carrots for soup. As regards Onions, a good stock of Leeks and a bunch of autumn-sown Onions were pronounced perfection. Then Carrots were small, Celery bolting, and Turnips nil. This season I have a capital run of autumn-sown Carrots in good order, very late Celery lately blanched, Turnips stored in a cool quarter, and plenty of good Leeks. No doubt Leeks are to be preferred to Onions for soup. The flavour is milder, as Mr. Groom says, and also more full and mellow than that of Onions. I am surprised, indeed, that stewed Leeks are not more popular than they are, for they are equal to stewed Celery, Seakale, or almost any other vegetable. Their greatest merit, however, at this season is their slowness to run. When all other Onion kind is in haste to bolt into seed the Leek stands still, and before it can make up its mind to start into flower it is potted.—D. T. FISHER.

**A Selection of Potatoes for Exhibition.**—In growing Potatoes for exhibiting, as in the case of numerous other things that could be mentioned, it is necessary to have a greater number of varieties than it is intended to stage. Speaking in a general way, the number grown should exceed by about one-third the number of dishes required in the collection to be shown, that is to say, if the cultivator contemplates competing in a class for twelve dishes he should plant eighteen varieties, and for a collection of twenty-four dishes thirty-six sorts. By having one-third more a much greater choice is afforded in the selection of samples when the crop is lifted, and in consequence a much better collection can be formed than would be possible with a less number from which to select. If it is intended to compete in a class for twelve dishes I would recommend the following eighteen sorts, namely:—Blanchard, Red Emperor, Triumph, Radstock Beauty, Salmon Kidney, Purple Ashleaf, Brownell's Superior, Grampian, Lye's Favourite, Snowflake, Model, Early King, Schoolmaster, International Kidney, Rector of Woodstock, Porter's Excelsior, Ashtop Fluke, and McKinlay's Pride. For making up a collection of twenty-four dishes I should recommend the cultivation of the following thirty-six varieties, namely:—Red Emperor, Scotch Blue, Seammell's Glory, Triumph, Trophy, Lady Webster, Salmon Kidney, Purple King, Lye's Favourite, Late Rose, Brownell's Superior, Radstock Beauty, Grampian, Purple Ashleaf, Blanchard, Gibraltar, Ruby, Beautiful Kidney, Snowflake, International Kidney, White Emperor, Early King, Early Market, Taylor's No. 1, Porter's Excelsior, Model, Rector of Woodstock, Ashtop Fluke, McKinlay's Pride, Onwards, Climax, Schoolmaster, Sedilla, Bedford Prolific, Edgecott Seedling, and Breadfruit.—PETER MCKINLAY, Beckenham, in "Gardener's Magazine."

## NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

**Tall & Dwarf Peas.**—I am pleased to observe that the merits of the tall section of the *Pisum* family are beginning to be generally recognised; short stalks and a short period of bearing are synonymous. It is only by means of varieties that develop a continuous supply of fresh blooms on elongated stalks that one can hope to prolong the period of gathering.—J. G.

**Kennet Salt for Slugs.**—Will Mr. D. Lamond kindly say whether this salt differs from common agricultural salt, and what proportion per rod or acre he finds it safe to apply to growing crops of garden produce, so as to make sure of destroying the slugs without injuring the crops?—F.

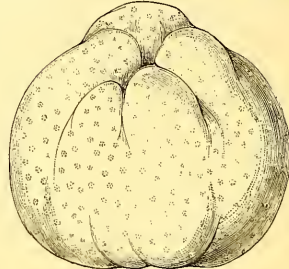
**French Lettices.**—I shall be greatly obliged if you or any of your readers will kindly tell me what are the best Lettices of the Paris gardens.—A. Z. [De Malte, Perpignon, Goutte lente à Monter, Cordon rouge, Crêpe grainé rotte, Blonde de été, Blonde de Berlin, Blonde de Versailles, Grossa brune parvessive, Morine, Passion, Palatine. There are a few of the best Lettices in cultivation.—D. GIBBERNE.]

## PLATE CXXV.

### PYRUS MAULEI.

Drawn by Mrs. DUFFIELD.

For the opportunity of figuring this fine *Pyrus* we are indebted to Messrs. Maule, of Bristol, the introducers of this valuable shrub—one alike ornamental in flower and fruit, and a great gain to our gardens. It is a native of Japan, Messrs. Maule



Fruit of *Pyrus Maulei*.

having obtained the seed from which it was raised through a member of Captain Alcock's Expedition some eight or ten years ago. It is a hardy, deciduous, spiny shrub, the flowers of which are large and, being orange-scarlet, remarkably showy. The fruit, which is produced in great abundance, is a little variable, both in shape and colour, and bright red where fully exposed to the sun. Though uncatable in a raw state, it makes an agreeable conserve, for which and for a drawing of the plant a first-class certificate was awarded at the Bath meeting of



Fruit of *Pyrus japonica*.

the Royal Horticultural Society in 1873. Along with the fruit of *P. Maulei* we have also given an illustration of that of the Japan Quince (*Cydonia japonica*), its relation, in order to show how much they differ. The two plants also differ both as regards leaves and flowers. It may be increased by grafting it either on the Apple, Pear, Quince, or Thorn, and it may also be readily raised from seeds, of which each fruit contains a great many; indeed, through repeated seeding and selection, Messrs. Maule hope in time to obtain fruit of this *Pyrus* fit for dessert. It flowers early in May, but sufficiently late to generally escape frost, and keeps in bloom till June. So handsome a shrub cannot fail to be everywhere a favourite. Those who take an interest in the genus *Pyrus* will find a full account of all the most ornamental species belonging to it in the tenth volume of THE GARDEN (see p. 384).



MAULE'S JAPAN PEAR (PYRUS MAULEI)



## NORTH AMERICAN PINES AT HOME.

The accompanying illustration gives a good idea of the broken shore scenery common to the larger navigable lakes of North America. The tall, spectre-like shafts of the Spruce or Larch, with their short, irregular pinnae, present, it must be confessed, a cold, weird look. But though lacking in what artists would call "warmth," such scenes form a picture that has unfortunately, as far as I have been able to judge, no counterpart in the tame, artificial lake scenery of this country. An intermixture of such subjects with the common-place Weeping Willow, Birch, Beech, Alder, Elder, &c., of our lake shores and islets would give a sprightliness and natural wildness to such scenes. The fallen tree in the foreground furnishes an idea that is seldom carried out. It would be an easy matter to partially uproot plants without killing them, in order to effect

and for the excellence of their timber. The following are the only species and varieties that can be recommended as really hardy enough for our climate in the open air:—

**ANTARCTIC BEECH** (*Fagus antarctica*), sometimes called *F. betuloides*, is an evergreen species indigenous to both sides of the Straits of Magellan, and occurring in vast forests in Terra del Fuego, where it extends from the seaside up to the snow-line of the mountains, and varies in height from about 40 ft. in the more sheltered situations to a scrub-bush of some 2 ft. or 3 ft. in such as are high and exposed. The tree is broad and bushy, with a trunk much thicker than is usual in proportion to its height. Though introduced into this country in 1830, it has not yet been widely distributed, and is still scarce and comparatively little known. Its leaves are much smaller than those of the common Birch, which they so much resemble, that *betuloides* has been regarded by some writers as the most appropriate specific name. It is an interesting species of very slow growth, but worthy



. North American Pines at Home.

this object. The Coniferous trees and shrubs best adapted to grow on the damp margins of lakes, and their low water-logged islets, are *Larix americana*, *Abies alba* and *rubra*, *Pinus Strobus*, our own native Pine, the Deciduous Cypress, the *Glyptostrobus heterophyllus* of China, and *Sequoia* (*Taxodium*) *sempervirens*, the Canadian or Hemlock Spruce, the American *Arborea* (one of the best), the white and red Cedars; and for draping the margins of the islets, the common Savin (green and variegated) and many other species of depressed and prostrate Junipers will also doubtless be found suitable for such a purpose.

GEO. SYME.

## SPECIES AND VARIETIES OF BEECHES.

The hardy species of this genus form a limited but important group of evergreen and deciduous trees, with a wide geographical distribution over the temperate and colder regions of both the Old and New Worlds. They are famous alike for their highly ornamental character

of a place in shrubby borders, growing well in light, dry soils, and useful as a rocky plant. It is also well adapted for training on walls, its spray-like branches and abundant foliage affording great facility for keeping it neat and trim.

**COMMON BEECH** (*F. sylvatica*).—This tree is found over a wide area in North America, in various parts of Continental Europe, where it forms vast forests, and is believed also to be truly indigenous to England. It grows from 70 ft. to 90 ft., and in some cases 100 ft. in height. Its flowers, which appear in May, are of a brown colour, small and inconspicuous. They are followed, however, in most seasons, by an abundant crop of fruit in the shape of small triangular Nuts, commonly called "Beech Mast." An old writer, with great truth, remarks that the Beech is "at once the Hercules and Adonis of our Sylva;" and it is scarcely necessary to say of such a familiar tree that for stateliness and symmetry of outline it has no superior, whether as seen in our forests or ornamental grounds. It grows with great rapidity in moderately dry and even rocky situations, and nowhere with greater luxuriance than in the chalks and marls of England, yielding valuable timber, and that in a shorter time than any

of our other hardwoods. It has long been employed as a hedge plant, both by itself and in combination with Hawthorn, making not only a strong and durable fence, but affording a shelter equal to evergreen shrubs, from the curious fact that, though naturally deciduous, when trimmed regularly as a hedge it retains its decayed leaves during the winter. There are several very distinct varieties in cultivation suitable for ornamental plantations, of which we recommend the following as the most desirable:—

**FERN-LEAVED BEECH** (*F. s. asplenifolia*).—This has its leaves cut into narrow segments having the appearance of Fern fronds. It is a remarkably elegant ornamental tree, with a compact habit of growth, and a great favourite for parks or lawns.

**CUT-LEAVED BEECH** (*F. s. heterophylla*).—Similar to the preceding, but quite distinct, the leaves being more irregularly cut; it is also a very beautiful tree, especially in the form of a single specimen.

**COPPER-LEAVED BEECH** (*F. s. cuprea*).—This differs only from the species in the colour of the leaves, which are light brown or copper coloured.

**PURPLE-LEAVED BEECH** (*F. s. purpurea*).—A grand variety, differing from *cuprea* in its leaves being of a deep, shining purple.

**LARGE-LEAVED PURPLE BEECH** (*F. s. purpurea macrophylla*).—This fine variety has its leaves a richly coloured as those of the last, but very much larger; it is as yet scarce, but without doubt a great acquisition.

**WEeping PURPLE BEECH** (*F. s. purpurea pendula*).—A beautiful variety with pendulous branches, forming, when grafted standard, high on the common Beech, a surpassingly beautiful lawn tree, and one, indeed, well suited for any prominent situation in the garden or other dressed grounds. All the varieties with purple or copper-coloured foliage are invaluable for associating with green-leaved trees, and they have been largely used in the production of the finest landscape effects.

**SILVER-VARIEGATED BEECH** (*F. s. variegata argentea*).—This variety has its leaves freely variegated with silver.

**GOLDEN-VARIEGATED BEECH** (*F. s. variegata aurea*).—This has leaves freely blotched with gold. Both of these variegated varieties are interesting, although in some situations, and notably in such as are moist and the soil rich, they have a tendency to revert to the normal state. When in good character, however, they are very striking.

**CRESTED BEECH** (*F. s. cristata*).—This is a curious form, with small, curled or twisted leaves, crowded into dense tufts. It is of dwarf growth, and well suited for a rock garden or for planting in collections of shrubs of moderate size.

**WEeping BEECH** (*F. s. pendula*).—This is a singularly beautiful tree, with long, weeping branches, forming a magnificent object when grafted on a tall stem and standing alone on Grass. It is of free growth, and soon forms a handsome specimen.

**AMERICAN BEECH** (*F. ferruginea*).—A deciduous species, of from 40 ft. to 60 ft. in height, introduced from North America in 1766. Its leaves are of a bright glossy green tint. This is probably only a variety of *F. sylvatica*, which it very much resembles, the chief differences being the reddish-brown bark, which doubtless suggested the name, and the short, obtuse leaf-buds. It has a similar habit of growth to the common species, and, as far as we have observed, quite as hardy in this country. The following variety, however, is so distinct, that it should never be omitted in even the most choice selection of ornamental trees.

**BROAD-LEAVED AMERICAN BEECH** (*F. f. latifolia*).—This sort has large, broad leaves, similar in form to those of the Chestnut. It is one of the handsomest of the group, of free growth, and very hardy.

HUGH FRASER, in the "Gardener."

### SUITABLE SITUATIONS FOR PLANTATIONS.

PERHAPS one of the most common mistakes made in forming plantations is planting in wrong situations. No intelligent forester will, of course, commit such mistakes if he can help it; but we have only to cast our eyes about us to see how frequently such mistakes are perpetrated. Trees are planted in wet situations and on undrained land, where it is well known they cannot thrive, and exactly similar blunders are committed in the other direction. Take the Larch, for example. It is a well-ascertained fact that it cannot thrive long in a wet soil; but how often do we see it planted in sodden, undrained land, and the trees dying prematurely in consequence. If it has light—that is, if the plantations are not left too crowded—the Larch, as a rule, thrives uncommonly well on dry soil, even though the latter be thin. The finest trees and soundest timber that ever I have seen have always been grown in such situations. In a large tract of Larch plantations not far from here, and which has lately been cut down and

used for colliery purposes, the trees were mostly all sound and good, very few of them exhibiting any decay in the centre, and they would possibly be about eighty years of age. The ground on which the plantation stood is naturally well drained, the soil, thin but not poor, being a fair yellow loam. There are many fine trees of the same age about in the same locality, all in good health, and, where exposed to the light, furnished with branches nearly to the base of the trunk. Where these Larches thrive, however, the common and Silver Spruce grow but very indifferently, the soil being too dry for them. We do not suppose a single Spruce of respectable dimensions or in good health could be found in the same locality; but in another part of the country, where the soil is moister and the rainfall much greater, the Spruces are invariably healthy and form fine trees of great girth, while the Larches are poor and everywhere exhibit symptoms of premature decay. Spruces make a sorry figure when planted for ornamental purposes on dry thin soils and in exposed situations. Of late years a fashionable landscape gardener has been using them extensively on an estate for clump planting on dry knolls along with other subjects, and at the present time more miserable objects could not be found anywhere. Curiously enough, the Deodars (*Cedrus Deodara*) and the Nordmann Spruce seem to thrive well in situations that suit either the Larch or the Spruce. The Deodar suffers a little from exposure, but not nearly to the same extent as many other Conifers. It is an excellent, sure-growing tree, whether the soil be poor or rich, moist or dry, within reasonable limits, and wherever a good solid evergreen fringe is wanted to a plantation it is the tree to plant. The Wellingtonia is not so particular as regards soil, but it is needless to plant it in exposed situations, or I may qualify my statement, and say situations exposed to north, north-east, or north-west, and east winds, which, when they blow with any persistency, make mere naked skeletons of the trees. This, indeed, is the fault of nearly all the more tender Pines. They make noble and symmetrical specimens when sheltered, and are perhaps hardy enough against frosts, but they do not stand the blast successfully. The Holly and the Yew are two valuable trees. They will grow tolerably well in the shade, and in almost any ordinary good soil; but in a dryish, strong loam both do best, the Holly particularly. Though a difficult subject to transplant, I never remember the latter to have shown any signs of distress from drought if the roots had had time enough to get hold of the soil; but the Yew occasionally suffers, owing to the habit of the roots, which spread out close to the surface; and hence the beneficia trees growing on lawns and other exposed places receive from top-dressings, which should be placed over the roots as far as they extend. Still, though there are trees that prefer a dry, and others a moist, situation; as a rule, all timber trees prefer a soil free from stagnant moisture; hence the necessity of drainage in plantations, which may be effected by means of open drains to a considerable extent, if the drains be out in parallel lines at regular distances apart, and kept open by periodical cleanings. I have known extensive woods drained in this way, when doing it in any other way would have entailed much expense.

J. S.

**Broad-leaved Hemlock Spruce** (*Abies canadensis macrophylla*).—This Hemlock has long been known to us, but, like many other fine plants, it has waited long for proper recognition. It is a true Hemlock, as its name indicates, but the growth, though fairly vigorous, does not equal that of the parent. Perhaps the most remarkable quality belonging to it is its colour. The green is decided, but of the darkest character, intensified, and made more remarkable by deep shades and shining lights, arising from the compactness and waxy lustre of the leaves. Differing somewhat from other dwarf Hemlocks, such as *A. pumila* and similar varieties, it is somewhat irregular in outline. Its proper use is in groups, combined with the contrasting colours of the Golden Retinospora and other dwarf Conifers, or planted singly near the borders and curves of walks. The origin of this Hemlock is a little curious. It was picked up over twenty years ago in the nursery of King & Murray, of Flushing, from amongst some common Hemlocks sent to them by a Western firm. This original plant was placed in a conspicuous position, and there it stands to-day, a mass of dark foliage some 15 ft. high, quite regular in form, and in full vigour, which can hardly be said of common Hemlocks of the same age. From this source was propagated all the first stock of plants that were sent out, and even now very few are produced anywhere out of Flushing.—S. PARSONS, in "Country Gentleman."

The Largest Chestnut Tree, probably, in the State of New Jersey was felled recently in Camden. On account of its giant size it was left standing when the land on which it grew was cleared in 1774. For many years this monarch of the ancient forests has been a land-mark in Camden county. It measured 21 ft. 9 in. round the butt.

GARDEN BOTANY.

(Continued from p. 367.)

**SCALY BULBS.**—The bulbs of different species of Lily are very diverse, but nearly all of them belong to the same type as fig. 111. Here the bulb consists of the fleshy leaf-bases, but instead of their being concentric, as in the Hyacinth, they are



Fig. 110.—Naked or scaly bulb of Lily.

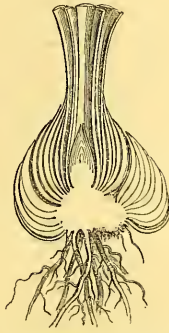


Fig. 111.—Longitudinal section of bulb of Lily.

narrow and scale-like, and often very loose. Such bulbs are termed scaly bulbs. The duration and reproduction of Lily bulbs varies in different species, but they only flower once. A peculiarity of many species is that, in addition to the tuft of roots at the base of the bulb, others are borne on the flower-stem above the bulb. The flower-stem either rises perpen-



Fig. 112.—Plant of Potato, showing stems, tubers, and true roots.

dicularly from the bulb, or, especially if the bulb be weak, it takes a horizontal direction for some distance before it rises aboveground, and sometimes bears several new bulbs on this horizontal portion. In some species the scales of the bulb are all of them the thickened bases of leaves which have appeared aboveground and died down to the thickened part. In other

species some or all of the scales were originally developed as such. Usually one new bulb is annually formed in the axil of one of the scales of the old bulb, and it is either seated within the scale or carried out an inch or more beyond it on a branch (rhizome). In some of the species of the allied genus *Fritillaria* the scales of the bulb are as thick as they are long, and closely packed together; whilst the bulbs of the familiar Crown Imperial (*F. imperialis*) have thin scales, and are very much like those of some of the Lilies. For more complete informa-

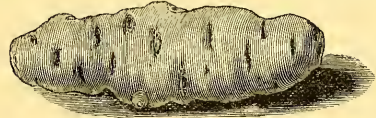


Fig. 113.—Tuber of Potato dormant.

tion on the bulbs of this class I cannot do better than refer the reader to Mr. Burbidge's illustrated memoir, which appeared in *THE GARDEN* in the early part of 1877. A familiar instance of a bulbous root-stock among dicotyledons is afforded by one of the Buttercups (*Ranunculus bulbosus*). It appears to be renewed annually, but in the spring very little usually remains of the old bulb. Two or three years ago, however, myself and several other persons found many of them in the spring which were very well preserved and attached to the new ones.

**TUBERS.**—A tuber is very similar in its nature to a rhizome; in fact, it is a portion of a rhizome very much thickened, or what is technically termed tuberised, which is eventually detached from the slender part of the rhizome; but a tuber under ordinary conditions is of annual duration, that is to say, this year's tuber forms a new plant next year and perishes, or its substance is used up in the early growth of the new plant. The presence of eyes (buds) in the tuber (fig. 113) are sufficient to determine that it is a stem formation, but if we follow the development of tubers from a seedling Potato we have proof of its nature. In germination the cotyledons of Potato seed are hypogæus, that is, remain underground, and the real root, of course, is produced below them. Above the cotyledons, and below the surface of the ground, horizontal branches



Fig. 114.—Mammillaria. Stem fleshy and leafless.

(rhizomes) are soon given off. They bear reduced scale-like leaves and roots, and at intervals become tuberised or enlarged into tubers. When the buds of a tuber start into growth, stems are formed which appear aboveground. On the lower part of these stems, quite close to the tuber, roots are formed, and immediately above them, as in the seedling plant, rhizomes, portions of which are eventually tuberised. The Jerusalem Artichoke has tubers similar to those of the Potato, but they are even more like swollen branches.

**RHIZOMES.**—A rhizome is a perennial, usually prostrate, subterranean stem, which lengthens at one end, and usually dies away at the other, and annually forms new roots, and throws up a flowering-stem or stems and leaves. Rhizomes are of two kinds, determinate and indeterminate, according to the mode in which they grow and extend themselves. An example of an indeterminate rhizome is afforded by the only too-familiar Couch Grass (fig. 115). It elongates by terminal buds, and ramifies in all directions, throwing up flower-stems from the axils of the scales with which it is furnished. The root-stock of the Primrose (fig. 116) is another form of indeterminate rhizome. On the other hand, the rhizome of the Solomon's Seal (fig. 117) is determinate. This makes annual growths from the axil of one of the scales of the previous year's growth; and each season the growth terminates in a flowering-stem, which emerges from the ground after having made a short horizontal elongation underground. The scars of each year's flower-stem are quite prominent, as shown in the figure, and it is to this circumstance, it is stated, that it owes its popular name. Most of the Irises have determinate rhizomes. Another indeterminate rhizome to mention is that of the Horsetail (*Equisetum arvense*, &c.) This often grows downwards in an oblique direction to the depth of 3 ft. or more, and is far more difficult to eradicate than the relatively superficial



Fig. 115.—Indeterminate rhizome of Couch Grass (*Triticum repens*).

Fig. 116.—Rhizome of Primrose.

rhizomes of Couch or Twitch Grass. Some writers extend the term rhizome to the trailing stems of Ferns, &c., and the root-stocks of herbaceous plants which do not elongate underground, but it is better to restrict its application to the limits above defined. Achimenes produce a curious, scaly root-stock, intermediate in nature between a tuber and a true rhizome.

**CONNECTING LINKS BETWEEN ROOT-STOCKS AND STEMS.**—There are some stem formations which cannot well be referred to any of the types of root-stock described above, because they are formed aboveground, though they are essentially of the same nature. In some plants there is a considerable prolongation of the axis below the cotyledons and above the ground. In transplanting seedlings of this kind they are often inserted into the soil up to the cotyledons, and then this part, which would have naturally remained aboveground, is subjected to conditions favourable to the formation of roots, and often does produce them. Aboveground this hypocotyledonary portion of the axis frequently gives birth to branches. In *Cyclamen* it develops into a circular, depressed body, from the underside of which new roots annually grow, and form the top leaves and flowers. The Turnip is intermediate between

the tap-root and this kind of stock. Another remarkable stock is that of *Testudinaria elephantipes*, a South African plant cultivated in the gardens of this country. Whether it is a hypocotyledonary growth I have not been able to ascertain, but it may be. It is a very large woody body, with angular, tessellated protuberances; and from the top the annual climbing stems are given off.

**TRUE STEMS.**—Under this head all the normal aboveground stems are included, no matter what their habit or size, as distinguished from the stem formations treated of under root-



Fig. 117.—Determinate rhizome of Solomon's Seal, showing the scars of three years' stems and the beginning of the fourth year's stem.

stocks. Stems exhibit a marvellous diversity of character in habit, size, shape, duration, internal structure, &c. As we treat of the minute structure of stems elsewhere, it may be passed over here. Branches of stems do not differ in function or structure from the main stem or trunk, and therefore they are included under the general term of stem in contradistinction to leaves, &c. With regard to the length or height of stems, although in popular, and even in botanical, language we speak

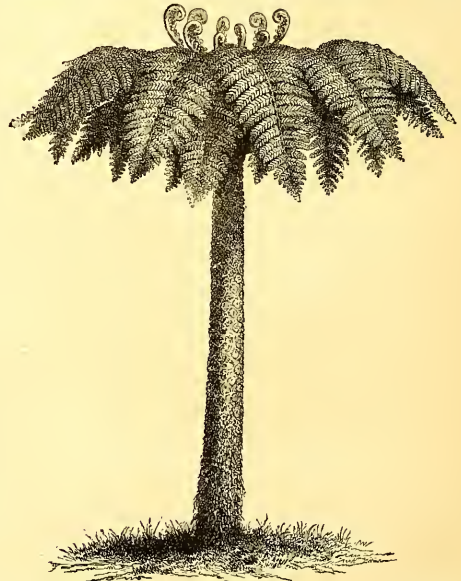


Fig. 118.—Simple (unbranched) stem of a Tree Fern (*Dicksonia antarctica*).

of stemless plants, this is not quite correct, because all plants have a stem or axis of some kind. Sometimes the leaves are crowded together close to the ground, as in the Primrose, but the part to which the leaves are attached is a stem, though short. Such apparently stemless plants are termed aculeous or stemless in descriptions, because in one word we are thus able to distinguish and separate them from the whole of those having an evident stem. This one word conveys a general idea of the plant under description. Stem productions bear leaves and flowers; roots under normal conditions do not. We have already enlarged upon this point in the paragraphs re-

lating to roots. Stems are either herbaceous or woody. The term herbaceous is not restricted to soft stems, but includes all stems of one season's duration, in contradistinction to those which are perennial and make distinct woody growth. What we call herbaceous perennials have a root-stock of more than one year's duration, but the flower-stems which they throw up each season are hard and woody in some species, though usually much less so than the more permanent stems and branches of trees and shrubs, even when quite young.

**DURATION OF STEMS.**—Popular classification of plants is based, to a great extent, upon the duration of the stem, whether annual (herbaceous) or perennial (woody), and we speak of herbs, shrubs, and trees. A tree is a woody plant with one stem only springing from the root, and the same species of plant may be both shrubby and arborescent, according to the conditions under which it is growing. Annual and



Fig. 119.—Simple stem of *Chameroops humilis*, typical of Palms.

biennial plants flower only once, those belonging to the latter category normally the second season, whilst the duration of the so-called annuals is from a few weeks to a few months. Besides these two classes of plants, there are other plants which flower only once, though they live several years or many years before they flower. Amongst the most remarkable of these we may note the American Aloe (*Agave americana*), Bamboos, and some Palms. The duration of the stem is here determined by the flowering period, after which it decays and dies. Plants which flower only once are termed monocarpic, literally fruiting only once; and plants which flower more than once are termed polycarpic. The duration of the stem is an important character, and the terms herbaceous and woody convey very distinct ideas to the mind; but it is a noteworthy fact that comparatively few families consist of either wholly woody or wholly herbaceous species. All the members of the Coniferae are woody plants, either trees or shrubs, and the Droseraceae is an

instance of a family in which all the species are herbaceous. As already mentioned, some stems of one season's duration are scarcely herbaceous in texture, and climate often determines the duration of stems. Some plants are shrubby in their warmer habitats, but in their colder habitats their stems are annual, because the frost cuts them to the ground every winter, and therefore they would rank amongst herbaceous plants. Examples of this kind are not wanting in cultivation, for both



Fig. 120.—Decumbent stem of *Veronica serpyllifolia*, with adventitious roots.

Fuchsias and Hydrangeas are successfully grown as herbaceous plants, though in their native countries and in the warmer parts of the kingdom they are shrubby. Something of the same kind happens to some woody plants, which are lofty trees in their warmer habitats, gradually dwindling down until they become prostrate shrubs in their boreal and upper altitudinal limits. Herbaceous plants have annual, biennial, or perennial roots, as we have already explained, but some perennials become annuals in a climate which kills the plant and not the seed. Biennials, if sown too early in the spring, or on poor soil, sometimes run to seed the same season, an occurrence of which every practical gardener has experience. Duration and size of stem is, then, greatly dependent on climate, though different plants in their natural climate are herbaceous and woody. Some trees, as some of the Poplars and Willows, grow very rapidly and attain their full size in 100 years or less, whilst the Yew is 1000 years or more before it reaches its prime.

**HABIT OF GROWTH OF STEMS.**—Stems are erect and unbranched, as in Tree Ferns (fig. 118) and most Palms (fig. 119), or erect and very much branched, as in the Oak, Beech, &c. Some stems are too weak and slender to support themselves erect, and are procumbent (lying flat on the ground), as in the Creeping Jenny, *Lysimachia nummularia*, or the flowering tips of the stems, rise as in *Veronica serpyllifolia* (fig. 120), and they are then called decumbent. Distinctive names are applied to some kinds of stem (branch). Thus naked, slender branches, like those of the Strawberry plant, which eventually bud and root, forming independent plants, are called "runners" (fig. 120a). The name "stolon" has been given to a kind



Fig. 120a.—Runners or Natural Layers of the Strawberry.

of runner which produces leaves before it roots, as the House-leeks, White Clover, &c.; and a "sucker" is a branch developed from an underground bud, sometimes lengthening horizontally for a considerable distance before appearing above ground. Other stems climb by means of tendrils, as the Grape Vine, Pea, &c., or by adventitious roots, as the Ivy. Others, again, twine round the stems of neighbouring plants, as the Scarlet Runner Bean and some of the Convolvulaceae. Some twiners turn in one direction and some in the other, but

into life. And yet, if we desire to make the most of imported bulbs in the open grounds of this country, we are compelled to plant them so late in the season that the flowers are, in many instances, out off by frost. If, then, the flowers themselves are subject to being destroyed by frost, what is to become of the tender and delicate germ? for it cannot even have any existence until after the flowers have faded in their natural way. June, July, and August is allowed to form the hottest portion of our year, and it is during that period that the different classes of bulbs, according to the dictates of Nature, liberate their germs in this country. Is it reasonable, then, to expect that an object so minute and delicate as the germ will be awakened into healthy life in the midst of cold and frost? The new bulb, or that which Nature intended to be the parent of the germ, is at this time, when the old bulb is blooming, fully developed, that is, it has within itself a young stem composed of rudimentary leaves and flowers. These were destined to be the above-ground portions of the plant next season; but whether they may succeed in blooming more or less favourably, or not at all, must depend on how they may be able to get through the winter. But where, at this time, is the germ—the origin of the plant that should bloom the year after next? In all probability the cold and frost prevented it from being liberated, or, if haply liberated, prevented it from vegetating; and thus the plant, in a very large proportion of cases, dies out the third year. Can we wonder, then, at the complaints that are made that only a portion of the thousands that annually arrive in this country bloom the first year; that they bloom in less proportion the second year; and that, by the third year, we see them no more? It would be contrary to the laws of Nature to expect anything else. We are favoured from time to time with the experience of those who have the means of growing Lilies under glass. But while we admire what they do, and can do, we should not overlook the wants of those who desire to grow Lilies in the open air; for their name is Legion; and they no doubt search the columns of THE GARDEN for guidance on the subject. It must, then, I think, be very reprehensible in any man to advance for such a purpose mere theoretical opinions without the shadow of a single experimental fact to rest upon. I am induced to say this because I have observed for some time that those who adversely point their remarks at me are among themselves entirely at variance with one another, differing in opinion as well as in theory, no two agreeing entirely on any one point, thus proving by the most undeniable evidence that, though this is the year 1878, the time has not yet come when the organic structure of the Lily is to be considered an understood and settled question.

I have enlarged so fully on the Lily during the first month of its existence that little is left to say about the second. All that can be said is that the parts increase in size, but increase so very slowly, though never dormant, that it is not until the end of the third month that we begin to be able to discern the germ or seed-bud, as I would now call it, by the naked eye. During this time the young stem, composed of rudimentary leaves and flowers within the new bulb also increases in size, pushing out the scales of the new bulb, which become more and more consolidated, increasing the size of the new bulb and adding considerably to its weight. This slow proportional increase in all the parts of the bulb goes on during the fourth and fifth months, and it is not until the sixth month that we can have the view of the interior, which is faithfully represented at p. 143, in the woodcut engraved from a photograph of the parts themselves, after having dissected a number of bulbs which were taken up for the purpose on Jan. 1, thus showing the seed-bud when it was just six months old. Hitherto I have written as if the new bulb liberated only one germ or seed-bud; but, as it is a known botanical fact that "plants, like animals, are organised and living beings," and that in the animal creation there are sometimes twins or two at a birth, and sometimes, but very rarely, triplets or three at a birth, so, in like manner, a Lily bulb will sometimes liberate two germs at a birth, and another will, but very rarely, liberate three germs at a birth. In such cases, as I have said in a former paper, these germs spring up close together, and as they grow they spread outwards, making room for their separate growths, and, when fully developed, they show two or three separate crowns, as the case may be, contained apparently within one bulb, as may be seen on inspecting a large number, but, when dissected, they expose two or three separate and distinct new bulbs, nourished, however, by only one set of roots. It is thus that these phenomena have given rise to very mistaken ideas on the subject, as they have often been described as central and side buds. With respect to these two but distinct classes of buds, the experimentalist knows where to find the central bud, even before it becomes visible to the naked eye, but no man can tell beforehand where a side or accessory bud may make its appearance. Central buds I call legitimate germs or seed-buds, side buds I simply call very young offsets, the former always flowering in the fullest manner within two

years from their birth, the latter taking two years or more before they can produce a single flower.

At p. 252, where I am glad to see M. Leichtlin's name, we are favoured with some remarks from him on the subject, but which, for want of space, as I suppose, they appear, to my great regret, to be somewhat ambiguous. At one place he says: "As to the majority, or perhaps as to all Lilies of the Old World, 'Dnedin's' theory seems to apply exactly, as far as the formation of the next year's bulb from side buds is concerned, but not in relation to the entire decay of the old bulb." M. Leichtlin admits, however, at the same time, that he has carried out few experiments by dissection. Had he done so to any reasonable extent, I think he would have been compelled to admit that my theory, as he calls it, is founded on the action of the legitimate central germs or seed-buds, and not at all on anything that can by any possibility be called side buds, as these, though they may, by cultivation, be made to propagate or multiply the species, have nothing whatever to do with the legitimate or hereditary accession of the old bulbs. At another place he says:—"As to *L. giganteum* and *cordifolium*, I must openly say that I have made no dissections in regard to them, but, from studying these plants in the shape of hundreds of bulbs, as far as growth is visible, it seem obvious to me that these species do not produce annually a new bulb from a side bud, but that the old bulb is enlarged annually by the scales growing larger through the growth accumulating from a central bud; and that during summer, when vegetation is active, another central bud is developed to grow next year." Now, the careful reader cannot but see that this, in a great measure, supports my doctrine. But, as I have stated in the columns of THE GARDEN on various occasions, it is utterly impossible for any man to form a correct opinion of the organization of the Lily by merely examining the outward or visible appearance of any bulb; and, in this case, M. Max Leichtlin frankly admits that he has gone no farther. M. Max Leichtlin closes his remarks by saying:—"I am of opinion that 'Amateur' (see p. 198) is right in his views, and that he will certainly be able to prove that the old bulb does not decay every year." I must confess that I am very greatly surprised at such a remark, coming, as it does, from M. Max Leichtlin, my opinion on that point being entirely in accord with that of Mr. George F. Wilson, when he says: (see p. 252) "If 'Amateur' can flower *L. giganteum* twice from the same bulb, he is a fortunate man." I will even venture a step further and say:—"If 'Amateur' will prove that he can flower any one of the Old World Lilies twice from the same bulb, he will prove himself to be a man of no ordinary standing among Lily growers."

At p. 227 "E. H. W." says, "The different ways of reproduction in Lilies are so marked that alone it would afford subject matter for endless remarks and controversy." This is entirely contrary to all my experience, for I have always observed a most interesting and singular similarity in the organisation of all the kinds coming under the denomination of the Lily proper. I therefore feel convinced that if "E. H. W." were to begin with the Old World Lilies, the greater part of which can be had in quantity and at comparatively little expense, and make careful experimental dissections at different times during the year, and then go on to the newer, the rarer, and the more expensive kinds, he would find that what he has now said on the subject would require to be entirely altered; for, as the matter stands at present, his remarks have not carried the subject a single step beyond "the theory which terminates in mere speculation," but rather adds to the "endless remarks and controversy," already going on with so little real benefit to the inquiring Lily grower.

I now come to a remark made by Mr. Groom, which I should like to have cleared up before we get wider apart. At p. 252 he says, "The only point to which I took exception was that of cutting down the flower-stems before the leaves had faded. 'Dnedin' will himself see that there is a wide difference between cutting the stems down in full and fresh bloom and waiting until ten days after the bloom has fallen to perform that operation." As I believe that there is here some misconception, I would take it very kind if Mr. Groom would point out to me the page and passage which has led him to make this remark. I have said somewhere that I have cut down Lilies in full bloom without affecting the growth of the new bulb; and I have also said that, as soon as the bloom is perfected and decaying in the natural way, the new bulb may be transplanted with perfect safety, as at that time it is pushing down its own roots, which are quite sufficient for its nourishment without any aid being required from the old leaves or stems. Mr. Groom will see that I have never professed to illustrate the distinctions that exist between "bulbs of all kinds" and the Lily, but have endeavoured to explain the nature and organisation of the Lily bulb itself, and, as I think, so clearly, as may enable Mr. Groom and other able horticulturists to draw the true line of distinction themselves. This much I know, that great stress has always been laid upon the fact that the foliage

of other bulbous roots should be allowed to grow until it decays in a natural way. But the Lily, I venture to say, is an exception to this rule, though not in general considered so. DUNEDIN.

### BUSH ROSES.

THESE are, as a rule, not nearly so effective as they might be. The usual course is to prune and simply to allow them afterwards to grow in what form they may choose to take. On their own roots, in genial soil, they yearly acquire strength such as necessitates, at the time of annual pruning, the specimens being allowed to get to a larger size, especially in height, the result of which is that the strong shoots, from which the greater portion of the flowers are produced, grow to a considerable height, at which point most of the blooms are borne, leaving the plants comparatively thin and bare at the base. Although it is anything but desirable to train Roses in a way that gives any approach to formality, still such an arrangement of the shoots may with advantage be employed as will keep them well furnished with a fair proportion of vigorous growth and full-sized flowers down to the ground, at which point in-



A Bush Rose.

dividual plants have the greatest breadth, gradually tapering up to the top, as in the accompanying illustration of a well-managed bush Rose, wherein, as will be seen, the form is devoid of undue stiffness, yet such as to produce an effect not possible where the plants are left to themselves. To produce the effect exemplified in the illustration it is necessary to have strong, vigorous plants established for years on their own roots; at the time of pruning, or soon after growth has commenced, a portion of the strongest shoots should be bent down and tied out horizontally to a few sticks stout enough to keep them in position allowing the remaining growths, shortened back to different lengths, to assume the position such as will lay the groundwork for the specimen which later on will be clothed with foliage and flowers. The central branches, according to the more or less strong-growing erect habit of the variety, may require a few sticks to hold them in their places, but the whole of such supports will be effectually hid by the foliage, and no trim outline should be attempted. The illustration is not an ideal conception, but simply a representation of a well-managed vigorous bush Rose. It will be easily understood that it is not desirable to attempt the training of Roses in this way in positions of all descriptions, or where they can much more appropriately be left to assume a wild form; but for beds in the immediate vicinity of a mansion in the more highly dressed portion of the grounds, where they will be in keeping with the surroundings, they at once produce an effect in every way

unexceptionable. By the side of a broad walk either straight or winding, where something is wanted to relieve a too even surface, rows of Roses at intervals more or less far apart, so trained, are infinitely superior to the naked-stemmed, mop-headed standards, so generally used in such situations; in addition to their shape, satisfying the eye in a way not possible with the standards, it is much easier to get a number of bushes sufficiently equal in their growth to keep up the requisite uniformity in the whole than it is with standards, which, when placed singly in rows, are so provokingly subject to a portion growing freely, and the others very little. T. BAINES.

### CUTTING DOWN LILIES IN FULL BLOOM.

I REGRET that "Dunedin" should have misunderstood my remarks about cutting down Lilies. I said nothing about *Lilium candidum*, which, though a Lily, has no analogy whatever, as regards treatment and growth, with many other Lilies. The only safe and sure way to speedily raise good, large, sound, white Lily bulbs is to cut away the flower-stems as soon as they appear aboveground, every inch of growth weakening the bulb; and they should always be transplanted, if they are to be removed at all, the very moment the last flower has faded, cutting away the old stem as low as possible. I had supposed this was so old and well known a custom that I did not allude to it. I wrote: "After thirty years' experience with thousands of bulbs of *L. speciosum* and its varieties." It does no more injury to cut away the flower-stem of *L. candidum* when in full bloom than it does to cut off the flower-spike of a Hyacinth, the flower-stem of a Gladiolus, the flowering-shoot of an Amaryllis, or the bloom of the Guernsey Lily. The leaves are all left, and these are all that are needed to produce a sound and perfect bulb. If this were not so, it would have been discovered long ago. With the Lilies, however, that have no leaves, only such as grow upon the flower-stem, it is quite another and totally different thing. Nature points this out. If the flower-stem of *L. giganteum* be cut away as soon as it makes its appearance, the leaves and bulb will increase in size; but if allowed to grow and bloom it so absorbs the nutriment of both, that nothing but weak offsets are the result. It is the same with the Century plant. When the Hyacinth growers of Haarlem tell us the bulbs are just as good if the foliage be all cut off, or the Gladiolus cultivators of France that cutting away all the leaves does no harm, or the Amaryllid growers destroy all the leaves, and the Guernsey Lily cultivators say the bulbs will flower just as well without making any foliage, I shall believe that cutting down such Lilies as make no root or bulb leaves does no harm. As to *Lilium candidum*, when the flower-stem is cut away the bulb is really greatly benefited, as "Dunedin's" experiment proved, just as removing the flowers or buds from any plant increases its growth and vigour. The leaves all remain, and it is these that nourish and sustain the root. If "Dunedin's" practice be correct with Lilies which have no bulb leaves, then we must have new rules for bulb culture, and the old custom of securing a vigorous, strong, and healthy foliage must be discarded. Boston. C. M. HOVER.

**Santolina Incana.**—This is one of the most useful of plants for forming edgings or divisional lines, and, being of a whitish-grey tint, it may be employed in many varying combinations. Its habit of growth is neat and compact, and, being hardy, it especially commends itself to those who have but a limited amount of glass structures. Cuttings of it put in under hand-glasses or lights in September make excellent little bushy plants for furnishing beds in spring. By having a good supply of this, and such plants as *Violas*, *Polemonium coeruleum*, *Golden Thyme*, and similar plants, bedding-out, as it is called, becomes a more reasonable affair than when all the subjects employed are tender.—J. G.

### NOTES AND QUESTIONS ON THE FLOWER GARDEN.

**Tree Pæonies and Frost.**—By way of answer to "B. S.," Rutlandshire (see p. 323), who is desirous of ascertaining the effect of the recent frost on Pæonies, I may state that here they suffered so severely that I don't think they will recover this season. A few Roses that were pruned early were also cut down, and the leaves of Violets were scathed, as if scalded. Anemones, which were in full bloom, had the latter greatly discoloured, but they are again in full beauty. Frost does not appear to affect the herbaceous Pæonies, and though we had from 7° to 10° for several nights, with blinding snow-storms, herbaceous plants generally withstood the storm bravely.—N. FULLER, *Dawnton Castle, Ludlow.*

**Aquilegia viridiflora.**—As a rule green flowers are not worth growing, but this Columbine is an exception; the sage green of the flower and delicate tint of the leaf form a striking contrast.—A. K., *Eastcott Cottage, Pinner.*

mere appearance sake, as if for the next fortnight it lays sufficiently open to permit sun and air to penetrate it, it will be in a much better condition for planting than it otherwise would be. Continue gradually to harden off bedding plants of all sorts by transferring them from the close, warm atmosphere of the propagation house to cold pits and frames, and afterwards to sheltered situations in the open air, where they can have the protection of mats or other materials when danger from frost is apprehended. Annuals which may have been sown some weeks since in heat, will now be fit to prick out into pans, boxes, or frames. Keep them for some time somewhat close until they become again established, when they may become gradually hardened to full exposure to the open air, when advantage should be taken of the first opportunity after a good fall of rain to plant them out where they are intended to flower. Seeds may also be sown now, upon a shady border in the open air, of such plants as the Sweet William, Wallflowers, Anemones, Pansies, Polyanthuses, and Alpine Auriculas; or such seeds may be sown in pans or pots under glass, and planted out when large enough to be handled. Keep beds of Carnations, Ranunculuses, or Tulips free from weeds and decaying leaves, and carefully support the flower-stems, &c., by stakes whenever this may be found necessary. Patches, or beds, of the various kinds of Violets should now be broken up, and strong well-rooted runners should be selected; these should be pricked out into light sandy soil on a shaded border, and should be well supplied with water until they are fairly established. It is always advisable to form fresh beds of these plants every year, as young plants are always found to bloom more profusely than old ones, and they also furnish much finer flowers. Amongst the finest of these sweetly-scented flowers is the Neapolitan variety,

the open air, or the plants turned out of the pots and planted in the soil permanently. In some cases it may be advisable to re-pot a few, and to keep them growing for conservatory decoration, or for planting in the outdoor Fernery, after their fronds have been formed indoors.

**Wall Climbers.**—It frequently happens that flowering plants, such as Roses, Clematises, or others that are employed for clothing walls, are indifferently trained at the commencement, by which inattention they very soon get nearly or quite bare at the bottom, making the best growth and producing almost all their flowers at the top of the wall, however high that may be. In growing fruit trees on walls the skilful operator is careful to train a sufficient number of strong branches low down in a horizontal position so as to balance the growth and to keep the bottom of the wall as well furnished as the middle and top. If the same care were taken with flowering plants when employed for the purpose of covering walls the subsequent effect would be much more satisfactory. Where large plants have been allowed to run up and become naked at the bottom there is no resource but either partially or wholly heading them down. Those consisting of a few strong and the remainder weaker branches should have the strong ones headed down near the base of the plants, which will cause them to break out, and the shoots they produce may be arranged so as to clothe the bottom of the wall, retaining the weaker growths, which will obviate the bare appearance that results from a total cutting back. Over the walls of buildings or on those of a considerable height a very good effect may be produced by planting Pyracantha, Cotoneaster, Pyrus japonica, and other plants of a similar character, in order to clothe the bottom of the wall with Clematises, Honeysuckles, Jasmines, Passifloras, or Wisterias to train over the top. Where any alteration is required in



Oak Fence (Worcestershire).

although it seldom succeeds well in the open air in this country, but requires the assistance and protection of a frame; where, to induce it to produce blooms early in the spring, it should be planted near the glass, and the temperature of the frame should be slightly increased by means of fermenting materials placed around it. The double and single Russian kinds are very useful and quite hardy, as are also the varieties known as the King and the Queen of Violets. The former is a fine, large, double, dark blue sort, and the latter, with flowers equally large and double, is in colour nearly pure white; while the Czar is a fine, hardy, robust sort, producing a profusion of single blooms at an earlier period than any of the other sorts, and is, perhaps, slightly less sweet-scented than some of them. There are, also, in addition to the sorts already mentioned, several other valuable varieties, including some novelties, which are highly recommended. The present is also a suitable time to cut and regulate the margins or Grass verges of walks and clumps, &c. This operation should be carefully performed with the edging iron, with the assistance of garden line and pegs, and this should be done every season, or at least once during every two years, although a deep raw edging to a walk is exceedingly objectionable, yet the level of the sides of the walk, so as to admit of the Grass shears being applied, and these should be used on every occasion when the Grass is mowed.

**Hardy Ferns.**—Remove any old leaves that may be on deciduous kinds out-of-doors, and loosen the surface soil about them, making it at the same time clean and neat. Roots of these may yet be safely transplanted in shady nooks. Hardy Ferns wintered in frames and greenhouses should have their old fronds cut away, the mould on the surface of the pots cleared off, and the pots themselves either plunged in the Fernery in

wall coverings the present will be found a good time to attend to it. There is one cause through which wall plants, especially Roses, frequently suffer to such an extent as to render it impossible for them to have a pleasing appearance—this is through such insects as green fly or red spider being allowed to increase upon them unchecked. From the warth which the wall affords, these pests generally appear upon such plants as they can live upon earlier than on those growing in an open position, and as rain has but a poor chance of effecting the removal of the insects, on account of the shelter afforded by the wall, the plants are almost wholly dependent upon the use of the syringe or garden engine for their riddance from these marauders. A plentiful supply of clean water alone, if applied sufficiently early and continuously as required, will keep the insects in check, but if a good look-out be kept so as to detect them when they first make their appearance in spring, and a thorough syringing be given with Quassia or Tobacco water, it will generally be found an effectual preventive. Climbing plants that thus receive sufficient attention thrive and flower very differently from those that exist under a state of neglect.

#### Kitchen Garden.

A sowing of French Beans may now be made on a warm border. It is not, however, advisable to put in many until the beginning of May, as they are liable to be injured by the weather; neither is it advisable to sow at all until May where the land is of a cold, retentive nature; but in such localities, when this vegetable is particularly desired early, a fortnight may be gained by at once planting a couple of Beans in 4½-in. pots, and keeping them under glass until the third week in May, after which there will be little danger from frost. At this early sowing do not cover the seed more than 1 in., for if sown deeply, and the weather becomes

very wet, it will rot. The Paris Red Flageolet is one of the best of dwarf Beans, being good in quality and a heavy cropper. A few Runner Beans may also now be sown in a dry situation, but do not at present risk too many. They are generally grown in rows 6 ft. apart on tall sticks, but it is not necessary that they should have sticks of great length, unless where these can be procured at little or no cost. Ordinary Pea-sticks, say 4 ft. in height, will answer very well, pinching off the points of the shoots as soon as they get to the top of the support, and in this case the rows do not need to be more than 4 ft. apart. They will, however, do well without any sticks. If the rows be planted 3 ft. apart, the seed 9 in. asunder in the rows, and they are simply allowed to lay on the ground, they keep breaking out and flowering all through the season, and the quantity of Beans which they produce would not be credited by those who have not seen them grown in this way. A few more rows of Turnips may now be sown, and for the general crop none are better than the Red-topped American Stone, already recommended for the earliest sowing. As with most other vegetables, it is much the best practice to grow Turnips in rows. Sowing in this way takes a little more time, but any loss in this is saved many times over by the facilities given for the use of the hoe in place of hand-weeding, which must in a great measure be resorted to where such crops are sown broadcast. Another sowing of the different sorts of Broccoli before advised should now be made; also one of Cauliflower, both Summer and Veitch's Autumn Giant. More Lettuces should likewise be sown, and they are to be sown now, and all through summer, these should be sown in rows where they are to be grown. The ground for them should be well manured; the rows should be 15 in. apart, the seeds put in thin, and, when large enough to handle, they should be thinned out to 1 ft. or 15 in. apart. Another sowing of Broad Beans may be made where these are required late, but such as are put in now will not bear so well as those sown earlier. Pot Marjoram, Sweet Marjoram, Thyme, and Sage should now be sown on ground previously well prepared for them by fine raking, as owing to the seeds being so small they will not be lost if the surface was rough; after raking, smooth the surface with the back of the spade, then sow the seeds and cover lightly with sifted soil. A little Beet may now be sown for an early supply, but do not yet sow the principal crop, as it is liable to run to seed if sown early. Sow in ridges 15 in. apart; where the soil is shallow it may be drawn into ridges about 6 in. high, and on these sow the seed, four or six together, in shallow holes 1 ft. apart, covering them not more than 3 in. deep. A little more Cabbage seed should also be sown, using on this quicker than the small-growing Cooconut, a kind which comes to maturity quicker than the large varieties. These will form good heads for use all through the autumn, planted on ground on which the first Potatoes and other early crops have been grown. One of the principal things to be observed in a well-managed kitchen garden is to always have in readiness something to plant in the places of such crops as have just been cleared off. Keep the hoe going wherever it can be used when the weather is dry. The ground occupied by Gooseberries, Currants, and Raspberries should be well hoed before weeds attain any considerable size.

#### Extracts from my Diary.

April 29.—Sowing two rows each of Carters' Champion and Painted Lady Runner Beans; also Mustard and Cress. Putting in cuttings of Double White Primulas. Planting a three-light frame with Vegetable Marrows to be ready in early. Levelling down Celery trenches and getting them ready for Peas. Forking amongst Potatoes and getting them earthed up where required. Giving all the newly-planted Cauliflowers and Lettuces plants a good watering; also all newly-planted Fruit trees and shrubs.

April 30.—Sowing Canadian Wonder French Beans. Potting off Coleus and Alternantheras. Planting out Carters' Giant White Coo and All the Year Round Lettuces, and thinning out those left in the seed bed to 1 ft. apart. Digging out Celery trenches and getting manure into them. Looking over all Strawberries that are fairly set, picking off all weak and late blossoms, and giving them weak guano water three times a week. Looking over Peach houses, tying in all young shoots, and syringing them freely night and morning.

May 1.—Sowing Veitch's Autumn Self-protecting Broccoli. Pricking off Celery, Stocks, Asters, and Violas. Thinning out and tying down young shoots in Vineries and thinning out the Grapes where required. Clearing off Broccoli stumps. Manuring the ground and getting it dug up. Thinning out and hoeing amongst Turnips and tying up Lettuces to blanch.

May 2.—Sowing Balsams, Cinerarias, Calceolarias, and Primulas. Transplanting white Spanish Onions brought forward in pots. Washing Roses on walls with Quassa-chip water, in order to kill green fly. Removing the coverings off Apricot trees, and thinning the fruit where set too thickly. Spawning and moulding over a Mushroom bed under a north wall. Cutting out all Rhubarb flower-stalks as fast as they appear. Renovating all linings round frames.

May 3.—Sowing Spinach, Cardoons, Early Snowball Turnips, and a little Endive. Potting Balsams and Caladiums. Looking over Cucumbers and Melons, stopping them, picking off all false blossoms, and earthing them a little where required. Getting out drills and planting early-sown Leeks. Thinning out Parsnips, and hoeing the ground amongst them.

May 4.—Sowing Asters, Stocks, Mignonette, and other annuals. Looking over Peach trees on open walls, disbudbing them, and washing them with Quassa-chip water, in order to kill green fly. Mowing and

cleaning up pleasure grounds, and rolling down all gravel and turf that require it. Watering such Pines as require it; also inside Vine borders. Hoeing amongst all growing crops. Fruit in use for dessert: Pines, Apples, and Strawberries. W. G. P.

Dorset.

#### RUSTIC FENCES.

WANDERING, some years ago, in the neighbourhood of Worcester, I was shown what, in the absence of any other distinctive name, I shall call a "Saxon" fence. As the annexed illustration will show, it is an ordinary open paling, but constructed of grotesque pieces of split wood fastened in a wilfully conspicuous manner with wooden pegs. Its picturesque appearance and thorough fitness of purpose prove that some, at least, of our forefathers possessed a keen sense of the beautiful. Let us examine this fence in detail. In the first place the materials are found on every estate, and generally when so found are consigned to the firewood heap, from the supposed impossibility of using them for any other useful purpose. But as this fence consists of split wood (the more gnarled and contorted the better) it can be made, to a great extent, from such refuse as old hollow trunks and twisted boughs, of no value for timber. With these some fairly straight wood should be used, or the fence will possess too much Japanese grotesqueness, and will lose one great element of its beauty—fitness. Although refuse wood is used, it should consist of hard-wood timber and fairly sound, or by the time our humid climate has beautified it with Moss and Lichens it will need renewal. The pins or trenails must, of course, be made of good heart wood, as, being so slight, they would soon decay if made of sappy material. One great advantage of an open fence consists in its suitability for climbing plants, whose beauty on a close fence is partly lost, as one does not get those side views of leaves and sprays which an open fence affords; and the distance, in this case, is able to lend enchantment to the view. In a close fence all is seen at once, and that all—foreground. Another advantage in the use of such unshaped wood is the infinite variety which it affords in place of the wearisome monotony of the ordinary open fence, where each opening and pale are counterparts of the others. In the Saxon fence, on the contrary, no one part is a repetition of any other; and, from the facilities which it gives for varying its height without incongruity, the sky line can be made as varied as it is necessary, and that is surely another greatly neglected element of beauty in modern "mechanical" ornament. For Clematis or other screens the construction of a similar skeleton or framework would afford a good opportunity for displaying individual ability and taste; and if varieties of Ivy were allowed to climb partly up it, such screens would remain objects of beauty all the year round, as I have found Ivy to flourish even when covered in summer by *Convulvulus* (*Calystegia sepium*). A few sprays of the Ivy might be allowed to climb to the top and bloom, but in that case the beautiful shape and venation of the leaves would be lost. In or near towns rustic work is a mistake, as Lichens and Moss will not grow while soil finds too ready a lodgment on every inequality. LONDON STONE.

[For a beautiful photograph, from which the annexed illustration of this fence was prepared, we are indebted to Mr. Richard Smith, of Worcester.]

**Aucuba Berries.**—The introduction of the male varieties, by which we have been enabled to fertilise the flowers of our large out-of-door bushes, has not been attended with such good results from a decorative point of view as was anticipated, for, unlike the Holly and other showy berry-bearing plants, until the following spring, when the young foliage soon overgrows them. In order to have them in really good condition at Christmas they must be introduced to a glass structure in autumn and treated similar to *So-anum* *capitatum*.—JAMES GROOM, *Hendon*.

**Seed Variations of *Phormium tenax atropurpureum*.**—The dark purple form of the New Zealand Flax having seeded freely in the nursery of Messrs. Thibaut & Ketteler at Secaucus, last autumn, much curiosity was felt as to whether the peculiar deep colouring of the parent would reproduce itself in the seedlings. As yet this is apparently not the case, as the young plants which have come up very freely are either completely green or cream-yellow, which, as stated in last week's *Gazette*, cannot live. Whether the green seedlings will assume the deep purple tint of their parent at a later period of their existence remains to be seen.—W. E. G.

## ANSWERS TO CORRESPONDENTS.

**Planting Irises.**—When is the best time to plant Irises, bulbous as well as rhizomatous?—B. [Bulbous Irises should be all in the ground by October; September is even preferable for some kinds. The evergreen Irises you can move at almost any time; but early in autumn is best for the vigorous growing varieties of the Germanica type. I. Kämpferi, cristata, and others of similar character should be planted soon after they have done flowering so that they may get well established before winter.—A. P.]

**Diseased Grapes.**—In my Vineyard, I have, among others, one Vine of West's St. Peter's that for two years before beginning to colour has had most of the berries covered with round, dark, nearly black spots, which, to some extent, disappear when the Grapes colour, but seem to leave the skin so tender that half the Grapes are cracked. As none of the other Vines have been similarly affected, I am puzzled to find the reason, and beg to trouble you on the subject.—J. D. [The probability is that the spots complained about are caused by the atmosphere being overcharged with moisture. Reduce this just before the Grapes begin to colour, and by free ventilation keep the atmosphere buoyant and sweet; the spots will not then trouble you, and the Grapes will colour all the better.—W. W.]

**Destroying Woodlice.**—Can anyone recommend any effectual means of destroying woodlice? My Orchard house is infested with them.—F. B. [Many ways of destroying woodlice are given in Quid's "Garden Receipts," and amongst them boiling water poured into the crevices into which they retire during the daytime is said to be a good plan. Care must, however, be taken not to let it injure the plants. Trapping with eliced Potatoes might be tried.]

**Evergreen Hedge.**—What is the best kind of plant of which to make a hedge for the purpose of hiding a roof? I should prefer it to be evergreen, and it would have to be ultimately from 10 ft. to 14 ft. in height. The soil is strong and well drained, with a gentle slope from north to south, the line of the proposed hedge being the same. I have thought of Holly and Yew, and was in doubt between them; the former, as it sheds its leaves at times, is littery, and the latter, I am told, is slow of growth. A friend recommends Thuja Lobbi.—B. [I have tried Cupressus Lawsoniana for making an evergreen hedge in a kitchen garden, and have found it to be excellent for that purpose. It grows quickly and bears clipping and pruning well, and when in flower it is highly ornamental. Thuja Lobbi, I have no doubt, would also answer, but it does not grow so fast as the Lawson Cypress.—W. T.]

**Landscape Gardening.**—You would do me a favour if you would kindly tell me what would be the necessary instructions to enable a youth of eighteen years to study landscape gardening. He has served four years under a practical gardener, but he wishes also to have a knowledge of landscape work.—J. H. [He ought to work at ground-work as a contractor, and also under a good landscape gardener, and be taught also to travel a good deal abroad as well as at home if he wishes to become a good landscape gardener. See chapter on Park Monceau in new edition of the "Parks and Gardens of Paris" (Macmillan), where what a landscape gardener ought to know is outlined.]

**Worms on Lawns.**—How much salt should be sown per acre on lawns to keep down worms, of course so as not to injure the Grass?—J. H. [The usual quantity of salt for a dressing on lawns to keep down worms is from 5 to 7 bushels per acre; but in any case salt is a dangerous remedy, and liable to do more injury than the evil which it is intended to cure unless very cautiously applied. When put on in a dry state it is liable to be washed into low-lying portions by a sudden downpour of rain, and kills any vegetation with which it comes in contact; it is, therefore, safer to apply the minimum quantity in a liquid state, and to repeat the application after a week, when it will prove a stimulant to the Grass or any crop to which it may be applied.—J. G.]

**Mesembryanthemum cordifolium and Sparrows.**—Last year I edged two beds with this plant, and was greatly troubled with sparrows eating off the leaves. They completely stripped the plants, for which I was obliged to substitute others. My first crop of Beet was sown in the same way; they eat off the plants as soon as they came up. I should like to have the advice of your correspondent on this subject. Is there any way by which I can protect these two useful and ornamental plants?—C. H. Kircrain, Colchester Park. [The only safe mode of saving the Mesembryanthemum from sparrows would be to stretch a small piece of netting over the edging till the plants acquired size and strength. After sparrows have brought up their young they go in flocks to the beds to dig for grain, and are not so troublesome in gardens as during the month of May and June. The net could then be removed. Findings of white-worms stretched over the edgings might be tried, as these, I trust, keep sparrows off early Peas, and they do not like scot if spread thinly over the foliage.—W. T.]

**Romneya Contleri from Seed.**—Is this Poppywort difficult to propagate from seed? I got packets of seeds of it from two different seedmen last year, and they did not come up; and this year I have sowed in heat, and no sign of them. I saw it in flower at Glasnevin, out-of-doors, in last January.—F. O. [Romneya Contleri is not difficult to raise from seeds; but, like those of so many other American perennials, the seeds are slow and irregular in their germination. Ordinary greenhouse temperature is sufficient, in which a few of the seeds will start after a month's rest or upwards, and successive crops will appear for at least a year subsequently. More than ordinary care must be taken in transplanting, the seedlings being tap-rooted. If only a few plants are wanted, the best plan is to sow very thinly in thumb pots, and, as soon as a few seedlings have attained the height of 1 in. or so, the ball of soil should be carefully divided, so that each plant can be separately potted without

disturbance of the delicate root fibres; or the method pursued with Mignonette may be followed. All the seedlings may be thinned out but one, and that may be allowed to grow till the pot is full of roots and a shift is necessary.—W. T.]

**Wellingtonia Cones.**—The illustration of the cone of the Wellingtonia (see p. 333) is a very beautiful one. We have a tree of it here bearing a large number of cones. Is this a common occurrence?—CAMBRIDGE.

**Insects.**—W. G. Your beetle is Olorhynchus caelestis, an insect well known for its destructive properties.—Grab in Orchard House.—T. C. [It is impossible to say what is your best to do unless one knows the particular grub in question; kindly send us a specimen.]

**Procuring Argentine Asparagus.**—Will you kindly inform me where I can obtain some Asparagus (Argenteus) seed, as mentioned in p. 371, of April 29?—J. E. P. [From M. Godfrey Lebeuf, Argenteuil, Seine-et-Oise, France.]

**Names of Plants.**—I send you a dried specimen of a tree, the name of which I should like to know. I took it from a tree in the streets of Niamos from 20 ft. to 40 ft. high, of which there were many. It was called Alishier, which, I believe, is the French for Crataegus. I never recollect having seen the tree before, and was struck by its appearance, although the leaves were not fully expanded on the 6th inst, when I collected it.—DALBERTIE. [It is the Alishier de Fontainebleau of Spach, and the Aria latifolia of French gardeners.]—J. G. [We cannot undertake to name plants without their flowers.]

## QUESTIONS.

**Flower Tubes.**—Can anyone tell me where the tubes with elastic mouths for holding flowers in water are to be procured?—T. S.

**Tarred Fruit Trees.**—I have got some wall fruit trees which have by some means become smeared by pitch or tar. Will some of your readers kindly help me out of my difficulty by informing me how to clean them thoroughly?—ALPHA.

**Out-Door Camellias.**—I should be glad to know what Camellias are suitable for growing out-of-doors? what is the best time for planting them out? what soil had I better give them? and what aspect?—RAMALING, Surrey.

**Myrtles.**—How can I get Myrtles to flower? I have several large flowers, and whether I keep them in a greenhouse, or put them out-of-doors all summer, it seems quite the same; they produce no flowers, though the foliage seems quite healthy and green.—H. K. M., Argyleshire.

**Grass Cover.**—We want a rack-growing Grass, to live under trees, as covert for pheasants. I have seen such growing in the south of England, where it had the local name of Strawberry Grass. It was very rough at the edges; so much so, that it would cut the hand if drawn through it rapidly. What was this? Can any of your correspondents say?—T. W.

**Hybrid Crotons.**—Will some of your readers kindly give me a hint as to the quickest mode of flowering Crotons? I wish especially to flower C. volutum; having three or four plants of it, I would sacrifice one to the experiment. I was thinking of starving the plant for about a couple of months in a small pot, and then placing it in bottom-heat (tan), but would be glad of some information on the subject. I have successfully crossed C. majesticum with C. Wiesmanni, and have one very fine young plant, now about 10 in. high, promising well both as regards habit and colour. I have also crossed C. Wiesmanni with C. interruptum; the seedlings in this case are only about a month old, but from what I can see at present I am sure I am going to have some good ones.—E. M.

## TREE CARNATIONS.

ARE these only suitable for the greenhouse, or are they hardy enough for open ground culture?—P. T. [To have tree Carnations in full perfection they should be treated as greenhouse plants, and may be had in flower the whole year round. We have some of Miss Jolliffe at present in 6-in. or 7-in. pots, with fifty blooms on each. These are plants that were planted out last spring in mixed borders, and lifted early last winter; the remainder have continued to flower the whole season. In mild localities or warm sheltered positions I see no reason why these beautiful flowers should not prove as hardy as many of the plants used for border decoration, as their continuous habit of flowering renders them very serviceable after the ordinary Carnations are over.—J. G.]

"F. A. J." requests information (see p. 376) as to the treatment of Tree Carnations, and as many are interested in their culture besides your correspondent a few remarks may be useful. First, let us speak of the propagation of the plants. "S" recommends layering them in June or July; that is one way, but not by any means the best way. If good sized plants be wanted to flower in winter, they must be propagated from cuttings in February or March, and for succession in April and May. Layering is a slow and tedious process; I take the small size growths, and place ten or a dozen of them in a 5-in. pot in fine soil. They are put in just as you would Verbena, and they strike roots in about eight days in a propagating house, where the temperature is about 55° at night; but to make certain of their doing well the cutting pots should be plunged in a gentle bottom-heat, and if a hand-light be not available to place over the pots, a square of glass will answer the purpose. When the cuttings have formed roots I pot them off into thumb-pots, replacing them in heat,

which should not be higher than 55° at night, and a lower temperature would answer equally well. They would even do in a cold frame, only growth would not be so rapid. When the plants have grown 6 in. or 9 in. in height they should be stopped, and attention must be paid to re-potting them as soon as the small pots just named are full of roots. I need not say that they will not do well if they suffer from any cause, such as inattention to watering, careless potting, or allowing them to become pot-bound. I find the best compost to be turfy loam four parts, one part rotten manure, and one part leaf-mould, with some sand added, unless the loam be of a sandy character. Tree Carnations delight in a porous soil, and I find that they are fond of some pounded charcoal. I keep them under glass until May or even the beginning of June if the weather be cold. By the end of July they will have grown so much that they may be shifted into their blooming pots. The strongest growers will require 8-in. or 9-in. pots; those of a weaker constitution about 7-in. ones. To each plant must be placed a stout stick, to which the main stems must be tied closely, and also the side growths; but the latter must not be drawn up too closely. The pots may either be plunged or not. If plunged in Cocoa-nut fibre refuse, so much water will not be required, but they do equally well if the pots are not plunged. Many of the earliest-rooted plants will produce flowers before Christmas; others will come on in rapid succession. Some will open their flowers in an ordinary greenhouse, but I find that they do best in a temperature of about 50° at night, with a rather dry atmosphere. Tree Carnations are sometimes attacked by green fly, and if under glass, the best plan is to fumigate until this pest is destroyed. If the plants be out-of-doors, I dust with Scotch snuff or Tobacco powder. The shoots may also be dipped in soft, soapy water sufficiently strong to kill the flies without injuring the growths. I never layer Tree Carnations; I would as soon think of layering Zonal Pelargoniums. The only ones that I have found difficult to increase by means of cuttings have been the Prince of Orange and Ascot Yellow Picoetes; these two I propagate both ways, as one seldom has too many of them, especially the latter. For all ordinary requirements it is not necessary to grow a large number of varieties, and the most useful are those that have the following points, viz., substance of petal, a stout calyx that does not split, decided colours in the flowers, and a floriferous habit. The best white flowers are Guelder Rose, La Belle, and AVALANCHA. Empress of Germany is all white, except a few delicate stripes of pale rose; it is a grand flower. Rose-coloured flowers are nearly as useful as white. The best are Annie Williams, Miss Jolliffe, King of the Belgians, and Rose Perfection. Scarlet and crimson flowers of the highest merit are to be found in *Alégitère* (a new sort, dwarf in habit, and most floriferous), Prossrino, Grenadier, and Scarlet Desfance.

J. DOUGLAS.

#### OPENING OF THE GARDENS AT KEW.

THERE is an old Scotch proverb which says, "Aim at a silk gown, and ye'll maybe get a sleeve," that applies in the present instance to the Kew question. The agitation to procure the opening of Kew gates at an earlier hour than heretofore is likely to result in gardeners and others, at least, being admitted at any hour of the day. I see the director has intimated through a contemporary—an intimation which is insufficient for the general public—that by applying at the curator's office they will be admitted, and nothing is said about the certificate of respectability that was to be obtained from "two respectable householders," an idea which must surely have been suggested by a parish relieving officer or some such functionary about Kew, and which has been a source of considerable mortification to the craft. It is creditable to Sir Joseph Hooker that it was always his "wish and desire that horticulturists should have entire facility of admission" to the gardens morning and afterwards, and the question now is, Who frustrated his good intentions? Was it any of his subordinates? If so, the sooner the matter is explained the better. It is simply disgraceful to think of the multitudes that have had to turn their backs on Kew gates, or "hang about Kew Green" till the gardens were opened, while it was all the time the "wish and desire" of the director that they should have every facility of admission afforded them. Through some error on the part of the visitors, or their "applying at the wrong gate," they did not enjoy the advantage of the privilege, we are now told, but we know a great deal better than that. When, pray, was such a rule ever publicly intimated? The admission now made by the director is a damaging one. Here are a great body of horticulturists and others clamouring for a privilege which, it is now admitted, should never have been denied them, and which it was the express wish of the director they should fully enjoy. Who, let us ask, is to blame for defeating the intentions of Sir J. Hooker? J. S.

— Sir J. Hooker at last makes it clear in a contemporary that gardeners may obtain admission to the gardens at Kew in the forenoon.

"The access to all persons visiting the gardens for study and improvement of whatever kind—whether botanists, horticulturists, artists, foreigners, or persons from a distance, in pursuit of any special inquiry or information—will be put upon a systematic footing. It has always been my wish and desire that such persons should have entire facility of admission in the morning, but it is possible that, through application at the wrong gates, or other misapprehension in some cases, such admission may not have been obtained. I think it may be useful, therefore, to state that all such visitors should call at the curator's office, and, after signing their names and stating the object of their visit in a book kept for the purpose, should enter the gardens by the office gate." This is a little better than the almost absolute exclusiveness that has hitherto been the rule at Kew. But it is not what the public have a right to expect. However, even for the above many of the horticultural fraternity will be grateful.

— The agitation in favour of admitting the public to Kew Gardens during the whole of the day, instead of the afternoon only, is daily gaining strength. The chief, and we might almost say the only argument advanced by the opponents of the proposed change is, that it would interfere with the studies of botanists. There can be no question as to the value and utility of botanical research, though whether, as it is carried on at Kew, it is productive of more benefit to the public than the opening of the gardens in the morning would be is a matter of opinion. It would be interesting to know how many botanical students attend at the gardens daily, in what their studies consist, and what is the net result of their labour. We might go even further and suggest that, as they are supposed to be working in the public interest, and at the expense of the public, that public has, at least, a right to be informed as to what they are doing. Some little coteries of scientific men are apt, when subsidised by Government, to diverge into the paths of dilettanteism, and the very honesty of their intentions makes them unconscious humbugs, inasmuch as they are anxious to do something, no matter what, to justify patronage. Apart from these considerations, however, it seems to us that the objection is weak in itself. We fail to see that the students would suffer very much from the presence of the public. People do not, as a rule, go to Kew to visit the Herbarium, and if they did, it would not be difficult to assign sound reasons for excluding them during part of the day. But, with this exception, we believe the restrictions to the free use of the gardens might be abandoned. It is true that the National Gallery closes its doors upon certain days of the week to all except students; but the latter may be seen upon other days quietly pursuing their studies in the midst of a crowd of visitors.—"Examiner."

**Violets Everywhere.**—You may have noticed that a clump of Violets amongst shrubs, or in some other odd place where it ought not to be, will be found at this time of year as full of flowers as if a shower of blue hail had fallen on that particular spot. And you may also notice that an odd plant of Parsley that escapes destruction amongst Onions, or Cauliflowers, or Daffodils, will be grandly curled, and will throw out its great, handsome leaves with a vigour unknown to Parsley in the row, as if to say to all beholders, "Behold how heterodoxy invigorates the constitution!" Taking note of such things in the days of my youth, I adopted very early in my career a plan of securing Violets in endless quantity by the very simple process of planting them anywhere, anywhere, and everywhere. The main requisite to the production of Violets in the ordinary method is fresh soil; hence, in the routine culture, the borders must be refreshed with leaf-mould and charr'd rubbish, and more or less of old hotbed manure. But the heterodox method does not include any preparatory measures. All our Ivy edgings and banks are studded with clumps of Violets and Woodruff; Violets are objectionable when mixed with Ivy, because of their coarse, obtrusive leafage in the summer, but Woodruff is in every way acceptable, and ought to be mixed with Ivy edgings and knolls everywhere, even if there are miles of them. As for the various sorts of Violets, I have all that have been brought out of late years, from the noble *Czar* to the *Cleveland* set, and the curious oblique and double varieties. But when I multiply Violets by the thousand and ten thousand for mere amusement, and make all my banks and hedges, and the ground under Hollies and other shrubs a continuous Violet carpet, I never trouble to look for the named sorts. I tug and tear at the common blue and common white varieties that are (or should be) found in every garden; and it will be time enough to make miles of Violets out of the named sorts when the common ones fail to satisfy me.—"Gardener's Magazine."

**Apricots on Spurs and Young Wood.**—I find that in spite of the bad weather we have a good crop of Apricots set, but they are all on the young wood that was nipped in quite closely—the blooms, in fact, touching the wall while from spurs all the blooms have dropped off frost-bitten. This I regard as a proof that the wall, or rather the latent heat contained in it, affords the greatest amount of protection to wall crops. We adopt the old nail and shred system. Will anyone tell us how wired walls have fared this year?—J. G.

## SOCIETIES AND EXHIBITIONS.

## ROYAL BOTANIC SOCIETY.

APRIL 24.

THIS, the second spring show of this Society this season, was quite equal, if not better than the last, and considering the unfavourableness of the weather, there was a good attendance of visitors. The exhibits, which were tastefully arranged, consisted of Pot Roses, Azaleas, Clematises, and miscellaneous collections of plants.

**Certificates of Merit** were awarded as follows:—

**Pansy Fred, Perkins** (H. Hooper).—A distinct kind, with large flowers, having violet-coloured petals, striped with clarat, the centre being blotched with rich velvety-black, surrounded with rosy-crimson. One of the most novel and attractive kinds in cultivation.

**Rose Boieldieu, H. P.** (W. Paul & Son).—A large and well-formed flower, of a deep rosy colour. Likely to prove a good exhibition variety.

**Rose Mrs. Laxton, H. P.** (Paul & Son).—A free growing kind, having deep green leaves, and beautifully formed, dark, velvety crimson blossoms; evidently a valuable variety for pot culture as well as for exhibition purposes.

**Azalea Madame Lefebvre** (Turner).—A pure white-flowered variety of singular merit, and well worth a place in every collection.

**Wallichia zebrina** (Williams).—Described in THE GARDEN of last week.

**Ixora hybrida** (Williams).—A compact-growing variety, and one which produces large trusses of delicate lemon-coloured flowers on every small shoot. A valuable addition to this useful class of plants.

**Dracœna Bausei** (Williams).—A garden hybrid raised in the Anerley Nurseries, having broad revolved leaves of a glossy bronze colour, broadly margined with bright crimson. An excellent vigorous-growing kind.

**D. Mrs. Bause** (Williams).—A narrow-leaved kind of the terminalia type, with a drooping habit. Valuable for vases or market purposes.

**D. Renardii** (Williams).—A kind conspicuous for its dwarf, compact habit of growth and its short, broad leaves, which are of a light glossy green colour, beautifully banded and striped with rosy-crimson.

**Lastrea aristata variegata** (Veitch).—A valuable Japanese species, having a delicate variegation at the base of the pinnae.

**Rhipidopteris peltata gracillima** (Veitch).—A great improvement on the type, the fronds being larger and having finely cut pinnae. An excellent plant for culture in pans.

**Dioscorea retusa** (Veitch).—A South African species, of free growth, having a peculiar twining habit, and bearing abundance of cream-coloured catkin-like blossoms. Excellent for twining round umbrella-shaped trellises.

**Hæmasthanus Keilbreyeri** (Veitch).—A variety from the South Coast of Africa, bearing large trusses of bright scarlet blossoms, the stamens being much longer than the petals, and tipped with golden anthers. One of the most curious, as well as showy Hæmasthanuses that have been exhibited for a long time.

**Grevillea filicifolia** (Rollisson).—Described in THE GARDEN last week.

**Adiantum Lawsonianum** (Veitch).—A dwarf-growing garden variety, having peculiarly small pinnae, very bright and elegant. One of the most distinct Maiden-hair Ferns that have been raised in this country.

**Gloneria jasminiflora** (Williams).—An attractive and valuable stove plant of easy culture, and one which bears a profusion of white sweet-scented Jasmine-like flowers throughout the winter and spring months.

**New Plants.**—These were shown by Messrs. Veitch & Sons and Mr. B. S. Williams. In Messrs. Veitch's group were several new Crotons, the most valuable one being C. Challenger, a species from the South Sea Islands, having long, graceful leaves, richly marbled with golden-yellow changing to bright rosy crimson as they become matured. From the same firm also came an excellent plant of the useful *Euryclæa australis*, from Queensland, a coloured plate of which was given in THE GARDEN lately (p. 472, Vol. XI.). This was beautifully in flower, as were also several new *Hemantidæ*. In the same group were, moreover, brightly-coloured plants of *Phyllanthus roseo-pictus*, *Acalypha Macleanæ*, and a beautifully-crested variety of *Lomaria* named *L. discolor biglandifida*, together with plants of the miniature *Otaheite Orange*, laden with fruit. Mr. Williams showed a fine specimen of the beautiful *Gloneria jasminiflora*, from Brazil, covered with large clusters of ivory-white, jasmine-like blossoms, several new *Azaleas* of a meritorious description, and various *Amaryllides*.

**Orchids.**—A good collection of these was shown by Mr. Heims, gardener to F. A. Philbrick, Esq., who had a healthy specimen of *Dendrobium thyrsiflorum*, bearing nearly a dozen large clusters of white and golden blossoms, well-flowered examples of *Oncidium Marshallianum*, *Odontoglossum cirrhozum*, O. *Alexandra*, O. *Rozeli* and its white variety, and the beautiful white *Cypripedium nivenum*, bearing the largest and most perfectly-formed flowers we have ever seen.

**Roses.**—These were well shown by the leading growers. The best collection came from Messrs. W. Paul & Son, Waltham Cross, to whom

an extra prize was awarded. Among the best bloomed plants were the white *Madame Alfred de Rougemont*, the beautiful bluish-coloured *Captain Christy*, the rich cream-coloured *Maria Van Houtte*, and the brilliant kind called *Fisher Holmes*. Messrs. Veitch sent a group in which were several remarkably well-flowered plants of *Madame Victor Verdier* bearing blooms equal in form and colour to many often seen in June; *La France*, *Madame de St. Joseph*, and the pure white *Madame Villermoz* were also equally good. For eight *Roses* in pot Messrs. Paul & Son, Cheshunt, obtained the first prize, with well-bloomed plants of *Souvenir de Elise*, *Dupuy-Jamain*, *Madame Lacharme*, and others. An extra prize was also awarded to Messrs. Paul & Son for a group of *Roses*, in which were well-flowered examples of *Madame Victor Verdier*, *Charles Lefebvre*, and *Chantant* kind, associated with these were eight-coloured kinds as *Marquise de Mortemart*, *Coline Forster*, and *Madame Villermoz*. The first prize for new *Roses* was gained by Messrs. Paul & Son, who had several valuable and attractive kinds. Mr. Turner also showed new kinds. In the amateur's class for six pot *Roses*, Mr. James, of Isleworth, was first with well bloomed healthy plants of *La France*, *John Hopper*, *Edward Morren*, and others.

**Auriculas and Polyanthus.**—Twelve excellent plants of *Auriculas* came from Mr. Charles Turner, the Royal Nurseries, Slough. The foliage was large and healthy, and the flowers, both in form and colour, all that could be desired. The most attractive kinds (self) were Mr. Turner's own seedlings—*Charles Perry*, a large purple-edged flower, with pure white petals, associated with these were *White*, *White*, and *Sarah*, violet-purple. Mr. Roberts, gardener to W. J. Perry, Esq., Fulham, also sent plants of *Auriculas*, as did likewise Mr. Heims, gardener to F. A. Philbrick, Esq. Mr. J. Levesley, Isleworth, showed a group of gold-laced *Polyanthus*.

**Cinerarias.**—The first prize for these was deservedly awarded to Mr. James, Isleworth, who had dwarf healthy plants, 2 ft. through, and in a mass of large, brightly-coloured blossoms of the finest form. Mr. Levesley contributed an extensive group of seedling plants, dwarf in habit, and bearing brightly-coloured flowers, an excellent strain for market purposes. Mr. Ratty, gardener to R. Thornton, Esq., Sydenham, also showed some well-grown plants.

**Alpine and Herbaceous Plants.**—These were shown by Mr. Roberts and Mr. Wheeler, and consisted of common border flowers of no particular merit. A collection of bulbous plants from Mr. Roberts contained well-flowered examples of *Trillium grandiflorum*, a good variety of the *Paget's Narcissus*, *Stella*, and some *Androsace*.

**Azaleas.**—The best of these came from Mr. Turner, Slough, who had medium-sized, well-bloomed plants. The most attractive light-coloured kind was *Nonpareil*; *Madame Van der Cruyssen* was the best purple, and *Flag of Truce*, a well-known double white-flowered kind, was admired for its delicacy and profusion of blossom. The same exhibitor had also a group of small plants consisting of new kinds, some of which will doubtless prove superior to many already in cultivation.

**Miscellaneous Subjects.**—The best group of miscellaneous stove and greenhouse plants came from Messrs. Rollisson & Sons; it consisted of well-grown *Azaleas*, *Erica*, *Everblastings*, choice *Orchids*, large *Palms*, *Cycads*, and *Tree Ferns*, the whole being edged with *Maiden-hair Ferns* and similar plants. Mr. B. S. Williams, Holloway, had also an excellent collection of miscellaneous plants, among which were noticeable unusually well-bloomed specimens of *Franciscusa calyculata*, *Yandæ*, *Azaleas*, &c., all of which were rendered more effective by being interspersed with choice *Palms*, *Ferns*, and fine-foliaged plants. Good examples of *Giant Cycas* were also shown in this group. Messrs. Cutbush, Highgate, sent an interesting group, in which we noticed well-bloomed *Rhododendrons*, *Azaleas*, *Polygals*, &c., interspersed with *Palms*, *Aralias*, *Pandanads*, and other fine-foliaged plants, for which an extra prize was awarded. Messrs. Veitch & Sons showed an attractive group of *Clematises* (blues), *Fair Rosamond* and *Lacie Levening* (whites), and *Lady Londborough* (violet). Adjoining these *Clematises* was a group of *Giant Azaleas*, and the new species *Azalea mollis*; also several excellent *Rhododendrons*, and three round baskets filled with plants of the beautiful hardy *Gentiana acanthis*, showing how attractive it is when grown in masses; with the above were, likewise, plants of cut-leaved *Acer*. Mr. James, Isleworth, had nine excellent show and fancy *Pelargoniums*, fresh in foliage and flowers, for which a first prize was deservedly awarded. A good group of *Amaryllides* came from Mr. F. Knowles, gardener to H. Little, Esq., Hillingdon, Uxbridge.

**Cut Flowers.**—Messrs. William Paul & Sons had excellent stands of cut *Roses*, amongst which the most noteworthy were *Paul Verdier*, *Souvenir d'un Ami*, *La France*, *Niphetos*, the rich creamy-coloured *Madame Hippolyte Jamin*, and the dark crimson *Louis Van Houtte*. Mr. Walker, The Nurseries, Thame, Oxon, showed remarkably fine stands of blooms of *Maréchal Niel*; also stands containing well developed blossoms of climbing *Devoniensis*, *Gloire de Ducher*, *Jules Margottin*, and others. Cut blooms also came from Messrs. Paul & Son, amongst which were examples of *Clematis* varieties, *Elise Massé*, of *C. Belle Lyonnaise*, likewise a box of *Maréchal Niel* in excellent condition. Mr. Hooper, Bath, furnished a large group of *Pansies*, amongst which was every imaginable form of flower. The blooms were in some cases unusually large, and the colours both rare and bright. To lovers of *Pansies* this offered an excellent opportunity for selecting sorts. Cut blooms of *Himalayan Rhododendrons* were sent by Mrs. Vriean, of Singleton, near Swansea. The flowers, which were delicate and well formed, had been cut from plants growing in the open air.

## NATIONAL AURICULA SOCIETY'S EXHIBITION.

This was held at the Crystal Palace on Thursday last. The plants were numerous and generally good, the selfs attracting the most attention. Gold-laced Polyanthuses were numerous and beautiful, and the attractions of the show were enhanced by a collection of well-flowered Azaleas, Show and Fancy Pelargoniums, and fine-foliated plants from Mr. Charles Turner, the Royal Nurseries, Slough, to which an extra prize was awarded. The chief prizes for Auriculas were won by the Rev. Mr. Horner, Kirkby-Malzeard, Ripon, and Mr. James Douglas, gardener to R. Whitbourn, Esq., Loxford Hall, Hereford. The first prize for fifty plants, not less than twenty varieties, was gained by Mr. Douglas, who had well-grown, healthy plants and fine symmetrical flower-spikes. Conspicuous among the selfs was Marquis de Lorne, a large showy flower of a magenta colour, with well-defined, smooth paste; Metropolitan, a bluish-purple flower with very white paste. Among grey-edged kinds, the best were Beauty, Confidence, and Marie. Mr. Charles Turner was second with smaller plants of the best varieties, including Mammoth, Clipper, and Charles Perry. Mr. Llewellyn Neath was third. There were several other collections of a showy character in this class, but the blooms were coarse and inferior, although excellent for border planting. In the class for twelve plants dissimilar there were numerous exhibitors. The first prize fell to Mr. Horner; Mr. Douglas was second, and Mr. Simonite, Rough Bank, Sheffield, was third. The first prize in the class for six plants was also won by Mr. Horner, the second by Mr. Simonite, and the third by Mr. Douglas. The plants in this class were fairly good, but the trusses were smaller than in the class for fifty. In the class for four plants dissimilar there was least competition. Mr. Horner was first, Mr. Douglas second, and the Rev. B. J. Marquetts, Lillington, Upminster, ham, third. In the class for two plants dissimilar, Mr. Horner was again first, with two grey-edged kinds in good condition; Mr. Barlow, Slattocks, Manchester, was second; Mr. Simonite, third. For one specimen (green edged) Mr. Horner was again first, with an excellent plant of Col. Taylor. Mr. Simonite was second with Hudson's Apollo, and the third prize was won by Mr. Douglas, who had Lancashire Hero in good form. For one specimen (grey edged) there were some seventeen exhibitors. The best came from Mr. Horner. It was a well formed flower, with well-defined paste and golden tube. The same exhibitor also obtained other prizes in the same class with good kinds. For the best white-edged variety, Mr. Horner was first with Catharina, a fine kind, bearing small flowers of exquisite colour and shape. The same exhibitor also obtained the second prize with John Simonite and the Smiling Beauty. The best self also came from Mr. Horner, who had a well-flowered plant of Pizarro, a brown-coloured kind, with a velvety edge and well defined paste. The second prize was won by the same exhibitor, with a beautiful blue-edged kind named Meteor Flag.

**Prize for American.**—In the class for twelve plants, Mr. Turner was first with even, well-grown plants; Mr. Douglas was second; and Mr. Barlow third. In the class for six plants, Mr. Turner was also first with King of the Belgians, a striking variety, with a reddish-crimson edge and bright yellow paste, one of the best Alpine kinds in cultivation. Queen Victoria, Mercury, and Sensation were also good; these plants bore several spikes of blossoms, and were admired, probably, more than any others in the show. Mr. Douglas was second, with well-flowered, showy plants of Beatrice, Silvia, and Neatness. The best single specimen came from Mr. Charles Turner, Slough. It was a large-flowered kind, of a deep purple colour, with white paste and small, well-formed tube. The same exhibitor was also second with Mariner, and Mr. R. Dean was third with Captivation.

**Polyanthuses.**—The best six plants came from Mr. R. Dean, who had beautiful gold-laced varieties of excellent form; Mr. Barlow was second, and Mr. John Beswick, Middleton, third. For two specimens the best came from Mr. Beswick and Mr. Barlow. In the competition for single specimens there was over twenty exhibitors. The best came from Mr. Brownhill, Sale, who showed a variety named Cheshire Favourite, a beautiful gold-laced sort; the same exhibitor was also second with the same kind, and the third prize was won by Mr. Barlow. A horticultural certificate of merit was awarded to Mr. G. Smith for Polyanthus Admiral Hornby, a beautiful gold-laced flower of fine form and colour.

In the extra classes Mr. Douglas showed an excellent group of plants with varied flowers, which were much admired; and Mr. Ware, Hale Farm Nurseries, sent a collection of Polyanthuses, Primroses, and a new white Viola named White Star, which is likely to be largely grown for bedding purposes.

Mr. Henry Hooper, Vine Nursery, Bath, showed a large collection of cut blooms of Pansies, which attracted much attention on account of their varied forms and rich colours.

An excellent collection of Primulas was shown by Mr. R. Dean, Ealing, among which were many improved and beautiful kinds.

**The Dreaming of Plants and Animals.**—Mr. Francis Darwin, lecturing at the London Institution the other week on the analogies of plant and animal life, said:—“There is one—but only a fanciful resemblance—between the sleeping plants and animals, namely, that both have the power of dreaming. I have been sitting quietly in the bathhouse at night, waiting to make an observation at a given hour, when suddenly the leaf of a sensitive plant has been seen to drop rapidly to its fullest extent and slowly rise to its old position. Now in this action the plant is behaving exactly as if it had been touched on its sensitive joint; thus some internal process produces the same impression on the plant as a real external stimulus. In the same way, when a dog dreaming that he will yelp and move his legs as if he were hunting a real instead of an imaginary rabbit.

## GARDEN DESTROYERS.

## IS THE SPARROW A FRIEND OR AN ENEMY?

Mr. TILLEY makes out a strong case (see p. 356) against the sparrow, but is it a fact that his depredations so much exceed his good deeds that his banishment would be a boon to horticulture? Now, I would ask, Upon what does the sparrow live in the summer months during the breeding season? From May to August there is but little grain; on what, then, does he subsist and feed his young? In the neighbourhood of towns and farmyards he may, it is true, carry on his depredations during the whole year; but sparrows abound everywhere, and in the lanes and fields insect life must form the chief food. Is it really a fact that the sparrow systematically attacks the buds of fruit trees in the same manner as the billfinch? If such be generally the case, those in this neighbourhood must be exceptionally well behaved, as I have never perceived any symptoms of such conduct. If such were the case, taking into consideration the numbers of these birds which one everywhere sees, fruit growing would just be an impossibility in this country. For one fact I can vouch, viz., that where they find caterpillars in any quantity they will greedily devour them and feed their young upon them. Several years ago some Strawberry plantations were covered with the larvae of a small moth to such an extent that they threatened their entire destruction. I noticed, however, that those situated near some buildings where the sparrows had nests became in a short time comparatively free, and I found that they searched for and destroyed the larvae with avidity. They were busy amongst the plants all day long, and were so ravenous for the larvae that they would come within arm's length. Seeds that were sown in the vicinity they scarcely seemed to notice. I particularly watched these birds at work, and observed them fly away with at least a dozen larvae at a time—taking them to their young. As the sparrow is an inordinate feeder, it may be imagined that a pair must destroy an enormous quantity of insects during the season. On another occasion I was greatly plagued with small slugs even in frames, but they were ultimately found out and almost exterminated by the sparrows. The fact seems to be that, this bird being a great feeder, it will devour almost anything, attacking grain crops and seeds in 'the ground, and occasionally other things, with rapacity; but I feel convinced that an insect diet is just as much to his liking, and that he rids us of a vast quantity of noxious insects during the summer months. Let anyone make this experiment: If a crop be much infested by caterpillars, strew a few dead crumbs in the vicinity; the sparrows will then soon be there, and will in a short time destroy them. With all due deference to our American friends, I am inclined to believe that the sparrow will not eventually be found to be such an unmitigated evil as he is now reported to be. One may have too much of any good thing, and the Americans are just finding this out. Let them leave the sparrow to take his chance in the battle of life, and the balance of power will soon adjust itself.

J. COANHILL.

**Slugs.**—There has been a good deal of correspondence of late about slugs, and many have been the recommendations, and amongst others ducks, but I have not seen mentioned what we consider the best of anything to clear our gardens of these pests, and that is the common green plover or peewit. If any one has a walled garden where they can be confined, these afford the most pleasant and sure remedy. They do no damage whatever, and clear off slugs, wire-worm, and Gooseberry caterpillars most completely. I got them when young, and allow them to run about the garden; they get very tame, and are kept from flying away by having one wing clipped. After moulting they leave us, and some years back one bird confidently returned to his old haunts and nested in the Strawberry bed.—J. P., York.

—I received the enclosed interesting communication with the Bristol postmark on it; it must have come from that great authority in all matters horticultural at Bitton. It appears to have been printed in the Transactions of the Royal Horticultural Society, and is headed, “On Destroying Slugs in Gardens,” by Mr. John Wilmot, F.H.S. Read May 12, 1812. It shows that our fathers had the same trouble with slugs that we have, and that much the same means for destroying them were then used and recommended. The communication is as follows:—“The usual way of killing slugs practised at present is with lime strewed on the ground very early in the morning, or late in the evening, the thermometer not below 45°; they then are found in moist weather in abundance, on the surface of the soil, when scattering lime fresh slaked or pulverised will destroy a number of them, excepting rain comes to their assistance, which too frequently frustrates the design. As the principal time of their committing their ravages is in a rainy or a moist season, the very weather is unfavourable to the application of the lime, as it will act

no longer as a caustic, after lying on the damp ground even for half-an-hour. At the suggestion of my friend, Mr. Whately, the celebrated surgeon, I was induced to make a trial of lime-water, which I found greatly to exceed my expectations. I now not only propose, but strongly recommend it on an extensive scale, as I can prove it a saving of £9 out of £10, and it will entirely rid the land of those noxious vermin. The plan I recommend is to take a small portion of fresh Dorking lime and pour on it some hot water; when thoroughly dissolved, add water sufficient to make it pass through a fine rose of a water-pot. Previous to the preparations let a woman take some Peas haulm (I give that the preference), or any large leaves of the Cabbage tribe, and lay them a pole distance from each other. If the weather permit they will be found in abundance collected under the haulm, &c., both for shelter and food, as we always find them prefer vegetables in a state of stagnation to those luxuriant in growth. When properly collected let a boy take up the haulm, &c., and by a gentle shake leave the whole of the slugs on the ground. The woman with a water-pot and rose must then pour a very small portion of the liquor on them, and the boy in the meantime must remove the haulm, &c., to a different spot in the intermediate space. By pursuing this plan for one week (when the weather is favourable) I am perfectly satisfied the whole of them may be destroyed, as the least drop of the liquor will cause immediate death, whereas with lime they frequently leave a slimy matter behind and escape. In the flower garden it will be found a great acquisition by watering the edging of Box, Thrift, &c., for wherever it penetrates it is certain to kill, even in a rainy season. The first thing to be considered in any new experiment is the trouble and expense attending it, for however certain and efficacious the remedy, it is frequently overbalanced by the expense. In the plan I propose the application is simple, the effect certain, and the expense trifling, which are objects worthy our consideration, as four middling-sized watering-pots at one time will be found sufficient for an acre, allowing one pot to forty places, and when it is considered that a piece of lime, about 2 lb. weight, is sufficient for one pot, we may conclude that to any extent (even in agriculture), including labour, &c., the whole amount will not exceed 5s. per acre, to be passed over four different times, which, if properly pursued, I am certain will rid the land of the whole of them at any season of the year, excepting frosty weather. The haulms, if not used after the crop of Peas is over, may be dried and put away for that purpose; the expense will then be found nearly as stated for one acre (everything convenient):—

Trouble in laying haulm, &c., woman and boy	s. d.
half a day each	... .. 1 0
Removing ditto four different times, one quarter of a day each time	... .. 2 0
Lime	... .. 1 0
Total expense	4 0

Thus for 4s. per acre they may be totally destroyed, however numerous. I can vouch for the statement being correct, having practised it to an extent this winter, and strongly recommend it to the Horticultural Society."—GEORGE F. WILSON, *Heatherbank, Weybridge Heath.*

— Among the numerous suggestions of your correspondents for getting rid of these pests, I do not think anyone has mentioned the use of a hedgehog in a walled-in garden as a good remedy. I got one in the spring of 1876, and in that year I certainly was less troubled with slugs than before. The hedgehog soon made himself at home, and as the winter approached curled himself up in a bundle of leaves to hibernate. A few warm days in February, 1877, tempted him out, but he soon retired to sleep, and did not again stir till June. During my absence from home for a few days he got into a box exposed to the sun, and, being unable to extricate himself, was either starved or roasted to death. The result of his loss soon became apparent, for the slugs last season and this spring have been as troublesome as ever. I shall certainly, therefore, procure another hedgehog.—W. J. T., *Bristol.*

— No doubt hungry ducks will eat slugs, but I have always found that they prefer a Pea to a slug. Just now, when slugs most abound, our friends the birds all feed on worms on the lawn, and not one is seen picking up the slugs in the kitchen garden early or late; but when the Strawberries get up the Grass lawn will be wholly deserted, and the fruit garden infested. It is too often thus, that natural forces and tendencies seem to work contrary to the wishes and interests of cultivators. The birds, for example, all just now prefer worms to snails; by-and-by they will greatly prefer fruit to either. And the ducks, which might just now feed upon slugs, prefer to eat Peas, Lettuces, and Cauliflowers instead.—D. T. FISH.

**The Hop as a Vegetable.**—Although so much grown for its well-known use, and often seen as a climber in small gardens, the

Hop is little known in England as a vegetable. In Belgium it is used as a vegetable is almost universal. The young shoots are cut as soon as they are 2 in. or 3 in. above the ground, and boiled in salt and water; they are then dried, and sprinkled with the juice of a Lemon to keep them white. Before serving, put them again over the fire for a few minutes, with salt and plenty of butter, then add eggs mixed with milk, when they may be eaten like Asparagus, to which they are not inferior. Managed in this way, it makes a most delicate and refined dish. The young shoots of Hops are generally cut twice for the sake of strengthening the plants; therefore it would not be advisable to grow Hops for their shoots to be used as a vegetable only—when they could be gathered in Hop-fields, in gardens, and even in a wild state, all of which are equally good. If this were well known, many of the inhabitants of Kent would add a wholesome dish to their tables, and might even make money by sending the shoots to market.—D. GUIHENEUF.

**Women Gardeners.**—The Geneva correspondent of the "Echo" says:—A new species of instruction classes for women has recently been in great favour in Switzerland, more especially in the great orchard districts of the Thurgau, Bern, and elsewhere. This is the so-called "Gomiesbankurs." A scientific gardener gives practical lectures on the cultivation of fruits and vegetables, and an experimental field is granted for practice. Such a course was instituted last week in the busy town of Burgdorf, where Pestalozzi began his great educational revolution eighty years ago. No fewer than 100 women and girls have already given in their names as students. The general crash of manufacturing industry is filling the air with speculations and proposals for the fuller use of the land as a means of livelihood.

**The Preservation of Hothouses.**—Assuming that the houses have in the first instance been constructed of good materials, the question of their future preservation is summed up in one word—paint. In the large majority of cases hothouses are ruined for want of paint, and do not last out above half as long as they might do. It is quite a common thing in gardens to see good houses that have not received a coat of paint for ten or a dozen years, or more, and which are in many places quite rotten in consequence, and ready to fall to pieces. It is needless to point out the evils of such a penny-wise-and-pound-foolish practice; but we would say that those who are not prepared to keep their hothouses in order and repair should not build any. Both plant and fruit houses are now constructed as simply as possible for the sake of light. Rafters and sashes are reduced to the smallest dimensions consistent with safety and stability, and if they are kept regularly painted they will last for many years; but a year's neglect to paint, when painting is required, may ruin all. A good deal, of course, depends upon the use the house is put to. Dry, airy greenhouses, conservatories, and such like do not require painting inside so often, but outside they should be painted as often as required—once in two years, or thereabout; whenever the woodwork is beginning to show through the paint, or rather, we should say, before. Orchard houses, stoves, hot-pits, and all structures in which much steam is produced, and which are frequently washed and scrubbed to keep down insects and filth, need painting considerably oftener. Paint only will prevent such structures from rotting in a very few years. The drenching atmosphere penetrates into every crevice, socket, and joint where it can find a leak, and decay is not discovered until serious mischief has been done. Painting should always be done at a dry season of the year, and before the work is begun the house should be emptied, well ventilated, and thoroughly dried. We should recommend damp hothouses to be painted one coat inside every two years, or every three years at the farthest; and if three coats can be afforded, all the better. The paint does not cost a great deal, nor does the work of putting it on.—S.

**Beetles and Cockroaches.**—These troublesome pests almost invariably congregate and increase rapidly in any heated structure to which they obtain access; they are often a great source of annoyance in forcing houses, where they attack fruit and also the leaves of various plants, especially those of young seedlings. I have lately tried several kinds of pastes and powders, but the most effectual remedy is strychnine mixed with barley meal, to which sufficient grease is added to make it into a paste. This, if set in saucers near their haunts, will be speedily cleared up, and the smallest portion will prove fatal to them.—JAMES GROOM, *Henham.*

**Planting the Pampas Grass.**—This should not be planted before the middle of April in the north; but in the south the beginning of the month will answer. I have planted large quantities of it both in the autumn and spring. The autumn-planted plants, unless very large, were almost all failures; the spring-planted ones nearly all succeeded. I have observed the same in the case of the New Zealand Flax, which requires similar treatment to the Pampas Grass. I find that the different variegated varieties grow with great luxuriance when planted out-of-doors here, and that the variegation remains perfect.—ARCHIBALD FOWLER, in "Gardeners' Chronicle."

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"This is an art  
Which does mend Nature: change it rather: but  
THE ART ITSELF IS NATURE."—*Shakespeare.*

### FLOWERS FOR THE WORKING CLASSES.

Those who reside in neighbourhoods almost entirely inhabited by the working classes must have noticed how eagerly the barrows of flower vendors are invaded on Saturday evenings. Flowers, however simple, have an influence in the right direction, and those who can assist in distributing them, or in imparting a knowledge of their culture among the poor, will by so doing render a real service to the community. In London the working classes have, it is true, to conduct their garden operations under great difficulties—such as confined areas, cold piercing draughts, a scorching sun, or an entire absence of that luminary, so far as its direct rays are concerned, an atmosphere laden with dust and soot, the difficulty of getting suitable soil, &c.; still, in spite of all these a little knowledge of the treatment and selection of plants would greatly assist in overcoming them. How many bare walls would be improved by being covered with Vines, Virginian Creepers, Ivy, or Euonymus, all plants of easy culture, the only conditions necessary being good drainage and a small quantity of ordinary soil mixed with about one-third of well-rotted manure. The shoots should be placed against the wall in upright parallel lines at regular distances apart, care being taken that the shreds are long enough to allow the wood to swell freely.

In summer, too, Convolvulus, Canary Creeper, and other Tropæolums, Sweet Peas, Scarlet Runner Beans, and some few others may be used with good effect in like positions; these are easily cultivated, and within the reach of all. Plants in pots or boxes require particular attention in many respects. More failures probably arise from over-watering than from all other causes put together; by far the greater portion of those who constitute the working classes consider that water is a cure for every ailment, and consequently they administer it in such doses as are sure to be detrimental. In the case of seeds another common source of failure is burying them too deeply, so that, although germination commences, they are too weak to push through the soil. Small seeds cannot be covered too lightly, but care must be taken that the surface of the soil does not get dry; they should therefore be placed in a shady position until they are well out of the ground. Sowing seeds too thick is another error, as no sooner do the seedlings appear than they damp off or grow up so weakly as to be useless. Very many annuals, such as Asters, Stocks, Zinnias, Phloxes, dwarf Nasturtiums, Flax, Indian Pinks, Mimuluses, ornamental Grasses, &c., may be grown in pots or boxes with ordinary care. These may be sown in April.

Daisies, Heartsease, Aubrietias, &c., for spring flowering should be sown in July or August. The class of plants termed half hardy, such as Pelargoniums, Verbenas, Balsams, and others, should be purchased in May in each year, as some difficulty would be experienced in keeping them through the winter. In every case where plants are grown in pots or boxes good drainage should be ensured, and the scorching rays of the sun prevented from striking directly upon the pots or boxes, as the roots of the plants would be injured thereby. This can be effected, in the case of boxes, by having a double side, and filling the space with Moss or some such material. Pots can be either plunged in boxes or have some artificial covering which would materially assist in keeping the plants in a healthy condition. It must also be borne in mind that the foliage should be kept clean. A compost formed of ordinary garden soil, mixed with one-third leaf-soil or well-rotted manure, and a little silver sand would suit nearly all kinds of plants for the positions mentioned. I am of opinion that if small prizes were offered at certain periods of the year for window gardening among the poor, they would very much assist in creating a demand for such flowers as could be easily grown. Some such prizes are, I believe, given by a few local societies, but such instances are rare. A great deal of good

would be done by making them more general, and all interested in the matter would, by imparting a knowledge of plant culture, or assisting in a pecuniary way confer a boon on the poor.  
*Southwark Park.* CHARLES DENNIS.

### TULIPS AT FOREST HILL.

THE most brilliant display of these popular spring flowers to be found near London may now be seen at Messrs. Carter & Co.'s nursery at Forest Hill. Here are upwards of 50,000 bulbs of the best kinds, growing in light rich soil, to which, together with good bulbs, may be attributed the unusual excellence of the flowers. The ribbon fashion of planting Tulips so much in vogue is altogether objectionable, and although some beds here are planted in this way, owing to the colours being tastefully arranged, the effect is not so formal as that generally seen; and, moreover, these beds are greatly relieved by large plots of ground being planted with mixed sorts irrespective of height or colour. These beds at once suggest that the more naturally Tulips, as well as all other plants, are arranged, the more pleasing and beautiful is the effect. Early, mid-season, and late kinds are here planted in such a way that a succession of bloom is gained all over the space covered with them for the longest possible period, which is a much better plan to adopt, especially in private gardens, than that of planting each bed with a separate kind, or such as will come into bloom at one, for Tulips, under the best of circumstances, do not last for a very long time, and, unless early and late sorts be planted together in beds, the season of bloom is indeed a short one. Among the most attractive kinds we noted Vermilion Brilliant, a kind resembling the well-known Scarlet Duc Van Thol, but its flowers are much larger and brighter in colour, and the plant is rather dwarfier. Kaiser Kroon is perhaps the largest-flowered Tulip in cultivation; its flowers are of a bright scarlet and orange colour. It is a tall grower, and for attractiveness it is unequalled. The best striped kind is Royal Standard; its flowers are crimson and white, of medium size, and very showy. Wouvermann is one of the most distinct kinds in cultivation; its flowers, which are of a bright claret colour, are large, well formed, and last for a long time. The best double white kind was one named Murillo, very dwarf, and exceedingly useful for small beds. Queen of the Violets is a sort well worth extensive culture, on account of its violet or rosy-pink blossoms. One named Rose Gris de Lin we admired more than any in the whole collection; its blossoms are of medium size, delicate pink in colour, the petals being tipped with white. We also noticed several kinds with silver or golden-edged leaves which were both novel and interesting. Any one wishing to ascertain which are the best varieties of Tulips would do well to inspect this collection, in which kinds to suit all purposes may be found. S.

### HARDY FLOWERS AT TOTTENHAM.

THE Hale Farm Nurseries are just now well worth a visit on account of the number of beautiful hardy plants which they contain being now in bloom. Besides large beds of Daffodils and other subjects frequently met with, there are many plants now in flower of a rare description; among other noteworthy subjects may be mentioned the beautiful *Houstonia corulea*, which is seldom seen in good condition. It grows here freely in light sandy soil, the plants being in habit similar to a miniature *Lobelia*. Its flowers, which are of a lovely lavender colour, remind one of those of a *Forget-me-not*, but they are stiff and waxy, and last for a considerable time in perfection. The abundance in which they are produced from Moss-like tufts a few inches above the ground renders this one of the most charming of rock plants. There is also a white kind equally deserving of special culture. *Symphandra Wanneri* is also a good plant just now in bloom. It bears pyramids of large drooping bell-shaped blossoms of a lovely blue colour from 6 in. to 9 in. in height, and is altogether a desirable plant. We also noticed the Golden Dog's-tooth Violet (*Erythronium americanum*) in bloom, and *Phlox setacea* at-purple-pure, one of the best of the rose-coloured dwarf *Phloxes*, was a mass of blossom. Large beds of P. Chelsoni are now snowy white with bloom, and *Trillium grandiflorum* in sheltered situations is laden with flowers. *Saxifraga peltata* is in excellent condition; stalks of it 2 ft. high are surmounted by massive heads of bloom. *Dodecatheon splendendum* often erroneously called *D. integrifolium*, is just now coming into bloom, and is in every way much superior to the latter variety, which is also just now in flower. *Primulas*, likewise, form an attractive feature, large beds of P. *cortusoides*, P. *intermedia*, and P. *ameza* being masses of blossom; established plants of the former variety are furnished with over forty strong spikes of flowers. P. *capitata* is a valuable new kind of the variegata type, bearing whorls of deep blue near blossoms one above the other. The beautiful Bird's-eye *Primrose*, P. *fariosea pyramica*, is also very pretty. Its rosy-pink flowers are

produced in round clusters about 2 in. above the foliage; they are of better form and deeper in colour than the type, and the plant is devoid of that white powder found in the ordinary kind. Anubrietas on the rockwork represent large banks of blossom, and it is satisfactory to find that, by careful fertilisation and selection, some greatly improved varieties are now to be found. The flowers are more than double the size of the older kinds, whilst in colour they are much brighter. The best of the early Ranunculuses, *R. amphlexicaulis*, is covered with pure white blossoms as large as a florin, and the distinct *Viola pedata*, with its small pale blue flowers, which is seldom seen in good condition, is flowering freely, as is also its white variety. Both kinds are quite distinct from other *Violas*, on account of their claw-like, light, deeply-cut leaves. The species of *Tulips* are also in fine condition, as are likewise large beds of the Sea Thrift (*Armeria cephalotes rubra*), and seedling and other *Iris*s. A good plant on the rockwork is *Erysimum pumilum*. It grows in compact dwarf tufts, covered with bright sulphur-coloured flowers, and spreads freely; it might be used for spring bedding with advantage.—C.

**Gold-laced Polyanthus.**—It is right that seekers after the fine old named Gold-laced Polyanthus should be put on their guard against unprincipled persons, who, taking advantage of the increasing interest felt in this flower, are palming off mere seedlings as named varieties. A few days ago an amateur grower of the Polyanthus residing in Edinburgh sent me pips of ten named flowers, which he had received from a florist in the midland counties purporting to represent such fine varieties as Earl of Lincoln, Exile, Cheshire Favourite, Beauty of England, Kingfisher, &c., not one of which were true to name. Seeing that good prices were paid for these spurious varieties, it is to be regretted that lovers of Polyanthus should be victimised in this way. From another cultivator I got other pips, but all spurious, and, I fear, traceable to the same source. Next week I will send you notes of some of the named varieties I have discovered during the past year, and, lest it might be said that perhaps I do not possess *bona fide* examples of the old varieties for comparison, but may have been deceived also, allow me to state that my flowers are all too beautiful not to be true; that they answer to published descriptions of them; and, further, I have obtained them all from trustworthy sources. Perhaps an announcement of the fact that some of the originals at least exist may prevent any further attempts at deception.—R. DEAN, *Ealing, W.*

**Free and Shy Blooming Roses.**—Mr. W. Hough (see p. 336) has made a mistake in planting such Roses as Climbing Devoniensis and Reine d'Or in his conservatory. They are somewhat shy bloomers in the open air, unless under special treatment, and they bloom even worse under glass than outside. Reine d'Or flowers pretty freely with us closely pruned in and trained on a warm south or west wall. Climbing devoniensis I could do nothing with until I trained it round a tall chimney belonging to one of the furnaces, and left it to ramble almost at will in a free, unrestrained manner. Treated thus, it produces immense numbers of flowers; but neither this nor Reine d'Or should be planted in a conservatory. The dwarf Devoniensis flowers freely enough planted out under glass, and is exquisite in bud and in fragrance. Instead of Reine d'Or plant *Maréchal Niel*, which flowers even more freely under glass than *Gloire de Dijon*. The three *Nephetes*, *Solfaterre*, *Celine Forestier*, and *Lamarque*, also flower freely under glass. The latter is one of the best Roses in cultivation for conservatory purposes, and is quite worthy to rank with *Maréchal Niel*. In such positions it is pure white, large, and very fine when open with the most lovely buds. *Nephetes* is also finer planted out under glass, creamy-white, large, and beautiful. Among other Teas suitable for such purposes, and that bloom very freely under glass, are *Adam*, *Satanet*, and *Souvenir d'un Ami*.—D. T. FISHER.

**Romneya Coulteri.**—I was quite unware, until I saw it stated in THE GARDEN, that the seed of this plant would come up in a month. In my experience it generally takes ten or twelve months. In fact, it is one of those seeds that usually lie dormant a year after sowing; and this class of seeds also requires to be kept moist during the whole time. Therefore, thumb-pots would be just the very worst size in which it could be sown, as, from the great number of times they would require to be watered ere the seeds came up, the soil would be either quite soured or rendered inert; far better to sow in large pots or pans, and place them in the dark, covering them close, in order to prevent evaporation. They might be examined now and then, so as not to let them get too dry, and, in due time, the seedlings will appear, when they can be removed to the light. This plant can be quite safely potted off in the following simple way: As soon as a plant is fairly above the soil, thrust down by the side of it the point of a stick (I use the ivory handle of a budding-knife, because it is always in the waistcoat-pocket handy),

and gently raise it up, letting it remain thus for two or three days; then put it into a single pot. Plants of this kind, however, require a good deal of care until they are a year old.—T. SMITH, *Newry*.

**Tree Pæonies, Dielytras, and the Frost.**—I can quite confirm "B. S.'s" remarks (see p. 328) on this subject. These beautiful plants, the Tree Pæonies, have seldom suffered so much as this season. It does not seem so much one frost as many in succession that does the greater mischief on these occasions. Successive frosts seem to act like a succession of blows; these, continuing on one spot, wound or bruise the tissues. So frost after frost sinks deeper and deeper, until the plants are crippled or destroyed. The Tree Pæonies are very much crippled here and in the neighbouring gardens of Mr. H. Porteus Oakes, of Nowton Court, near Bury St. Edmund, who has one of the finest collections of Tree Pæonies in the neighbourhood. But the Dielytra is still more severely punished, and is, in fact, out down level with the ground; it will doubtless break again and flower later. This lovely plant is generally frosted here, but no severities of our spring climate seem able to teach it to flower later. The early Forget-me-not (*M. diastiflora*), that seemed quite dead on April 1, has recovered so rapidly that most of it is already in flower. I never remember to have seen such a striking illustration of the rapid recovery of any plant or flower. Crown Imperials have suffered so severely that they do not seem as if they could recover.—D. T. FISHER.

**Double Auriculas.**—Doubtless, that singular occurrence that has from time to time shown itself in the Chinese Primula, the common Primrose, and, in a very isolated degree, in the Polyanthus, has also appeared in the Auricula, and we now possess some eight or nine really double kinds. How these originated is a matter worthy of patient inquiry, but the duplication does not appear in the best flowers, and probably owes its development to cultivation, which has the power of multiplying the number of petals so as to gradually constitute a perfectly double flower. The first appearance of an extra petal issuing from the tube of the flower is marked by the florist, who sees therein the foundation of a race of double kinds; seeds are saved, and the result is a few flowers that are more distinctly double than the parent. A few years more and we have perfectly double flowers, but it frequently happens, as in the case of the Chinese or common Primrose, for instance, that the result is entire barrenness. In the double Auriculas some, such as the purple, black, and bronze, are so double that no pistils or stamens are visible; others produce, on the same stem, flowers that are both double and semi-double, and some of these latter produce seed-pods, and thus promote the spread of other kinds. The fine double yellow will sometimes seed and reproduce itself, and sometimes colored single flowers. Of double kinds now existing there are yellow, black, purple, white, maroon, lilac, mauve, hrunze, &c., of which both yellow and lilac are now seeding. Some of the newer kinds are of Continental origin, but are fairly robust growers, and will be better known in a year or two. Being naturally slow propagators, it will not be possible to offer these to the public for some time to come.—A. D.

**Graveyard Gardens.**—With reference to "E. F.'s" remarks (see p. 379), I think any flower border on the top of a grave should be permanent, and require no gardener's hand to change the flowers at different seasons, and that spring flowers and the beauty of spring are most suitable to the associations of a grave. I think the following would make a lovely border, and contain nothing that, if planted at moderate distances, would become weedy or run into others, and would continue to take care of themselves as long as it is likely the planter's eye would watch them. In peat and silver sand (a good deal of sand, to keep it sweet) plant *Gaultheria procumbens*, with *Lilium tenuifolium* dotted among it, *Trillium grandiflorum*, *Gentiana verna* (not acutis), which flowers the easiest, *Scilla sibirica*, and *Iris reticulata*. In loam, not too heavy, as it becomes heavier by wet and sour, plant *Heleborus maximus* (it would not spread, as "E. F." fears), *St. Bruno's Lily* (the largest flowered one), *Silene alpestris*, *Lencoum vernum* and *æstivum*, *Cyclamen Coum* or *Atkinsi* and European, *Anemone stellata* and *hertensis*, *Crocus Sieberi* and *Imperati*, *Triteleia*, *Scilla nutans*, *Gladiolus*, and *Violas* which "E. F." mentioned, spread far too much, and would overrun one another.—J. R. D., *Stamford Hill*.

**Iris pumila for Spring Gardening.**—Where this style of gardening is carried on, this beautiful Iris should in all cases be used. Few plants are more effective; it grows regularly, and, if planted in good sandy soil, never fails to yield an abundance of sky-blue blossoms. We saw an isolated bed of it lately in the gardens at Wimbledon House completely carpeted with flowers, a condition in which it has been for a long time past, and in which, to all appearance, it will continue for some time yet to endure. The plants will bear transplanting yearly if used here, but they are best left undisturbed.—S.

## NOTES OF THE WEEK.

**Primroses for Waste Places.**—In Mr. Williams' interesting note on this subject I saw no allusion to what seemed to me the most important thing to say about the matter—the need to naturalize the many beautiful new and old forms of the Primrose, now obtainable in gardens, and often shown in a feeble condition at shows. Many of these are splendid in colour, and have constitutions quite as vigorous as the common Primrose. There is little need to plant what is so abundant in many places already, but there is nothing better worth doing in the way of wild gardenizing than planting in copses, banks, and similar places some of the lovely varieties to which I allude. Even some of the vigorous yellow kinds would be desirable.—A. P.

**Paris Exhibition.**—M. Truffaut, the well-known nurseryman at Versailles, writes to us, under date of May 1, as follows:—"From my own observation, having passed the day at the Exhibition, I feel sure, although many houses are not yet ready, there will be a good show of plants for the first international exhibition on the 15th inst. But what struck me the most was the conservatory built by Mr. Boyd, of Paisley, and furnished by Mr. Wills. This is certainly, at the present time, one of the chief features of the Exhibition. The English exhibits in this department do the greatest honour to your country."

**Spring Flowers at Tooting.**—I send you herewith cuttings from my two beds of *Anemone fulgens*. The fogs of the last two days have not improved them, but a more glorious sight in the sun is hardly conceivable. You will observe there are two varieties—the one with nine to twelve petals I call fulgens, and the one with twenty to thirty petals I call fulgens multipetala. I also send you some flowers of *Romulea Clusii*, a Spanish species, now blooming profusely in my grounds and very pretty, the flowers being large and rosy-lilac in colour with an orange throat. I send you leaves of Emperor and Empress Narcissus, in order to show that in plants which have been undisturbed for two years the foliage is broader than in those which are transplanted.—P. BARR.

**New Mignonette.**—Mr. Gallop sends us from Brighton specimens of his new Mignonette, which is very distinct in appearance and very fragrant, even when grown in ordinary soil, and flowered so early in the season. It is a good sign to see attention devoted to distinct or improved varieties of such plants as the Mignonette.

**Conifers at Dropmore.**—We have received from Mr. Titmuss, gardener at the Old Palace, Croydon, photographs of two of the most remarkable Conifers at Dropmore, viz., the Douglas Fir and the *Arucaria imbricata*. The first is stated to be 108 ft. in height. Its seed was sown by Mr. Frost, who is still gardener at Dropmore, in December, 1827. Of the *Arucaria*, which is upwards of 60 ft. in height, a coloured plate will be found in the ninth volume of THE GARDEN (see p. 84). It was planted in 1830.

**Indian Azaleas at Chelsea.**—These form a very attractive feature just now in Messrs. Veitch's nursery. Large houses filled with medium-sized plants in full flower may now be seen, as well as hundreds of noble specimens fit for show purposes. These latter are much more effective than such plants usually are on account of their being allowed to grow in a more natural manner than ordinarily, so their leaves as well as flowers can be seen. All the best old kinds, as well as many valuable new ones, both single and double, are here represented, and these embrace every shade of colour to be found in Azaleas.

**Plants at Nevry.**—I send you flowers of *Piptanthus nepalensis*, *Eurybia gummosa*, *Hovea Celsi*, *Correa cardinalis* in flower since October, and *Chamaecerasus grandiflorus roseus* from the open ground; also a branch of Mr. B. S. Williams' stove shrub, which he says requires the same treatment as *Ixoras*, viz., *Toxicophloeum spectabilis* also from the open ground where it has passed the winter. I likewise send a cutting of the same from a large plant wintered in a cool house where it was with other plants frozen quite hard once or twice. It will be seen that the colour of the foliage is quite different from what we usually see in a warm house, being a rich warm brown like that of a Copper Beech. I also send you a cut specimen of *Fuchsia splendens*, a number of plants of which were wintered in a cold frame are now coming beautifully into flower.—T. SMITH.

**John Waterer's Bagshot Cherry.**—I send for your inspection specimens of a new Cherry which I sent out to the trade a year or two ago. It is called *Cerasus Watereri*, or John Waterer's Bagshot Cherry; it is one of the very best flowering spring trees which we possess. The quantity of it which we have as yet distributed is very limited, and therefore it is but very little known. Blooming, as it is, in our nursery just now, it is really a magnificent plant; it makes a fine standard tree, and I believe it will become most useful as a

forcing plant, as it could be got into flower so early.—JOHN WATERER, Bagshot. [A more floriferous or beautiful early-flowering shrub or small tree could not possibly be found than this Cherry, the examples of it sent to us being literally masses of blossom. The flowers, too, are individually large and tinged with pink, especially in the bud state. It closely resembles the St. Julian Cherry, figured in THE GARDEN (see p. 436, Vol. X.) under the name of *Cerasus Juliana floribus roseis*.]

**Large Berberis Darwini.**—I saw, the other day, in a garden in this neighbourhood, an isolated, unpruned, ununtillated, symmetrical specimen of this handsome shrub which measured 63 ft. in circumference and about 22 ft. in height. It rests upon green turf, and fairly represents what this Berberis may become under suitable conditions if left to itself.—T. SMITH, Nevry.

**New Dendrobium.**—A new Dendrobe is now in flower in Messrs. Veitch's nursery at Chelsea. Its flowers are golden-yellow, the throat being a little deeper than elsewhere. The lip is furnished with a long fibry fringe, which renders the flowers quite novel in character. The plant grows freely, and will doubtless prove a free bloomer. When plentiful this Dendrobe will find its way into every collection of Orchids. It is named *D. Brymerianum*.

"The Parks and Gardens of Paris."—A new edition of this book, which has been out of print for several years, has just been issued by Messrs. Macmillan.

**Arnebia echioides.**—Dr. Moore sends us flowering specimens of this bright yellow Borage-wort, which is one of the most ornamental of the rarer herbaceous plants at Glasnevin. The dark spots on the petals give a very bright effect when the flowers first expand; they afterwards gradually disappear as the flowers get older.

**Cymbidium eburneum.**—Of this beautiful Orchid Mr. William Ball has lately imported a large quantity, some of which, we understand, are to be disposed of at Stevens's. Importations of Orchids are at all times welcome even should their worth and beauty be unknown, but to receive an abundance of kinds known to be both beautiful and valuable, is much more satisfactory. What are called Indian Crocuses (*Pleione*) and numerous other good Orchids are also to be offered at the same sale.

**Single-flowered Petunias in Spring.**—For conservatory decoration these easily-grown plants are of great value, for, in addition to their effectiveness, they supply colours possessed by few other plants. We lately saw a quantity of them in full bloom in Messrs. Carter's nursery at Sydenham. The seed, sown early in the year, produced plants which were encouraged to make growth, and at the time of our visit they were in 6-in. pots, large and spreading, and loaded with rich and variously coloured blossoms.

**Plants in Flower at Colchester.**—Our Narcissi have been fine, so has *Tulipa Greigi*, but it is now nearly over. *Trillium grandiflorum*, *recurvatum*, and *erythrocarpum* are grand; so is *Iris iberica*. We expect about 100 blooms of this *Iris*. *Fritillaria recurva* is just opening; also *Iris pumila* and its varieties *gracilis*, *azurea*, and *lutescens*. *Narcissus Bulbocodium* is fully out, with *Dodecatheon elegans*, *Orobis mascula*, *O. foliosa*, and *O. spectabilis*. *Corydalis bracteata*, *Habenaria rotundifolia*, and *H. dilatata*. *Primula japonica* and *Darlingtonia californica* are also showing flower.—A. W.

**Double-flowered Rhododendron.**—I send you a double flower of *Rhododendron Dalhousie* from a truss of bloom in which there are one single and three double flowers. Has there ever been recorded an occurrence so singular?—A. HOSSACK, Ragley Gardens, Alcester. [The bloom sent is incomparably the handsomest double *Rhododendron* we have ever seen. It reminds one of a double white *Brugmansia* in miniature.]

**Magnolias at Tooting.**—Large plants of these make a fine display just now in Messrs. Rolleston's nursery. Their bloom buds were little injured by the late frosts, and they are now one sheaf of blossom. The principal kind is *M. conspicua*, but a sort named *M. Soulangiana*, trained on a wall, is the most effective. Its flowers are produced in great profusion all up the branches, and, being very large and suffused with pink, afford valuable blooms for use in a out state. The wonder is that this and other varieties are not used for forcing more extensively than at present. They submit to forcing equally well as a Ghent Azalea, and they may be had in bloom without difficulty at Christmas. In proof of this, a large branch furnished with bloom-buds, placed in a tank in one of the Fern houses in the nursery above alluded to a few weeks before Christmas, opened its blossoms perfectly, and came in very usefully at that comparatively flowerless season of the year.

**John Waterer's Exhibition of Rhododendrons.**—This is to be held in Cadogan Square, adjoining Prince's Cricket Ground, during the present year. It promises to be a remarkably extensive and fine exhibition.

## NOTES FROM KEW.

**Hardy Trees and Shrubs.**—To the Natural Order Ericaceæ we are indebted for many of our best hardy-flowering shrubs, and at this season numerous members of this family are putting on their floral adornments. Thus one cannot but be struck with the fine plants of *Arbutus Andrachne* that are now covered with large bunches of white, cup-like flowers, broad at the base and contracted at the opening; the bright evergreen leaves, and the remarkably clean-looking, smooth, reddish bark give to this plant a striking character. *Vaccinium amarum* in the pleasure grounds is very fully covered with its blossoms, which are similar in form and size to those of *Arbutus*; instead of being white, however, they are tinged with red, and the pedicels themselves are red. *Menziesia petrifolia* is a dwarf and exceedingly pretty bush from North America, the rosy-purple, bell-shaped flowers are borne near the tops of the short branches, which are thickly clothed with leaves, much resembling (as the specific name implies) the Crowberry (*Empetrum nigrum*) of the moors and rocks of the mountains of Great Britain. *Amelanchier canadensis* is one of the prettiest early-flowering trees, showing up well in clumps or shrubberies its sprays of white flowers, the red calyx lobes and red stalks of which make the species conspicuous either amongst deciduous or evergreen shrubs. It is the Service or June Berry of the Eastern United States, and is found mostly by the banks of mountain streams. Arrows are made from the strong wood, and the berries are eaten either cooked or in a fresh state when ripe. The Cherry Crab (*Pyrus baccata*) is now one mass of snow-white blossoms; it is a very handsome small tree, and is well worth a place in any shrubery. Its beautiful fruits are freely produced; the early falling away of the calyx lobes and the very glossy, glabrous leaves abundantly distinguish this from the Siberian Crab and its varieties. The Chinese Crab (*P. spectabilis*) is another Asiatic species of great beauty; it is the most handsome of the section to which it belongs, and is covered with a profusion of fine, rosy-pink flowers. The slender twigs of the South European *Prunus* (*Cerasus*), *Mahaleb* var. *chryso-carpæ*, are densely clothed with corymbose racemes of fragrant white flowers; the habit is very graceful, and, altogether, this little tree is a very desirable one. The evergreen *Laburnum* (*Piptanthus nepalensis*) is a fine bush, and its erect, terminal racemes of large yellow flowers are very striking; it, however, requires in our climate a somewhat sheltered position.

**Hardy Herbaceous Plants.**—The *Ranunculus* family affords a large contingent of extremely valuable flowers at the present time. *Ranunculus acris*, sometimes called Fair Maids of France, is a handsome plant, about 2 ft. high, with pure white flowers. A double variety of this, in gardens, is known as White Bachelor's Buttons. *R. millefoliatus* has finely-cut leaves and large golden-yellow flowers; it is a native of Sicily. *Trollius europæus*, the Globe-flower of the mountain pastures and coops of Britain, has charming lemon-yellow flowers, whilst *T. asiaticus* has dark orange. The South European *Anemone palmaria* has golden-yellow, Buttercup-like flowers, and is a very pretty species. *Waldsteinia sibirica*, a dwarf, Rosaceous perennial, with Strawberry-like leaves and short panicles of bright yellow flowers, is a charming species for the front of the herbaceous border. *Hutchinsia alpina* and *Schizoregia podolica* are pretty little white-flowered Crucifers of similar size and habit; both do well on rock-work and flower freely. *Anemone balcanica* is a minute Sandwort from the Balearic Islands; it clings to stones almost as closely as most Mosses, and its star-like pure white flowers are beautifully set off by the dense carpet of small dark green leaves. *Ohonca cheirifolia*, a remarkable dwarf Composite from the Mediterranean region, has very glaucous leaves and bright yellow flowers. *Polemonium reptans* is a pretty, dwarf North American perennial, the light blue flowers of which are borne on short panicles; it is perhaps the earliest of the genus. Among Narcisus the most attractive are those given below. Two forms of the Hoop-petticoat Narcisus, bearing the respective varietal names of *conspicua* and *tenuifolia*, are very pleasing; the latter is about half the size, in all its parts, of the former; both are natives of South-west Europe. *N. aurantiaca* is a robust variety of the South European *N.* incomparabilis, and has an orange-coloured corona and sulphur-yellow perianth. *N. pseudo-Narcisus* var. *bicolor* resembles the common Daffodil in size, &c., but it flowers much later than the type, and the corona is bright yellow, whilst the perianth is pale sulphur. Amongst Irises the most charming of the species not previously noted is *Iris nudicaulis*, from Silesia and Bohemia; it is a very handsome rather dwarf species, with dark purple flowers. *Uvalaria grandiflora* and *U. sessilifolia* are North American perennials, and are both beautiful and interesting; the former has stems about 18 in. high and perfoliate, light green leaves, from the axils of which spring the pendulous, yellow flowers, 1½ in. to 2 in. in length; the latter is a much smaller species with whitish flowers. The bruised leaves of *U. grandiflora* are in America accounted a remedy for the bite of the rattlesnake.—†

## THE FRUIT GARDEN.

## THE GREATER HARDINESS OF PETALS THAN PISTILS.

This is a matter that has hitherto received little or no attention; yet it is one of the most prominent and deceptive features of this and almost all our fruit failures. Walking round the garden, and looking on the trees that were fairly protected, the inexperienced might think that the accounts of the fruit failures had been grossly exaggerated. Peaches and Plums look bright and fair as before, and Apricots, having so far accommodated themselves to frequent failures, have expanded their second or reserve forces of bloom to make up for the almost complete wreck of the first and main crop. But all is not gold that glitters, nor all fruit that looks like it. These floral appendages, that look so bright and gay, are but flowers on the birch of Death. The pistils, stamens, ovary are all wrecked, or so crippled that fructification is impossible. The very persistency with which the more ornamental appendages of vitality (the petals) cling to the trees is one of the worst possible signs of the hopelessness of a crop of fruit. Were the blossoms set, or likely to set, the petals would quickly fall off; but they cling on to the last, as if loth to give up all for lost. Even not a few of the second bloom of Apricots seem imperfect, and many of the buds seem to have been loosened from the trees by the frost before opening, so that the merest touch or the gentlest breeze causes them to fall; still, no doubt, a few of these may set. Of course I am writing of trees properly protected. Those left to themselves seem to have no chance whatever. Apples seem to stand still since the frosts; still, as they are abnormally late, it is hoped they are safe; there will be a fine bloom. Early Plums are wrecked, but the later ones seem safe, and are expanding rapidly now, so that the trees are white as a sheet. Cherries are also a glorious show, and look safe and sound. Late Pears also look more hopeful; most of the early ones are wrecked. Gooseberries have passed through pretty well, doubtless owing to the snow, which laid thickly on the bushes. Currants are also unusually late, and seem all right. Strawberries also look promising, so that, should the remainder of April and May up to the 20th prove genial, perhaps a half crop of out-of-door fruit may yet prove one of the welcome blessings of the season. But a month of danger is yet before us, and almost everything depends on what weather that month may bring. The growth of everything in the open air has been remarkably slow up to the present time, and in that fact there is much hope that the great English fruit crop for all classes in England—that of the Apple—may escape being wrecked; and, if so, there is every symptom of its proving plentiful.

D. T. FISH.

**Fruit Prospects.**—Notwithstanding the prognostications of the prophets, I think we are likely to have average crops of most fruits this year where the blossoms have escaped the late frosts, and provided they escape after this date, April 27, which we may hope. Some kinds of Apples and Pears are full of bloom, and others are quite barren; this is especially the case with Pears. The most floriferous Pears are *Doyenné d'Été*, *Napoleon*, *Broome Park*, *Williams' Bon Chrétien*, *Althorpe*, *Crassane*, *Barré d'Amant* (a good Pear in our high latitude), *Chamnotel*, *Bœurré Clairgeau*, and *Easter Bœurré*. Such as the *Forelle*, *Marie Louise*, *Bergamotte*, *Hacón* (incomparable), and *Knight's Monarch* are quite barren. The most promising Apples are *Devonshire Quarrenden*, *Bradick's Nonpariel*, *Irish Peach*, *Golden Pippin*, *Boston Russet*, *Claygate Pearmain*, *Pearn's Pippin*, *Cooke Pippin*, *Adam's Pearmain*, *Lamb Abbey Pearmain*, *Lord Suffolk*, and the *Codlins*; the latter two are sorts which rarely fail. Cherries are as full of flower as ever I saw them; but are too early in bloom for this district unless the weather turns out exceptionally favourable. Plums are middling; Strawberries, Gooseberries, and Currants look fairly well.—J. S. W.

**Tan Cure for Gooseberry Caterpillar.**—I have no experience as regards the Elder bush cure for this caterpillar (see p. 356), but 4 in. of tanner's bark spread around the stems and over the roots in the autumn I have found to be a complete cure. It either kills the larva or keeps it from getting out; and either way the result is a cure, the simplest and best I have found. I have little faith in frightening or charming such pests away by any sort of counter-charm; but if Elder boughs will drive or keep away flies from horses' ears, why should not permanent plants among Gooseberries have a similar result as regards caterpillars? Why, indeed? Only I can say this, that Tomatoes do not drive away wasps from luscious fruits, as many have affirmed; and I have never found the wasps even stop to notice the Love Apples when any ripe Peaches or Pears were in the way. Hence, I am also sceptical about the Elder plants.—D. T. FISH.

## BERRY HILL, TAPLOW.

WE have more than once spoken of this place as interesting from a landscape-gardening point of view, and now have much pleasure in giving a view in and plan of the ornamental part of the grounds. The charm of the place is owing to its possessing considerable variety of vegetation, often disposed in an artistic manner, and at the same time having abundance of breadth and turf about the house. The elements of the landscape picture are simple, there being no natural features to help the designer beyond a little gentle undulation of the ground. Such charms as it possesses are within the reach of all having a few acres of ground. The water is artificial, but has in outline or in the grading of its banks nothing in common with the unpleasant ponds which are too often the result of efforts in this direction. The house is on a gentle eminence, and the views across the lawn, both to and from the house, are often pretty. As may be noticed, the terminations of the water are well concealed; but perhaps the most instruc-

## TREES AND SHRUBS.

## RHODODENDRONS ON CHALK.

I OBSERVE some inquiries on this matter by "A. C." (see p. 276), and also note the advice "not to attempt to cultivate them at all on the chalk." This is rather too sweeping, as everything almost turns on the character and depth of the soil over the chalk. The greater part of the gardens here are on the chalk, which varies in depth from 1 ft. to 4 ft. from the surface. Yet Rhododendrons thrive well in the natural loam that overlies the chalk and better still, in woods where the *débris* of fallen leaves forms a patulum in which their roots delight. "A. C.'s" proposed plan, however, of digging pits in the chalk and filling them with peat in which to plant Rhododendrons is not a good one. A better course is to form good masses of soil over the walk of considerable size and depth, and to plant these raised beds with Rhododendrons. The larger the masses the more telling in a park; and if the soil could be laid between 2 ft. and 3 ft. deep the plants would thrive all the better. The sides of the newly-raised beds might



Berry Hill: View across the Water and Lawn to the House.

tive feature of the plan (see p. 413) is the absence of needless walks. In this respect it is a charming contrast to the French gardens made hideous by curvilinear walks interlaced throughout their whole surface, and of which we have given several specimens in THE GARDEN. Here it may be noticed that one outer walk leads to all the important features of the place, and the lawn is consequently unbroken. How many gardens that might be beautiful are spoiled by needless walks! It must be a very large garden, arranged in this or any similar manner, which requires more than one walk. The place is charmingly planted, although no additions have been made to its collections since its owner, Mr. John Noble, removed to Park Place a few years ago. The garden was laid out by Mr. Marnock, and owes much of its beauty and interest to the good taste of its owner in matters of planting and garden design. Mr. Noble has since formed another beautiful garden at Park Place, Henley-on-Thames, of which we hope soon to publish some views. The names, being engraved in the plan, make it self-explaining.

be furnished with Ivy, Periwinkle, Cotonaster, or, better than all, the variegated Japanese Honeysuckle, or *Berberis Darwinii* pegged down. The surface of the beds should be flat, or even slightly hollow in the middle, and if the soil be dry and clay be come-at-able, the sides might be puddled round with clay, and also the bottom in extremely dry places; but neither will be useful in a general way. The form of the bed will retain the moisture that falls upon it, while its elevation above the surrounding surface will protect it from the opposite extreme of stagnant water at the roots. It is the want and the excess of water far more than anything in the soil or subsoil that prevents the growth of Rhododendrons on the chalk. Another point of much moment as regards the culture of Rhododendrons is shade. This is easily provided by planting in clumps of trees already established, or by planting some Oak, Sycamore, or other trees a season or two before the Rhododendrons are planted. Oaks seem to agree with Rhododendrons better than any other trees, and if tolerably tall trees be planted in the prepared beds, they will afford a useful shade at once. One great benefit derived from mass planting, as here proposed, is, that the plants shade each other from the first. Rhododendrons naturally cling together in masses, and those who plant thinly

in the open ground, even in the best soils, generally have to submit to a slow growth for some years in consequence; but in unfavourable soils and in ungenial places the penalty paid for the thin distribution of plants is the death of many and a severe check to all. The Rhododendron is a surface-rooting, shade-loving plant; and it follows that, set out thinly on or off the chalk, it suffers severely from the sun on its stems and roots; hence, the worse and more exposed the position, the thicker Rhododendrons should be planted. This lesson was well learned many years since. An avenue on either side of a green walk and also a mass of Rhododendrons were planted simultaneously. Naturally, the finest plants were selected for the avenue or line; but the effect of isolation was so marked that the massed plants took the lead at once, and the open lines never got within any fair distance of them afterwards. Neither is there any waste of money or plants in this thick planting, as few shrubs transplant with more ease than Rhododendrons, and before any great overcrowding takes place, it is easy to thin with such discretion that neither the plants taken nor those left shall greatly feel it. In unfavourable localities I should, however, prefer thinning with the knife rather than the spade; and no plants do better in thick masses than Rhododendrons. In fact, once they reach this state, they seem almost independent of soil; and if they have trees overhead, or a few leaves scattered amongst them every winter, they will thrive and flower on almost any soil, however bad or barren. Water, however, they must have. For more Rhododendrons are killed by drought than starved through unsuitable soils. During dry summers, on thin barren soils, the plants should be drenched with water, especially in East Anglia and other dry districts; for, in general terms, it may almost be affirmed that as is the rainfall so is the size and luxuriance of these grand plants, and nothing astonished me more than the literal forests of Rhododendrons to be met with in Inverness-shire and other parts of the Highlands of Scotland. Many of the Rhododendrons in the north are more like our grandest specimens of Portugal and English Laurels than the usual run of Rhododendrons one meets with in the south. Therefore, if cultivators could irrigate their Rhododendrons a few times during hot dry summers, or, as the farmer expressed it about his Mangles, "turn a river over them," they would doubtless thrive in hundreds of localities where they now refuse to grow. Soil is of less moment than shade and moisture. Every one knows these plants thrive in peat; it is less generally known that they flower even better and thrive almost as well in good loam than in peat. They will live in clay and in soils little else or better than sand, especially if the latter be dressed with cow manure in a decomposed state. Perhaps the best soil of all is that composed of equal parts of peat, loam, and leaf-mould, pretty freely intermixed with pure silver sand. Red pit sands are generally objectionable, as the iron found in some of them is as bad or worse than chalk for Rhododendrons. D. T. F.

**Shrubs for Mixing with Fuchsias.**—I quite agree with "Kensington" (see p. 359) that *Dentzia glabra* is an excellent bed or border plant far too scarce in cottage and other gardens. We have some grand plants of it here among Rhododendrons, and its noble drooping masses of white, towering far above their bright colours, are beautiful in the extreme. The double *Dentzia* is equally beautiful, but less white. It, however, flowers later, and continues much longer in flower, and it is one of the best shrubs that has been introduced in modern times. Being, however, a *Dentzia*, it has been forced to death in not a few gardens, a purpose for which it is not adapted, and far inferior to gracilis, which is inimitable for that purpose. The latter also does well out-of-doors in warm localities, and is extremely beautiful where it thrives in the open ground. The *Dentzias*, however, flower earlier than the *Fuchsias*, and so far could hardly add to their beauty, though the foliage is good and the habit graceful. Perhaps some of the *Spiræas*—such as *S. arifolia*—would be a better match for *Fuchsias*. Still, *Fuchsias* need no support, as of them it may truthfully be said none but themselves can be their equals, and amongst them there is a marvellously rich variety of form and colour. But masses of *Dentzias*, *Syringas*, *Almonds*, *Lilacs*, *Spiræas*, *Rhododendrons*, *Azaleas*, and other shrubs of moderate size, and well posted here and there on the Grass, have a magnificent effect. I also quite agree with "Kensington" about the *Catalpa*, which is a fine tree where it thrives and can find room. To do it justice, however, it needs much space. Among other beautiful, moderate-sized, choice neglected trees may be named the *Magnolia conspicua*, which is in full flower early in April, and one of the most beautiful and sweet of the *Magnolias*, only second in size and fragrance to *M. grandiflora*. Such trees as these, the *Ailantus glandulosa* and several *Asclepias*, form a most welcome addition, and a pleasing contrast to the *Thorns*, *Laburnums*, *Lilacs*, and *Laurels* that so often form the entire furniture of small gardens.—D. T. FISHER.

## THE PRIVETS.

By GEO. GORDON, A.L.S.

THESE grow freely in any kind of soil; they bear clipping well and form good hedges, for which the best are the Italian Privet and the oval-leaved one from Japan, especially the last, which grows twice as fast as the Italian Privet, and is more robust. It is also sub-evergreen, or in mild seasons quite evergreen. It commences to grow very early in spring, and in the neighbourhood of London is fast superseding all others for forming hedges. When planted singly, as bushes, Privets also form very ornamental objects, as they flower most profusely. The Indian Privets (*Ligustrum robustum* (spicatum), pubescens, bracteolatum, vestitum, nepalense (Wallachi) lanceolatum, longifolium, and virgatum) are all tender, and are seldom met with, except in botanic gardens, where they are treated as greenhouse shrubs. They are of little use as decorative plants.

**Common Privet** (*Ligustrum vulgare*).—This is so well known, that it is only necessary to state that there are several varieties of it; the most distinct of which are the yellow-berried, the variegated, leaved, and the Italian or evergreen one, which retains a portion of its leaves all winter.

**Oval-leaved Japan Privet** (*L. ovalifolium*).—This forms a robust, upright shrub, 6 ft. or 8 ft. high, and retains a portion of its leaves all winter. The latter are tolerably large, oval, somewhat pointed, quite smooth, and of a deep shining green on the upper surface; the flowers are borne on rather close panicles, and are produced in July and August. Of this there is a fine, erect-growing, golden variegated variety, which in gardens bears the absurd name of *L. californicum*. This kind, as I have said, is now common as a hedge plant about London.

**Chinese Privet** (*L. sinense*).—This forms a tall, deciduous shrub, 8 ft. or 10 ft. high, with an ample, spreading head. Its leaves, which are much smaller than those of the oval-leaved kind, are oblong-lanceolate, somewhat pointed, and tomentose; the flowers are borne in rather large, loose, terminal, villous panicles, and are produced in great profusion in August. Of this the *L. Stauntoni* is a variety, and it bears the names of *chinese*, *ibota*, and *ibota villosum* in gardens. There is a fine variegated variety of it, the leaves of which are edged with gold.

**Japan Privet** (*L. japonicum*).—This is a low-spreading, evergreen shrub, from 3 ft. to 5 ft. high, with broad, oblong-ovate, somewhat pointed leaves, grooved along the middle on the upper surface, quite smooth, and of a deep glossy green above; the flowers are in rather largish, compound racemes, with the pedicels spreading. It is the dwarfest of all the species, and forms a very neat shrub, which flowers in July and August. Its synonyms are *L. latifolium* and *L. Sieboldi*. There are three or four varieties of it, one of which has tricoloured leaves.

**Leathery-leaved Privet** (*L. coriaceum*).—This is a distinct Japanese kind, with thick, glossy, dark green leaves, and quite a dense habit of growth. It is known in gardens under the name of *L. glabrum*.

**Shining-leaved Privet or Wax Tree** (*L. lucidum*).—This is an old inhabitant of our gardens, and forms an erect, twiggy, sub-evergreen shrub, from 10 ft. to 12 ft. in height. Its leaves are rather large, broad, and of a deep glossy green; they are ovate-oblong, pointed, smooth in the adult state, and shining. The flowers are borne in large, spreading, thyrsoid panicles and terminal. It is a native of China, and flowers in September and October. Of this there is two varieties, one with much larger bunches of flowers (*L. floribundum*) than the type, and the other with variegated leaves.

## JUGLANS LONGIROSTRIS.

THIS variety of *Juglans* about to be described is certainly one of the most remarkable in the genus, more especially from a scientific point of view. It is one of those plants which show, better than any amount of argument, how far types may extend, or rather that their extent is illimitable. In an article, condensed from a paper by M. E. A. Carrière in the "Revue Horticole," on the Walnut and its varieties, which appeared in THE GARDEN, Vol. IX., p. 361, it was shown that the American and Asiatic types *nigra* and *regia* are closely connected by a long series of intermediate species. Nothing, says M. Carrière, in a recent number of the "Revue Horticole," confirms this view of the question better than the fact of the sowing

which has produced the *Juglans longirostris*, having been made with the seed of the common Walnut, none of the other seedlings being exactly like the parent tree. They all differed in form and general appearance by the size, shape, and nature of the fruit, by dimensions and form of the leaves, and even by the absence of the well-known characteristic odour peculiar to the Walnut trees of all countries, such as *regia*, *nigra*, *cinerea*, &c. It may be noticed that these species, which have long been thought to be geographically distinct, are now found to be closely connected. For instance, in the far east of Asia and Manchuria, and possibly elsewhere, there exist certain forms which nearly approach *Juglans nigra* and *cinerea*, of which they are the analogous forms, and which seem to unite these types to *J. regia*, which itself appears under a great number of different forms. Amongst these there are several varieties that bear fruit, the shells of which will not divide; we must, in fact, break the shell

ing, as they do, additional connecting links between the two great groups of Walnut trees. M. Carrière promises to give an account of these interesting varieties. In the meantime he informs us that one of these so closely resembles the Hickory or Pecan-nut tree of Louisiana (*Carya olivæformis*), as to be easily mistaken for it. C. W. QUIN.

THE AMERICAN CORK, OR WESTERN ROCK ELM.

(*ULMUS RACEMOSA*.)

THIS tree is found growing with the common American Elm, and in situations similar to those selected by that tree, from the southwestern county of Vermont westward to Illinois, and from the Ohio northward into Canada. It is common in New York, along the banks of the Mohawk and its tributaries, in Yates County, near Penn Yan, and occurs in many parts of Ohio and Illinois; but it is in the southern peninsula of Michigan, Wisconsin, and the province of Ontario that the Rock Elm is most frequently met with. This species will be readily distinguished by the disposition of the flowers, which, unlike those of other Elms, are borne in racemes 1 in. to 2 in. long, and composed of several clusters of two to four flowers together. It may be distinguished also from the common American Elm, at all seasons of the year, by the thick corky ridges which extend along the young branches. The wood, too, will be found to be very dissimilar from that of the American Elm. Its specific gravity is '832, while that of American Elm is but '649, or 22 per cent. lighter. It is almost as heavy as the best Eastern Hickory, 4 per cent. heavier than the best San Domingo Mahogany, and 26 per cent. heavier than second-growth Eastern White Oak. The wood is fine grained, compact, and shows but little of that inclination to splinter which renders the wood of the American Elm unfit for many purposes of construction. The heart-wood, which is buff in colour with reddish tints, is susceptible of high polish, and is warm and agreeable in tone. Architects and cabinet-makers, to whom specimens have been submitted, speak of it with unqualified praise for furniture-making and interior decoration, for which purposes its hardness, strength, and beauty seem to particularly adapt it. The wood of this tree is unknown in the Eastern markets, but considerable quantities of what is called Canada Rock Elm are annually exported into Great Britain from Canada; but, judging from the descriptions of it, I am inclined to think that this is nothing but American Elm, or perhaps a mixture of the two, as lumbermen do not well distinguish this species, calling all Elm grown on high and dry land Rock Elm, and all that is produced along the river banks and in damp situations Bastard Elm.

Although still unknown in the East, the wood of *Ulmus racemosa* is highly valued in those portions of the Western States, where it is abundant enough to form an article of commerce. It is very largely employed in the manufacture of heavy agricultural implements, such as ploughs, mowing and threshing machines, and similar articles, in the construction of which the best White Oak is used in the East. In spite of its weight and strength, this wood is very flexible, and, when properly seasoned, retains any shape into which it has been bent, a quality which finds for it important employment. In some parts of Michigan, Rock Elm is largely used for the frame-work of chairs, and for the hubs of wheels and the heavy beams of stump pullers it has no equal. It is used for the slats of stock-cars, and for this and other purposes large quantities are annually consumed by the railroads. Indeed, the wood of this tree is generally employed wherever it can be procured, and where a material combining at once strength, toughness, and solidity is required. Should it reach the Eastern markets, the qualities which have caused it to be eagerly employed wherever it is known will find for Rock Elm a ready sale here; while, unless the opinion of those experts to whom specimens have been submitted is a mistaken one, it will be one of the most valuable, as it is one of the most beautiful, of American woods for the architect and cabinet-maker.

Taking the standard of weight as the best test of the heat-giving quality of any wood, and of the length of time it will continue to burn, Rock Elm is barely surpassed as fuel by Hickory itself. The specific gravity of Eastern second-growth Hickory is '838, that of Rock Elm '832, and that of second-growth Eastern White Oak '662; so that, applying the test of weight, Rock Elm as fuel is worth only 1 per cent. less than Hickory, while it is worth 26 per cent. more than White Oak, the best fuel which now ever reaches this market in any quantity. Actual experiments show that this wood burns slowly, with a bright, steady flame, and without snapping; ash equal to sixty-seven hundredths of 1 per cent. of the dry wood consumed is left after burning. As is to be expected of a tree yielding such heavy, close-grained wood, the Rock Elm grows very slowly. Specimens before me, cut from trees grown in Michigan, show that the annual layers of wood vary in width from one-sixteenth to one-eighth



*Juglans longirostris* (one-fiftieth the natural size).

in order to get at the kernel, which is so shut in by the ligneous walls of the mesocarp, that it is difficult to extract it at all. The most striking example of all these modifications of the original type *Juglans regia* is the *Juglans longirostris*. The tree has thin branches which grow nearly upright, forming a tall narrow pyramid. The bark of the branches is glabrous, of a shining black colour, that of the young shoots being equally glabrous, but of a dead green tint speckled with greyish-white. The buds are of a rusty greyish-red. The leaves are compound, and in some cases grow to the length of more than 16 in. The fruit stalk is covered with extremely short hairs of a light green colour. The fruit is borne on a short stalk, narrow at the base, but widening towards the middle, beyond which it decreases in size, again finishing in a long point or beak (*longirostris*). The surface is slightly sinuous and covered with short down; the shell is woody, and the surface is more or less gibbous and rugose. The form just described is not the only remarkable variety found amongst this crop of seedlings. Three out of these are specially interesting, form-

of an inch, and that the tendency of this tree is to grow more rapidly with increasing age. One stem, only 5 in. in diameter, shows sixty-seven annual layers, but this specimen doubtless grew in unfavourable soil, as a tree of the American Elm growing with it gained but 6 in. in sixty-five years. Never a common tree, the Rock Elm is fast disappearing from even those parts of the country where formerly it was the most abundant, and steps should at once be taken to propagate and plant what must be considered, in spite of its slow growth, one of the most valuable of American timber trees. I cannot learn that the Rock Elm has ever been cultivated, except in the new arboretum of Harvard University, where seedlings, three or four years old, are perfectly hardy, and are growing about half as fast as American Elms of an equal age.

The methods employed to propagate and cultivate the American Elm will be found equally successful with the Rock Elm, which will, I am confident, find itself at home in any part of the United States, and in any situation where the American Elm will thrive. The cultivation of the Rock Elm cannot, however, be recommended in those portions of the country infested with the canker-worm, which will doubtless attack indiscriminately the foliage of all the North American Elms. Sargent's "Notes on Trees and Tree Planting."

### NOTES AND QUESTIONS ON TREES AND SHRUBS.

**Outdoor Camellias.**—In reply to the inquiry concerning these (see p. 400), allow me to state that the best aspect for Camellias is a south or south-west one, sheltered by a bank or wall. They flourish in a compost consisting of two parts fibrous peat and one part good loam, with an addition of sharp sand. Planting from pots may take place at any period, but about July is the best time, as the wood is then well ripened. Duke of Devonshire, Halfida, Chandleri, Florida, imbricata, elegans, Alberti, Double White, Donkelaar, Countess of Orkney, Mathotiana, and Lady Hume's Blush are the best for outdoor culture, but in severe weather the flowers will be often damaged, unless temporarily sheltered.—W., *Exeter*.

—Almost any strong growing kind of Camellia should do well in the open air in Surrey if the situation be moderately sheltered from strong winds, and especially from the north. In planting out as an experiment it would not be advisable to select new or expensive kinds, and specially not plants that have been subjected to heat or forcing. It would be well to have good, well-hardened plants, some three or four years worked, as those when too often established would make the most robust growth. It has been too often the rule to turn out into the open ground old half-starved plants that are relegated to outside treatment from want of house room. If from such plants some disappointment should result, the Camellia should not be blamed. Such kinds as the Old Double White, Double Striped, Mathotiana, Lady Hume's Blush, &c., thrive satisfactorily in Hampshire, where the soil is a mixture of peat and loam, and where both Rhododendrons and Pinuses grow luxuriantly. Trench the soil deeply, let it be moderately manured, sweet, well drained, and of a sandy texture, and Camellias will doubtless do well. The Camellia is a very hardy shrub, as in the open air it does not begin to make its new growth until the most dangerous frosts are over. The plants may require a year or two before they make a good start, but when once established their future prosperity may be regarded as assured.—A. D.

**Fagus antarctica and Fagus betuloides.**—In Mr. Fraser's article on Beeches (see p. 391), he states that these two names are synonyms of one species. Possibly the same species may in gardens bear sometimes the one and the other, but it is a fact that they belong to very distinct species, both inhabiting the extreme south of South America. *F. antarctica* is a deciduous tree, and grows at a greater elevation than *F. betuloides*, which has thick, glossy, evergreen leaves. Both species were introduced into this country by the Antarctic Expedition, and are as easily distinguished from each other as the Evergreen and Turkey Oaks.—V. B. *Hemelst.*

**Holly Berries and Hard Winters.**—The popular notion that an abundance of Holly berries denotes a severe winter was evidently at fault last season, as the trees are still loaded with berries and coming into bloom for another crop. It is singular how the birds select particular trees for their first meal, clearing them entirely of their crop and shunning the next tree altogether. They are evidently fastidious as to flavour, for, as far as external appearance goes, there is not a shade of difference between the trees selected and those rejected.—J. Gloom, *Henham*.

**Berryless Hollies.**—I have been told that the Hedgehog Holly never bears berries. This year on a tree of this kind, near this town, there were half-a-dozen berries, of which I had one, and have set the seed contained in it.—H. S. N., *Bishop's Castle, Shropshire*.

## THE INDOOR GARDEN.

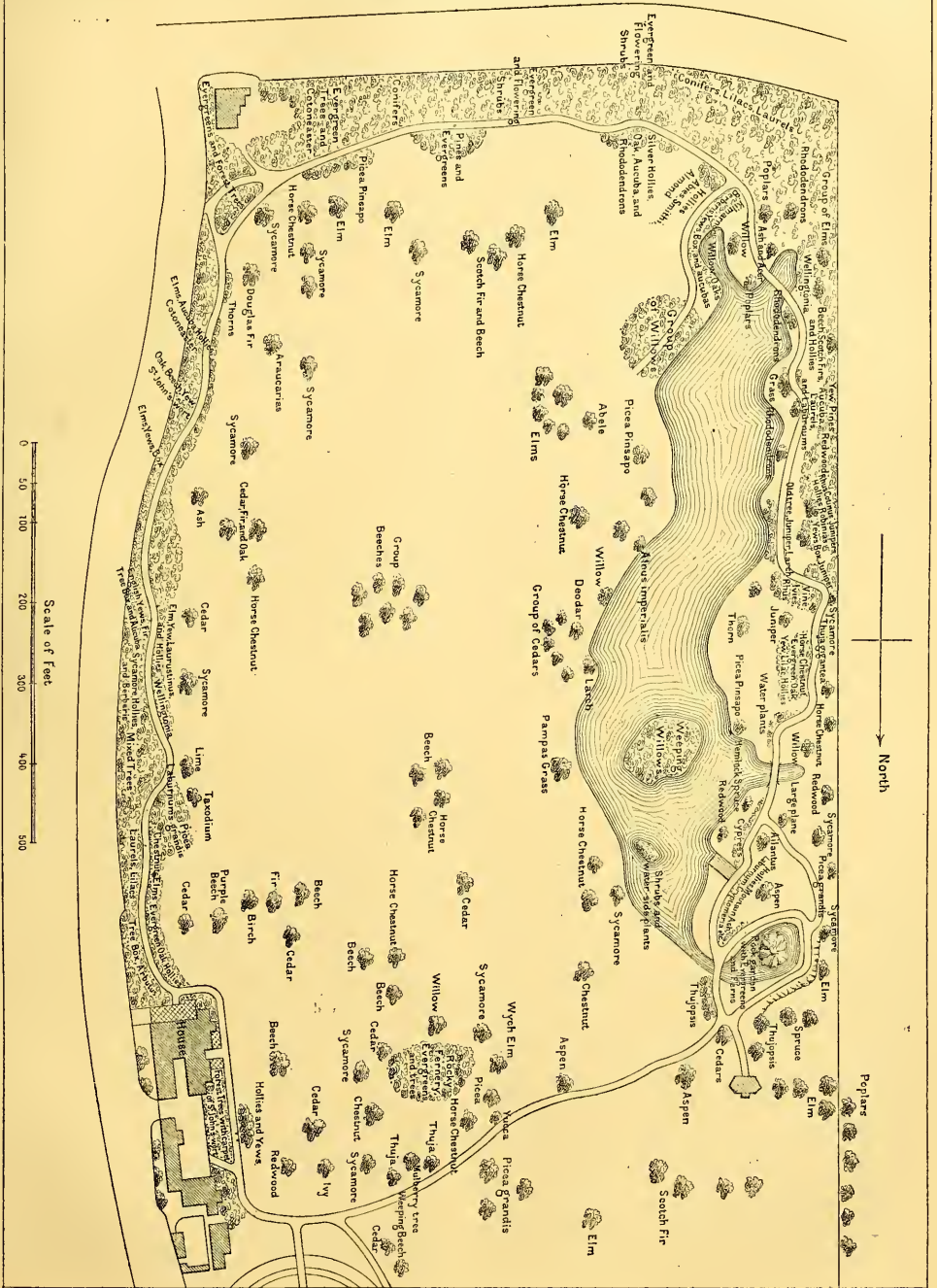
### TENDER ANNUALS AND OTHER DECORATIVE PLANTS.

SEEING the great dearth there is of greenhouse plants that bloom during the summer and autumn, and the few available for decorative purposes at those seasons, with the exception of Fuchsias and Pelargoniums, it has occurred to me that a list of such plants as may be raised from seed sown now, together with a few remarks thereon, may be of service to many readers of THE GARDEN. One advantage in growing plants of this class is that they can be got up quickly at a very small cost, and as fresh ones can be raised every spring, there is no necessity to winter them, a great consideration with many who have only very limited accommodation under glass, and who therefore desire to make the most of the room they have. Taking them in alphabetical order, the first that occurs to me is

**ACACIA LOPHANTHA**, a plant of singularly graceful habit and outline, and one that is particularly well adapted for table decoration or for placing in windows, as there it shows off its elegant foliage to the greatest advantage. Not only is it good for either of these purposes, but it forms an admirable relief to the flatness and general uniformity of others on a stage when set so as to show clear above them; and half-a-dozen used in this way do much to give a finished look to any house in which they may be used. By sowing annually at this time of year, plants of this Acacia may be had with straight, single stems furnished with leaves down to the pot, and when in this condition they are exceedingly ornamental. The seeds, being somewhat hard, are rather slow in germinating, but in this they may be hastened by soaking them for twelve hours or so in warm water, after which they should be sown in sandy soil and placed in a brisk heat, such as that of a Melon or Cucumber frame. A rich, light loam suits them best to grow in, and 6-in. pots are quite large enough for the first season, but if extricated plants are required they may be had by liberal shifts and feeding them well with manure water.

**AMARANTUS TRICOLOR, SALICIFOLIUS, AND HENDERI** are also very desirable, and, like the Acacia just alluded to, come in admirably for table decoration, but to fit them for this purpose they must have plenty of light, so as to impart to their leaves those rich, brilliant tints of colour for which they are so justly admired. Not only must they have an abundance of light, but the atmospheric moisture should be in proportion, otherwise they are sure to suffer from the attacks of red spider, to which they are very subject, and which, if not kept in subjection, soon spoils their beauty. The best and easiest way of growing these Amaranthus is to plunge them in a pit or frame by themselves, and keep them well syringed overhead, and if this is done daily at two or three o'clock when shutting them up, they will soon make handsome little specimens that will be highly ornamental in the greenhouse or conservatory. Being moisture-loving subjects, they should have plenty of water and free drainage to admit of it passing away quickly, and this, with a rich loose soil and liquid manure occasionally, will keep them in perfect health till cold weather sets in, when they begin to die off. Seeds sown at once in heat will soon be up, and, in potting off the plants, the most promising only in point of colour and habit should be selected, as they are very sportive in their character, and vary much in their markings. Besides these that are so valuable for the beauty of their foliage, there is that fine old annual the

**GLOBE AMARANTUS**, better known, perhaps, as *Gomphrena purpurea*.—The flower-heads of this resemble those of Clover in shape and size, but are far richer and more varied in colour. The group to which it belongs contains plants well deserving of more general cultivation, forming, as they do when well grown, neat, branching, bushy little plants, varying from 1 ft. to 2 ft. high, each shoot terminated with one or more of their symmetrical globular heads. These, if cut before they have attained their full size and maturity, will retain their fresh-looking appearance for a considerable period, and are, therefore, most useful to mix with Everlastings and Grasses of different kinds, with which they associate well and do much to enliven. These Gomphrenas are of easy culture,



PLAN OF LAWN AND PLEASURE GROUND AT BERRY HILL.—(see p. 411).

and do best when growing if placed in a pit or frame where they can be plunged in a bed of gently fermenting material, the genial moisture from which, being discharged with such regularity, just suits them. The next situation most agreeable to them is a warm house, where they can be placed away from draughts or dry currents of air, and kept syringed occasionally till they show flower, when any damping overhead should at once be discontinued. To have fine masses of them, the best way is to put three plants triangularly in 6-in. or 8-in. pots, and, if the different colours be grown together, they form a very pretty contrast, and have a much better effect. Those that blend best are the purple and white or purple and yellow, both of which come true from seed, which should be got at once and sown in a brisk heat, and the plants nursed on in the same near the glass, so as to keep them from drawing up weakly and spindly. They delight in a rich vegetable soil, and require plenty of water all through the season, the want of which soon causes them to present a starved appearance, and prevents them from producing their blooms with anything like the freedom or size they otherwise would do.

*BROWALLIAS* (elata and Roezli) are most valuable for blooming late in the autumn or through the winter, which they will do freely if kept near the glass in a temperature varying from 50° to 55°. For working up into bouquets they are unsurpassed, their slender stems and numerous lovely small blue or white flowers rendering them particularly well adapted for that purpose, and, what is equally in their favour, they are very lasting in water, as, when using them last year, I found at the end of a week they were as fresh as ever. As pot plants, too, they are exceedingly ornamental, and, in order to have a regular succession, seed should be sown about the middle of June and again at the end of August or even later, which will carry on the supply up to the following April or May. Those sown first will do best grown outdoors after they have got a fair start, which should be afforded them by keeping them close in a frame for a few days after being potted, when any sunny sheltered position will suit them. Being rather spare and fragile in their habit, they produce the finest display by being placed three in a 7-in. or 8-in. pot; but those required for winter work may with advantage be confined to a size smaller, as then less water and root-room are required. During the summer months they require a free use of the syringe, as in hot weather they are subject to red spider, which, if allowed to effect a footing, soon spoils their appearance.

*BALSAMS* are too well known to need a word in their favour, as they are grown more or less successfully in almost every garden, and if a good strain be obtained and the plants well managed, nothing is more showy and beautiful than those of the Camellia-flowered section; besides having blossoms of great size and fullness, some of them are as handsomely marked as a Carnation, while others are of a brilliant self colour. To have fine, sturdy, well-furnished specimens, with the lower branches resting almost on the rims of the pots, they must be grown in full sunlight, close up to the glass, and have plenty of air on all favourable occasions. This will keep them stocky and short-jointed, so that every branch and lateral will stand stiff and erect without any support, as all Balsams should. To grow them really well, they require a little bottom-heat, such as may be afforded by any gently fermenting material, and at every shift into larger pots they should be dropped lower, so as in the end to bury up the stems to the first joint. So gross-feeding are they in their habit, that they will take almost any amount of liquid or solid manure if administered in a mild form and at proper and suitable intervals of time. When large plants are required, it is a good plan to pick off the first bloom-buds that show, as then their strength and energy are concentrated in developing growth and in becoming better established.

*CHILIES*, such as Prince and Princess of Wales, are of that exceedingly ornamental character when well fruited as to be among the very best plants which it is possible to have for winter decoration in a warm greenhouse or room, so beautifully bright are the yellow pods with which they are laden. Used with *Solanum capsicastrum* for dinner-table decoration, the contrast between the coral red berries of the one and the colour of the other is very effective, and, being of a similar style of growth, the two associate well together, and are deserving of exten-

sive cultivation for the above-named purpose alone. Although they may be raised and perpetuated by cuttings, the best way is to sow seed annually, and this should be done at once in light soil, and then placed in heat, where, if kept moist, it will quickly germinate, and soon be ready for potting off. This should be done in small pots, in a mixture of loam and leaf-mould in the proportion of three parts of the former to one of the latter, together with a little sand to keep it open and porous. These *Chilies* are more natural looking and show off to the greatest advantage when grown as standards about 1 ft. or so high; and to get them in this desirable form, the side shoots must be nipped out as they show, in order to drive them up with clear stems till they reach the limit fixed on, when the tops should be stopped and young growth encouraged. The thing then is to get them to flower freely and set a good crop of fruit, and this may be done by plunging the pots in any light pit where the plants can have full sunshine and plenty of room between, so as to admit of a free circulation of air amongst them. What artificial heat is needed after the end of May may be afforded by closing the lights early in the afternoon; but if they can be afforded a slight warmth from a lining, they will be all the better for the assistance given them. In winter they require a temperature ranging between 50° and 60°, or the leaves are apt to become discoloured and to fall off.

*CELOSIA PYRAMIDALIS* produces splendid feathery plumes, ranging in colour from bright crimson to pale yellow, and the plants are of singularly graceful habit, the inflorescence drooping over in the most elegant manner, and having of such a velvety appearance, they are exceedingly showy and attractive. Compared with these, the old Cockscomb, from which these originated or are allied, is a stiff, formal-looking plant, and is fast losing favour, as these are so much better in every respect. When well grown they form grand-looking decorative subjects, and are most valuable either for the greenhouse or conservatory; besides which, they are specially suitable for cutting, as owing to their peculiarly dry nature they last quite fresh-looking for a considerable length of time either in or out of water. Seeds sown now will afford plants that will come in towards the end of August, and these in a warm house will last in full beauty till quite late in the year. No place suits better to grow them in than a pit or frame, where, if closed early and heavily syringed, they will keep clean and soon make fine plants. Their habit is so symmetrical and their growth so uniform, that they require no stopping or training, and should be allowed to take their own natural course entirely, as it can in no way be improved.

*CAMPANULAS*, such as *C. pyramidalis* and *C. Medium calycanthera*, make a grand display during the spring and early summer months, and, being hardy, they may be grown in any border and lifted late in the autumn for potting. Those who have not seen the latter in flower can form no idea of their beauty, as they are distinct from any other *Campanulas* in having a large salver-shaped frill at the base of the bell, which gives them a very ornamental appearance. This saucer-like appendage measures, when fully expanded, quite 3 in. across, and, the blooms being produced in great profusion up the entire length of the many-branching stems, there are few plants more showy or serviceable. *C. pyramidalis*, better known as the Chimney *Campanula*, comes in later, and is altogether of a different habit, the flower-stems being more erect and much taller, towering from 3 ft. to 5 ft. or more when the plants are strong and healthy and well fed with liquid manure. The colours of these two latter are pale blue and white, but in *C. Medium calycanthera* there is a wider range, as they comprise almost every shade, so that a packet of mixed seed will afford great variety. These should be sown at once under a hand-glass or cold frame, and when up and large enough to handle, planted out in rich deep soil on a warm, sunny border, from whence they can be lifted and potted, and then kept in a cool house or pit to bring them slowly on.

*LANTANAS* are exceedingly showy, free-flowering plants that come in admirably during the summer and continue on till quite late in the year. The trusses of these are generally borne in pairs and have much the appearance both in size and shape of *Verbenas*, but are richer in colour, and the habit of

the plants more bushy and woody. For greenhouse or conservatory decoration they are of great value; the only drawback they have is that they are anything but pleasant when touched or rubbed against, as they then exhale a rather disagreeable odour. Seed should be sown at once, and the plants pushed on in heat in full sunshine, as it makes the growth short-jointed and hard, and induces an abundance of flowers.

*MARTYNTIA FRAGRANS* is a very desirable annual for pot culture, affording large, tubular, Gloxinia-like flowers that are beautifully spotted and marked, and altogether of a very showy character. Being somewhat tender, it is necessary to raise it in heat and grow it on in the same temperature till it comes into bloom.

*PETUNIAS*.—Of the many plants that may be raised from seed and got up to a flowering state in a very short space of time none are more generally useful than the double *Petunias*, which, grown in pots in an open position outdoors, flower with the greatest freedom when brought under glass, and, being so rich and varied in colour, do much in making a house gay and attractive. Even the single forms are deserving of cultivation for the same purpose, so beautiful are their markings, many of them being marbled and striped in the most fantastic manner possible. By keeping them plunged in a sunny spot they can be brought in as required and a constant succession kept up till Christmas or later. If sown at once they may be had in flower two months hence, but if large plants are required the way is to nip out the points of the shoots and give them a shift into larger pots. The soil that suits them best is a good fibry loam, in which they should be potted firmly and not overdrained.

*RHODANTHE MANGLESII* is one of the prettiest of all annuals for decorative purposes indoors, and forms charming, neat little groups for small stands or vases, where, when laden with lovely pink, satiny-looking flowers, it is highly effective. The newer variety, named *Prince Bismarck*, is likewise very desirable, being more double and having the merit of lasting longer in bloom. To get them to bloom early in spring, at which time they are most valued, seed should be sown in August, and the plants wintered on light, airy shelves near the glass in a warm house where the temperature does not fall much below 50°. Raised now, they will flower in two months or so hence, and last till late in the autumn. *Rhodanthes* delight in rich vegetable soil, and should be potted in a mixture of at least half leaf-mould or peat and loam in well-drained pots. Any cold frame, where they can be shut up early, will suit them at this season if not kept far from the glass.

*SCIZANTHUS PAPILIONACEUS* and *RETUSUS* form beautiful pot plants that bloom profusely and are highly ornamental, especially the first-named, the flowers of which bear a close resemblance to butterflies, so rich are their markings. Both varieties are very bushy in their habit, and range from 1 ft. to 2 ft. high, so that they are well adapted for small houses and for window decoration, where, from their gay and varied colours, they are sure to be highly appreciated. Sown in autumn, they are easily wintered in an ordinary greenhouse, and then come in at a time when flowers are scarce. To have fine specimens they should be grown three in a pot, and if of mixed colours, as they are almost sure to be, they will be all the more interesting and make a better display. *Scizanthuses* are plants of very easy culture, and will do well in almost any kind of soil that is open and free.

For the roof of the house where a few strings or fine wires can be strained *Ipomœas* may be grown, but these must have a sunny position assigned them to induce them to flower freely. *Tropæolums*, too, of the better class form showy roof-climbers, and when restricted for root-room, as they are in pots, are exceedingly floriferous, so much so, indeed, as to be rarely out of bloom. It will thus be seen that by the expenditure of a few shillings for seed, a greenhouse may be filled with gay flowers to take the place of *Camellias*, *Azaleas*, *Epacrises*, and such like when they are set out-of-doors to ripen their growth. Besides those enumerated, there are many others that might be mentioned, but these are the principal and best. S. D.

## CLEAN FLOWER-POTS.

GARDENERS seldom disregard the importance of clean flower-pots for all kinds of plant culture. Amateurs scarcely devote enough attention to it, and therefore are troubled with many failures in consequence. Plants are soon affected with disease if grown in dirty pots; the soil soon becomes waterlogged, sour, and Mossy, and the minute rootlets refuse to absorb moisture and nutriment from the walls in which they are imprisoned. Two things lead to deterioration in pots—one, and perhaps the chief, the excessive porosity and softness of the material of which they are made; and the other, defective drainage. Pots made of good hard clay, even in size, with sides of moderate thickness, if a trifle dearer, are at least much the cheapest in the end, as these neither get dirty so soon, nor are so brittle, and therefore last much longer. Plants should never be allowed to remain too long in the same pots; frequent shifts both promote health and free root action; and the cleaner and sweeter the pots, the more active will that root action be. Even apart from this, however, dirty pots are unsightly in any amateur's plant house; and if it be not desirable at all times to shift a plant into a clean pot, much good may be done by clearing out the Moss on the surface of the soil and re-dressing it with fresh material, and also by giving the outsides of the pots a good scrubbing in water. In large gardens, where many thousands of pots are employed in plant culture during the year, wet days are usually made available for washing them, and it is by no means unpleasant work during the dog days. In winter, however, several hours of pot-washing in very cold water is neither pleasant, nor does it lead to good results. A boiler or copper should be at all times available for pot-washing; and where a large quantity has to be got through, an abundant supply of hot soft water should be at hand. Two tubs should be used—one full of tepid water, in which the pots are placed to soak an hour or two before being washed, and the other full of hot water, in which the actual cleansing is done. If the pots be but moderately dirty, a wisp of bast or hay will make an efficient cleanser; but for very dirty, Mossy pots, a brush is the most effective. A semi-scalding in hot, strong soda-water not only assists in the rapid removal of dirt, but destroys parasitical Mosses and causes the pots to dry off at once; they are thus ready for stacking as fast as they are washed. Amateur plant growers should cleanse their pots in the same way, but of course there are fewer to clean; nevertheless, it is well to wash thoroughly, and get each pot as clear from dirt as possible. No person having any regard to the requirements of plant life would ever use pots that have not been properly cleansed. A. D.

## NOTES AND QUESTIONS ON THE INDOOR GARDEN.

*Croton Prince of Wales*.—Among all the many *Crotons* which have been introduced of late years, this is one of the handsomest and most distinct. It is of a free branching habit. The leaves are pendulous, arching, and slightly twisted; some of them present a complete spiral form, ending in a small, pointed elongation of the midrib, the edges of the leaves being always beautifully undulated. The colour of the leaf is almost entirely pale yellow, margined and mottled with bright carmine, with occasional irregular blotches of light green. The midrib and petiole are bright magenta. It was introduced by Mr. Williams from the South Sea Islands, and cannot fail to be largely grown for dinner-table and other decorative purposes.—S.

*Primula amœna*.—The hardness and easy culture, as well as the effective character of this *Primula*, render it one of the most valuable of dwarf decorative spring-flowering plants. In order to have vigorous plants of it in full bloom it is necessary to divide the old shoots every year into small pieces, and pot them in equal parts of torfy-loam and leaf-mould, adding plenty of road sand, or in lieu of leaf-mould well decayed cow manure may be used with advantage. Good drainage, plenty of water, air and light are also essential. Thus managed, healthy, vigorous plants, well furnished with Fern-like leaves, and a profusion of showy rose-coloured blossoms, may be obtained. A number of plants placed 5 in. or 6 in. apart in deep pans make also effective objects for placing in vases or on pedestals. As a basket plant too this *Primula* may be used with advantage.—C. S.

*Selaginella Brownii*.—This is one of the most useful of the Club Mosses; it is dwarf and compact in habit, of a hardy character, and, either in pots, pans, or planted out, it is worthy of culture in every garden.—S.

*Amaryllis virginialis*.—To this beautiful genus of plants this is the most valuable addition which has been made for many years past, and of all the forms lately sent out by Mr. Williams this will, without doubt, become the most popular. It is a very free-blooming variety, the scape usually bearing four or five large flowers, which are thick in substance, of fine form, and of the purest whiteness. It is without doubt the most chaste and beautiful of the family.—C.

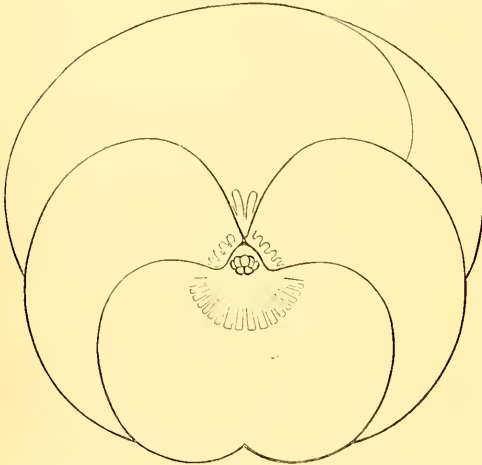
## PLATE CXXVI.

## PANSIES.

Drawn by H. NOEL HUMPHREYS.

HAVING recently given (see p. 122) a plate of Fancy Pansies, we now supplement it by one of what are called show varieties. In this, as in the case of the Fancy Pansies, we have deliberately preferred to draw Pansies gathered in an unfavourable season, and in size inferior to what is sometimes seen just as they arrived, rather than encourage the gross misrepresentation of these plants, which has been the rule for many years in floricultural periodicals. This misrepresentation sometimes arose from certain rules, as to size and form, being communicated to the unfortunate artist who had to draw the flowers. The kind of hybrid, arising from the attempt to draw the ideal from the flowers, resulted in such abortions as that of which we give an outline on this page—the said outline being more pleasing than the plate from which it was traced. The right course in the matter is to ask artists to paint what they see, and, indeed, those who respect themselves or their art will not do otherwise.

It will be seen that six of the flowers are termed selfs, that is,



Tracing of Pansy Lady Ross, as figured in a horticultural periodical.

they are entirely composed of one colour, excepting the blotch. For many years there were only dark, white, and yellow selfs, but now primrose, blue, and crimson have been added; and we hope that enterprising raisers will not rest satisfied until they have succeeded in introducing still other shades, as there can be no doubt that the strong aversion shown by competitors to admitting innovations of any kind into their competition stands has been one of the principal reasons why this class has never become so popular as the Fancies. The other classes in this section are white and yellow grounds, and in them the object aimed at is to have the belting on the upper and under petals of a uniform shade of colour. The colours in the Show Pansy are not so startling as in the Fancy, but the former has been known longest to cultivators, and many of the old florists still consider this group the only one worthy of being classed amongst florists' flowers; and there are enthusiastic florists who will continue to grow and improve them in spite of the strong feeling which has sprung up in favour of their more showy and attractive companions. There can be little doubt that numbers have been deterred from growing Pansies of all classes by the elaborate and expensive treatment recommended by some authorities; whereas it is a fact that many are killed by over-feeding and the introduction

of fresh soil, containing the eggs of grub and wireworm, which would have succeeded perfectly in any ordinary garden soil. No one need fail in the propagation of Pansies, as cuttings taken off during the summer and autumn months will root freely in any shaded border or frame, and in the south will stand quite well without any covering, while even in the cold northern districts they require only the slightest protection in winter. If planted out in autumn they will flower much earlier and stronger than when allowed to remain in the cutting beds till spring. The raising of Show Pansies from seed has long been a favourite amusement of many gardeners and amateurs, but it is principally to a few nurserymen that florists have to look for a supply of new varieties likely to surpass those already in existence. The treatment of the Show Pansy for competition may be given in a few words. The ground, which ought to be open and airy, should have been deeply cultivated and well manured for the previous crop. The plants may be arranged in beds, according to taste, from 9 in. to 12 in. apart each way, planted deeply in the soil, and watered occasionally during the summer, as they may require it. A mulching of old manure from a spent hotbed will strengthen the plants, and considerably increase the size and beauty of the blooms.

The Pansies from which our plate was drawn were supplied by Messrs. Dicksons & Co., of Waterloo Place, Edinburgh, who have good collections of these flowers. E.

## BOTANICAL GARDEN AT ATHENS.

From Patras I proceeded up the Gulf of Corinth to Corinth, thence across the isthmus to Kalamaki. *Pinus halepensis* was abundant on the surrounding hills; a very handsome red Poppy, with large central black blotches, and *Lagurus ovatus* were observed by the roadside, and *Urtica pilulifera* on the sandy shore. From Kalamaki a small steamer, passing between the islands of Ægina and Salamis, brought me in four hours to the busy port of the Piræus, within a short drive of Athens, which I reached soon after mid-day. Here I had the advantage of becoming acquainted with Professor Orphanides, whose little botanical garden was replete with interest. He possesses one of the finest collections in existence of Orange and Lemon trees, including between seventy and eighty varieties; also a fine series of the bulbous plants of Greece. The Athens Botanical Garden is unsatisfactory as regards its general order and aspect, and appears starved for want of funds. The collection of Greek bulbs is, however, very complete; they are mostly grown in pots. There is also a fine series of trees and shrubs, which, however, might have been easily arranged with a better intention to picturesque effect. *Biota orientalis*, *Pinus halepensis*, *Cupressus pyramidalis*, *C. horizontalis*, *C. Tournefortii*, *Schinus molle*, and very large Poplars are its only main features. Very little forethought seems to have been exercised in the arrangement of the general collection as regards ultimate size and grouping. It includes *Cratogeomys japonica*, *Juniperus atica*, a very pretty species with the habit of *Picea picea*; *Casuarina quadrivalvis*, *Ephedra distachya*, *Gleditchia triacanthos* and *G. ferax*, *Anthyllus Barba-Jovis*, a curious small shrub; *Ebenus cretica*, *Photinia arbutifolia* and *P. serrulata*, the latter a very striking plant, with white cymes of flowers and bright crimson leaves; *Maclura aurantiaca*, a singular spiny tree, allied to the Mulberry, with large warty fruit as large as an Orange; *Coccolus laurifolius*; *Ulmus euberosa*, and *U. excolta*; *Melanthus minor*, with scarlet and green flowers; *Rhus viminalis*, *Olea chrysophylla*, with small yellow fruit; *Solanum auriculatum*, a striking shrub with bright green soft foliage; *Viburnum suspensum* in fruit, &c. There is also a fair collection of herbaceous and economic plants, including several beds of Saffron, which I notice because they bore a profusion of ripe capsules and perfect seed, a fact of very rare occurrence with *Crocus sativus*; indeed, Major Trevor Clarke assures me that the cultivated Saffron has heretofore not been known to produce seed. I could not distinctly ascertain whether these beds were from a wild or cultivated source, but I believe from the latter.—G. MAW, in "Transactions of the Botanical Society of Edinburgh."

Singular Chinese Teapot.—In a recent number of THE GARDEN (see Vol. XII., p. 591) you gave a figure of a Japanese vase made of a gourd. There is in the museum at Kew a singular Chinese earthenware teapot, the body of which represents a Pomegranate, the handle a Fruit of *Trapa bicornis*, the spout a piece of jointed Bamboo, and the feet a Walnut, a Nalumbum head, and, I think, a Lichen.—J. R. J.



PANSIES AS THEY ARE.

- 1. The Mint ( yellow self.)
- 2. Robert Burns (yellow ground.)
- 3. Pilrig-beauty (crimson self.)
- 4. George White (primrose self.)
- 5. Bluestone (blue self.)
- 6. Janey Anderson (white self.)
- 7. Jane Grieve (white ground.)
- 8. Robert Black (dark self.)



## THE LATE JOHN KEYNES, OF SALISBURY.

SINCE John Keynes, of Salisbury, was taken from us and from his flowers, we have thought it would be well to publish a well-engraved portrait of him, with some account of his work. This it is difficult to narrate in exact chronological order, owing to the absence of data. His friend Mr. Dodds, for many years gardener at Fisherton, informed us that he first became acquainted with Mr. Keynes in 1830, and that he was then a successful cultivator of the Auricula, Polyanthus, Pink, Carnation, Picotee, and Ranunculus. Of Tulips he for several years had a good bed; but the force of his youthful floricultural ardour went out toward the Carnation and the Pink; he grew them well, and was a most successful exhibitor. Mr. Dodds states that not long since Mr. Keynes showed him the first prize he took for Pinks, for he had treasured it up as a memento of precious value. About 1831-32 Mr. Dodds had one of the best collections of Dahlias in the west of England. In 1833 Mr. Keynes, in conjunction with Mr. Dodds, began to grow seedling Dahlias, and the first Salisbury Dahlia Show took place about 1836. At this exhibition Messrs. Brown, of Slough (who were once the occupiers of Mr. Turner's nursery there) exhibited a then fine Dahlia named *Desdemona*; and Mr. Squibb, a florist at Salisbury at that time, had the Hon. Mrs. Harris, which Mr. Dodds describes as "a wonderful flower; we have never had anything like it in colour since." The first seedling Dahlia Mr. Keynes raised was named *Ovid*, very similar to a recent variety of Mr. Turner's bearing the same name. This he sold to Mr. Mountjoy, then a well-known florist residing at Ealing, for the sum of £60. At that time Mr. Keynes had no conveniences for propagating his Dahlias, and he used to let Mr. Squibb have his roots to propagate from for a sufficient number of plants at planting-out time. This arrangement went on for two or three years, when it was discontinued by Mr. Squibb, as Mr. Keynes bargained to have the best plants. That circumstance made Mr. Keynes a nurseryman; for, as he remarked, "If I am compelled to put up glass in which to propagate my Dahlias, I must sell plants to pay for it." Mr. Dodds thinks it was in 1836-37 that he commenced business, growing only Dahlias at that time. In 1838 Mr. Dodds' whilom foreman, Hincxman, became Mr. Keynes' propagator, and remained with him till 1856, when the present foreman of the Castle Street Nursery, John Wyatt, who was also foreman under Mr. Dodds, became foreman to Mr. Keynes, and remained with him till his death. Mr. Keynes was always much attached to Wyatt, and was a liberal and kind master to him. Mr. Dodds thinks it was about 1838-39 that Mr. Keynes published his first catalogue. In 1842 he sent out Prince of Wales Dahlia, a seedling raised by Mr. Dodds, and up to 1862 he sent out Mr. Dodds' seedlings, which he continued to do until the time when the latter left Salisbury; and it need scarcely be stated Mr. Dodds has raised some sterling flowers. It was in 1845 or thereabout that Mr. Keynes became the proprietor of the Castle Street Nurseries, previously known as Moody's Tree Nursery. At that time he had little or no practical knowledge of the nursery business, but his energy and perseverance conquered all difficulties, and he soon became a good man of business. He possessed the great advantage of having been well trained in business habits from an early age

in a very lucrative brush manufactory, which he continued to manage for many years after he became a nurseryman. Business to him was a source of great pleasure; he had great confidence in himself, and his industry in business was astonishing; he kept all his books, it is said, up to a short time before his death. Mr. Dodds remarks: "In all the years in which I knew him—and they were close upon fifty—I never found him unemployed." In 1841 Mr. Keynes was afflicted with a severe attack of rheumatic fever; and, to show the energy and perseverance of the man, in the autumn of that year, at his own risk and with very little help, excepting what Mr. Dodds could give him, he arranged and held a Dahlia show at Stonehenge, in the middle of Salisbury Plain. "I shall never forget it," states Mr. Dodds; "there were over 10,000 people present; it was a complete success;" and yet Mr. Keynes could only move about with the aid of two sticks. After the dinner he was lifted on to the table to make a speech. It was a remarkable gathering of the then leading Dahlia cultivators—George Glenny, Edward Spary, Charles Turner, Widnal, and many others were present, and the proceedings were most enthusiastic. Mr. Keynes, Mr. Dodds, and Mr.



John Keynes, of Salisbury.

Turner (then with Messrs. Brown, of Slough) each won a ten-guinea tankard." Those were days of keen enjoyment and intense excitement among Dahlia growers. Eventually the Dahlia declined in cultivation, and then Mr. Keynes took up the culture of the Rose. How successful he was both as a grower and exhibitor is well known; and within a few weeks of his death he gave orders for another new house to be built to grow Tea Roses in, and at the time of his death it was nearly completed. Carnations and Picotees were at one time largely grown by Mr. Keynes, and he used to take high honours at Carnation shows twenty years or so ago. At one time he raised and named a number of promising seedlings. Up to the year of his death he used to send out new Dahlias, mainly of his own raising. He was particularly fortunate with the fancy class, and did more than any florist of his time to improve them. In 1877, the year of his death, he exhibited in London and else-

where something like sixteen new Dahlias of his own raising of great beauty and attractiveness, and of these Bessie Ford, Charles Wyatt, Henry Bond, and Louisa Neate bid fair to take high rank among exhibition varieties. He was also a most successful cultivator of pot Vines, and did a large trade in them. How can we better estimate his character than in the words of his friend Mr. Dodds?—"I never knew a man more beloved and respected than my late friend; he was so straightforward as a man of business, and so steadfast in his friendship. He was very shrewd, and his advice was much sought after. In his native city he was honoured and respected by all classes. There was no show or affectation in his bearing; indeed, he hated everything of the sort. He was of the plainest manly, and always doing good in some way. Very many in Salisbury will miss him sadly. He was most liberal in his many acts of real charity, and they were numerous, but all performed in a quiet and unostentatious manner." In November, 1876, he was elected Mayor of Salisbury, and served his year of office to the satisfaction of his fellow-townsmen, having previously been a member of the Municipal Council of the city for a long period. D.

## THE KITCHEN GARDEN.

### HOW TO LENGTHEN THE ASPARAGUS SEASON.

ASPARAGUS, although indigenous to Britain, does not, when cultivated, enjoy an immunity from the blighting effects of unfavourable springs, such as we have of late years experienced. During the present season at this place on several occasions all the heads about to break through the surface of the soil have been entirely destroyed by frosts; and although the soil is naturally of a light and warm character, conducive to the early development of most kinds of crops, the middle of the present month of April has, nevertheless, passed before a single head of Asparagus has been fit to cut in the open air. Notwithstanding this, however, an almost daily supply of this delicious vegetable has been kept up since soon after Christmas until the time just mentioned, and this has of course been accomplished by culture under glass; not, however, by the old method of taking up the plants and forcing them in a hotbed, a plan which it is seldom advisable to pursue, unless in cases in which Asparagus may be desired in the very depth of winter, or where old, worn-out beds are being done away with. A bed has for many years been in existence here, surrounded by a low brick wall, having under it a flow and return hot-water pipe, and when forcing is about to commence the bed is covered with glass lights, the ends of which rest upon the retaining walls; and, if the weather be severe, the glass is covered with mats or dry litter, and is always uncovered when a ray of sunshine is likely to be secured. By keeping the pipes moderately warm for about three weeks, the heads generally begin to appear, and the plants, being now fairly excited, it is seldom found necessary to continue the use of fire-heat further than occasionally warming the water in the pipes, so as to keep up, to some extent, the temperature of the soil. It is generally considered that the Asparagus cut from this bed is quite equal, if not superior, in quality to any that is cut here in the open ground at a much later period of the season. The formation of this bed was, of course, in the first instance attended with some expense, which it has, nevertheless, amply repaid. Still, all intending cultivators may not feel inclined to incur this outlay, and a similar result may be secured by following some plan similar to what I will endeavour to describe. Let a situation be selected, and proceed as follows:—Throw out two trenches, each 3 ft. wide, and leave a space of 4½ ft. between them, so that from the centre of one trench to that of the other will be just 6 ft. The trenches should be 2½ ft. deep, and in the central part of each a 4-in. hot-water pipe should be laid; these must be connected to a small boiler, which should be placed at one end of the trenches equi-distant from each. The trenches should, if possible, run north and south, and may, of course, be of any desired length; and, if the ground has an inclination, the furnace and boiler should be placed at the lower end. Should the land, however, be perfectly level, it will then be necessary, in order to facilitate the circulation of the hot water, to give the flow pipe a gradual rise of a few inches towards the further end, where it must be connected with the return pipe in the bottom of the other trench, and here, also, the expansion cistern should be placed. The hot water, it will be seen, is made to flow up the centre of one trench and to return to the boiler by the other. The pipes should be surrounded and covered with small stones, flints, or brickbats; and upon these should be placed turves with the Grassy side downwards, or a layer of littersy manure, so as to prevent as far as possible the superincumbent soil from filling the interstices between the flints or brickbats. The trenches should now be filled in with highly-enriched soil to within 6 in. of the level of the surrounding ground, and in the central part of the trenches, at a distance of 2½ ft. from each other, the plants should be carefully planted, so that they will occupy the central part of a shallow trench in order that water, liquid, or other manures can be readily supplied to them at any time, while the somewhat wide space between can be occupied for at least the two first seasons with such low-growing crops as Spinach or Lettuces. One-year-old Asparagus plants are always to be preferred to older ones, and during the two first seasons no attempt should be made to force them, neither should any of the heads be cut; but, on the contrary, the

plants should have every attention as regards watering during dry weather, and once or twice during the season they should have a liberal dressing of salt, while, to prevent the shoots from being broken off close to the surface of the soil by wind or by their own weight, a few Pea sticks should be thinly inserted in the soil on each side of the plants. This will be found to prove an effectual support to them. When the plants have thus had liberal and careful treatment during two summers, they will generally be found strong enough to undergo gentle forcing during the following spring, and when this is about to commence a short stick or peg should be inserted in the centre of each stool, and the shallow trench in which the plants are growing should now be levelled in. The pegs will still indicate the exact position of the stools, over each of which an ordinary hand-glass should be placed. The hand-glass should not be less than 2 ft. across, and those with movable tops will be found most convenient. The entire surface of the soil around the hand-glass should now be well mulched with littersy manure 1 ft. or not less than 6 in. in thickness, while a portion of light littersy material should be in readiness with which to cover the hand-glasses during frost. This should, however, always be removed during sunshine, in order to secure any benefit likely to be obtained from solar influence, while the water in the pipes should be kept moderately warm. This may, of course, be easily ascertained by moving the top or lid of the expansion cistern, which should be placed so as to afford facility for such examinations. If gentle forcing be commenced, say, about the middle of January, Asparagus will generally be fit to cut during the second week of February; but it is unadvisable to force rapidly during the first season. As the same plants may, in this way, be forced for an indefinite number of years, it will be found that they gradually acquire a more early habit, and that they are more easily started into growth after they have become accustomed, as it were, to the process of forcing.

As soon as Asparagus becomes sufficiently plentiful in the open air the cutting of that under hand-glasses should be discontinued. The glasses should be removed, and as the object of levelling in the trench is in order that the necessary length of white or blanched stalk may be obtained, the loose soil may be again withdrawn into the space between the lines, when the plants will again occupy a shallow trench, and should at once have a dressing of salt, which should, as the season becomes more advanced, be followed by a thorough soaking of liquid manure and a heavy mulching of good stable or pig manure. As the stalks grow they should be secured against injury or breakage by a few stakes, as has already been recommended. Treated thus, the plants will be again in proper condition for forcing on the return of the following spring; and this forcing may be annually repeated for many years without the health of the plants suffering in any perceptible degree. A result, to some extent approaching what has just been described, may be obtained by the use of fermenting material without hot-water pipes. This method of forcing, however, demands more labour, is attended by considerable litter, and the results are less certain and satisfactory. The lines and the plants should be the same distance from each other, as has been recommended, and the hand-glasses should also be used in the same manner. Between the lines a trench should be thrown out about 3 ft. wide and nearly to a like depth, removing the soil to the ends of the rows, or to any other convenient spot, as it may again be required to fill up the trenches. When forcing is about to commence, the trenches must be filled with warm fermenting manure. This will require to be frequently turned, and must occasionally have fresh material added to it, so as to maintain the necessary degree of warmth to stimulate the roots of the plants into activity. P. GRIEVE.

*Culford, Bury St. Edmunds.*

**Parsley Canker.**—This season Parsley has failed in many places from the only disease that affects it at all seriously, and that is canker at the root. When this disease attacks the plants it generally kills them. Its appearance is soon detected, as the leaves turn yellow and the plants droop, and finally perish. If they be pulled up they will be found to be nearly eaten away at the root. Sometimes it attacks

the plants almost as soon as they come through the ground, when it always does most mischief; but it appears at all stages. What causes it has not been exactly ascertained, but it is known that generous culture is one of the surest preventives, though, at the same time, Parsley does not like an over-rich soil. It, however, likes a change of ground. One of the worst cases of canker which I ever saw happened on ground on which an excellent crop of Parsley had been grown the previous year; the first year it was good, and the second a complete failure. The soil which Parsley prefers is a rather light, deep, and fairly rich one. The seed should be sown pretty early for the first crop, as it takes a long time to come up—three weeks nearly, even in warm weather. It is a good plan to dig and sow at the same time, and I always prefer to cover the seed by hand with some light rich compost. In this way it is sooner induced to make good growth. The plant is not very particular as to situation, but I imagine that canker is always worst in dry and sunny exposures and in poor thin soils; a partially shaded situation suits it best. The winter crop, which should be sown in May or June, according as the locality is late or early, is the most important, and the plants should be well thinned out, so as to encourage good foliage and a hardy constitution. Some say that Parsley is best left unthinned, but that is a mistake, in the case of winter crops at least. When thick in the row and retarded the leaves are soft, and perish as soon as severe frost sets in.—CHEF.

### CUCUMBER CULTURE IN FRAMES.

As many frames will soon be empty through bedding and other plants being turned out of them, one of the most profitable crops with which they can be re-filled is Cucumbers. Early in spring or late in autumn Cucumbers in frames are often difficult to manage properly, but throughout May, June, July, August, and September they may be very successfully cultivated in cold frames with very little trouble or expense. Early in spring Cucumbers require a large hotbed on which to start them freely into growth, but for the next five months only a very small hotbed is necessary for that purpose, just sufficient to start the plants at first being enough. This is a great advantage, because in many instances material to make hotbeds cannot be had in quantity, and in many cases it is difficult to procure at all. There are, however, few places in which some material or other cannot be had with which to form a hotbed. It is well understood that leaves and long litter manure make the best hotbeds, but where these cannot be had, a hotbed that will grow Cucumbers well may be made without them. As lawns and patches of Grass in front of houses now require cutting, the Grass that comes off them forms an excellent material for the purpose. Old leaves of any description, tan, sawdust, shavings, and, indeed, anything of that description, may be mixed with the Grass, and if not mixed in greater quantity than the Grass itself, it will heat satisfactorily. All the material put together should be thrown into a heap for a week, and turned every other day during that time. In forming the bed, if the frame be 4 ft. by 6 ft., make it 7 ft. by 5 ft. From 1 ft. to 18 in. at the front, and 2 ft. or 30 in. at the back, is a good height, and the material must be trodden down very firmly. When finished, the frame may be set on the top, and the material may be packed around the frame about 3 in. up from the bottom, but a lining up to the top is not necessary at first. When matters have been brought to this point, the Cucumber plants will be required. These cannot be raised without a little bottom-heat, and where no other means of supplying this is at hand but the newly-made bed, the best way is to sow the seed where the plant has to grow, and thus save potting and shifting. Cucumbers delight in a rich soil. A mixture of half cow manure and half good loam is a good compost in which to grow them. When the loam is heavy a little leaf-soil should be added. Where none of these are obtainable, they will grow even in road scrapings, especially when there is a good quantity of horse manure amongst them. In sowing the seed on the hotbed only a little mound of this material should be made at first. Five or six shovelfuls will be enough, but it must be beaten firmly, and be allowed to lie on the top of the bed for a day or two before putting in the seed. Two or three seeds should be put in each mound, if the frame be a large one, but a one-light frame should only have one mound in the centre of the light. A hole 2 in. deep may be made with the finger and the seed inserted. No water is required, as a rule,

until after the plant shows itself; great care must, however, be taken that no snails are harbouring about the frame, or they will soon destroy the plants. At first only sufficient ventilation is required to let the steam escape, but when rough leaves are formed, more attention must be paid to giving air, in order to prevent the leaves from scorching. As soon as the roots are seen peeping through the mounds, more soil and manure must be added to them; a depth of 3 in. is enough to add at one time. Cold soil is liable to check the tender roots; therefore when a fresh dressing has been applied, water immediately with water heated to 85°, and whenever it is necessary to water at any time only use water heated to that temperature.

Supposing the bed to be made and everything done as described the first week in May, abundance of Cucumbers may be secured by the latter end of June. Making the bed a month earlier would, of course, produce an earlier crop. Should the plants show signs of flagging from want of heat, a lining about 18 in. thick can be put round the frame, consisting of the same materials as those of which the bed was originally made. One plant is sufficient for one light; but, where there are three, all of them should be pretty well advanced in growth before any of them are pulled out, and then the worst should be taken. When it is seen that one plant will not fill the light, two should be left. The leading shoot of one should go to the back; that of the other to the front. Stop them when they touch the frame. Laterals must be well kept in by pinching them frequently. As soon as the largest leaves show signs of becoming yellow they should be taken off in order to give room to the young ones, young shoots and young leaves being always preferable to old ones. The plants must not be allowed to bear too many fruits at one time, especially at first. After they have been bearing for some weeks liquid manure should be liberally applied to keep up the strength of the plants. Careful watering at the root keeps red spider and other insects better in check than anything else. Admitting plenty of air on one hot day, and neglecting to give any another, soon ruins them, and so does giving abundance of water at one time and allowing them to become dust-dry afterwards.

Where there are any other means of raising the young plants, the seeds may be sown singly in 3-in. pots three weeks or a month previous to making up the hotbed. By plunging the pot in a bottom-heat of 65°, the seed will soon begin to germinate. When the bed is made up, a mound of soil must be put in the centre of the sash, and the plant must be turned into this out of the pot. Last year we cut 300 Telegraph Cucumbers from a two-light frame 6 ft. by 8 ft. The young plants were raised in pots, planted out in April, fruited in May, and were thrown away in August, as we had plenty of younger plants in other frames. None of the fruit was shorter than 15 in., many of them 20 in., and some of them 2½ in. They were treated exactly as above described. No particular temperature was adhered to, this being entirely regulated by the weather. Telegraph, Lion House Improved, and Volunteer are three excellent sorts for frame culture. CAMBRIAN.

### FRENCH COOKS AND HOME PRODUCE.

THERE is no greater tyrant in a gentleman's establishment than a French cook, for which particular reason many ladies and gentlemen will not engage their services if they think it will comport with their dignity to dispense with them. That is about the whole secret of the matter, for it is now well known that English cooks—women as well as men—are hardly, if at all, inferior to French cooks, as is demonstrated in many an establishment. But French cooks are popular, and there is no class of servants who can sell their services on such advantageous terms. They take liberties with their employers (as shall be explained) in a manner and to an extent which, in the case of any other domestic, would not be tolerated. As a nobleman remarked to his agent not long ago: "They come here to spoil the Gentles; but, you see, we cannot do well without them; and they sulk if they have not their own way." This remark was made in reference to a discussion as to whether the cook should use the produce of the home farm instead of buying his goods from the dearest market, from which he, however, derived his perquisite in the shape of discount. There are honourable exceptions, no doubt; but few French cooks will use the produce of the home establishment if they can help it. The bacon and the mutton are either too fat or too lean, geese, turkeys,

and fowls generally are the same, and even butter and eggs, the latter fresh laid, are inferior to what Monsieur can buy from the market perhaps fifty or a hundred miles away. This is no exaggerated picture. I have in my eye more than either one or two establishments to which this description applies exactly. I could name one good-natured nobleman who has paid his French cooks just what they asked, and who has had half-a-dozen or more during the last twenty years, but who has never yet succeeded in pleasing any of them with the produce of his own farm, which he naturally desires to use. No one cook has he ever had who has not been asked to use the mutton, bacon, fowls, butter, and eggs from the farm, and no one cook has he ever had who could make these things do, and the consequence is that he has always been reduced in the end to the necessity of selling his own farm produce at wholesale prices in the market while his cook buys at the highest retail prices. I can imagine someone asking why are such things permitted; but those who know anything about a gentleman's house well understand how that happens. He would do the same with the garden produce, as I happen to know, but the gardener is generally capable of looking after the cook and spoiling his excuses, ingenious though they may be. One thing, however, puzzles both employers and gardeners, and that is, that when the establishment moves to London, where, as a rule, company only dine and never stays and, consequently, fewer people to supply, the garden cannot keep up the supply, though what did in the country is supplied in town by hamper twice or three times a week on a lavish scale. I could name some well-known establishments that spend hundreds of pounds every London season in Covent Garden, though the proprietors' own gardens were sufficient almost to supply a small town with fruit and vegetables, quantities of which are sent to their London houses about every other day.

The duty of a cook, or any other servant similarly situated, is to try and make the home produce go as far as possible, and it is a lamentable thing if gentlemen cannot make their servants conform to such reasonable conditions. The chances are, of course, that Monsieur may decline to engage with a lady or gentlemen who stipulates that he must exert the skill he is supposed to possess, and for which he is so well paid for exercising, in order to make the home produce available for home use; but, if he does, then the plan is to let him go. I am aware of the difficulties that would beset the experiment of the kind—the cook can, of course, "spoil the broth" and throw the blame on the materials he is obliged to use, but they can be counteracted in that direction as well. I knew of one French cook who could never serve up a home-grown fowl as it ought to be, but when he was permitted to buy them from the poulterer himself they were excellent. When, however, it came out that Mr. Cook had fallen into a trap, laid for him by the farm steward, who had served the poulterer with the very birds with which he had supplied the cook, there was a collapse. We have known another cured by a candid offer from the employer to the cook to submit the question of the quality of the home produce to arbitration—the cooking for the experiment to be done by a third and impartial person.

AN OLD GARDENER.

#### DISEASES OF MUSHROOMS.

The "molle" or "mole," as it is called by the French growers, attacks the Mushroom very vigorously, making great progress in a very short time. The Mushroom, when attacked by this disease, loses its shape, falls upon the stem, and seems to form one spongy mass with it cut off at the top, and full of granular matter. The skin which covers this shapeless cottony mass is pure white at first, but speedily changes to a yellowish-brown as it rots away. It emits a disgusting odour, and the inside becomes filled with brown threads, sure signs of decomposition. Sometimes the edges of the cap turn upwards, instead of downwards, and the gills become united into a spongy mass, which sticks to the edges of the cap. At other times the decaying mass exudes a quantity of reddish liquid. As soon as the Mushrooms attacked by this disease come into contact with the air they turn brown, and exhale an odour resembling that of putrefying meat. A diseased Mushroom, in its first stage of growth, presented at the base of the stem the appearance of being composed of a network of filaments, the spongy nature of which soon reveals the evil. The skin was still white, as was also the inside of the tissues. The smell was not yet that of putrefaction; but as soon as the Mushroom became exposed to the air the rusty-brown colour soon appeared, and decomposition set in with great rapidity. When the disease only shows itself in a few isolated cases, the Mushrooms so attacked must be promptly removed both from the

beds and the quarry. The first loss is the smallest, for if the disease be allowed to spread, the whole of the bad and diseased spawn must be removed and carried away to a distance. The causes of the disease are but little known, the opinions of practical Mushroom growers being divided on the matter. Some attribute it to lack of cleanliness when the beds are being broken up. Others say that the remains of old manure mixed with the soil of the quarry generate dampness underneath the beds, and as this moisture cannot be absorbed by the stone surface beneath, it gives rise to the "molle." According to this hypothesis, the remedy would be to thoroughly scratch the surface of the ground on which the bed rests if it rests on the bare earth. If, however, it is built on a layer of broken stones, this layer must be thoroughly broken up with a pickaxe, the whole of the surface, to the depth of 6 in., being removed and replaced by entirely new materials. Others say that the "molle" is the consequence of the beds being too much crowded together in a confined space. According to them, the vapours produced by the fermentation of the manure become condensed on the walls, and, mixing with the natural infiltrations, fall upon the beds, and bring about the decomposition of the manure. They base their opinions upon the fact that it is in the summer, when the heat is great, that the "molle" makes its appearance in quarries with low roofs, and that it is much more rare in quarries which have high roofs and strong currents of air circulating through them. But in any case, no matter what may be the cause, the remedy is the same, that is to say, to thoroughly break up and remove the surface upon which the beds are built. I may add that, out of the large number of quarries that I have visited, I have never once met the "molle" in a new quarry; while M. Gérard, after having sustained heavy losses, was obliged to abandon a number of coal-pits in which he had for a long time successfully carried on the Paris system of Mushroom growing. From this fact, we may draw the conclusion that, in the long run, the air of those quarries which are badly ventilated becomes so charged with miasmatic or fungoid germs, that they must be abandoned. The only remedy yet found has been to renew the beds and their foundations. It is just possible that strong disinfectants would remove the evil, but this remains to be proved.

M. LACHAUME.

#### NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

**Cauliflowers Buttoned.**—Nursing the plants too much during winter to withstand exposure in spring without a check, in my opinion, causes buttoning. Last October half our autumn-sown Cauliflowers were transferred from the open border to a frame, the other half being left in the bed where the seed was sown to take their chance during winter. Those in the frame were never protected, unless when actually necessary. Still, many of the plants soon became tall and tender, and about the end of March, when they were being hardened off, or left open altogether, previous to planting, many of them buttoned. I have seen this happen before in frames and under hand-lights, and I think that the cause of buttoning is very evident, especially as not one of our plants which stood in the open border all winter had buttoned. Throughout the winter not one of them lost a single leaf, and every one of them remained as dwarf and healthy as an autumn-sown Cabbage plant. They were planted out about the middle of March, and their leaves will soon meet in the rows, although they are growing 1 ft. 8 in. apart. In fact, those that were wintered out have all along proved so satisfactory that we have given away all our protected plants, as we do not want them.—CAMBRIAN.

**Scarlet Runners in Trenches.**—This is the best season for sowing a full crop of this prolific and useful vegetable. We usually follow late Broccoli with Runner Beans, and if the crop be not cleared off, a trench is dug out between every third row of Broccoli (6 ft. apart) and well manured, and the seed is sown thinly. After Broccoli are all cleared off, a good heavy dressing of partly decayed manure is applied all over the ground, the result being that drought is but little felt.—J. GROOM, Henham.

**Petunia Death to the Potato Bug.**—More than a dozen of our friends have written to us stating that Petunia plants—any 20 of our ordinary cultivated kinds—will drive away or kill the Potato bugs, as they know by actual test, while it hardly seems natural, there must be some truth in the matter. Wm. Gavin, of Prince Arthur's Landing, Ont., writes:—"We have no Potato bugs in this locality, owing, I believe, to a wild sort of Petunia which grows in uncultivated places. It is believed that this plant is very poisonous to the bugs, they being very fond of it."—Vicks' Magazine."

## PROPAGATING.

**DRACÆNAS.**—There are two ways of increasing *Dracænas*—the first (fig. 1) by cutting off the top, which should be put in single pots in equal parts of peat, loam, and sand, well mixed together; give a good watering and plunge the pots up to their rims in a good brisk bottom-heat in the propagating frame, keeping them close for two or three weeks, and giving a slight sprinkle of water overhead every morning. They take about two months to get well rooted, when air may be gradually given them, and they may be turned out of the frame. Keep them, however, on a gentle bottom-heat for a week or two, when they can be potted and placed in another part of the stove, and will soon make fine plants. By cutting up the stems, as shown in fig. 2, and putting the pieces in well-drained pots, or pans just covering them about  $\frac{1}{2}$  in. with fine soil over the tops, they will soon begin to grow if plunged in a good bottom-heat, and

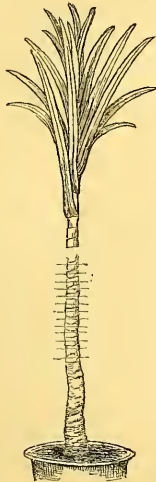


Fig. 1.

Fig. 2.

treated in the same manner as the tops. Sometimes they push forth numerous growths according to the strength of the stems; these all root, and each one when cut away will make a plant. The old bottom will push out several shoots, which may also be used for cuttings. *Dracænas* may be increased all the year round, but the best months are May and June.—H. H.

**Cinerarias from Cuttings.**—Although propagating *Cinerarias* from cuttings is by many considered a troublesome and needless way of obtaining plants, yet such a method has its advantages. The magnificent plants shown by Mr. James, of Isleworth, every spring are grown from cuttings, stopped once during the winter, potted into 5-in. or 8-in. pots, nearly tied out, allowed abundance of air, and from soon after Christmas till the end of March large spreading specimens covered with large bright blossoms are the result. Such plants are much dwarfier and more effective than plants raised from seed, and, moreover, they are much more suitable for supplying cut flowers.—C. S.

**Sympathy and Antipathy.**—It is well known that certain objects excite an instant horror in the minds of persons to whom they are antipathetic, and this in a manner quite distinct from the affectionation of fright. Some remarkable instances of real sympathy and antipathy are collected by Milingen in his book on "Mind and Matter." Amatus Lusitanus relates the case of a monk who fainted when he beheld a Rose, and never quitted his cell while this flower was blooming. Orfila (a less questionable authority) gives the account of the painter Vincent, who was seized with violent vertigo and swooned when there were Roses in the room. Volpi relates the history of an officer who was thrown into convulsions and lost his senses in consequence of Pink's being shut up with him in his chamber. Zimmerman tells of a lady who could not endure the feeling of silk and satin, and who shuddered when touching the velvety skin of a Peach. Effects of this kind are, in the majority of instances, purely physical; in some cases, however, the imagination is first affected.—The Daisy."

## GARDEN BOTANY.

(Continued from p. 395.)

**SHAPE AND CONSISTENCE OF THE STEM.**—The trunks and branches of trees and shrubs are usually round (terete), and afford very few distinctive characters; but in some classes of plants ordinal, generic, and even specific distinctions are afforded by the shape, &c., of the stem. The *Cactaceæ*, for instance, have, with few exceptions, thick, fleshy stems (see p. 393), and the leaves are represented by minute scales. Species of *Cactaceæ* are characterised by the shape of the stem, as spherical, columnar, fluted, angular, terete, flattened, and a variety of other forms. Some of the African and Canary Island *Euphorbias* have fleshy, Cactus-like stems, and the curious South African *Stapelias* are of the same character. Grasses, most of which are useful plants, differ among other things from the almost useless Sedges, which they closely resemble in outward appearance, in having usually cylindrical stems, hollow between the joints, whilst it is characteristic of Sedges to have angular, solid stems. The trunks of dicotyledonous trees diminish in size upwards, and the hardest wood is in the centre; monocotyledonous stems, on the contrary, are nearly of the same diameter at the top as at the base, and the wood is densest near the circumference. These differences arise from diverse modes of growth of these two great classes of plants, which are explained elsewhere. Many other characters in the shape and consistence of the stem might be pointed out, but it is unnecessary, as few special terms are in use to designate them.

**SIZE AND LENGTH OF THE STEM.**—In some plants we find the stem reduced to a small, disk-like body, on which the leaves are crowded, and the stems of some of the gigantic Conifere of North America rise to a height of 200 ft. and 300 ft., and even more. The tallest trees hitherto measured are some of the Australian Gum Trees (*Eucalyptus collosa*, *E. amygdalinus*, &c.), which sometimes attain the enormous height of nearly 500 ft. Baron Mueller mentions one which was 295 ft. up to the first branch, and more than 40 ft. in girth at the base. In size of trunk the Baobob trees surpass all others, but they are not proportionately lofty. The African Baobob has been found with a trunk 90 ft. in circumference, and the largest girth of the Australian Baobob on record is 85 ft. The length and diameter of stems depend, of course, so much upon soil, situation, and climate, that size is only a secondary character, and can only be approximately given, except for individual plants.

**PSEUDO-BULBS.**—The thickened perennial stems characteristic of many of the epiphytcal *Orchids* are called pseudo-bulbs, or false bulbs. They are to all intents and purposes stems, but the distinctive appellation is justified by the fact that important specific characters are afforded by their diverse forms. Occasionally the branches of a stem are so modified, as to resemble leaves, as in the Butcher's Broom (see p. 396). Each of these leaf-like branches springs from the axil of a minute leaf, and the flowers are borne on the centre, as the figure shows. This shrub is the only woody monocotyledon native of this country, and its stems, although woody and persistent, make all their growth in one season. *Xylophylla latifolia* is a dycotyledonous shrub, with leaf-like branches, bearing flowers on their margins. It is in cultivation in this country.

**SURFACE OF THE STEM.**—The surface of herbaceous stems is hairy or bristly, clothed with chaffy scales or prickles, or quite smooth and naked, &c. The bark of shrubs and trees is smooth, as in the Beech tree, deeply furrowed and corrugated, as in the Oak, peels off (deciduous), as in the Plane, armed with prickles, as in Brambles and Roses, and presents a variety of other characters.

**MODIFICATIONS OF BRANCHES.**—In the paragraph on the shape of stems, the leaf-like branches of *Ruscus* and *Xylophylla* are mentioned. Some of the branches of the Blackthorn, &c., are short, and terminate in sharp points. These are called spines, to distinguish them from prickles, which have their origin in the bark, whilst true spines proceed, like other branches, from the wood beneath the bark. Some writers regard the tendrils of the Grape Vine, Virginian Creeper, &c., as arrested branches modified for a certain purpose.

**FUNCTION OF THE STEM.**—Generally speaking, the stem possesses no special function of its own, and is simply the axis upon which active organs are seated. It is the channel through which the liquid food, absorbed by the roots, passes to the leaves. In some plants it fulfils the functions of the leaves when the latter are absent, and is then usually of a green colour.

#### The Appendages of the Stem.

The stem of a seedling plant, as we have seen, develops from a bud, called the plumule, which is formed at one end of the embryo; in dicotyledons, between two seed leaves or cotyledons. As the stem is pushed forth it remains simple, as in most Palms, or in course of time it ramifies very much, as in the Oak; and as stems or branches elongate, they bear at intervals, sometimes very short, leaves of various kinds. It has already been pointed out that perfect plants are often developed not only from seed, but also from small fragments of root, stem, or leaf. Knowing this, we are in a measure prepared to find that it is impossible, generally speaking, to exactly define the different organs borne by the stem (and branches), that is to say, in the same manner that the members of an animal may be defined. The bodies borne by the stem, though sufficiently distinct in most instances, sometimes pass gradually from one into the other, so that it is impossible to say where one leaves off and the other begins; and, as is shown below, the ordinary leaf form often replaces other organs. In fact, some or all of the parts of a flower often develop as green leaves. Such being the case, it is usual to speak of the organs borne by the stem as appendages, which present various modifications according to the function they perform, and which receive their designations from their function or purpose. Briefly, it may be stated that all kinds of leaves and all parts of flowers are of the same origin, and develop alike from a primarily indistinguishable organ or outgrowth of the stem. By the same rule the entire plant is said to consist of an axis and its appendages; the axis may be simple, or bear secondary, ternary, or a greater number of lateral axes. All modifications of the stem come under the general designation of caulome, and leaves, whether scale-leaves, foliage-leaves, or floral-leaves are termed phylloles in contradistinction.

**BUDS.**—All elongations of branches and stems, and the production of leaves and flowers, originate from buds, and there is no essential difference in the properties of an embryo bud (plumule) and other buds. But two kinds of bud may be distinguished, namely, flower-buds and leaf-buds. Already in the autumn the difference between the two is easily seen, and thus it is possible to say whether the Apple trees and Plum trees, &c., will flower profusely the following spring. The flower-buds are much thicker and less pointed than the leaf-buds. Buds, then, are either undeveloped, barren branches or flowering branches. Flower-buds usually develop one or more leaves as well as the flowers. The fact that a single bud will grow into a plant having all the properties of the parent is made use of in propagating rare varieties, and varieties of delicate species on plants of a more vigorous species. Occasionally a badly selected bud will produce a flower at once when it grows out, but there are always two or three leaf-buds below it, which, under favourable circumstances, will subsequently grow into branches.

**SEED BUDS (EMBRYO BUDS) DO NOT INVARIABLY REPRODUCE PLANTS IN THE LIKENESS OF THE PARENT.**—Seeds give birth to individuals of the same species, and in some cases they may be depended upon to reproduce a variety, distinguished from other varieties of the same species by the colour or size of its flowers, or some other character. But the variety must be what is termed "fixed." If it be wished to propagate a certain variety of Rose, Potato, or Pelargonium, &c., it can only be done with certainty from buds of the stem, that is, either single buds, or cuttings, or tubers bearing buds. A seed-bud (embryo) is the result of sexual impregnation or confluence, and, consequently, may combine the characters of dissimilar parents.

**POSITION OF BUDS.**—The normal position of buds is at the tips of the branches (terminal), or on the sides (lateral). The latter are commonly axillary, that is, in the angle formed by the upper side of the base of a leaf with the branch; but flower-

buds are sometimes extra-axillary. Should the vicissitudes in the life of a plant, or part of a plant, seem to require it to ensure its perpetuation, buds are formed on other parts of branches, or even on leaves or roots, as described above. All such buds are termed adventitious, because they appear at uncertain places. Adventitious buds are produced much more freely by some plants than others. Bryophyllum (fig. 124) is an example of a plant whose leaves under certain conditions give birth to numerous buds. Some trees, if cut down to the

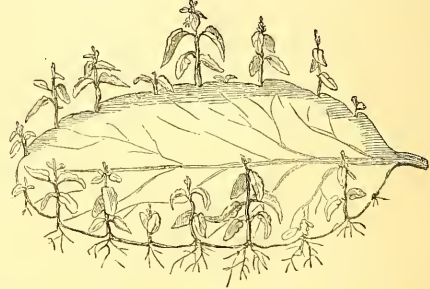


Fig. 124.—Leaf of *Bryophyllum calycinum*, with buds produced on its margin.

main trunk, will soon develop numerous branches where the section is made, as many species of Willow (fig. 125), Poplars, &c., but a Fir or Horse Chestnut treated in this way soon dies. The position of flower-buds has to be considered in pruning fruit trees and flowering shrubs, especially whether they are terminal or axillary. Again, the characteristic branching of different trees depends upon which and how many of the buds grow into branches each season. In the Horse Chestnut we have a tree of formal habit with few stout branches, from the fact that growth is mainly confined to the ends of the branches. Altogether, the growth of the Horse Chestnut is



Fig. 125.—Pollard Willow.

singular. The flowers, it will be remembered, are borne at the extremities of the branches, and the leaves are borne in opposite pairs. If each season the buds from both leaves of the last pair grew into branches, there would be a succession of forked branchlets gradually more and more crowded; but what almost invariably takes place is this, the branches of the inflorescence die back eventually close to the last pair of leaves, and only one of the two lateral buds is developed, and, being so near the end, it soon appears to be terminal. It often happens, however, that a shoot does not bear flowers, in which case it presents at the end of the season's growth a true terminal bud and two lateral ones immediately below the terminal one, having their origin in the axils of the uppermost pair of leaves. The succeeding ramifications depend upon the growing out of all three, or only one of these buds, and the production or not of flowers.

**BUDS SOMETIMES REPLACED BY DECIDUOUS BODIES.**—Normal buds are persistent, and grow into branches on the plant where they are formed, or remain dormant; but in some plants, in the place of normal buds, bodies resembling very small bulbs are formed. In course of time they fall off, and eventually grow into independent plants. The Pile-wort (*Ranunculus Ficaria*—fig. 127) is a common instance in which this provision



Fig. 126.—*Ranunculus Ficaria*, having bulbils in the axils of the upper leaves instead of true buds.

for the propagation of a plant occurs. It may, in this plant, at least, be regarded as a provision for the propagation of the species, because the plant seldom, if ever, ripens seed in this country.

**NAKED BUDS AND SCALY BUDS.**—The buds of most of our native trees and shrubs are covered with scale-like leaves, which are thrown off when growth commences in spring. They are very conspicuous in the Horse Chestnut, and of a very beautiful texture in many of the Fir trees. In the former they are covered with a glutinous exudation, and the inside in many other trees is clothed with a soft down, which may serve as a protection from cold and other adverse influences. The buds of herbaceous plants are protected in a different way, but they have usually no deciduous scales.

**TRANSITION FROM BUD-SCALES TO PERFECT LEAVES.**—Although the bud-scales of the Horse Chestnut, for example, are very different from the summer leaves, they are regarded by botanists as modifications of the same organ with a different function. This view is supported by the fact that in some plants, the Red Currant, for instance (fig. 130), there is a gradual transition from the outer scales to the perfect leaves, in which there are intermediate stages, which might be called highly developed scales or imperfectly developed leaves.

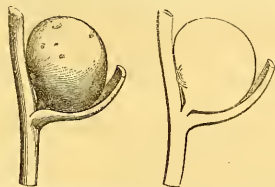


Fig. 127.—Bulbil of *Ranunculus Ficaria* (enlarged). Fig. 128.—Longitudinal section of bulbil.

**ACTIVE BUDS.**—Generally speaking, buds, especially in woody plants, are formed one season, and do not shoot until the following; but in many annual plants, for instance, they suffer no check. There is no pause between their formation and evolution; growth is continuous. Such buds are termed active buds, in contradistinction to the dormant buds of other plants, which await the warmth of spring before they unfold.

**LATENT BUDS.**—It is necessary to distinguish between dormant buds and latent buds. As a general rule, a bud is more

or less fully formed in the axil of each leaf of all perennial woody plants; but, under ordinary circumstances, not all of them shoot the following spring. As spring approaches, those nearest the tips of the branches begin to swell, and finally burst and grow out into leafy branchlets or inflorescences, or both. From the lower part of the previous year's shoots, from the rudimentary buds formed in the axils of the leaves farthest from the tips, no growth is made; but these rudimentary buds possess, nevertheless, a certain amount of latent vitality, varying, for different plants, in intensity and durability, as well as in capability of being stimulated into activity. Buds which shoot the season following their formation in the ordinary course of Nature are simply quiescent in obedience to the general repose in vegetation, and may be termed dormant; whilst those which would grow out only subject to extra-

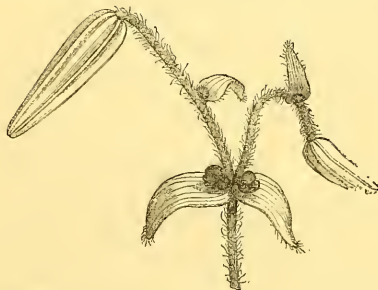


Fig. 129.—*Lilium bulbiferum*, with bulbils in the axils of the leaves and bracts.

ordinary conditions are latent buds. Sometimes the lowermost buds of a previous year's shoot give birth to two or three small leaves, and the successively higher ones to increasingly more vigorous growth; or, according to the nature of the plant, flowers and fruit may be developed from some of the lower buds. But as almost every genus, or even, we might say, species, presents peculiarities of its own in growth, it is obvious that we can only generalise here. It will, however, be clear to all that before a person can prune trees and shrubs properly or advantageously, he must have some acquaintance with their normal mode of growth and their vital powers when subjected to pruning. The reasons for pruning are not always the same, it is true, but the importance of doing it properly

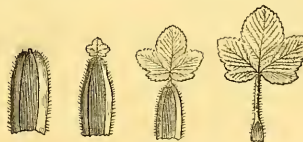


Fig. 130.—Bud-scales from the same bud of Red Currant, showing gradual transition to perfect leaves.

remains much the same, although some plants will bear almost any amount of cutting without injury to their lives. By removing the tips of shoots, buds which would otherwise remain latent, or, at most, make a feeble shoot, are stimulated into vigorous growth. Latent buds, again, must not be confounded with adventitious buds, mentioned above, which are produced on almost any part of some plants possessing great vital energy.

**LEAVES (Foliage Leaves).**—By foliage leaves, as has already been pointed out, is meant those parts of a plant popularly known as leaves, as distinguished from floral leaves, or the leaves forming the flowers. Now, although the phyllome, as it is termed in vegetable morphology, is the basis alike of foliage leaves and floral leaves, it is necessary, in descriptive botany, to retain not only such popular distinctive terms as leaf, petal, &c., but also to use a great many other names not

commonly employed, to designate certain parts, besides distinguishing a large number of the principal types of modification exhibited by each and all of these parts. In botanical descriptions of plants the term "leaf" is employed in almost exactly the same sense as everyone quite unacquainted with botany understands it; but this is not the case, as we shall explain in the proper place, with regard to the use of the term petal, &c. Botanists, however, make one noteworthy exception to the ordinary conception of a leaf which has already been mentioned, but it may be well to repeat it here. The so-called leaves of Ferns, whatever their consistence, configuration, dimensions, and other characteristics, are called fronds. On the other hand, the same terms are used to denote their different shapes, cutting, &c., as for the modifications of true leaves. In some botanical and horticultural publications, especially Continental ones, the leaves of Palms and Cycads are called fronds, whereby

length. Besides the name of Carob Beans, these pods are also commonly called Locust pods, or St. John's Bread, names by which they are well known in this country.

## THE LIBRARY.

### BIBLE PLANTS AND THEIR HISTORY.\*

WORKS on the natural history of the Bible are by no means scarce. The subject has been attacked from all points by authors of various attainments with varied success. A perfect knowledge of the Hebrew and Greek languages, together with a thorough knowledge of plants, are qualifications not possessed by many, but, nevertheless, very necessary for a clear and unprejudiced elucidation of biblical botany; and,



The Carob Bean Tree (*Ceratonia Siliqua*).

the term loses its special distinctive significance. It is applied to the leaf-like expansions of Ferns because they differ from ordinary leaves, inasmuch as they bear the reproductive organs on some part of their surface.

W. B. HEMSLEY.

**The Carob Bean Tree** (*Ceratonia Siliqua*) is a Leguminous tree, wild and extensively cultivated in the countries bordering on the Mediterranean. It has a fleshy fruit, which is imported into this country in considerable quantities for cattle feeding. The seed was the original carat of jewellers, and in many other respects it is an interesting tree. It forms a branching tree about 30 ft. in height, having wood of a pretty pinkish hue. Its pinnate leaves are composed of two or three pairs of oval blunt-topped leaflets, of a leathery texture, and a shining dark-green colour. The flowers are in small red racemes, and are succeeded by flat pods, from 6 in. to 1 ft. in

even with this knowledge, great discrimination is needed to be able to fix a certain Hebrew name to a distinct plant, in consequence of the same name being often applied to different plants, and *vice versa*. The same thing occurs throughout the vegetable kingdom generally, and in modern times often causes no little confusion. Mr. Smith's book has several advantages over those that have preceded it. First, it is very convenient as regards size; and next, the different plants are readily found under their popular or English heading, to which follows the Hebrew word. The author's knowledge of Bible plants, which, as he tells us in his preface, he has long studied, and, with one or two exceptions, were, before

\* "Bible Plants and Their History" with a Review of the Opinions of various writers regarding their Identification. By John Smith, A.L.S., ex-Curator Royal Botanic Gardens, Kew. With ten Lithographic Plates, by W. H. Fitch, F.L.S. London: Hardwick & Bogue.

his loss of sight, known to him in a living state, has enabled him to form some opinions which he has here left on record. We think he has done right not to overload a book of this kind with too many botanical terms. It is absolutely necessary that the Latin scientific name should be given in every case where it is possible, and this the author has done. The plan of the book will be best understood from the author's own words. He says:—"I deem it best to follow the original Bible classification of Grass, herbs, and trees; by so doing the allied modes of growth and products are brought together better than by either a scientific or alphabetical arrangement. Each subject is headed by its English and Hebrew names, followed by a quotation of the verse or verses in which it occurs in the Bible, the subject under consideration being printed in italics, in some cases being followed by its Hebrew name in parenthesis." The scientific names and the family to which each belongs, the native countries and the principal uses of the plants, both ancient and modern, are also given. The book is well got up, and will, we have no doubt, be in the hands of all who love plants for their own sake, as well as of those specially interested in their ancient history. It certainly deserves to rank as one of the best of Mr. Smith's many publications. It has evidently been a labour of love to him, and therefore is entitled to all respect. J. R. R.

**Poems of Places\*.**—This is the first part of a series of pickings and gleanings from the poets, a handy, well-printed, well-bound work, in two vols. of 500 pp. The scheme of the work is good, an alphabetical arrangement of all places found in poetry and song being given, and the poem appended, generally at full length, giving the author's name. A map of England and Wales, the countries to which the matter in these two volumes is limited, is inserted as a frontispiece to each volume, and contains only names of places, &c., celebrated by poets, and referred to in the book. The editor, the poet Longfellow, promises us more volumes of the same character dealing with other countries, till the "voyage round the world," described by Montgomery, "shall be brought to a safe and happy end."

**Artificial Manures†.**—This invaluable work on artificial manures (by Alfred Sibson, F.C.S.) tells us how to make, buy, value, and use them, and also gives us full information as to what kinds of cereals and root crops are most benefited by them. There is a useful chapter on the use of compound or special manures, in which cultivators are told how to make the mixtures themselves for all kinds of cereals and root crops; how to apply manures to the soil to the best advantage is also clearly pointed out. This is important, as when the fertilising elements are so placed in the soil as to allow of their exercising their full effects on the crop, that alone will often determine the practical superiority regarding two or more manures otherwise much alike. Mr. Sibson concludes with the advice that it is as bad policy to starve our soils, as it is our live stock.

**The "Maison Rustique des Dames‡."**—This is a work worthy of being known in England. The authoress enters fully into every detail connected with a household from a French point of view, and although there are some chapters which are not in harmony with English ideas or customs, still this fault is well counteracted by the useful hints and numerous receipts which could be carried out with advantage in every home. A good receipt given for cleaning decanters, or other crystal bottles, is as follows:—Place a few pieces of the Pellitory plant-leaves of Jerusalem Slicke, or Borage, in the bottle, then half fill it with cold water; shake it well, so as to thoroughly cleanse it, and afterwards rinse it with clean water. There are several receipts for taking fruit, and other stains out of linen; also for the starching of linen, so as to give the same brilliancy to it as French laundresses do. The receipts given for cooking vegetables and fish are particularly good, numbers of them are not to be found in any of our works on cookery. The authoress also gives receipts for several simple diætic quizes unknown in this country, and which would prove agreeable changes in our ordinary menus. There are also several seasonable menus for each month in the year, both for innocuous and dinners. The chapter on slight ailments, with prescriptions for their treatment without medical advice, and many useful ones for the immediate remedies necessary in cases of accidents, &c., will be found to be of great value in a country house when situated far from a town. The "Maison Rustique des Dames" contains also directions for gardening, the care and management of poultry, &c.; also full instructions for a dairy. It forms, in fact, a complete and useful manual.

\* MacMillan & Co., Bedford Street, London.

† London: Ridgway, Piccadilly.

‡ "Maison Rustique Des Dames." Par Mme. Miller-Robinet. Paris: Librairie Agricole de la Maison Rustique.

## GARDENING FOR THE WEEK.

### Flower Garden.

ALTHOUGH our springs of late years have rendered early bedding out undesirable, it is not too early to decide how the garden shall be planted, and to make arrangements accordingly. What may be termed the massing system has had its day, and it is evident that something fresh must soon be introduced. We would have masses of colour in suitable situations, but we would have them subdued and tastefully toned down by means of foliage, so as to form a rich, quiet, harmonious whole. Even ribbons, if a mere repetition of the same plant *ad infinitum*, cease to charm; and the same holds good in the case of panelling and carpet-bedding, where gaudy colours are employed. The secret of gardening decoration does not consist in crowding hundreds or thousands of plants, however scarce or valuable, into a given space. No; it lies more in the judicious use of appropriate plants, and in so lighting them up by means of colour that each shall enhance the beauty of the other. For this purpose expensive materials are unnecessary; it is the arrangement rather than the plants individually which charms. One man with a handful of flowers from the hedges will often produce an exquisite bouquet, while another, with flowers however choice, may fail. Tasteful application of the material which may be at command is what is wanted. Spring-flowering plants, although now doing good service, will soon require to be removed to the reserve garden, the ground in which should be put in order to receive them; add to it a little thoroughly decomposed manure, leaf-soil, or peat, as the case may be. Before planting, and not requiring to be shaded, such plants as Arabis, Anemone, Arabis, Daisies, &c., allowing sufficient space between the plants for proper development without crowding. Bulbs must be removed in as perfect a manner as possible, being careful not to bruise the leaves in the operation; and on no account remove the flower-stems, as they greatly assist the maturation of the roots. Water freely and protect from sunshine for a few days with evergreen branches. Plant out spring-struck Hollyhocks, and divide and re-plant Neapolitan and late-flowering Violets. Centaureas should be planted in the beds in pots, as they grow more compactly, colour better, and are more manageable in winter.

**Auriculas.**—These being now in full beauty, some pains must be taken to retain the bloom for as long a period as possible. If the plants be behind a wall facing the north, the glass being not requiring to be shaded, except for a few hours in the afternoon. Air must be admitted freely by tilting the lights against the wind, and when the air is quite calm it is well to remove the lights altogether. In this position I find the flowers more liable to suffer from damp than from any other cause and unless the structure be heated, which ordinary frames are not, there is no other way by which the damp can be combated, except by careful attention to the ventilation. I find the flowers to remain in good condition for a long time in a span-roofed house running north and south. In our house there are ventilators at both sides and the top lights all move, so that if the wind be blowing either from the east or west, plenty of air can be admitted without any injury being caused by its blowing directly upon the plants. As the latter go out of flower remove the pips and seed-pods, unless it be intended to save seeds, but do not break the stalks over, in case the part that remains should rot down to the centre and kill the plants. If the pips only be removed, allowing the foot-stalks to remain, there is no danger, as the stalks wither off in a dry state, and they can be drawn out without injury. It is also a good plan to remove the plants from the blooming house as they go out of flower; it will not be necessary to shade, unless from very hot sunshine, and the plants may be freely exposed to the wind.

**Carnations and Picoetes.**—We have just gone over our stock of plants and sown the seed soil in the beds, at the same time picking out the weeds and removing any decaying leaves. The plants are still under the glass lights, from which we do not care to remove them as long as we can spare the lights, but they are wanted for another purpose, and very shortly the plants must be placed out-of-doors. Meantime the flower-stalks have grown considerably, and before the plants can be fully exposed it will be necessary to stake them. Plants in beds require looking after now; stir the soil, remove weeds, and press the plants if they seem loose gently into the ground.

**Gladioli.**—If, from bad weather or any other cause, the main collection of Gladioli has not been planted, it is still time to do so. If it be intended to grow good spikes for exhibition the bulbs must be planted in beds, and it is useless to make the attempt unless the soil is rich, but it must have been enriched, if possible, six months before the time of planting. Crude manure in contact with the bulbs, or even near them, is sure to cause mischief. Bulbs of the commoner sorts may be planted in Rose beds, amongst Rhododendrons, or in the herbaceous border. This is also a good time to sow seeds of Gladioli; they hybridise easily, and, if the best sorts be crossed, there is a certainty of at least 10 per cent. being as good as the parents. I sow in 7-in. pots, using good loam, a little leaf-mould, and rotten manure. I plunge the pots to the rim in a bedch in which there is a gentle bottom heat. The seeds will vegetate in a fortnight if the glass lights be kept rather close. As soon as the seedlings appear aboveground more air must be admitted, and as they gain strength and the weather becomes favourable the lights may be removed altogether. They must not suffer from want of water at the roots, and when the leaves turn yellow in autumn the small bulbs may be shaken out from the soil; they will vary in size from a small Pea to a Fibert, and nearly all of them will throw up a flower-spike the following season.

**Pansies.**—In order to have a few blooms of these early it is necessary to grow the plants in pots, and to give them the shelter of a frame. It is but seldom that the flowers can be had clean when the plants are out-of-doors, but the intervention of a glass light preserves them in all their purity. As in the case of Auriculas, I prefer having the frames behind a north wall; less light is in that case required, and the flowers can be enjoyed even during the brightest sunshine. The shoots should be pegged regularly over the surface of the pots, and when they take an upright position they must be tied to neat, regularly-placed sticks. After all that has been said about destroying slugs there is no better plan than to look over the frame at night and pick them up by hand, throwing them either into a pot containing a little salt or dry lime. I also like to see the colours of the flowers tastefully arranged; they vary much, and more so now when the fancy has had been so much improved in colour and colouring, and the forms are indispensable to the colour may be. The yellow, white, and dark selfs, and the various shades of white and yellow grounds form a varied group even without the fancy kinds. See that the plants are well supplied with water at the roots, but none overhead.

Pinks, Pansies, Carnations, Picotees, and other small-growing plants in beds out-of-doors must not be neglected; the soil should be stirred between the rows when the weather is favourable, and if the plants be loose press them into the ground with the fingers; remove withered leaves or any decaying portions; look for slugs and the leather-coat grub at night when they are feeding. J. DOUGLAS.

### Indoor Plant Department.

**Conservatories.**—In these the finer kinds of Rhododendrons are now in great beauty, and none more so than the Sikkim, waxy, crimson-flowered R. Thomsoni. Some which have started into growth, and are planted out, must be well supplied with water; all decaying flowers and seed-pods should also be removed from them, unless it be desired to save seed, and even in that case only a few heads should be left on each plant. A few days more flowering remove from the conservatory, Camellias, Azaleas, Myrtles, Aracarias, Eugenias, and similar plants put out in beds and borders are now growing freely, and consequently require extra attention in the way of watering. Keep up a succession of blooming plants from other houses and pits; many stove plants, indeed, may be transferred to the conservatory while in flower, and if they are placed in the warmest part of it, they will continue longer in beauty than if left in warm houses; after flowering, they should be replaced in their former quarters. Pot on plants of double Petunia, using light, sandy loam and well-decayed manure for the purpose. Plants in constant bloom, and in a cool position, and, used in that way, a strong, rich, moist soil and cool position suits them best. Lemon-scented Verbenas also make good conservatory plants, as do likewise well-grown and well-flowered Heliotropes.

**Cinerarias and Primulas.**—A little more Cineraria seed should now be sown to succeed the earliest batch; also Primula seed to furnish plants in bloom for the winter. Those who have not had much experience in raising Primulas from seed, frequently find a difficulty with them, as the seeds are very tender, and must only be very slightly covered. A good method is, after filling the seed-pans with finely-sifted soil, consisting of three-fourths loam and one of leaf-mould mixed with a little sand, and making the surface firm, to sow the seeds evenly, not using any covering of soil, but laying over the top a little chopped Sphagnum; a sheet of glass placed on the top will keep the soil sufficiently moist to cause the seed to vegetate. As soon as growth has commenced the Sphagnum must be removed, otherwise the young plants will become drawn; gradually expose them to the light.

**Pot Roses.**—During weather such as we had a short time ago, there is a little difficulty in managing Roses under glass. When the sun gets powerful, even if the wind be cold, to keep the heat reasonably down it becomes necessary to give air, which, if not admitted with great care, so as not to come in contact with the tender foliage, is certain to produce mildew. This the experienced eye soon detects by the slight curl and puckered appearance of the leaves, and when once detected there must be no delay in immediately dusting the affected plants with sulphur, first damping them with the syringe, and being particular that the powder reaches both upper and under surfaces of the leaves. Any delay in taking means to destroy mildew will result in the plants being seriously weakened for the ensuing year, as it spreads rapidly, and the vitality of the affected foliage is soon destroyed in a way that causes its prematurely falling off, and whatever loss of leaf occurs root action will be affected in like proportion. Where Roses are grown as roof climbers in greenhouses and conservatories, mildew is almost certain to attack them about this season, especially where the house is kept a little warm by means of fire-heat, so as that naturally suits the Roses into growth before there is enough light and sun to give vitality to the leaves, and a necessity for giving air to the other occupants of the house to a greater extent than the Roses like, will with them also have the effect of producing mildew; and being, as they are removed a considerable distance above the eye, unless closely examined, half the leaves may be destroyed before it is discovered.

**Rose Insects.**—Mild winters are invariably the precursors of springs in which insect pests are plentiful. Rose Maggots especially are more than usually abundant, particularly on Roses, the leaves and young shoots of which in their first stage are of a pale green colour. These they seem to attack in preference to such as have their young growth strongly tinged with brown or red. This pest seems to be proof in a great measure against any insecticide, although there are some washes that render

the shoots more distasteful to it than others, but when once it exists food it must and will have, and I have found no means of preserving the young buds, except pinching with the finger and thumb. Those who only grow a limited number of Roses in somewhat confined gardens will generally find their plants suffer more than those grown in quantities in open situations. As soon as ever the leaves are detected in any way disposed to curl, the grub should be at once sought for, or they quickly descend to the heart of the young shoot. A free and regular use of the syringe or garden engine with clean water will prevent the necessity for using so much insecticide, and although the continuous application of water costs more in labour, it is still the cheapest in the end.

**Red Spider on Roses.**—There are no plants in existence more liable to red spider than Roses, especially when grown up the rafters and on the roof. To cope with this there is nothing like a thorough washing with the syringe at least twice a week, or still better, with the garden engine, but the latter must not be used with such force as to injure the young leaves. The unavoidable wetting that this occasions, the plants underneath, many of which do not require it, is the frequent cause of Roses when employed as roof climbers not having sufficient water applied in this manner overhead, and it is the chief drawback to their being grown over other plants in this way, but when they are thus used there is no alternative but these continued washings, otherwise the miserable appearance that they invariably have through a great portion of the season makes them rather an eyesore than an ornament, and at the same time causes them to be the direct means of communicating red spider to every plant upon which it will exist grown underneath them.

**Disbudding Roses.**—The practice may not be general, but years ago it occurred to me that weak-growing varieties, which often make a number of shoots never strong enough to flower, and these in their turn too weak to produce flowering wood in the coming year, would be better for having such weak growth thinned out as soon as it began to push, thus concentrating the energies of the plants in the shoots retained, which thereby attain so much more strength and vigour than they otherwise would. This practice I have since followed with the best results, especially in the case of standards, where the heads become so much less crowded. If the work be judiciously done, proportionate to the strength of the plants, in the weakest growers confining the shoots to the fewest number, and with all carrying out the operation before the growths have attained any considerable length, and in this way robbing the plant, there will at the winter pruning be few shoots that will need removing altogether, the work being simply confined to the necessary shortening of the stronger ones retained. Not only has this a considerable influence in strengthening the shoots that are kept for the current season, but it equally increases the production of flowers. T. BAINES.

### Indoor Fruit Department.

**Pines.**—To make fruit swell off freely, now that the days are long and light, ought to be no difficulty. All that is required is method in the way of applying necessaries, such as tepid manure water, charging the atmosphere with ammonia and humidity, kindly airings occasionally, and never shading if well swelled, finely-coloured fruit is aimed at. Talk of shading, indeed, in our cloudy, dark, humid climate, where the general complaint always is, "what little sun we get! Oh, no; to deprive our fruits of that is against all natural reason and law. Succession plants in every stage of growth should now get their full share of heat, humidity, and air, with a warm humid atmosphere. Air freely night and day, in order to get strong robust plants.

**Vines.**—The Vines in the early houses will now be ripening, and some air left on at night will assist the colouring process. In the succession houses, when the Vines are in flower, good fire must be kept up, and plenty of air given when the weather permits. Thinning the berries as soon as they are fit, stopping the laterals at a leaf or two above the bunches, and removing all superfluous shoots will be the main points now to attend to in the latest Vineries.

**Peaches.**—The fruit in the earliest Peach house will now be at its second swelling, and the border must be examined to see that the moisture is sufficient, especially where the roots are all inside the house. An abundance of manure must be given when the fruit is colouring, and the water at the roots gradually discontinued. The trees in the late succession houses must be syringed every afternoon, and a moist atmosphere kept to prevent red spider from injuring the foliage. Soft water, at a temperature as high as that of the house, should be used for this purpose, for hard water stains the foliage and fruit with carbonate of lime, and spoils the bloom on the fruit when ripe. The thinning of the fruit must be attended to, and the quantity left on be regulated by the health of the trees. I find the best soil for Peaches is the heavy, heavy, heavy soil, such as can be procured, is the turfy loam from old pastures or the sides of roads, and no manure or compost of any kind added to it. Peach trees grown in such soils never make too gross or unhealthy wood, and they can always be kept up to the desired vigour by an addition of fresh soil to the roots and liquid manure during the time the fruit is swelling. All leaf-mould, old tan, or any compost or soil that is likely to bring funguses into Peach tree borders should be strictly avoided when making them, for when fungus fastens on the roots of Peach trees it soon renders them unhealthy and unproductive.

**Figs.**—As the first crop of fruit will be about ripening, the supply of water to the roots must be diminished, and only sufficient given to prevent the second crop from dropping. The trees grown on the walls after the winter coverings are removed will want their wood thinned and all

the shoots left nailed or tied in. Syringe with Tobacco water, or fumigate should the black aphid make its appearance on the trees.

**Orchard House Fruit Trees.**—In true orchard houses, that is, where no artificial heat is employed, the temperature must be ruled by the weather. It is advisable, therefore, on bright sunny days to close the lights early in the afternoon, to secure a higher temperature for the night. Disbudding and pinching all strong shoots, and thinning the fruit where set too thickly, will be the routine for this month. Green fly and red spider must be eradicated by fumigation or syringing with Tobacco water.

**Cucumbers and Melons.**—A steady bottom-heat will still want keeping up, and by attention to syringing and a moist atmosphere the foliage will appear clean and healthy. The fruits on both Melon and Cucumber plants often set too many at a time, and require thinning, so as not to weaken the plants too much. Put pieces of straw or glass under Melons grown in frames, to prevent the damp soil from rotting the young fruit. When Melons are grown in pits, and the plants trained on wires or trellises, the fruit when getting heavy must be supported on a square piece of wood with a piece of string fastened to each corner tied to the wires, leaving plenty of room for the fruit to swell to their full size. Plants in frames will still want covering up with mats at night, and continued till all danger from cold weather is over. The ridge Cucumbers sown in May will want planting out by the end of the month, and a suitable sown or bed made with hot manure will be preparing for their reception. Vegetable Marrows will likewise want planting out at the same time and in the same way.

**Strawberries.**—When the fruit is all gathered from forced Strawberries, the plants are often huddled together in some exposed corner and neglected; but such plants, if taken care of and planted out, will furnish fine fruiting plants next year in the open air. Some varieties likewise when planted out early produce a good crop in the autumn, notably Sir Charles Napier for one. If the ground cannot be got ready for planting them out till other crops come off, and the pots are wanted, the plants may be shaken out and packed closely together, with a little mould sprinkled amongst them, when they will be safe till planting time, if supplied with water in dry weather. Take advantage of favourable weather to clean between the plants, and to mulch them properly in good time. Where the soil is light and open, tread it firmly previous to mulching.

#### Kitchen Garden.

**Sowing Scarlet Runners, French Beans, Kale, Peas, &c.**—A full crop of Scarlet Runners should now be sown. It does not need any considerable length of time to elapse between this sowing already advised, as if the first happens to suffer through frost, those now planted will succeed them without any loss of time. At the same time put in some more dwarf Beans. Green Curled and Cot-tager's Kale should now be sown; these will come in for planting upon ground vacant from the early crops of Potatoes, Peas, &c. The Cot-tager's Kale should be grown in every garden, large or small; it is as far superior to any other variety of the Kale tribe as a spring Cauliflower is to a winter Broccoli. The seed is generally mixed, some of the plants coming up quite green, whilst others are tinged with purple. These latter only should be planted, as, both in flavour and texture, they are much superior to the green and but little inferior to Brussels Sprouts.

**Cauliflowers, Brussels Sprouts, and Broccoli.**—When spring-sown Cauliflowers and Brussels Sprouts have got about 3 in. high, they should be thinned out in the seed-beds so as to leave them 6 in. apart, or if transplanted into a nursery bed at the above size, it will be still better for the plants. The beds to receive them should consist of light, open soil, tolerably rich, and about 6 in. in depth, on a hard surface of ashes; so managed, they will attain size and vigour by the time they are required to be finally planted out, and can be moved to where they are to be grown even in dry weather, as they will be found with a far greater length of roots than when allowed to remain in the seed-bed until the time of planting. The final planting can also in this way be longer deferred, thereby giving additional time for the clearing of the ground they are to occupy, which, especially in small gardens, is an advantage worth considering. Another sowing of summer Cauliflower, as well as some more Veitch's Autumn Broccoli to succeed the first sowing, should be made; also more Broccoli to come in through the winter and spring. All seeds of this description should always be given an opening away from trees and walls, and from the influence of which these vegetables are often sown, the effect being that the plants always become drawn and weakly. When the ground is dry on the surface, any that has been cropped for some time should be hoed over as soon as there is an appearance of weeds; by thus disturbing them directly they vegetate, much less labour is involved in their destruction than if they be permitted to attain a considerable size. Use the implement freely, so as to stir the ground 2 in. or 3 in. deep, leaving the top as loose and open as possible, which will assist the growth of the crops.

**Preparing Ground for Spring-sown Cabbages, Brussels Sprouts, &c.**—Prepare the ground by digging it well, and by giving it a good dressing of manure for planting with the spring-sown Cabbages of the best sorts and Brussels Sprouts, as it is important to get these in as soon as they are planted as the plants are of the Brussels Sprouts which become larger, and the produce is proportionately greater—if planted early. The ground for Celery should also be prepared at the present time. It is much better to have this in readiness before the time

for planting has arrived, as it should be put in during showery weather if possible, which can be taken advantage of without delay when the ground has been made ready beforehand. The usual way of planting is in trenches, with from one to three rows in each. For the earliest, the three row system causes a saving of ground, but it is not suitable for withstanding the cold of winter, being more difficult to protect, more exposed to wet, and consequently more liable to rot. In wet heavy land, if winter crops, single rows are best; in such as is dry and tolerably light, two rows in a trench may be grown. Upon the number of rows it is intended to grow together will depend the width of the trenches. If three rows are planted the trench should be 4 ft. 6 in. in depth; for two rows a 3-ft. trench is necessary; and, for a single row, one of 2 ft. wide will suffice. The space between each trench will require to be proportionate to the width of the trench, so as to afford soil sufficient for earthing up, without coming so near the plants as to injure their roots—a mishap that often occurs in Celery growing. It is of importance to keep this in view, especially for the late or principal crop. Single rows, to stand through the winter, should have a space of 2½ ft. between each trench, or if 3 ft. all the better. For double rows allow 3½ ft. between them; where three rows are to be planted 4½ ft. will not be too much for them. In each case the trench should be formed by removing about 9 in. of the soil to the width required, and laying it up between each trench in the usual ridges; then put in each trench 6 in. of good manure—such as has become thoroughly rotten is by many considered indispensable, but that which is half rotten is equally good, provided it does not contain too much straw. For dry light land a mixture from the stables and cowshed is the best; the latter, being cooler, keeps the plants growing better in hot dry weather. Dig the manure in with 10 in. of the bottom soil of the trench, or a little more if there be sufficient depth without reaching that which is bad and unsuitable, and thoroughly incorporate the manure with the soil. Ground so prepared some time beforehand, so as to get soaked with rain, is in a much better condition for planting than if only made ready immediately before the plants are put in. The ridges between the trenches, especially where double rows of Celery are grown, will answer for a row of Lettuce, which will be cleared off before the Celery requires earthing up. For this purpose the middle of the ridges should be hollowed a little so as to hold the water which the Lettuce will need in dry weather; and here also manure water will be of use, as the ridges cannot well be manured for the Lettuce.

#### Extracts from my Diary.

**May 6.**—Sowing Dwarf Green Curled Savoys, and the following sorts of Broccoli—Walcheren, Veitch's Autumn Self-protecting, Carters' Champion, Wilcox Late White, Cattell's Elopiae, and Leamington. Potting on Cockscombs, Celosias, young Cyclamens, and *Deutzia gracilis*. Hoing up all weeds and suckers amongst Raspberries, leaving six canes to a root for training. Digging out a trench and getting it filled with fermenting material, and otherwise getting it ready for ridge Cucumbers and Vegetable Marrows.

**May 7.**—Sowing four rows of the following sorts of Peas:—Giant Emerald Marrow, Dr. McLean, Ne Plus Ultra, and Omega; also two rows of Johnson's Wonderful Longpod Bean. Giving all Broccoli, Turnip, and other seeds a dusting with wood-ashes early in the morning to keep down the fly. Digging all flower borders ready for planting. Turning over gravel walks in back shrubberies to give them a fresh appearance. Looking over all Strawberries that are well set, picking off the weak and late blossoms, and trying up Lettuces to blanch.

**May 8.**—Sowing Primulas, Cinerarias, Stocks, Asters, and *Humea elegans*. Potting on *Chrysanthems* and *Azaleas*. Pricking off Veitch's Autumn Self-protecting and Snow's Winter White Broccoli and Autumn Giant Cauliflower. Leaving on air night and day in early Vinery in which the Grapes are colouring. Clearing early Potato Frames, and getting them ready for Melons. Digging out more Celery trenches, and getting the manure into them.

**May 9.**—Sowing a little Borage for succession; also Leeks and Mustard and Cress. Potting Balsams and spring-struck Fuchsias. Stopping all young shoots on Fig trees. Staking and tying out old Fuchsias for exhibition. Planting out three trenches of Red and White Celery to come in about the middle of August. Hoing amongst Strawberries, and cutting up clump from litter as it comes from the stalks for mulching them. Looking over Peach trees on wall, picking off all curled leaves, and disbudbing them where required.

**May 10.**—Potting a batch of young Vines; also Melon plants. Staking and tying up *Mignonette* in pots. Planting French Beans in cold pit previously brought forward in pots. Looking over stoppings, tying, and staking, and thinning the Grapes where required. Thinning Turnips, Carrots, and Spinach. Renovating all linings round frames, looking over all Pines, and watering them where required.

**May 11.**—Planting out Sweet Basil into a rough frame for protection. Looking over Peas and house and tying in all young shoots; also Cucumbers and Melons, picking off all false blossoms, and stopping them where required. Hoing amongst all growing crops. Sticking three rows of Peas and getting them earthed up. Mowing and cleaning up the pleasure grounds, and rolling down all gravel and turf that require it.—W. G. P., Dorset.

Two children died in Lurgan on Tuesday week from poisoning, caused by eating wild Parsnips in the field.—"Irish Times."

## OPENING OF KEW GARDENS.

You have published a great many letters lately on the subject of Kew Gardens, most of which, while professing to bear only on the question of the early admission, are full of objections to the present management of the gardens. Will you kindly allow me space for this letter, in which I wish to state a few reasons for entirely disagreeing with the conclusions of your correspondents. Into the general question of the early opening of the gardens I do not wish to enter. I can quite understand that many residents of Kew and the neighbourhood would wish it, but I think the question may be safely left in the hands of the Director and the First Commissioner. On that point, however, I must remark that I should have been glad if your correspondents had not mixed up the question with arguments which savour more of personal pique than of sober argument. No controversy is ever served by personalities, and if Kew Gardens be the wretched establishment, horticulturally and scientifically, that some of your correspondents seem to wish to prove them to be, then it can be scarcely worth such an agitation to gain admission to them; and I hope, also, that we shall hear no more of the foolish argument that the people pay for them, *ergo* they have a right to use them as they please. That is merely the argument of the little street Arab whom Leech once drew for us in "Punch," who refused to cease gazing at the Life Guardsman on the plea that "We pays for you, and I may look at you." But the point on which I entirely join issue with your correspondents is in their complaints of the exclusiveness of Kew. This complaint is first applied to the non-opening of the gardens, and then is, by an easy process, extended to the general management. To this I answer—I have had experience of Kew for several years. I have had experience also of most of the botanic gardens in Great Britain, and of very many Continental gardens. From all of them I have received not only civility and kindness, but great liberality; but I can say, without any hesitation, that from none have I met with more uniform civility, kindness, and liberality than from Kew. And when I speak of liberality I do not mean only, or chiefly, in the distribution of plants, but especially in the readiness with which information is given on any subject, and with which ready access is granted to all parts of the institution. I have also some acquaintance with other of our public departments, and I say, without any hesitation, that I know of no public officer who tries so hard, not only to do the work of his office efficiently, but also to make it thoroughly popular, as Sir Joseph Hooker. I believe that if he thought that botanical science, or even a love of plants, would be extended by the early opening of the gardens he would be the first to advocate it. At present he believes that these objects are best served by retaining the morning hours for the work of the staff and for students, and admitting the public in the afternoon; and I feel very sure that he is a better judge of these matters than any who have not a share in the actual work. I know it may be said that from my being personally known at Kew I meet with more liberal treatment than others might expect. That may, to some extent, be true now; but I met with the same civility and attention when I made my first application as a complete stranger.—HENRY N. ELLACOMBE, *Bitton Vicarage*.

I have been intending to write to THE GARDEN for some time to protest against the way in which many of your correspondents are attempting to make use of the present agitation for the purpose of disparaging the management of Kew. From the style of argument which has been used, I am convinced that many of those writers are entirely ignorant of what is being and always has been done at Kew, and some of them are evidently inspired with an unaccountable feeling of hostility towards the Director. I find to-day that Mr. Ellacombe has already written to THE GARDEN to show how different is the real state of the case from what has been alleged. I need say no more, as his name and experience will have much more weight in the matter than my own. I may add, however, that having had personal experience of the botanic gardens of Paris, Berlin, Genoa, Turin, Palermo, Karlsruhe, Brussels, and Amsterdam, I can say without any wish to disparage those gardens that there is nothing like the same amount of civility, liberality, and intelligence displayed in any of them that there is at Kew; and, further, that I have found no public institution in Great Britain which seems to do as much for the convenience and assistance of the public as Kew does. Of course it is not in every way perfect; but who expects perfection in anything?—N. J. ELWES.

We publish willingly these notes from gentlemen so well known in the cause of garden progress—the more so as they do not use the untenable "arguments for the gardens being closed till the afternoon." We, however, while making known the courtesies met with by our correspondents, and, no doubt, by many others having similar tastes, may remind them that Mr. T. Baines and other able horticulturists whose names we are not

at liberty to mention here, have written to us of failure even to obtain admission to the gardens before the afternoon. Our correspondents will also remember that few of the general public have had that personal acquaintanceship with the officials which ensures such kindness as they acknowledge. A public garden can only be fairly judged in relation to the public in every degree. The rigid rules that have hitherto been in use at Kew have naturally led to irritation of feeling and to questions as to the nature of the horticultural work done at Kew which claimed an exclusiveness for the pursuit of the work, long departed from in the case of other public gardens. We believe all this feeling would subside if the gardens were opened when the flowers open—in the morning—and should advise the Director and First Commissioner to make an experimental trial for a few weeks. They would find that only quiet people would trouble them—people whose presence would simply make the vast solitudes of the gardens a little more animated and picturesque. We believe there are, wholly apart from personalities to which our correspondents allude, good reasons for opening the gardens throughout the day, and here-with subjoin a few of them lest they should be forgotten in the heat of argument.

We take no interest in the subject from the point of view of the holiday-maker, who seems to us to be treated liberally, but from the point of view of the vast number of people, horticulturists and others, who care for gardens, trees, and flowers. Numbers of persons come from our colonies and from America to whom a visit to Kew is important, and we speak from experience when we say that the plans of such people are very often deranged and their time wasted by the rules which exist at Kew. To horticulturists who come from distant parts of the country the same thing happens. Kew is a very large place, which cannot be seen in an afternoon, and these men are often forced either to lose more time than they need do, or not to see the gardens as they ought. The gardens are open at one o'clock, which happens to be either the luncheon or the dinner hour of most English people; and, therefore, they may be said to be practically closed for an hour or so later. In the short winter days this amounts to virtually closing the gardens altogether. Throughout the whole of the winter and spring the most agreeable time to visit Kew would be the bright morning and noon. In summer, too, many people would be charmed to go in the early morning, if allowed to do so. When only one visit can be paid to Kew there is literally not time, even in the summer days, to see the place properly. Public gardens elsewhere of any importance open at reasonable hours. The gardens at Edinburgh, Dublin, Paris, and Lyons are all open early in the morning, and we hear nothing whatever of "science" suffering in consequence, though those gardens are much nearer to the cities than Kew is to London, and therefore more likely to be overcrowded. The gardens lose more than half their value to the public if they are shut up for half the time people might visit them. The question of the slight expense necessary is no reason for not opening the gardens, because, if we mistake not, it would not be difficult to mention various departments at Kew in which great expense is incurred for matters of much less importance than the opening of the gates to the public. To form a national garden at an enormous cost, and support it with a revenue of over £22,000 a year, and then to deliberately shut the gates throughout the best part of the day for as much as seven and eight hours after other botanic gardens are open to the public, is neither wise nor just. As to the so-called "scientific" work which has been urged as an excuse for keeping the garden shut, if that mean horticultural work, such as sending plants to the colonies, it is done in the propagating houses or packing-sheds, which are always private. If it mean such scientific work as is done in books or reports, it is done in the officers' rooms, in the library, or in the herbarium, with none of which the general public wish to interfere. The fact of work going on in these places does not show that people might not be admitted to the gardens now deserted through so many hours of the day. We find a scientific journal, the "Journal of Botany," saying—"Besides the officials themselves we believe we are not wrong in stating that the number of persons engaged at Kew (we do not, of course, speak of the herbarium) is exceedingly small. Into the causes of this it is not necessary to enter, but it is obviously undesirable that everybody else should suffer

in order that half-a-dozen artists and experimenters in fertilisation may be undisturbed." As well might we have a churchyard closed or a public way stopped because an artist was employed in sketching the church or a landscape. The interests of the "students" have been supposed to be antagonistic to the admission of the public, but the fact is, students have hitherto been excluded from the gardens in the morning, and it is well known that the botanical classes of the medical schools in London receive specimens and liberal assistance from small gardens in London of a non-public character, such as the gardens of the Botanic Society and the Apothecaries' Company, and not from Kew. It is necessary to say so much, in consequence of statements that teaching could not be carried on in the gardens if the public were admitted. But if it were the fashion for botanical classes to assemble at Kew in the morning, all the botanical pupils and all the botanical teachers in Europe might be simultaneously engaged in these large gardens without interference on either side by or with the public. Except on holiday afternoons, we have never yet seen the gardens at Kew in any other condition than would allow any number to study to their hearts' content. It is now announced that all persons visiting the gardens for study and improvement will be admitted before one o'clock if they call at the curator's office and sign their names, stating the object of their visit, in a book kept for the purpose. If this is the only result of the agitation it will be a gain to horticulturists. Many of them have written to us lately, among them some of the ablest in England, of having gone to Kew and been turned away from the gates. We think, however, this concession wholly inadequate, and unworthy of a great national establishment. It is impossible, as it is undesirable, to draw the line between horticulturists and the general public as regards the right of entry to a public garden. If any art or science appeals to all directly and forcibly it is that illustrated in such gardens as Kew, and it is therefore much to be desired that no needless restriction be placed on its enjoyment. In great museums and galleries, where the whole surface has to be cleaned every day, there is need for reserving certain working hours for the purpose, but even in such large and magnificent galleries as those of the Louvre this is arranged for at such hours as do not inconvenience the public. In such great galleries and museums the reason why they are not open for a longer time every day than is now the case is often the difficulty of lighting them efficiently without danger to the structure or injury to its contents. In the case of a garden but a small portion of its surface will undergo cleaning on any given day, and as far as the lighting, that is done by the sun himself. It is therefore strange that a garden like Kew should be closed to the public at a time when the National Gallery and the British Museum have their doors wide open. There is good reason why it should be opened hours before and hours after them, just as in other cities public gardens are opened early in the morning, while the doors of the adjacent museums may not be opened till after breakfast.

W. R.

**Tabernaemontana camassa.**—None of the varieties of this genus equal this in usefulness, or can be so easily obtained. It grows freely in a warm house, and in a very small state yields an abundance of pure white, sweet-scented flowers, rather smaller than those of the well-known *T. coronaria*. We lately saw a quantity of plants of it growing in 4-in. pots in Mr. B. S. Williams' nursery at Holloway, and, being in full bloom, they made quite an effective display. On some of the plants, not more than 6 in. high, we counted nearly thirty blossoms and buds. The flowers of this variety, moreover, last a long time, and it should be grown in every garden in which a warm house exists.—S.

## OBITUARY.

We have to record, with regret, the death of Mr. RANSLEY TANTON, of The Nursery, Epsom, which took place on the 26th ult., at the early age of forty-three. He had taken an active part in the decorations which were got up on the occasion of Lord and Lady Rosebery's return from their wedding tour, and dropped down dead from a diseased heart. In his early days Mr. Tanton was employed in the gardens at Chiswick, and, for a short time, in the Society's best days, as librarian at 21, Regent Street. The Nursery will, we believe, be carried on as usual, by his widow.

## ANSWERS TO CORRESPONDENTS.

**Eucharis amazonica.**—For these last five years I have had a dozen pots of this *Eucharis*, and have, up to the present time, not had more than three flowers. They have been, and are now, in the Pine pit, and I am informed that the bottom-heat is insufficient for it. Can you give me any information as to these plants, and what amount of forcing they require to flower them?—J. J. [Remove them at once into a cool house, and keep them rather dry at the root for a month or six weeks; afterwards place them in your Pine pit in bottom-heat, and give them plenty of water, and they will no doubt flower satisfactorily. Weak liquid manure water applied when they show bloom will greatly assist them.]

**Evergreen Hedges.**—The best evergreen with which I am acquainted for rapidly forming a good hedge or screen is the *Colchic Laurel*, which grows better and quicker than any *Conifer*. If this be well planted in good rich soil it will run up 3 ft. or so each year, and is, withal, very handsome.—T. SMITH, *Newry*.

**Flower Tubes.**—In reply to "T. S." (see p. 400) I think he can get what he asks for by applying to Mr. J. C. Hamerton, 3, Pierie Terrace, Finch Road, Losells, Birmingham.—Geo. Boss, 10, *Quinton Road, Richmond*.

**Hybrid Crotons** (see p. 400).—The best way to induce C. voluntia to flower is to give it every encouragement in the way of heat and moisture, and thus make it grow as quickly as possible.—W. H. G.

**Ants.**—Can any of your readers suggest a simple remedy or means of destroying and exterminating these destructive pests where they are completely overrunning grounds, hothouses, greenhouses, and plants, by harrowing themselves into the pots where the plants are growing?—J. J. M. [In "Garden Receipts," published by Macmillan, Bedford Street, Covent Garden, you will find collected together many different ways of killing ants.]

**Strawberry Runners.**—I have a number of well-rooted Strawberry runners left over from last year's planting; they were packed closely together on a piece of hard ground last autumn, with a little light soil placed amongst them; they are looking very strong and healthy now. Will they be of any use for making fresh beds this year? or would it be better to throw them away and take fresh runners this summer? In the event of making use of last year's runners, would it be advisable to plant them out in rich soil under a north wall now, and remove them to their final places in August, as the ground intended for the new beds is now planted with early Potatoes?—G. M., *West Malvern*. [Leave the plants where they are; put a little more soil round them and a little short manure among them; keep them well supplied with water until the ground is ready for planting. They will make better plants than this year's runners, and if the bloom be kept picked off them it will be an advantage.—W. S.]

**Names of Plants.**—B. S.—These are the plants commonly known as Paris Daisy, no doubt from being frequently grown in the flower-gardens of Paris. The fine-leaved glaucous kind is *Chrysanthemum fontinalium*, the other *C. frutescens*; sometimes they bear the name of *Argyranthemum*. P. J. NEWCOMB.—1, *Forsterianum*; 2, *album*; 3, *glaucum*; 4, *reflexum*; 5, *anglicum*; 6, *lyodium*. It is difficult to correctly name *Sedum* without flowers. J. E.—The summer Snowflake (*Leucopogon aestivum*). J. WALBRUN.—As far as can be ascertained by the dried-up specimens received, No. 1 is *Mentha arvensis* or *Corv. Mint*. It is by no means an uncommon occurrence for beds of the culinary Mint (*Mentha viridis*) or Spear Mint, or, as it is sometimes called, Lamb Mint, when allowed to remain undisturbed for several years, to become overrun by this variety. How this result is brought about is not quite clear; but it is possible that the self-sown seed of the cultivated sort (*Mentha viridis*) may produce this variety, which may be used for culinary purposes, but is found to be inferior to the true Spear Mint. Where it occurs it is therefore advisable to make a fresh bed upon a fresh piece of ground, taking care to avoid the use of plants of the spurious variety. No. 2 appears to be *Mentha viridis*, not *Mentha piperita*, which it only grows for the sake of its essential oil, and is not used for culinary purposes.—P. G. W. M.—Ivy-leaved *Palargonium elegantissimum*. Begonia next week. S. P. GUILFORD.—Dried up, but probably *Alonsoa Warcewiczii*. W. V.—*Genista agillatis*. YOUNG GAARDNER.—1, *Centropogon Lucianus*. 2, Apparently *Lithospermum prostratum*. 3, *Rhodiodesendralbous*. OCHRTO.—The drawing sent of the plant you had for *Odontoglossum cirrhosum* is *Mesospidium sanguineum*.

## Questions.

**Slugs and Wireworm.**—In THE GARDEN (see p. 390) Mr. D. Lamond says that Kennel salt destroys slugs and wireworm. I cannot get any salt by that name. Does he mean the potash manure Kalmitt, and in what quantity should it be applied? In the same number "W. A." recommends nitrate of soda for wireworm. In what quantity is it to be applied?—A. SWEETMAN.

**Holly Timber.**—Into what purpose can this be converted by machinery, and the most profitable? By machinery I mean that worked by steam.—O. F.

**Plums shedding their Blossoms.**—Can any of your readers tell me the reason why Plum trees in an orchard house drop their blossoms just as they are setting?—A. H., *Guildford*.

**Nectarine Trees shedding their Fruit.**—Our Nectarines on the back wall of a Peach house, which are at the size of Peas, fall off. I have examined the borders, and it seems all right as regards moisture. Can you tell me the cause? They are not shaded by the other trees.—A. I.

**Rust Preventives.**—I have a small boiler for heating a greenhouse not set in brickwork. Is there any composition with which I can cover it that will prevent its rusting and retain the heat?—L.

## GARDEN DESTROYERS.

CATS *v.* MICE.

WITH all due deference to Mr. Cornhill (see p. 356), it will, I think, be generally admitted that cats are but indifferent gardeners. About London, where they visit us in tens and twenties, or even more, they are a great nuisance. Seed-beds are their favourite resorts, in consequence of the fineness of the surface-soil, and, unless well protected, they are sure to become materially damaged. The havoc caused by them, too, among bedding plants during the hardening-off season, when they are left exposed, is very great. Cats, of course, will destroy mice, but it will be well to consider whether the good which they do in that respect will counterbalance the damage which they incur. I have a lively recollection of the damage done by cats in several large gardens in the country where I have been employed. One of their favourite amusements was to sharpen their claws on the stems of Camellias, Vines, Peach trees, climbing plants, &c., in some cases killing them outright. In early spring, too, when butterflies made their appearance, puss would wait until one had alighted upon some choice flower, and then pounce upon it, often to the certain destruction of both plant and flower. Where plants happened to stand somewhat closely together, much damage was always caused by cats dodging after mice. One cat would be of little use in a large establishment, and if several were kept much damage would be done. Farther, cats in the country find sufficient food without the trouble of seeking it among flower-pots, and it is very difficult to teach them what you want them to do. In town gardens cats scratch over the surface of flower-beds, uproot small plants, break off the tops of Hyacinths, Tulips, and other bulbs; and woe beside a batch of bedding plants, in either greenhouses or frames, if two or more cats should get in. On this matter I can speak with confidence, our annual average loss being some hundreds of plants. Cats also break a good deal of glass. We find little difficulty in destroying mice by spreading poison upon bread, and also using a few traps of the most improved patterns baited with cheese or bacon. In the case of seeds, to which mice are partial, we protect them by covering the pots or pans with glass until the seedlings appear aboveground. Cleanliness tends very much to prevent the increase of mice. There should be no accumulation of old straw or similar materials about houses or adjacent sheds, and all kinds of rubbish should be removed to a distance. A little gas-tar may also be put in their launts with advantage.

Southmark Park.

CHARLES DENNIS.

—The advice offered by Mr. Cornhill (see p. 356) on the subject of admitting cats into gardens cannot, I think, be received without caution. He suggests that, where gardens are troubled with mice, the owner should keep cats, and, not content with this, that they should besides entice their neighbours' cats to come and assist in destroying these pests by placing pieces of red herring about the grounds to tempt them in. Now cats are useful animals in a house, stable, or granary, but, to my mind, the less one is troubled with them in a garden the better. What can be more unsightly, on walking round one's ground in the morning, than to see the well-kept gravel paths disfigured by patches of earth, thrown on them during the previous night by cats? or, perhaps, a beautiful *Nemophila* bed on one's lawn, which was but yesterday a blaze of flower and the admiration of all, flattened down like a field of Barley after a thunderstorm. Mr. Cornhill seems to have been much interested in watching the movements of cats, as he tells us that they will "wend their way among plants, never so much as touching one of them." This may be true when all is quiet; but suppose a mouse, disturbed at its meal on some choice bulb, should, at a sight of a cat, suddenly dart for refuge behind some pots of flowers—a scrimmage follows of course, and what then happens to plants that may stand in the way? Or let an adventurous "tom" on looking in at an open conservatory window, discover a "wen" busy at her work amongst the spiders, or a robin feeding her brood in a nest which she has built in one of your hanging baskets; then in a moment down go your lovely *Maréchal Niel* and the pretty *Dentzia* with which you had intended to decorate the breakfast table on some particular occasion. One word also as to red herring baits. There are other animals beside cats that would soon be attracted by them, and if used here, or near any large town, one's garden would become the resort of half the curs of the neighbourhood.—F. CORNELL, *Merwood, Parkstone.*

—Few will question the usefulness of cats about a garden. But, unfortunately in many establishments it is more difficult to retain cats than it is to destroy mice. Gamekeepers, who I suppose must act in self-defence, are more deadly enemies to cats than cats are to mice. I have, therefore, while recognising the great usefulness of cats, given them up, and now trust to traps.—J. M.

## RANSOMES &amp; SIMS' LAWN MOWERS.

This noted firm, whose great manufacturing depot is one of the places of interest at Ipswich, has, as is well known, a world-wide reputation for its agricultural machinery—from steam engines, of all sizes and capacities to ploughshares, and they are now among the foremost manufacturers of lawn mowers. I have been struck with the excellence of their machines on several occasions, and, as a consequence, I am now in possession of four of Ransomes' "Automaton" mowers; and as gardeners and others are always interested in such matters, I daresay they will be glad to hear my opinion of them. One does not usually pay much attention to what the makers themselves say of their own machines, but in the present instance the makers do not exaggerate when they state that their mowers are "thoroughly strong, well-made, and durable." In this respect they are not excelled, and I have worked all the others and speak from experience. But though they are strong, they are also light, and work easily and noiselessly, and, what will be regarded as a great advantage, they "rib" the Grass in cutting less than any machine I have yet tried. Indeed, where the lawn is cut as frequently as it should be, they do not "rib" at all. This, I suppose, is owing to the speed at which the knives travel, and their taking a shorter grip of the Grass; I do not profess to explain the matter scientifically, only record the fact. One thing I can state—the men who work the small machines here take to the "Automaton," and that is saying a good deal, for mowing-machine work is no child's play anywhere, and the machine which is easy to work will always be the favourite. Ransomes' "Reversible" lawn mowers are handy little machines, and new. They can be worked either side upwards, which reverses the action of the cutting barrel, and brings a fresh set of edges into use, which is a new and important feature. Of course, Ransomes' machines have all the usual improvements, and one of the best is the manner in which the knives are held—which is by an arm at each end—and the ease and facility with which they can be adjusted to the plate. Adjusting the knives and raising and lowering them is a work which the men have often to do, and it is important that they should be able to do it readily and without making mistakes. From a gardener's point of view, I can thoroughly recommend these machines.

CHEF.

**The Marnock and Other Portraits.**—I am glad to see that it is proposed to present Mr. Marnock with his portrait. I can never forget his courtesy and kindness alike as director of the Regent's Park Botanic Gardens and conductor of the "Gardeners' and Land Stewards' Journal," while his genius and success as a landscape gardener have been highly appreciated and admired by all lovers of good taste. Can nothing be done to provide, by subscription or otherwise, good engravings of such portraits as that of Mr. Marnock, Lindley, London, Rivers, and Veitch? so that gardeners might be able to adorn their too often bare walls with these and other representative men whose presence in their homes could hardly fail to inspire them with greater enthusiasm and perseverance in their often all too arduous profession. I should like to see this matter of good engravings of our famous leaders carried out with such spirit as to bring them within reach of all classes of practical gardeners, as well as amateurs and the general public.—D. T. FISHER.

**Professor Balfour's Testimonial.**—A meeting of Edinburgh graduates was held at the house of Dr. Duckworth on the 15th April to promote the above object in London and elsewhere. It was announced by Dr. McIntosh, of Murchy, that about £250 had been already collected from friends and former pupils of Dr. Balfour. A most excellent portrait of the Professor has been painted by Sir Daniel Macnee, President of the Royal Scottish Academy, and this is to be presented to the Senate Hall or Library of the University. It is desired to procure a replica of this, from the same hand, as a gift to Dr. Balfour's family, and additional subscriptions for this purpose are now sought. It is believed that the scheme only requires to be known to the numerous pupils of the zealous and beloved Professor of Botany, scattered all over the world, to ensure a ready response. It was thought fitting thus to mark the kindly services of Dr. Balfour, who had acted as Dean of the Medical Faculty for more than thirty years, and had recently retired from that office. Subscriptions may be sent to Mr. David Smith, Treasurer of the Royal Society of Edinburgh.

**Spain and the Phylloxera.**—Notice has been given by the Consulate-General of Spain in London that, in order to prevent the introduction of the Phylloxera (in addition to the restrictions already in force, and without prejudice to any further measures it may be found requisite to adopt), the Spanish Government has prohibited absolutely at all Spanish ports the importation of every kind of live plants and packages used for the same.

"This is an art  
Which does mend Nature: change it rather: but  
THE ART ITSELF IS NATURE."—*Shakespeare.*

### SEASIDE VEGETATION IN ORKNEY.

HAVING read with interest in one of the March numbers of THE GARDEN (see p. 203) some notes regarding Veronicas and other subjects growing near the sea at Worthing, I have thought that it might interest some of your readers to hear what can be done with similar and other plants at the other end of the kingdom, viz., in the Orkney Islands. Here, in an old-fashioned but charming garden we have Veronicas against a west wall growing to the height of 8½ ft.; *Araucaria imbricata*, 19½ ft.; *Rhododendrons*, 10 ft.; *Fuchsia Riccartoni*, 15 ft.; North American Currant (*Ribes sanguineum*), 10 ft.; all within a stone's throw of the sea. The Veronicas are fully exposed to sea and wind; but the others are sheltered, to a certain extent, by a sea wall. In the general treeless aspect of these islands such a garden is much valued. Elms, Sycamores, Mountain Ash, and Chestnut are all thriving, and a pretty effect is gained in early summer from masses of *Laburnums* which line the plantations, under which whole sheets of lovely blue Wood Hyacinths spring up year by year. Holly, too, grows to a fair height. Behind the shelter of this small woodland, Nature, aided by art (years ago), has produced a constant succession of beautiful surprises, which occur all through the grassy slopes from January to June. First we have Snowdrops, then Crocuses, different coloured Primroses, Jonquils, Lilies, Tulips, year after year, without receiving any other attention, or causing any inconvenience beyond leaving the Grass rather long uncut, in order that the plants just mentioned may have well died down before they are interfered with. In summer the Maiden Blush and many other Roses may be met with all over the place, and lately a large bed of new Hybrid Perpetual Roses has been planted, which promises to add much to the delights of the garden. A picturesque old Vinery, with none of the modern improvements, still affords an excellent and an abundant supply of Grapes, and some Fig trees trained on an espalier the full length of the house yield an average crop, and form quite a feature in this quaint old fruit house. In the greenhouse (also by no means a modern structure) a Myrtle planted out has grown to the full height of the house; and as a *Maréchal Niel* Rose planted a few years ago is now running all over the rafters, and showing plenty of flowers, the effect of the pale delicate yellow of the Rose blooms against the glossy, dark green leaves of the Myrtle will doubtless prove before long a pleasing feature. Planting is now being carried on on a larger scale than hitherto in another part of this island, but, owing to the high winds that prevail, trees make but slow progress unless they are at first protected by a wall, which I see few of your correspondents advocate. The plan pursued here now is to outline all the windward sides of plantations with, first, Sea Buckthorn, then *Pinus maritima*, behind which other trees are used, but the dry, cold spring, which was the season chosen for planting most of these subjects, has left traces of its presence in the brown appearance of nearly all the Silver Firs and other evergreens. Any plants likely to lead to success in planting in a windy, exposed country, with a generally mild climate, and where frost is comparatively unknown, will be gladly received.

*Westness, Rousay.*

ROBERT HENDERSON.

### A GARDEN OF HARDY PLANTS.

THE part which THE GARDEN has so ably and consistently performed since its establishment—that of advocating the culture of the choicer kinds of hardy plants, many of which have been too long neglected—has proved eminently successful in many cases, to the real advantage of gardening. A neighbour of mine, who has a fair-sized piece of garden attached to his residence, now devotes the whole of it to the culture of hardy plants; and he has gathered together a collection at once extensive and inte-

resting. In addition, he has built himself a house for those requiring some protection, to preserve their beauty from harm through frost and rain. This house is small and nearly square, being 10 ft. by 12 ft. It is span-roofed, amply ventilated, and sunk 2 ft. below the ground level, access being had to it by means of steps. A kind of brick stage, on which is a bed of Cocoa-nut refuse, runs round the house, and this is about 3 ft. from the ground. It is surprising what a number of plants can be staged in this small and serviceable house; and, as he is away from home all day, he finds it of great advantage to plunge the pots nearly to their rims in a bed of Cocoa-nut fibre. I selected a few of the gems of the collection, and will commence with the variegated and ornamental-leaved plants, which, when grown in this way, are charmingly effective. I may mention *Euphorbia dulcis* fol. var., a dwarf evergreen plant, having the foliage broadly margined with white; a pretty silvery-foliaged Veronica, said to be quite distinct from *V. icæna*; *Phormium tenax variegatum* (Veitch's variety); *Santolina incana*; the silvery-variegated *Ophiopogon spicatus* and the yellow-margined *O. Jaburani*; *Libertia pulchella*, a distinct and pretty plant, with a yellow band running along the centre of each dark green, lanceolate leaf; the curious *Hypericum balearicum*, a most interesting little shrub, with singularly-formed leaves; *Ligularia Kämpferi* fol. var.; a golden-foliaged *Helichrysum*; *Opuntias*; choice varieties of *Saxifrage*, *Sedums*, and *Sempervivums* growing in small pans, and forming an edging to borders round the house; the square-stemmed *Andromeda tetragona*; the white and yellow-variegated *Thymes*, both of which are charming in winter and early spring; *Bambusa Fortunei*, *Aspidistra lurida variegata*, *Geranium argenteum*, *Spiræa Ulmaria* fol. variegata, *Nertera depressa*, various *Funkias*, and others too numerous to mention. Flowering plants were represented by hardy *Cyclamens*, Terrestrial Orchids, species of *Primula*, *Hepatica*, *Galanthus*, *Narcissus*, and *Tulips*, &c. All these plants were in admirable order, and, like a good collection of Auriculas, they served to illustrate the value and advantage of a round of constant attentions. It is practically impossible to enter this house at any time of the year without seeing much to interest and gratify. The out-door garden outside, it is true, a few fruit trees that are valuable as affording shade, but no other trace of a kitchen garden was to be noted. It was laid out in slightly raised beds of varying shapes, all appropriately edged with rockwork or some such material, and devoted entirely to the growth of choice hardy plants. Here and there are mounds for *Sedums*, *Helianthemums*, and other trailing plants; also ponds for hardy aquatic; and, indeed, various little surprises of a pleasant character. A plantation of *Phloxes* here, another of *Pyrethrums* there; *Lilies* and *Gladioli* further on; also clumps of choice *Aquilegas*, &c. Particularly noticeable was the pretty *Ranunculus acontifolius* plenus, very early in bloom; *Gemm occoccinum* flore-pleno, *Gallardia grandiflora*, *Linum flavum*, *Alyssum spiosum*, *Primula marginata*, blooming finely on the shady side of a stone; *Gentiana acaulis*, *G. verna*, &c. There is so much of interest in this garden, that one could visit it weekly, and see something fresh and new at each visit. Against the walls of the residence were unpruned *Roses*, *Clematises*, &c.; in the forecourt garden were a few beds out in the Grass and borders flanking them on either side, and these were filled with hardy plants for permanent service. The beds and borders are never empty; they render services in an unbroken succession; and if some plants decline at the proper time, others are pushing forth some feature of interest to take their place. In such a garden slugs and snails are apt to be troublesome, and they are voracious in the matter of *Funkias* and other herbaceous plants growing in perforated zinc, 4 in. or so in height, placed round the plants. Slugs and snails carefully avoid sealing these metallic ramparts, and the plants are enabled to flourish unhindered by such attacks. I never visit this garden without coming away full of enthusiasm. Like the house, it requires constant attention; but it is labour sweetened by a high reward. There is no sameness or monotony about its varying features; a pleasant freshness of interest is never absent from year's end to year's end. D.

### THE JAPANESE GARDEN AT THE PARIS EXHIBITION.

THIS promises to be of great interest to the visitors to this gigantic show. Besides the peculiar specimens of dwarf and distorted vegetation for which the Japanese are so celebrated, there will be a large number of every-day agricultural and horticultural productions and ornamental plants. Besides numerous specimens of different kinds of cereals, we are to have several varieties of Plum, Peach, and Kaki trees, Haricot Beans, Turnips, and other fruits and vegetables. Amongst ornamental trees and shrubs there will be specimens of Cherry trees with double violet flowers, but both belonging to the

two types which have been so long known to horticulturists as *Cerasus Sieboldi* and *Cerasus Lannesiana*, as well as a very interesting variety of Weeping Peach tree, bearing very dark double flowers. We may also mention amongst the ornamental plants several collections of herbaceous *Pæonies* which, unhappily, do not bear flowers; also several so-called Tree *Pæonies*, of which only a few bear any well-shaped flower-buds. Unfortunately, these plants have greatly suffered from being transplanted, as well as from the long journey which they have made; they will, therefore, give but a poor idea of the beauty of their flowers when grown under favourable conditions. The greater number of these varieties, however, are to be found already in certain horticultural collections. Another collection, which will be of equal interest, can hardly be properly appreciated, owing to the specimens shown being extremely small. These are the Japanese Maples, properly so called, with their finely-cut leaves of various tints. A very good idea, however, may be formed of the value of these trees as ornaments, a large number of them being now known to European horticulturists. Besides the plants already enumerated, there are a large number which cannot at present be noticed, but of which we shall give an account hereafter. Several of the houses erected in the Japanese garden will give an excellent idea of how such structures are raised in Japan, as well as of the profitable and ingenious way in which the Japanese utilise the Bamboo, a plant which plays a most important part in the domestic economy of the dominions of the Taiocon. Amongst the materials used in the erection of these houses we may find a large number of specimens of planks and beams, most of which seem to have been cut from trees belonging to the *Coniferae*, very probably from the *Pinus Masoniana* or *densiflora*; these will give a good idea of the colossal dimensions acquired by certain species belonging to this genus. One of the beams mentioned above measured no less than 6 ft. 6 in. in diameter. C. W. QUIN.

#### DIELYTRA SPECTABILIS.

This has been termed one of the "finest herbaceous plants in cultivation." It is simply perfect as a decorative plant in the open border; and in pots, when well managed, it is invaluable for conservatory and greenhouse decoration. A good cultivator once remarked, "There is, perhaps, no other plant known which combines the character of so many distinct genera as the *Dielytra*, for, while the root and leaves exhibit a familiar resemblance to the *Pæony*, the flowers display to the curious observer the combined qualities of the *Monks-hood*, the *Iris*, the *Orchis*, and the *Foxglove*; thus we may imagine that Nature, in her floral freaks, has ways and means for fulfilling the great command—multiplying, replenishing, and adorning the earth by producing annually superior and inferior varieties and sub-varieties yet unknown to mankind." The flower of the *Dielytra* well repays examination, for it is simple in appearance, yet perfect in its way, being composed of a calyx, corolla, stamens, and pistils. The calyx, which is a simple scale-like substance, falls away when the flower is about half expanded, leaving exposed two outer petals, which form the principal corolla, and serve as a spathe or envelope for the more tender part of the flower. Let a blossom of it be closely examined, and it will be seen that each of these parts resembles separately the flower of the *Monks-hood*, and terminates in a long folded point, which is reflexed, forming, as it were, a pair of wings, which, when seen at a short distance off, tend to give the flower a light, fantastic appearance. The inner perianth or central column of the flower is formed in like manner as an *Iris*, while the stamens are united at the bases into two distinct sets of three each, which cling to the inside of the outer petals, thus forming a sort of wirework to keep the petals in their proper positions, and tapering upwards until they reach the top, where they are again drawn together, and the fructifying bodies arched between the spoon-like extremities of the two inner petals, the opening and closing of which are influenced by the sun's rays when the flower is in the zenith of its beauty.

At the spring show of the Newcastle-on-Tyne Horticultural Society on April 3, one of the features of the show was the *Dielytras* in pots. It was not so much on account of their great size as for their admirable growth and splendid heads of flower that they were so much admired. The effect was most pleasing; the numerous rosy-pink coloured flowers were borne on pendulous racemes all over the plants. These plants had had to undergo a certain amount of forcing, but they bore no

traces of it; indeed, they might have been lifted from the open border, so clean, robust, and natural did they look. Nor were the plants in very large pots. I have been flowering some in 6-in. pots in a cold conservatory, and they have been charming. The roots were divided in the autumn, and carefully planted in a cold frame in a good light soil. When I potted them in February they were just starting into growth. I used a good yellow loam, leaf-mould, and some manure, giving the pots plenty of drainage, so that water could pass away freely. They have had plenty of water; a little liquid manure given occasionally gave a fine colour to the blossoms. When the plants go out of bloom they will be placed out-of-doors for a time, and in July planted out in a prepared bed in the open ground. By keeping them in pots till that time opportunity is afforded for taking off young growths round the main stems, which root freely in a light and very sandy soil in a gentle bottom-heat. An increase can also be had by dividing the roots, but when this is done a year's growth should be given to the plants before they are employed for forcing purposes.

I have not seen the white variety for a long time. Its decorative value is much below that of the common form, which will, perhaps, account for its so rarely being seen under cultivation. D.

*Cortusa pubens*.—A good specimen of this new *Cortusa* may now be seen on a rockery at Kew. It is, apparently, a suitable companion for the better known *C. Matthioli*, which had hitherto been the only species of the genus in cultivation. It is a native of Transylvania, and much resembles the latter species, but differs from it principally in its more compact habit, colour of flowers (which are pink, changing to a lighter hue, but which are borne in the same umbel-like form), and by the whole plant being beset with a short, dense pubescence; it also appears to be more floriferous. It is a decided acquisition to our hardy plants, and doubtless will succeed under the same conditions of culture as *C. Matthioli*, which thrives well in a compost of sandy loam enriched with well decomposed leaf-mould or manure, a plentiful supply of water in spring, and not much exposure to direct sunlight.—W.

Tree *Pæonies*, *Dielytras*, &c., and the Frost.—I have a few, a very few, bloom-buds left on my Tree *Pæonies* that look as if they would open in due time; but, with regard to the *Dielytras* and *Crown Imperials*, I appear to be more fortunate than Mr. Fish (see p. 406). The former, which the soil here seems to suit, are now (May 7) just coming into bloom, and were not at all affected by those terrible frosts which we had in March; and the *Crown Imperials*, though they were prostrated for a time, recovered on the return of mild weather. The bloom-buds were not then fully developed, but the flowers, when they opened (those of the red kind only), had, some of them, a rather washed-out appearance. *Myosotis dissitiflora* was not at all affected by the frost. Elevated ground, such as mine, often escapes injury when more favoured localities suffer severely from hard frosts.—B. S., *Uppingham*.

The Late John Keynes, of Salisbury.—You have been remarkably successful in your likeness of this genial horticulturist and good man. There are men you only meet once or twice in a lifetime, and yet remember with sufficient vividness to recall at sight evermore. Among the few such that have affected me thus was John Keynes. Your memoir of him is also most interesting. What a good example it affords to young men, and to us all in this luxurious age! How quiet and gentle he always seemed! Active amongst the most active, he yet appeared almost unmoved by the bustle and excitement of great shows or social meetings. I wish, in this age of book-making, some one would undertake to write wisely, truly, and well the lives of our horticultural worthies, say from Loudon to Keynes, or any definite period. Such a work would prove as useful as it would be interesting, and would illustrate afresh the axiom of how little the world knows of its greatest men; for many horticulturists have been indeed great—alike in their characters, their work, and the far reaching influence of the latter in the world at large.—D. T. FISH.

Spring Snowflakes.—Last year I got from abroad several hundred bulbs of this beautiful spring plant, but have been much disappointed that very few indeed have flowered. "E. F." (see p. 251) says they did not flower the first year after planting with him. Is this the experience of others also? If so there is comfort in thinking that one's labour has not been thrown away. Along with the importation of Snowflake I received roots of many species of *Orchidæ* and other hardy interesting plants that I have not seen, in any nursery catalogue.—P. NEILL FRASER, *Murrayfield, Edinburgh*.

## NOTES OF THE WEEK.

**Large Marechal Niel Rose.**—What do you think of a *Marechal Niel* Rose 58 ft. in length with upwards of 2000 blooms on it? I was in Mr. J. L. Wall's garden, Redland Lodge, Bristol, on Tuesday last, where I saw a glorious sight of *Tea Roses*, the best I have seen this year, and amongst them was the *Marechal* I have mentioned—truly a glorious Rose.—B.

**Lilacs, Bird Cherry, and Sweet Brier in Hedges.**—A very good notion is being carried out at Longleat by the forester, Mr. Berry, who plants the above-named and other like trees and shrubs and climbers at intervals in the hedges that surround the numerous cottage gardens on the estate. Already many of these have grown into the flowering stage, and it may be easily imagined what a beautiful result they afford and how much more they promise. A like plan with thoroughly hardy and excellent fruit trees would be excellent, as in that case one would have both flower and fruit.

**Oncidium concolor.**—Plants of this *Oncidium*, a coloured figure of which was given in THE GARDEN (see p. 58) may now be seen finely in bloom in Messrs. Veitch's nursery. They are growing on suspended blocks, from which their graceful spikes of bright yellow blossoms droop in a very effective manner.

**Cerasus Watereri.**—I can quite confirm from personal experience the description given (see p. 407) of this *Cherry*. We have two small trees of it, which we had from Mr. John Waterer in the spring of 1876, and they are just now a mass of blossom, quite lovely in tint, and as large as a *Primula*. I am convinced if this tree were more widely known no one would feel their garden to be complete without it.—Mrs. F. RICARDO, *The Friary, Old Windsor*.

**Clianthus Dampieri.**—Of all plants this is one of the most difficult to cultivate. Nurserymen seldom can keep a stock of it, and good flowering specimens of it are of rare occurrence. The best plant of it which we have seen for a long time is now in flower in Mr. Williams' nursery at Holloway.

**Azalea flambeau.**—Of all the Indian *Azaleas* now in bloom in the London nurseries, none is so brilliant and showy as this. Its flowers are dark crimson, and, though not so large as those of some other kinds, are of great substance, and consequently they last in good condition for a much longer period than those of a more flimsy texture. Wherever really good brightly coloured blooms are required in spring this *Azalea* will be found indispensable.

**Gardenia Stanleyana.**—This plant, so seldom met with, is now finely in bloom in the Victoria Nurseries, Upper Holloway. It is a straggling grower, and its character is wholly unlike that of a *Gardenia*. Its flowers are produced from the joints of two-year-old wood, and whilst now in flower the bloom-buds for next year are observable on last year's wood. Its flowers, which are sweetly-scented, resemble in shape and size those of a trumpet Lily, the tubes being 8 in. or 9 in. long; the petals are recurved, white, and spotted with bright crimson, and the inside of the tube is green and mottled with dark brown. Though it cannot be considered a very useful plant, it is nevertheless well worth growing where a large collection of stove plants exists.

**Newmarket Pink.**—This new forcing Pink is now finely in bloom in Mr. Ware's nursery at Tottenham. Of its colour it is doubtless the most useful kind that has yet been raised, and one which will, when better known, be largely cultivated by all who require good Pinks and plenty of them early in the year. Cuttings of it struck in spring, planted out during the summer in good soil, and lifted and potted in the autumn, make fine bushy plants, furnished with from thirty to forty large, double, rose-coloured blossoms in April.

**New Variety of Dendrobium superbiens.**—There is now in bloom in Mr. Williams' Victoria Nursery, Holloway, a very different form, if not a different species, of the new *Dendrobium superbiens* from those which have hitherto flowered. The pseudo-bulbs are more than double the thickness, more like the mature bulbs of *Cyrtopodium Andersoni* than those of any hitherto known *Dendrobium*. The flowers on this plant are not so dark as those on the one which Mr. Williams first bloomed, the petals being paler on the margin. The leaves on the young growths are also of a much thicker and more leathery description. This *Dendrobium* appears to differ in habit from other species by the way in which the flower-stems in every case push out leaves and form a pseudo-bulb after the flowers have fallen off. It is usual to see many of the species form young plants from the nodes of the old bulbs that have not flowered. The *D.* noble section and, to a still greater extent, the old, but when well managed, beautiful *D.* pulchellum constantly do this in quantity; but in the case of the plant under notice the growth goes on from the stems which have produced the flowers. *D.* Jamesianum was in bloom in the same house, bearing large white flowers, with a deep

orange-red blotch on the base of the labellum. In the same house, too, was a grand example of the finest-coloured, large-flowered form of *Odontoglossum vexillarium*, bearing five spikes of its lovely deep pink-coloured flowers. Even the comparatively pale smaller-flowered forms of this plant are very handsome, but they pale in beauty beside the deep-coloured varieties.—B.

**Gloxinias at Chelsea.**—Arranged in a cool house, adjoining the Orchid houses in Messrs. Veitch's nursery at Chelsea, is a large collection of these attractive plants, which now make a fine display. They consist of choice-named kinds of every variety of colour, and some valuable new seedlings may also be found among them.

**A New Laurustinus.**—In the Holloway Nurseries may be found a new *Laurustinus*, which will prove valuable for early forcing. Its flowers are double the size of those of the ordinary kind, as are also the trusses, and, being of the purest white colour, they cannot fail to be appreciated early in spring either for conservatory decoration in a cut state.

**The Paper White Narcissus.**—None of the *Narcissei* are more valued in the London flower markets than *Narcissus papyraceus*. Its blossoms are sweetly scented, of snowy whiteness, and they last in good condition for a long time. When used in bouquets they are as effective as many choicer flowers which are much more difficult to obtain. It is grown largely in Messrs. Carter & Co.'s Crystal Palace Nursery, where long beds of it are just now a mass of blossom.

**Gloneria jasminiflora.**—This elegant new plant, now finely in bloom in the Victoria and Paradise Nurseries, will, when better known, doubtless be found in every garden in which stove plants are grown. It is, however, a difficult plant to propagate, a circumstance against its speedy distribution. Like many of the *Franciscas*, it flowers so profusely from every small shoot that few little growths are made, and consequently few vigorous cuttings of it can be obtained. For months in succession established plants of it continue to yield a profusion of large clusters of blossom of snowy whiteness, and they last longer and are even choicer in appearance than those of the white-flowered *Bonardias*.

**Polygala Dalmaisiana as Small Plants.**—Though often found in the form of large specimens, this useful *Polygala* is seldom seen in the shape of bushy little plants, such as could be used for vases or for table decoration. For these purposes, however, it is well adapted. It should be grown in the form of a standard, with a stem 6 in. or 8 in. high, and if the shoots are stopped a good bushy and gracefully drooping head, bearing a profusion of bluish-purple, Pea-shaped flowers, will be the result. We saw it grown in this way in Messrs. Outbush's nursery, at Highgate, where, associated with *Azaleas* and similar plants, it was exceedingly effective.

**A New Masdevallia.**—An elegant new *Masdevallia* is now in flower in Mr. Bull's nursery at Chelsea. Its nearest relation is *M.* *Denisoniana*, but the flowers are much larger than those of that kind. It is exquisite in form, and the colour, which is rich violet-purple surpasses in brilliancy that of any other *Masdevallia*.

**Tree Carnation Ia Belle.**—The snow-white, sweet-scented flowers of this *Carnation* are more prized in the London flower markets than those of any other kind, and deservedly so, for when the plants are subjected to good culture the blooms come perfect in form and are more effective in bouquets than even flowers of *Gardenias* or *Stephanotis*. Wherever *Tree Carnations* are grown this kind should have a foremost place. It is now flowering freely in the principal nurseries about London.

**Jasminum ligustrifolium.**—When in the form of standards this is one of the best *Jasmines* which can be grown, either for conservatory or indoor decoration. It has Privet-like leaves, and bears abundance of white sweet-scented blossoms, which are invaluable for bouquets. It is of easy culture, and succeeds well in a cool house. Standard plants of it in 6-in. pots may now be found in some of the London nurseries loaded with blossoms.

**Orchids at Holloway.**—There is a good display of Orchids just now in Mr. Williams' nursery, at Holloway. Among the most striking may be mentioned *Dendrobium Jamesianum*, a species which bears rich salmon-spotted, white flowers, some of which measure 4 in. across. *D.* *Palmeri* is also bearing unusually large flowers beautifully coloured. We likewise noted the fine variety of *D.* *superbiens*, to which reference has just been made, and plants of *D.* *Devonianum*, the latter on suspended blocks, and bearing long wreaths of handsome flowers. On a specimen of the lovely *Odontoglossum vexillarium* we counted five strong flower-spikes and some thirty unusually large and finely-formed flowers, of a delicate rose colour; and *O.* *Servantesi* (the blooms of which last in good condition perhaps longer than those of any other Orchid) is also now well in flower. In addition to these, too, several *Masdevallias* are in bloom, including the curious *M.* *ohimera* and *M.* *Krameriana*; and we also noticed some good examples of *Aerides Fieldingi* and *Vandas*.

## NOTES FROM KEW.

**Hardy Trees and Shrubs.**—Perhaps the most uncommon, as well as the most charming, of the hardy shrubs of the present week is *Rubus deliciosus*, from the Rocky Mountains. This fine garden plant was figured in the "Botanical Magazine" two or three years ago, and, from the letterpress accompanying the illustration, we learn that it was discovered by Dr. James in 1822, but for a period of about forty years from that time it does not seem to have been noticed by any naturalist. To Mr. Isaso Anderson Henry, of Edinburgh, is due the honour of having introduced so fine a shrub to our English gardens; it makes a nice bush about 3 ft. high, and is covered with large, lovely, rose-like, pure white blossoms about 2 in. in diameter. Its original discoverer says it bears a fruit of delicious sweetness and considerable size. Without taking the fruit at all into consideration, it is amply worth cultivating as an ornamental plant. *Genista supina* is one of the showiest of all the Leguminous family at present in flower; its long shoots are bowed down with the weight of their numberless yellow, pea-shaped blooms. *Cytisus ratisbonensis* is somewhat similar to the preceding, though it seems hardly such a free-flowering species. *Amelanchier vulgaris*, the European counterpart of the Service or June Berry, mentioned in last week's notes, is a pretty little tree, the flowers being a beautiful red or pink in bud, and white when fully opened. *Sedum palustre*, or Labrador Tea—so called on account of its use—is a very desirable dwarf Heathwort, conspicuous at the present time on account of its numerous umbels of white flowers. *Ribes aurum* var. *serotinum* is probably the most handsome of the yellow-flowering Currants; the yellow sepals are large, and the short petals are distinctly bordered with red. This is a native of North-West America. *Pothergilla alnifolia* is a dwarf North American deciduous shrub, having spikes of white fragrant flowers. *Staphylea pinnata*, the common Bladder-nut of Central Europe, has pinnate, light green leaves and pendulous racemes of white flowers; grown in pots, this flowers freely and forces readily; the blossoms, too, are a shade purer white than those produced on plants in the open air. *Olestra Gunnii* (on one of the walls) has sprays densely clothed with white *Michauxia* Daisy-like flowers; as a spring-flowering wall plant this can be highly recommended. The double-flowering Cherry (*Prunus Cerasus flore-pleno*) ought to be more frequently seen in our shrubberies, or as single specimens on lawns, &c.; the snow-white double flowers last some time, and are most freely produced.

**Hardy Herbaceous Plants.**—One of the rarest, and also one of the most handsome, of the herbaceous plants now in flower in the Kew collection is *Dracopcephalum heterophyllum*, from the Himalayas; it is a dwarf, neat-habited Labiate, with large, deep blue flowers. A lovely little *Narcissus* is *N. juncifolius*, with rash-like leaves and golden-yellow flowers. A miniature form of this *N. gaditanus*, also from South Europe, may also be seen. *Alyssum montanum* is a splendid little border plant, about 4 in. in height; it is now one carpet of golden-yellow blossom. *Kerneria Boisieri* lasts a long time in bloom; from the compact rosettes of small leaves spring branched panicles of pure white flowers; this plant only attains a height of 3 in. or 4 in. *Paeonia anomala* and *tenifolia* are two exceedingly handsome species from Siberia; the former has finely-cut leaves and crimson flowers, the latter much more finely-cut leaves and dark crimson flowers. A double variety of *P. tenifolia* is also in flower. The eastern *P. decora* is a very showy species, although inferior in that respect to *P. anomala*; the colour of the flower, too, is different, this being a purplish-crimson. *Hemerocallis Kwanos variegata* is a splendid plant with variegated foliage, and has much the appearance, in its present stage, of Variegated Indian Corn. A variegated form of our British Wood Spurge (*Euphorbia amygdaloides*) will also be admired by all who have any leaning towards variegated plants; the variety is not nearly so strong-growing as the type. *Camassia Leichtlinii*, a native of British Columbia, is a very fine Liliaceous plant of recent introduction; it is a noble species with scapes 3 ft. in height, bearing numerous whitish flowers measuring 2 in. across; this certainly ranks first in the genus to which it belongs. Amongst Tulips those worthy of special mention are the yellow-flowered *T. fragrans*, from Algiers; the crimson-scarlet *T. Hageri*, lately introduced from Greece; and *T. retroflexa* and *T. fulgens*, both of garden origin. *T. retroflexa* has large, light yellow flowers with reflexed petals, and, although far below the notice of the Tulip exhibitor, is a very striking and desirable border plant. *T. fulgens* has large, deep crimson, yellow-centred flowers. *Aceranthus diphyllus*—or, as it is now called, *Epidemium diphyllum*—is a pretty plant with pure white flowers. *E. Muschonianum* is another lovely species with whitish flowers. *E. macranthum* has large flowers, with long, curved, tail-like, white petals and broader, purplish sepals. All three are natives of Japan. *Ornithogalum divergens* has umbels of pure white flowers about the size of those of *O. umbellatum* (the Star of Bethlehem).

**Orchids.**—*Epidendrum bicoloratum* from Trinidad is worthy of special mention both on account of its beauty and rarity. Although it has been frequently imported in considerable quantities, the plants have not as a rule survived a couple of seasons, and have rarely produced flowers on growths made in this country. One of the Kew specimens has four and another two large, deliciously scented white flowers, the lips of which are yellow at the base, and dotted with small purplish-crimson spots. During the season of growth this requires much more heat and moisture than are generally found sufficient for most Orchids; supply these conditions and success will not be difficult of attainment. *E. esolobellum* from Guatemala and Honduras is a striking plant, with pleasantly-scented flowers, borne on a long straggling panicle; the sepals and petals, about 1½ in. in length, are greenish at the base and purple upwards; the lip is straw-coloured, bordered with yellow and streaked with rose. *Oncidium sarcoodes* from Brazil has pseudo-bulbs and leaves like those of *O. pubes*, but the flowers, which are produced freely on short, stiff, erect, branched panicles, are large, very bright yellow, blotched with brown-red; this is a most showy and distinct species. *Olotoglossum nebulosum* is a most lovely species, with large pure white flowers, the basal part of the lip being striped and spotted with orange-yellow. *Sobralia macrantha* is a magnificent terrestrial Orchid from Mexico and Guatemala; the slender reed-like stems, about 4 ft. in height, are crowned with rather stiff-lined but very gorgeous, rich purple, aromatic blossoms, above 6 in. in diameter. *Brassia Lawrenceana* is a splendid Brazilian epiphyte with pale golden-yellow flowers, copiously barred and blotched with reddish-brown; the very long, narrow sepals and petals impart a peculiar aspect to the pendulous racemes. *Phalaenopsis Lüddemiana* is represented by a very finely coloured variety, the amethystine tint being very conspicuous; this nicely-scented species was introduced from the Philippines some years ago by Messrs. Low & Co. *Vanda camellata*, also from the Philippines, is hardly showy enough for general cultivation; the flowers, which are produced in long, loose, erect racemes, are pale yellow, streaked with dull pale red. *Aerides affine* var. *roseo-superbum* is a very charming plant, with long drooping spikes of brilliant rosy-pink flowers; it is a native of Sikkim. *Saccolabium curvifolium* is a neat little epiphyte with short, erect spikes of orange-red flowers. *Dendrobium rhodopterygium* is evidently nearly allied to *D. Parishii*, noted some weeks ago, but is altogether, from a gardening point of view, inferior to that species.†

**Tea Roses on North Walls.**—Mr. Taylor grows these very successfully on the north walls of numerous glass houses in the gardens at Longleat, the walls being at the present time covered with the healthy and vigorous growth of these plants. The soil being odd, when beds or borders of loam are prepared for the roots the soil is placed above the level and against the walls of the house. As many as over 900 good blooms of *Gloire de Dijon* have been cut from these walls in one day. Tea Roses in pots are also grown in these gardens, and in a remarkably successful way. They are always grown on their own roots from cuttings struck under a hand-light on a north border.—V.

**Rheum officinale and Genista sulphurea.**—These two useful plants may now be found in several London gardens. The former is rather earlier in the year than usual, established roots of it having already grown into large bushes, consisting of elegant, deeply-cut leaves; few, indeed, would take it for a species of *Rhubarb*, so refined and ornamental is its foliage. The *Genista*, which is in full bloom, is one of the best of the genus for shrubby decoration or for mounds or rockwork. Seedlings of it do not come true to character, but by grafting, good plants of it true to name may be secured. It flowers profusely for several weeks in April and May, and wherever wild gardening is attempted these two plants should be the first amongst large-growing subjects to be planted.—C. S.

**Trifolium uniflorum.**—This old but little known one-flowered Clover is, in my opinion, one of the gems of the *Poa* family, and it is a pity that it is so seldom seen in cultivation. It has a neat trailing habit, and its pink and white flowers, which are borne singly and are larger than those of any of the genus, are studded profusely over the surface of the plant, rendering it a very striking object. It is of the easiest culture, delighting in an exposed position on the rock garden and an open space on which to creep. The other day I observed a plant of it on a rockery at Kew bearing nearly fifty flowers.—W.

**Leucocjum hymalaicum.**—I have this rare and beautiful Snowflake in flower at the present time, but, unlike its congeners, its flowers are pure white, spreading, and nearly 1 in. across. Each bulb has thrown up three or four flower-stalks about 6 in. in height, each bearing two blossoms, which open in succession. It certainly deserves to be better known, and if it flowers in winter, as its specific name would lead one to infer, it would greatly enhance its beauty. I attribute the cause of my plant being in flower now to its being planted rather late last season. A sunny border and a light soil seem to satisfy its requirements.—A.

## TASMANIAN VEGETATION.

BEAUTY, as we know, though always pleasing, may differ in kind, and to those whose eyes are sated with the pervading greenness of English Grass and dense-foliaged Horse Chestnuts and Elms, let us suggest a voyage to this charming island, whose mountains, rivers, lakes, and forests will some day be the haunt of holiday makers seeking refuge from the dust and heat of an Australian summer. The view represented in the engraving may give some idea of the lavish beauty to be seen on the river Derwent, where the Hobart Town Botanic Gardens are situated—a happy spot, where both the gardener and the artist may find his fill of interest. Our point to-day, however, is the gardening; and it is curious to see how instantly the eye is attracted by the light, Grass-green foliage of the Swamp Gum tree that abounds in this neighbourhood, as the popular conception of an Eucalyptus that is exemplified by the well-known Blue Gum (*Eucalyptus globulus*), which, on account of its rapidity of growth and valuable timber, has been largely raised in Europe to the exclusion of other kinds more suited to our climate. The Swamp Gum (*Eucalyptus viminalis*), which is hardly if at all known in this country, is as green as a Weeping Willow when bursting into leaf, and casts no deeper shade than the slenderest Birch tree; it is evergreen, delights in a wet soil, such as we too commonly have to contend against, and therefore deserves trial in this country, where a bright green evergreen tree is a desideratum. In its native country it grows naturally in both colder and moister situations than the Blue Gum, which exists out of doors in England, so there is good reason for hoping that this would thrive in all but the most frost-stricken districts. Mention has already been made of some of the interesting plants in the botanic gardens, so to-day Tasmanian trees deserve their share of attention, from which they have been, it seems to me, unavailingly excluded on account of the tenderness of some. No greater contrast could be imagined than that which the colour and growth of the strange *Casuarina quadrivalvis*, the She or He Oak of colonists, growing on the rocky points that overlook the Derwent, make to the slender and green Swamp Gum. Low and spreading in growth, almost black in colour, its dingy drooping branchlets, hose in hose like a "Mare's-tail," and its clustering brown cones, give the idea of a tree that has been scorched by some bush fire, and exaggerates the green of the first mentioned tree; but it must be confessed that, unless there be a very great hankering after variety, it is a tree which we can leave in its own hemisphere. Other greener and more graceful *Casuarinas* there are, but none that are so likely to stand this climate. Another bend in the river, and a tree that in the distance looks like an Oak deserves remark; it is the *Acacia melanoxylon*, whose wood is much sought after and known by the name of Myall or Violet wood. Apart from its value as timber, it is a most desirable tree, with rather densely tufted spreading branches and evergreen leaves, for any garden in which it may thrive. To a passer-by, without books of reference and unaccustomed to such Austral vegetation, it is hardly necessary to say there are great difficulties in ascertaining the name of anything that he cannot himself

determine; and this is rendered still worse by the misleading names given by the colonists to plants and trees, without rhyme or reason, unless it be that at any cost they determined to retain the names familiar to them before leaving home. The native Honeysuckle (*Banksia australis*) and native Cherry (*Exocarpos cupressiformis*) are well-known instances of this discrepancy between names and things. When trying to master the chief features in such extensive genera as *Eucalyptus* and *Acacia*, there seem to be several misapprehensions also on the botanist's side, and I make this remark the more carefully because in one instance a very beautiful plant is in consequence little known in this country. Of all *Acacias* (here called *Wattles*) none is more beautiful when in flower than that called *A. mollissima*; in early spring it is one cloud of rich yellow sweet-scented blossom; and this is called the Golden Wattle, as well as other later and still deeper coloured kinds. Again, none is less attractive than *Acacia dealbata*, with its scanty pallid blossoms, which appear in summer, not in spring, and with its straggling growth and black bark; this is called the Silver or Black Wattle, in reference, it may be, to flower and bark in turn; therefore it is surprising to find that, botanically speaking, there is no difference between *Acacia mollissima* and *dealbata*. From a gardening point of view,

the two plants are as the poles asunder, for one is ornamental in the extreme, the latter is worthless, so that seed sent from Australia should not be the true *A. dealbata*, but *A. mollissima*. By one of Nature's freaks this beautiful tree is found sufficiently hardy to withstand an ordinary winter in England, but it flowers so early as to require a wall to obtain its lovely blossoms in anything like beauty. No one who has once seen this in perfection will ever, I venture to say, be without it either under glass (where it grows very tall) or in genial situations out of doors. Another tree



View from Botanic Gardens, Hobart Town, Tasmania.

from this part of the world, and that has really proved to be hardy, is the Huon Pine (*Dacrydium Frankii*), which grows in marshy ground towards the mouth of the Huon River; although slow in growth in its own country, it bids fair, from all accounts, to surpass its parents in stature when grown in this country. Like the Huon Pine, *Acacia dealbata* var. *mollissima* grows by the side of watercourses; hence, perhaps, its power of withstanding our damp soil and air. Wandering about day by day, now here, now there, the popular illusion that all Gum trees (*Eucalypti*) are alike vanishes as experience is gained; though the curious and somewhat ungainly habit of branching peculiar to this genus is common to all, yet the diversities of colouring in trunk and leaf, and the varying sizes of leaf and tree, are as great as can well be imagined, and afford endless grounds for admiration. Some trunks are smooth and columnar, without a branch for 150 ft., and in the autumn, when the old bark strips off, are as silver as a Birch; some are dove coloured, and some of a glowing Apricot colour; while in other *Eucalypti*, whose bark is persistent (for all do not lose their bark annually), the trunks are deeply corrugated and as black by nature as even London smoke could paint them. The leaves vary in shape from a perfect round to the slenderest whip-like growth, and in colour may be found of all shades, from the blue *E. globulus* to the brightest green,

or even primrose and red, in young growth, though most kinds are of a dull olive green. Who then can say that all Gum trees are alike? Even among so many there are but few that are really worth trying to grow in a garden, as mere existence can never be ornamental. I would, however, recommend all who wish to reproduce something of antipodean beauty to try at any rate *Eucalyptus amygdalina*, the loftiest and most colossal of Gum trees, which has been measured and found, I am told, to be in one instance 460 ft. in height, and it grows at cold elevations; then there are the Mountain Gum (*Eucalyptus Gunni*), a lofty tree, though rarely reaching more than 100 ft., and the small-growing but large-leaved *Eucalyptus coriacea*, that grows at an elevation where snow falls sometimes in summer (as I saw with my own eyes), both of which are likely to succeed in all parts of England. Then *E. viminalis*, with its green tasselled branches, and *E. obliqua* (stringy bark) come as a trifle less hardy, but as being so distinct as to make them also worth a trial, the first thriving in moist and deep soil, the latter in sandy and rocky positions. One thing seems certain, and that is that where *Eucalyptus globulus* is found to exist all these will thrive and prove ultimately ornamental; while one great attraction they all possess must not be overlooked, namely, that all give out a pleasant and aromatic scent which will add a charm to another sense than that of sight, and recall to those who have had the pleasure of enjoying it the health-giving atmosphere of an Australian or Tasmanian forest. E. H. W.

**Flora of Corfu.**—Bulbous plants form an important item in this flora. Crocus Boryi, out of flower, was extremely abundant on all the higher ground I visited, accompanied by several species of Romleas, but I cannot ascertain that any other species of Crocus occurs on the island, and I think that some error must have crept into Dean Herbert's notes in the "Botanical Register," where he states that seven species, some of them vernal, are indigenous. The four species, *canellatus*, *Boryianus*, *hadriaticus*, and *sativus* (?), known to grow in the neighbouring islands of Santa Maura, Cephalonia, and Zante, are autumn flowering. Narcissi were abundant, but out of flower. The prevailing species seem to be allied to *papyraceus*, but I failed to identify *N. corcyrensis*, figured by Herbert in his *Amarylhidaceae*, which is special to the island. I also found *Iris tuberosa*, and on the flanks of Santa Deka another elegant species, with narrow Grassy leaves and pale blue flowers; several species of Muscari, a *Bellevalia*, *Hyacinthus orientalis*, one or two *Colochicums*, *Ornithogalum exscapum*, and a number of *Orobidhs*. Amongst the other prevalent plants were *Phlomis frutescens*, *Anemone stellata*, *Geranium pyrenaicum*, and a very conspicuous *Saponaria*, allied to *S. calabrica*, but with larger flowers. *Lithospermum purpureo-cœuleum* and several other conspicuous *Boraginaceos* plants.

**Plants Found on Mount Hymettus.**—Athens is environed at a little distance by a series of stony mountain ridges, reaching to about 3500 ft. in height, including Parnes, Corydallus, Pentelions, and Hymettus. The last-named mountain afforded me a most interesting botanical excursion, in which I was accompanied by Professor Ophanides' gardener. From Athens, crossing the classic Illyssa, we drove up the valley of the Eridanus, a small tributary stream, to the Syriani Monastery, whence we ascended the mountain on foot. The prevalent plants were *Arum Draconculas*, *Poterium spinosum*, *Euphorbia spinosa*, *Euphorbia Apios*, *Lloydia græca*, a charming little plant with the habit of a small *Stellaris*, several species of *Thymus*, *Arbutus Andrachne*, a striking shrub, with rich brown smooth bark, and also a smaller species. Crocus Spraneri (*C. canellatus*) and Crocus *levigatus* were most abundant all the way up the mountain. Crocus *sativus* græcos grows on the summit, but this we did not find. A small yellow sweet-scented Tulip occurred sparingly, and on the summit of the lower part of the ridge *Fritillaria græca* was fairly abundant. *Fritillaria tristis* was also indigenous to Hymettus, but I am told has not been recently found.—G. MAW, in "Transactions of Botanical Society of Edinburgh."

**Alyssum saxatile compactum.**—This is somewhat late in coming into full beauty in spring, but it makes up for the delay by a glorious mass of flower such as is not excelled by any yellow-flowered plant in cultivation. Large clumps of it in mixed borders have a striking effect. Cuttings inserted under hand-lights in a shady position in June make useful little tufts for bedding purposes the following year, and if left undisturbed for a few years, form gorgeous masses of flower from the middle of April to the end of May.—J. GROOM, Henham.

## THE FRUIT GARDEN.

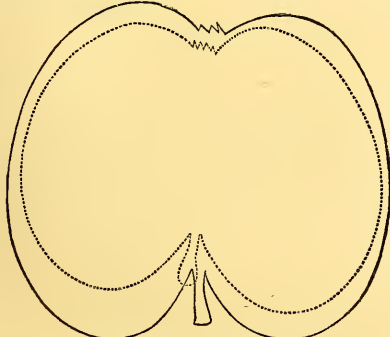
### TAN MULCHINGS FOR STRAWBERRIES.

STRAWBERRIES are to many the great fruit crop of the season, and to all they are a crop much appreciated. Few things mar the pleasure of eating and gathering them more than slugs, snails, and worms. These nestle beneath the leaves or under the mulchings; and just when the fruit begins to ripen and to give forth its luscious odour, out crawl these pests and fasten upon, disfigure, or devour them. It is thus impossible to gather and eat the fruit off the plant—by far the best mode of enjoying it—with pleasure. In any case the disfigurement and destruction of many of the finest fruits become a serious matter, and it may be almost wholly prevented by the following simple expedient: Give the plants at once several overhead dressings of equal parts soot and lime, covering the entire ground between the rows and the plants, and sprinkling freely on and around the crowns. The best time for these dustings and sprinklings is early in the morning or late in the evening. At either season the slugs and snails will be on the move, and caught with the hot, bitter dressing in the most defenceless condition. The first dressing warns off, the second disables, and the third kills them. This is a fair mode of attack; it gives the pests a chance of life. If they have not sufficient sense to take a first warning, they must take the consequences. Twelve or twenty-four hours' grace may be given between the dressings; and the strength of the latter should be cumulative—a slight warning dust at first, then a heavier dose, to be succeeded by a final killing application. For the last dressing double or treble the proportion of soot to lime should be given. Soot is one of the best possible manures for Strawberries, giving that size, substance, and colour to the leaves which is the surest sign of vigour. In about a week after the last dressing, unless rain has fallen in the interval, the plants should receive a heavy overhead drenching. This clears the crowns and leaves and renders the soil uncomfortable for worms, woodlice, earwigs, or other Strawberry-loving creeping insects that may be present. No living thing likes soot or lime, and the mixture is still more nauseous and disagreeable to them. In a few more days, and when the surface gets a little dry, a cleansing dressing of rather fresh tanner's bark may be put on about 1½ in. thick. This is also very distasteful to insects, no snail, slug, or worm remaining in or near it if they can help it. After a few washings it gets so clear of tannin, as not to taint the fruit that lies on it to ripen. The Strawberry plants also seem to thrive under the tan exceedingly, as it keeps the moisture and strength in the soil, though it probably adds but little to the latter. It has another great merit. If it be useful, as it often is during dry weather, to water the plants during their swelling stage, the tan speedily presents a dry surface again for the fruit. This quality of rapid drying and of a rough, hard surface is equally useful during a rainy time through the ripening period. In a word, tanner's bark is one of the cleanest and safest mulchings for Strawberries. Softer materials, such as short Grass litter, waste hay, half rotten straw, &c., yield to the wet and allow the fruit to sink into them, to their sudden and complete destruction, while tan is almost equal to tiles or pebbles in providing a hard, clean bed for the fruit. It is, in a word, one of the cleanest and best dressings for Strawberries, having powerful anti-insect, and also anti-rotting, qualities. D. T. FISH.

### THE AMERICAN NEWTOWN PIPPIN.

AN early March issue of THE GARDEN contains a disparaging paragraph in relation to this famous Apple, which, as an American fruit grower, residing in a favoured locality for its growth and general perfection, I can scarcely allow to pass unnoticed. Not merely from any apt incentive of special fitness do I assume the rôle of its defender in this particular instance, but wholly from a sense of a sort of wounded national pride, and as a simple act of pomological justice; for we certainly are very proud of the Newtown Pippin in America, and feel very bold about it too, as we challenge the world to produce its equal. And I need scarcely add that this peculiar pride has of late been duly respected by a very large number

of appreciative English people, as our increased annual shipments to British ports will fully show. "C. G." and his friends were, he says, greatly disappointed in the flavour of the half-dozen specimens given them by a friend, and he adds that they were considered inferior to several home varieties. I am certainly obliged to him for his care in satisfying himself as to the accuracy of his samples, and, assuming them to have been genuine, can only account for his disappointment by the further assumption of their general imperfection and exceptionally poor quality, arising from unnatural conditions of growth, which is highly probable, from the fact that the past season proved most unfavourable for Apples in this country, and our entire crop was defective and inferior; our Pippins especially so. And, in addition to this, our crop of Pippins being small, and English demands for them being correspondingly greater than usual, our buyers and shippers sorted less closely; "culs" found favour where in former years choicer fruits were tossed aside. From these facts, then, as I know them to be, you can readily deduce ample reasons for the general inferior condition of our Pippins sent you last year; and in the light of these statements your correspondent will, I trust, withhold further censure. This season we hope to send you much better fruits, although you may not pay us so much for them, as our crop will doubtless be larger. For, strange as it may appear, we often do pay the highest price for the poorest quality, and with less murmuring too. I also notice in your



Two forms of Newtown Pippin Apple.

columns other and similar reports of this Apple as received in England last season. They are, of course, not always properly packed for long shipments; and then too many of our sorters and shippers have more guile than conscience, and in various kindred ways English buyers are doubtless cheated and disappointed in the purchase of this American Apple; but, remember, never in a well-grown, genuine Newtown Pippin Apple as it grows here. To enable your readers to identify this fruit on all occasions, I here furnish an outline drawing and an accurate description of it. In size it varies from medium to large. Some of our pomologists were formerly inclined to recognise a sub-variety, but it is now considered as only one, modified by various circumstances of growth. The larger outline is the more common shape; flattish round, angular; stem short; cavity rather deep; smooth, yellow, or greenish-yellow, often with a ruddy red cheek to the sun, shading off to a faint brown. The dotted outline represents another form to which it sometimes approaches in less favourable localities and under poorer culture. The colour is then a brighter green, and the flavour and texture inferior. In well-grown fruit the flesh is fine, very firm, crisp, and juicy, with a rich, sprightly, highly aromatic flavour, quite unapproachable by any other Apple, and a peculiarly fragrant aroma that strongly appeals to the alimentary senses, and courts the favour it deserves. The fragrance arising from an open barrel of this fruit will sufficiently describe what I mean. With us it begins to arrive in fine eating condition in January, and continues thus all through the winter and spring, and even into summer where the conditions of growth and preservation have been favourable. The tree grows slowly and bears shyly while young, but when

greater age is attained it becomes vigorous and very productive under good soil and management. Our bearing trees in the Apple season here on the Hudson are a sight well worth seeing. The bark is rough, shoots thin and flexuous, yet hard and mature, standing our winters perfectly. This Apple was formerly considered quite unreliable, unproductive, and unprofitable, but of late years it has grown better, our orchards are older, and in this district it is now the most profitable Apple we have, always commanding the highest price. Its great firmness and solidity peculiarly fit it for shipping purposes, and it is eagerly sought annually for export purposes. The variety originated in Newtown, Long Island, whence its name, and its greatest perfection is attained in its native locality, and here along the Hudson River. H. HENDRICKS.

Kingston, N. Y., U.S.A.

### INARCHING VINES.

THIS is the best time of the year to inarch Vines. The growths will unite in ten days now, when the generality of wood is tender, green, and full of sap. I inarched some a few weeks ago, and never had them unite quicker or better before. Some who recommend inarching are very particular in their instructions as to making both cuts the same size, in order that the edges and bark may fit exactly, but I have proved this to be unnecessary. In inarching a small Black Hamburg on a Muscat the wood of the former was not a quarter so thick as that of the latter; consequently, it was impossible to make both cuts the same size. The slice of the Muscat wood was some  $\frac{1}{4}$  in. wide or more, while that of the Hamburg was less than  $\frac{1}{4}$  in.; each cut was, however, about 2 in. in length. The cut in the Hamburg was placed against the centre of that of the Muscat. Both were then bound moderately firm together during their whole length with a piece of Raffia Grass, and when this was removed, ten days afterwards, the two were firmly united together. I do not think, however, that this would succeed so well by-and-by when the wood begins to ripen, as then it takes much longer to grow together, and if it be left too late in the season until the sap begins to descend it is difficult to effect a union at all. Hence my reason for calling attention to it at the present time. Perhaps some inexperienced amateur Vine grower may not understand what is meant by "inarching." Let me explain. Inarching is a form of budding, or rather grafting, one kind of Vine on to another, and, when done at the proper time, it is much better than either budding or grafting. The Vines generally inarched are those which are not satisfactory as regards their fruiting qualities, and on which we always put a free-fruited sort. In other cases we try one Vine on another by way of experiment, as some Vines which do well enough on their own roots do still better on the roots of others. The Black Hamburg, for instance, never fails to fruit on any other sort of root, and, provided other things are equal, it may always be fully depended on. For this reason those who have inferior fruiting kinds of Vines will never err in inarching Hamburgs on them. On the other hand, the Black Hamburg is one of the best stocks or roots on which to try all kinds of Vines; and any kind of Vine, new or otherwise, should never be thrown away until it has been tried and found to fail on the Black Hamburg.

As will be understood from what has just been stated, inarching consists in removing a small slice from two Vines shoots between two leaf-joints, and binding the cut surfaces together face to face. The scion should be a plant either raised from an eye or cutting this or last season; it does not make much difference, though the young Vine be a very small one, because as soon as ever it catches hold of the stock on which it is inarched it develops rapidly. I prefer the young Vine to have been rooted from an eye early in spring, and grown on until it is 3 ft. or 4 ft. high, when it is in prime order for inarching. Of course Vines raised like this are grown in pots, and they should be kept in them until the scion has become united to the stock. The part at which the connection is made should be at the first shoot from the ground, or as near this as possible. Sometimes the Vine in the pot can rest on the ground while the scion is being connected with the stock, but where there is nothing convenient on which to rest the pot, a piece of twine or wire may be put round it so as to suspend it

to the trellis. When the inching is accomplished now with soft green wood, the young Vine in the pot may be cut away six weeks after the operation; it should be cut close below the union, and, in case of accident, a piece of soft matting may be kept tied round the joint throughout the season, but this must be looked to frequently to prevent the wood from being tightened or injured thereby.

CAMBRIAN.

#### LIFTING VINES AND OLD FIG TREES.

THE Vines at Wimbledon House, which have, through defective borders and being infested with mealy bug, failed for years to produce satisfactory crops of Grapes, have lately been very successfully lifted and re-planted in fresh borders. In August, after the crop had been out, the roots in the inside borders were lifted, and the longest of them were shortened back. A new border was made, and the roots were re-planted. After this the Vines were kept growing as vigorously as possible until October, after which they ripened their wood and were pruned; they were then thoroughly cleansed, and the houses painted. In November the outside borders were re-made, and the Vines were then started into growth. I should have stated that the old canes, which are inside, were bent down, and that some 2 ft. or 3 ft. of their length were buried in the border, in order to induce them to throw out new roots, and also to leave room at the top of the house for new growth, and to admit light. This operation has proved highly satisfactory, as the buried portions of the stems have emitted abundance of healthy young roots, which no doubt prove a great support to the Vines. This year the latter are carrying a fair crop of fruit, and the laterals are allowed to grow at will. When the fruit is ripe, Mr Ollerhead proposes to remove it, and place the bunches in bottles of water; he then intends to cut down the whole of the Vines close to the ground, and, by taking timely precautions, to prevent them from bleeding so much as to weaken them, it is hoped to get strong canes up this season which will bear a good crop next year. If this operation should prove successful, the whole of the Vineries will be thoroughly renovated, and that without interfering with the crops in any great extent.

Two of the houses in the same garden, which have hitherto been used for plant growing, have been filled with Fig trees. These were lifted from the open ground in December, all roots being cut off to within 2 ft. or 3 ft. of the stem, and planted inside the houses in square holes about 2½ ft. or 3 ft. deep and 4 ft. each way. These holes have been concreted all round the sides, so as to prevent the roots from getting so far as to induce the plants to make growth at the expense of fruit. When lifted, the trees bore a quantity of fruit, which afterwards swelled, but, owing to an accident which befel the heating apparatus, sufficient heat could not be kept up to ripen them thoroughly. The trees themselves, however, have experienced little or no check by the removal; they look perfectly healthy, and, being well set with small fruit, a good crop is anticipated in the autumn. Next season, when the plants have got better established, these will be two of the best Fig houses with which we are acquainted; the trees, indeed, already cover the whole of the circular roof.

C. S.

#### NOTES AND QUESTIONS ON THE FRUIT GARDEN.

**The A Bec Peach.**—In THE GARDEN (see p. 282) Mr. Coleman gives an excellent list of Peaches, classified to suit distinct seasons, and which was doubtless appreciated by many, as, from experience, I know that it is by no means uncommon to find mid-season and late varieties in positions where early sorts would have been far more satisfactory, and *vice versa*. I have looked through many good fruit lists and catalogues, and have failed to find in any of them the variety so highly spoken of under the name of A Bec. Will Mr. Coleman kindly inform us where it is obtainable, as good varieties for early work are not very numerous, and growers would doubtless welcome any really valuable addition to this class?—JAMES GROOM, *Henham*.

**Norfolk Beefing Apple.**—Now that the Apple-room shelves begin to present a somewhat bare appearance, it may be worth while making a note of any sort that may be relied on as fit for kitchen use after May 1, and foremost among these I always find the Norfolk Beefing. We have a few trees of it which are almost certain to carry a fair crop every year, and, as regards keeping, we have some of the fruit now in good condition that were blown off the trees last autumn, and, although bruised, the decayed portion has not spread; in fact, they seem to defy decay, preferring rather to dry up. Where Apples are in request as late as May and June this variety should not be overlooked.—JAMES GROOM, *Henham*.

#### GARDEN BOTANY.

(Continued from p. 424.)

**DEFINITION OF A LEAF.**—A leaf consisting of two distinct parts—a stalk (petiole) and an expanded or flattened part called the blade (fig. 131)—is called a petiolate leaf; when the blade is seated immediately on the stem and devoid of a stalk, the leaf is said to be sessile (figs. 132 and 133).

**DURATION OF LEAVES.**—The leaves of perennial plants—that



Fig. 131.—A branch of *Alnus glauca*; an example of a plant having stalked (petiolate) leaves. Reduced.

is to say, plants whose span of life exceeds one season—are evergreen or deciduous, according as they persist or hang on the plant in a living state during the winter, or fall off in the autumn. All our hardy fruit trees and most of our forest trees, excluding the Pine family, belong to the latter



Fig. 132.—Couch Grass; an example of a plant with stalkless (sessile) leaves.

Fig. 133.—Primrose; another example of sessile leaves.

category. Persistent or evergreen leaves remain attached only till those of the succeeding year are expanded, as in some species of Privet, Enonymus, &c., or for two, three, or more years. In *Arancaria imbricata* they persist a great number of years, and in *Welwitschia mirabilis* they live as long as the plant itself, which may be a period of 100, 200, or more years.

**CONSISTENCE OF LEAVES.**—The substance and texture of leaves afford subsidiary characters useful in distinguishing

species; and some genera and even families are characterised by having leaves of a certain density. For example, the Crassulaceæ (Sedum, Echeveria, and Sempervivum), the genera Mesembryanthemum, Aloe, Haworthia, and many others are remarkable for having almost invariably thick, fleshy leaves. In many of the Cycadææ (Cycas, Zamia, and Encephalartos), they become hard and woody; in Palms they are frequently like parchment (pergamentaceous); and the leaves of the Common Laurel, Rhododendrons, and the India-rubber tree (*Ficus elastica*) are more or less leathery in texture, or what is termed coriaceous, as opposed to membranous (thin and not stiff), as the leaves of a very large proportion of British plants. Several other terms have been employed, but these three—fleshy, coriaceous, and membranous—qualified by adverbs of degree, are sufficient for all, except quite unusual conditions.

**VENATION OF LEAVES.**—The substance of the blade is traversed in various directions by more or less conspicuous lines of tissue of greater density than the intervening tissue, for

these the stout petiole terminates abruptly, and then divides in a radiate manner into relatively slender ribs answering to the folds of the blade. It is characteristic of monocotyledonous plants to have the veins running parallel to the midrib, as in the Gramineæ (Gynerium), Amaryllis, Iris, &c. The Aroideæ (Anthurium, Arum, and Caladium) offer a notable exception to this rule, having usually a distinctly netted venation. The venation of the leaves of dicotyledonous plants generally presents two distinct types, between the extremes of which there exist all intermediate gradations, it is true, but there is seldom any difficulty in assigning a leaf to its respective type. These two types or plans of venation are illustrated by figs. 135 and 136. In the Elm (fig. 135) the principal veins run from the midrib towards the margin, something like the plumelets of a feather; hence this kind of venation is designated pinnate venation. The principal veins in the leaf (fig. 136) radiate from the apex of the petiole, forming a radiate or palmate venation. Sometimes the two types of venation are combined in the same leaf; it is partly so in *Sterculia platanifolia*, and

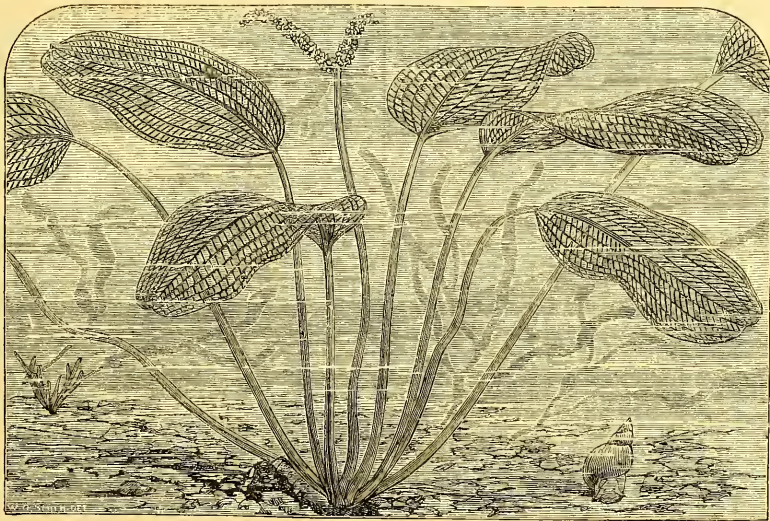


Fig. 134.—*Ouvirandra fenestralis*, in which the blade of the leaf is almost reduced to the lattice-like venation. About quarter of natural size.

which it forms a kind of framework or support. This network of stronger tissue is spoken of as the venation of the leaf, not, however, because its ramifications or veins have a function analogous to that of the veins of animals. The singular Madagascar water plant, *Ouvirandra fenestralis* (fig. 134), has its leaves almost reduced to the lattice-like venation. Besides what is termed the venation, the blade is commonly crossed longitudinally by a thicker rib continuous with the petiole, when there is one; this is the midrib, which is usually more prominent and thicker than the veins. Sometimes the venation itself is very prominent throughout all its ramifications. The leaves of the great Water Lily, *Victoria regia*, have the veins enormously developed on the under side, forming a remarkable and beautiful framework of great strength. The leaves of most Melastomaceæ (*Cyanophyllum*, *Medinilla*, *Miconia*, &c.) have two, four, six, or more lateral nerves, as they are commonly called, which are often nearly or quite as prominent as the midrib; and the same thing is of frequent occurrence in the genera *Smilax* and *Dioscorea*. Another deviation is offered by the fan-shaped leaves of some Palms. In

very strikingly so in the Horse Chestnut (fig. 137), the primary veins radiating from the petiole, and the secondary ones diverging from the primary.

**SIMPLE AND COMPOUND LEAVES.**—The blade of leaves presents an infinite diversity of forms, all of which may be referred to two principal types, termed simple and compound. A simple leaf may have a blade that is quite undivided and with an unbroken margin, as in fig. 138, or it may be more or less cut or divided, as in fig. 136. A compound leaf consists of separate pieces (leaflets) jointed to the petiole, or midrib, or lateral branches of the latter, as in *Acacia* (fig. 139). Some simple and compound leaves approach each other very closely in external appearance; but if the parts of the blade are not separately jointed (articulated) to the petiole or midrib, as the petiole is to the branch, the leaf is termed simple. Unfortunately, this rule is not strictly followed by botanists, many of whom describe leaves as compound if they are divided to the petiole or midrib, even if the parts are not jointed to the petiole or midrib, and never separate from them.

**FORMS OF SIMPLE LEAVES.**—It is not our intention to attempt

to describe all the varieties possible that leaves present, but rather to direct attention to the principal variations of the two types briefly defined above. A large number of the terms employed to designate the shape, &c., of leaves, petals, &c., retain their generally accepted significations, and are, therefore, intelligible to the reader without illustration or explanation. For example, with regard to the general outline of leaves, petals, &c. (always, be it observed, without reference to indentations or divisions), the terms round, elliptical, oblong, oblique, and triangular belong to this category. And when any two of these or other terms are coupled with a hyphen, as oblong-elliptical and oblong-oblique, the combination either denotes that the shape is midway between that defined by the

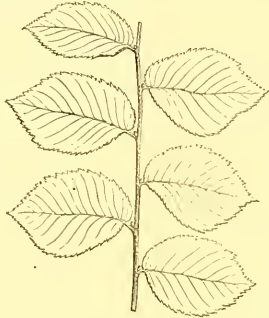


Fig. 135.—Leaves of Elm, with pinnate venation.

terms separately, or that the leaves, or what not, vary between the two extreme shapes indicated. Then, with respect to the apex or tip of a leaf, leaflet, or petal, the terms rounded, blunt (or obtuse), and acute are easily understood. Occasionally a little ambiguity may arise from using the same term to denote a figure and the configuration of a solid. For instance, leaves are described as oblong, and the same term is sometimes applied to a cylindrical seed vessel or leaf, though, of course, only to indicate the outline of its medial plane. On the other hand, there are some Latin and Greek and dog-Latin terms in use



Fig. 136.—Leaf of *Sterculia platanifolia*, with palmate venation.

which require explanation. Most of these terms have been selected or coined to replace cumbersome compounds; they and others have a conventional meaning attached to them. Thus acicular (needle-shaped), cordate (heart-shaped), subulate (awl-shaped), sagittate (the shape of an arrow-head), lanceolate (the shape of a lance-head), reniform (kidney-shaped), &c. In the following paragraphs the applications of these and other useful terms will be explained and illustrated; but it is necessary to remind the reader that mathematical precision, or anything approaching it, is not aimed at in botanical descriptions, either in figure or size, because the parts of all plants are subject to considerable variation in these respects, depending upon the age and vigour of the plant, and the external conditions under which it is growing. Thus the writer has collected perfect flowering plants, growing on a wall, of the

common Poppy (*Papaver Rhoeas*) not more than 2 in. to 4 in. high, whereas under ordinary conditions, as a Cornfield weed this species attains a height of as many feet. Where possible, descriptions of plants are based upon a number of individuals of average size and range of floral and foliage characters;

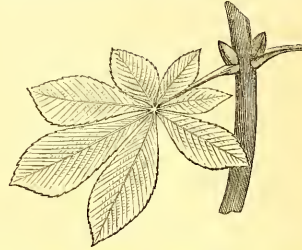


Fig. 137.—Leaf of Horse Chestnut, showing radiate and pinnate venation combined.

extremes, the result of extraordinary conditions, being left out of consideration. The descriptions of a vast number of exotic plants, drawn up often from single dried specimens, are very imperfect; and it is often necessary to compare fresh speci-



Fig. 138.—*Polygonum orientale*; leaves simple.

mens with the types themselves, to determine whether they are of the same species. This being so, the beginner must not be discouraged because he is unable to determine plants



Fig. 139.—*Acacia grandiflora*; leaves compound.

from descriptions alone. After this short explanatory digression we will review some of the principal modifications of the simple leaf. Already mention has been made of scale-leaves, with which some buds are clothed, but there are other

rudimentary leaves, of various degrees of development, which will be noticed under different heads, as phylloides, &c.

**NEEDLE-SHAPED LEAVES.**—One of the most important of the not very highly-developed forms of simple leaf is the acicular, or needle-shaped, like those of many of the Coniferæ (Pines and Firs, &c.), important because characteristic, more especially of this one family, and the antithesis of the flat-leaved plants. The acicular leaves of the Pines are in clusters or bundles of two, three, or five, sheathed by membranous scale-leaves at the base, the number being practically constant for each species. In the Firs, Junipers, &c. (fig. 140), they are clustered or scattered; and through the species of Abies, Podocarpus, Salisburia, &c., we arrive at a kind of leaf differentiated into blade and petiole. In the Cupressineæ, a tribe of the Coniferæ, the leaves are scarcely more than scale-leaves, being very small, closely appressed to the branches, and overlapping each other, or imbricate.



Fig. 140.—Subulate leaves of Juniper.



Fig. 141.—Petate leaf of Tropæolum; the petiole attached within the margin of the blade.



Fig. 142.—Mesembryanthemum acuminiforme, with acicular-shaped sessile leaves.

**LINEAR LEAVES.**—The term linear is applied to leaves, &c., which are many times longer than broad, and nearly the same width throughout the entire length, with the exception of the tip. The leaves of some of the Coniferæ come under this denomination, and it is the characteristic type of leaf of the large orders Gramineæ and Cyperaceæ, the Grass and Sedge families, which abound in nearly all parts of the world. Leaves of this type are usually sessile, and in the families named have a sheathing base. In true Grasses the sheath is split down one side, and at its top there is almost invariably a more or less conspicuous chaff-like scale called the ligule (fig. 143); in Sedges the sheath is closed. When the leaves are somewhat broader and curved, as in Iris and Gladiolus, they are termed ensiform or sword-shaped.



Fig. 143.—Millium multiflorum, showing the ligule at the base of the leaf.

**SUCCULENT LEAVES.**—Fleshy or succulent leaves (fig. 142) are almost endless in variety of form, as in the genus Mesembryanthemum, Crassulaceæ, &c., and some of these forms have special names which we shall not particularise. As already mentioned, the Aloe and Agave type is the most striking among succulent leaves.

**FLAT SIMPLE LEAVES.**—These may be separated primarily into those having entire (unbroken) margins (fig. 144), and those in which the margin is more or less deeply notched or lobed, or the blade deeply divided. When the indentations are only quite shallow in relation to the size of the leaf the latter is said to be toothed. There are three principal kinds of toothing. When the teeth are sharp (acute) and directed outwards the leaf is dentate (fig. 145); when the teeth are acute and directed towards the tip of the leaf, as in the Stinging

Nettle, it is serrate; and when the teeth are rounded, as in fig. 146, it is crenate. Simple, entire, or toothed leaves (or the separate leaflets of compound leaves or petals, &c.) may be referred to one or the other of the forms, or a combination of two or more of them. It will assist in determining the classification of such forms by observing first of all whether they are broadest below the middle, in the middle, or above the middle. The commonest forms broadest below the middle are the lanceolate (leaves of Antirrhinum majus, leaflets of Laburnum), ovate (somewhat the outline of an egg), cordate (leaf of Violet), hastate (Arum maculatum), and sagittate (common



Fig. 144.—Entire leaf of Ducus.



Fig. 145.—Dentate leaf of Saxifraga dentata.

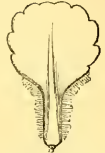


Fig. 146.—Crenate leaf of Saxifraga hirsuta.

Arrow-head). Of those broadest in the middle, it is only necessary to mention the names, as oval, elliptical, rotundate, and orbicular. When broadest above the middle they are, according to their outline, obovate, oblanceolate, obovate, &c.

W. B. HEMSLEY.

**Hoop-petticoat Daffodil** (*Narcissus Bulbocodium*).—The difficulty of flowering this charming little Daffodil in the open air in this country has often been alluded to in your columns. Imported bulbs of it flower freely and ripen seed the first year, but after that they disappear. Such, at least, has been my experience hitherto; but this year a batch of seedlings sown four years ago, raised in a box from home-saved seed and turned out somewhat carelessly in hot weather last June into a sunny border, have flowered freely. This is the more remarkable considering the exceedingly wet summer and winter which preceded this spring. Whether the plants have become sufficiently acclimatised to flower regularly in this climate remains to be seen. The Hoop-petticoat Daffodil is one of the most distinct of the genus, and worthy of some trouble to establish it as a free flowerer.—SALMONICEPS.

**Primroses for Waste Places.**—"A. P.," alluding to remarks made by me on this subject (see p. 407), seems to imply that I made no allusion to what he considers the most important point—the introduction into the places indicated of the garden varieties of the Primrose. Let me assure "A. P." that what he hints at was studiously avoided. My sole aim was to make a popular native more popular still by causing it to be introduced by tens of thousands into districts in which it might be a comparative rarity. I certainly had not the remotest idea of advocating the planting in wild and waste places, perhaps miles from a dwelling, what will barely in many places live in a garden. That a garden plant will thrive in a wilderness I do not doubt, but in such a case design is always apparent, and places must be very secluded indeed where these fine flowers would be allowed to establish themselves. A scarlet Thorn would appear absurd in a hedgerow of the snowy May; and a crimson Primrose in a wood among our national flowers would remind one of the lady "who painted her face and tired her head."—THOMAS WILLIAMS, *Ormskirk*.

**Wallflowers in Paris.**—Amongst the many rural elegancies that make Paris the freshest and brightest of cities, we must give a large place to the Wallflower. We see Wallflowers in plenty in all parts of Europe, and even in London they are not unknown. But really you must go to Paris to see Wallflowers just right, and to learn thereby how cheap is beauty and how universal is the medicine of gladness for the single eye that is full of light. On a sunny day in April you may see in the Parc de Monceaux, and other such places, what at a moderate distance look like beds of crimson Azaleas; but when you reach the spot you find them to be beds of Wallflowers, solid with bloom, quite uniform in height, and, as the gardeners say, "as neat as if turned out of a bandbox." Almost invariably the sorts employed are the deep blood-red and the bluish-purple, all the lacy blues being repudiated, and the best yellows being scarcely anywhere represented. These blood-reds and purples are mixed throughout in equal proportions, and the near view of them is as enjoyable as the distant view is surprising. The odour diffused adds very much to the charm of the golden-green leafage of the trees overhead, for wherever these fiery masses of Wallflowers are to be seen there are also trees enough to make a bower of pleasantness to drive dull care away. How simple and inexpensive are the best pleasures!—"S. H.," in "Gardeners' Magazine."

## PLATE CXXVII.

## TROPÆOLUMS.

(WITH FIGURES OF T. POLYPHYLLUM AND T. SPECIOSUM.)

Drawn by MRS. DUFFIELD.

TROPÆOLUMS are popularly known as Nasturtiums, and this is the reason why: Men first studied the properties of plants and named them accordingly. Thus it came to pass that *Tropæolum minus* was associated with Land Cress (*Lepidium sativum*) and Water Cress (*Nasturtium officinale*) under the generic name of Nasturtium, and the *Tropæolum* was called *Nasturtium indicum*, with the English name of Indian Cress. It is true that *Tropæolums* possess anti-scorbutic properties as well as Water Cress, and it has been observed by a writer on the useful plants of Brazil that *T. pentaphyllum* is one of the very few plants of the excessively rich Brazilian flora that possess this valuable property. The genus *Tropæolum* comprises about forty species, all natives of South America, two or three perhaps extending to Mexico; but this is doubtful, because several species are commonly cultivated either for use or ornament, and may in this way have been introduced north of the Isthmus of Panama. They are almost confined to the mountainous region on the western side of South America, from New Granada to Chili. Three species are natives of Brazil, and one is widely dispersed in Buenos Ayres and Uruguay. Very few of them descend into the tropical zone, and therefore they do not require great heat, which is rather unfavourable to them. On the other hand, the first frost cuts most of them to the ground. They love a half-shaded situation, and all of them will succeed in the open air with us in the summer. It is quite unnecessary to dwell on their merits as ornamental plants, because three or four species and their hybrid varieties are familiar and fully appreciated. We would only call attention to the fact that there are many other species equally, or even more, attractive than those better-known ones. A glance over the following brief descriptions will afford an idea of the richness and variety of the genus, of the brilliant and singular combinations of colour in the flowers, and of the diversity of foliage they present. There are annual and perennial species, and the latter may be sub-divided into two groups, the one with fibrous and the other with tuberous roots. The rapid growth of the annuals, *T. majus*, *minus*, &c., is proverbial, and their hardiness in a temperature above the freezing point, as well as their indifference to the nature and quality of the soil, recommends them where anything unsightly is to be hidden. Some of the tuberous-rooted species are cultivated for their tubers, some of which attain several pounds in weight, and form an important article of food in their native country. They are not all of them of quite so easy culture as the annual species, at least in our climate, and some persons fail altogether, whether owing to their unskillfulness or other causes it is hard to say. The two species represented in the accompanying coloured plate belong to this section, and it is especially concerning them that various persons have communicated to THE GARDEN from time to time the results of their experience, their methods of treatment, &c., to which we may refer the reader desirous of learning something of their culture.

*Annual Species, or Species Treated as Annuals.*

**Small Indian Cress** (*Tropæolum minus*) is a more elegant, but less showy, plant than the large Indian Cress, being smaller in all its parts. Besides the difference in size, it is easily distinguished from the more generally cultivated *T. majus* by its acute, almost bristled-pointed petals, and by the principal veins of the leaf, usually extending beyond the blade in the form of small teeth or soft bristles. It was introduced from the West Indies into Spain soon after the discovery of America, and was in cultivation in this country as long ago as 1596, being one of the few New World plants included in Gerard's catalogue of that date. It is true that Mr. Daydon Jackson, in his reprint of the catalogue, identifies Gerard's plant with *T. majus*, though on what grounds does not appear. The figures in Gerard's "Herbal," and also that in Parkinson's "Paradisi in sole Paradisus Terrestris" (1650), agree with *T. minus*. This plant was a great favourite with both of the writers named. Parkinson says, "It is of so great beauty and sweetness withal, that my Garden of Delight cannot be unfurnished of it." He continues: "The whole flower hath a fine small scent, very pleasing, which, being placed in the

middle of some Carnations or Gillyflowers (for they are in flower at the same time), make a delicate Tussimusie, as they call it, or Nosegay, both for sight and scent." It is widely dispersed in America, where it is at home, and now also in many other warm countries. Doubtless it originally spread from the mountains of the western side of South America. Of trailing habit and annual duration. Figured in the Bot. Mag., t. 98, in the year 1798, when, it is stated, it had been, to a great extent, displaced by the more showy *T. majus*.

**Large Indian Cress, or Nasturtium** (*T. majus*).—Too well known to need description, even in its primitive varieties, and as one of the parents of the beautiful hybrids. Much larger in size, and climbing by means of its leaf-stalks; it likewise differs from the preceding in the broad petals being rounded at the top. From its coarser, *T. Lobbianum*, and co-parent of many garden hybrids, it may at once be distinguished by the absence of hairs on the leaves and outside of the flowers. According to Linneus, this species was introduced into Europe in 1684, and Aiton states that it was introduced into this country by Dr. Lumley Lloyd in 1686. Also an annual and a native of Peru; and one of the earliest plates (23) in the "Botanical Magazine."

**Lobbs's Tropæolum** (*T. Lobbianum*, Bot. Mag., 4097; syn., *T. petiolorum*, Benth.).—This beautiful species was collected about the same time both by Lobbs and Hartweg; but to the former, it appears, belongs the honour of having introduced it into our gardens. It is a native of the mountains of Colombia, where Lobbs detected it in 1843, and sent it home to Mr. Veitch, of Exeter. An annual of vigorous growth and climbing habit with petalate leaves, similar to those of *T. majus*, but hairy. The flowers of the original variety are not so large as those of the later species, and they are hairy outside. Moreover, they also differ in the limb of the three lower petals being toothed and fringed, and not merely the stalk fringed.

**Canary Creeper** (*T. aduncum*, Bot. Reg., t. 718; syn., *T. pergrinum*, Bot. Mag., t. 1351).—Undoubtedly the favourite of the genus, a distinction it fully merits, as it is almost without a rival for window and trellis work where lightness and elegance are required. Indeed, one might say that it is peerless among yellow flowers. The yellow is of the most pleasing shade, having more of the green than the red element in it. Its precise home is uncertain, as it is now spread from Mexico all through the eastern side of South America to Chili; but it has doubtless spread from the Andes. Aiton states that it was originally introduced into this country in 1775, by B. Bewick, Esq.

*Perennial Species.*

**Tricolor Tropæolum** (*T. tricolorum* (Sweet), Brit. Fl. Gard., t. 270).—There seems to be no reason why *T. azureum* should not be as easy to cultivate as this familiar species, which one may see in perfection in almost any garden. Its numerous flowers, which have an almost vermilion-red calyx tipped with purple, and small yellow petals, are exceedingly attractive, associated, as they are, with small, elegant, five-lobed leaves, borne on thread-like stems. This species seems to have been first sent to this country by a Miss White, daughter of the Vice-Consul at Valparaiso, in 1827. It is commonly treated as a greenhouse or window plant, but it will succeed out-of-doors in a warm situation. The first tubers received in this country were sent to Chelsea Botanic Garden, and Sweet records the result of their treatment. Those planted in pots and placed in the hot house did no good, but grew up very weakly and soon dwindled away. Some others planted in a sandy soil by the side of a wall in the open ground grew luxuriantly and ripened abundance of seed. They reached a height of 10 ft., and were covered with a profusion of flowers.

**Blue Tropæolum** (*T. azureum*, Paxt. Mag., ix. 241).—After Mr. Miers published the description of this species in the narrative of his travels in Chili, everybody was anxious to obtain it, to associate with the yellow and red-flowered species; but some time elapsed before lovers of flowers were gratified with a sight of a living flowering plant. William Lobbs met with it near Valparaiso in February, 1842, and sent living plants to Messrs. Veitch, who exhibited a flowering specimen the following September, for which the Royal Horticultural Society awarded them the large silver medal. In spite, however, of the novelty and undoubted beauty of this species, it seems to experience a lingering existence in our gardens, and most persons who see it are disappointed in their expectations of what a Blue Tropæolum would be. Most likely some cultivators have succeeded in developing its full beauty, but I have seen only very weakly plants bearing rather pale blue flowers. To a certain extent this seems to have been the case with the first plants introduced, for Lindley states that this remarkable plant has much deeper-coloured flowers in a wild state than it has yet produced under cultivation. It is by no means so easily cultivated, there can be no doubt,





TWO HARDY TROPAEOLUMS. (T. POLYPHYLLUM AND T. SPECIOSUM.)

as most of its congeners, though it can hardly be beyond the skill of the fraternity. Being a native of the central provinces of Chili, it is not so hardy as most other species, and it is always a slender, delicate plant; therefore, not a gross feeder. It is a very slender, intricately-branched plant, growing 4 ft. or 5 ft. high in its native country, and having small, long-stalked leaves, with the blade deeply divided into four or five variously-shaped, but usually very narrow, lobes. The solitary blue flowers are about 1 in. in diameter, borne on thread-like stalks a little longer than the leaves, and have five equal-spreading, two-lobed petals. Gay describes this as one of the most elegant species of the genus, with flowers of an azure blue.

**Short-spurred Tropæolum** (*T. brachyceras*, Bot. Mag., t. 3851).—A slender climber with the habit and foliage of the Tricolor Tropæolum, and yellow flowers streaked with red, and about  $\frac{3}{4}$  in. in diameter. The petals are almost equal in size and uniform in shape and entire, except a notch at the top. The spur is very short, and hidden from view when the flowers are erect. A native of Chili, introduced by Mr. Cumming in 1840; and it is one of the commonest about Santiago, Valparaiso, &c., climbing over shrubs several feet high. It is called by the natives Flor de Perdiz, or Partridge Flower.

**Sir James Smith's Tropæolum** (*T. Smithi*, Bot. Mag., t. 4385).—A distinct and beautiful species with petalate, deeply five-lobed, glabrous leaves on long stalks, and red and orange flowers of medium size. The lobes of the leaves are broad and distant from each other, and the whole leaf 2 in. to 3 in. in diameter. The calyx is ruby-red, with the exception of the lower half of the spur, which is green; and the finely-fringed petals are orange veined with red. One of the most desirable species, widely dispersed at great altitudes in the mountains of the north-western part of South America. This is another of William Lobb's introductions. How many fine plants this one indefatigable collector sent home, we can form some idea from the number of species of this genus alone with which he enriched the gardens of Europe.

**Violet-flowered Tropæolum** (*T. violacea*, syn. *T. azurea*: Bot. Mag., t. 3985, not of Miers).—Closely allied to *T. azurea*, with which it has been confused, and of which it may possibly be only a variety. It is slender in habit, and the leaves have unequal lobes, differing in this particular from typical *azureum*. The flowers are of a paler hue, and the petals are two-lobed and minutely toothed on the margin, not entire, as in *azureum*. It grows among bushes in half-shady places in 30° to 32° lat. in Chili.

**Moritz's Tropæolum** (*T. Moritzianum*, Bot. Mag., t. 3844; syn. *T. Funchi*).—A very handsome species, of climbing habit, and quite glabrous in all its parts. The large petalate, rotundate, obscurely-lobed leaves attain as much as 5 in. or 6 in. in diameter, and are borne on long stalks. Each of the shallow lobes of the leaf has an orange-coloured callous tip. Flowers medium size, bright red and orange, the petals nearly equal, and very deeply fringed. Certainly one of the most beautiful of greenhouse species. It is a native of New Granada, and was introduced into England about 1840.

**Esculent Tropæolum** (*T. tuberosum*, Bot. Mag., t. 3714).—One of the most ornamental of the hardy tuberous-rooted Tropæolums, but it has proved rather a shy bloomer in many places where it has been tried. It is a tall climber with succulent stems, roundish petalate, lobed leaves about 2 in. or 3 in. across, and rather small red and orange flowers. The lobes of the leaves are broad and almost truncate. The colouration of the flowers is very beautiful, the calyx, with the exception of the green tip of the spur, being a deep red, and the entire petals, which scarcely exceed in length the lobes of the calyx, are of a rich golden yellow, veined with black. This species is, or was, commonly cultivated in Peru at an elevation of between 8000 ft. and 11,000 ft., the tubers being a daily article of food. Mr. McLean introduced it into this country in 1838.

**Elegant Tropæolum** (*T. speciosum*).—This magnificent species is another of the many fine plants introduced by Mr. William Lobb when collecting for Messrs. Veitch, of Exeter. He sent it to England about the year 1846, but it had then long been known in the dried state. It is a native of the southern provinces of Chili, from Concepcion to Chiloe. Although this is constantly being recommended in the gardening papers by the few who succeed in growing it well, it is a plant that one rarely sees, and yet its gorgeous crimson-red flowers are perhaps the showiest of the genus without the gaudiness of many of the garden hybrids. Gay ("*Flora Chilena*") states that in its native country it has numerous slender stems, from 15 ft. to 20 ft. long, climbing over and elegantly interlacing and festooning shrubs and small trees. The long-stalked leaves are divided to the base of the blade into about six oval-oblong lobes, and they are furnished with conspicuous stipules, and the flowers are borne on stalks over-

topping the leaves. The limb of the petals is almost square and slightly bilobed, and borne on a very slender stalk. Instead of the glaucous foliage of *T. polyphyllum*, it is usually more or less hairy.

**Knights's Tropæolum** (*T. polyphyllum*).—The late Mr. Knight, of the Exotic Nursery, King's Road, Chelsea, was the introducer of this fine hairy species, about the year 1842. It varies very much in habit and foliage from different localities, as the dried specimens at Kew testify, the leaves being deeply divided into six to twelve lobes, which in some specimens are very narrow, whereas in others they are broad, as in the commonly cultivated variety. In its native country, according to Gay ("*Flora Chilena*"), the stems grow from 4 ft. to 8 ft. long, and the flowers are always yellow. Growing among shrubs, the stems elongate, and the leaves and flowers are scattered, but in an exposed border it is a plant of compact habit with short, stout, succulent stems, densely clothed with leaves and flowers. It has a wide range in the Andes of South America, ascending to an altitude of 6000 ft. to 7000 ft. as far south as the Cordillera of Santiago, in Chili; and it is, perhaps, the hardiest species of the genus. *T. edule* (Paxt. Mag., ix. 127) is probably a variety of this of more straggling habit.

**White Tropæolum** (*T. albidiflorum*, *Flora des Serres*, iii., pl. 9).—Apparently a variety of *T. polyphyllum*, distinguished by the colour of its flowers, the petals being white inside, passing into deep yellow in the claw, and tinged with pink outside. It was in cultivation in the Brussels Botanic Garden in 1846, but I am not aware that it ever reached this country.

**Notch-petaled Tropæolum** (*T. crenatiflorum*, Bot. Mag., t. 4245).—This has pretty bright yellow flowers, about 1 in. in diameter, and semi-circular, petalate leaves, with rounded, shallow lobes; but the habit of the plant is rather straggling, and the foliage and flowers in the specimens seen are distant. Introduced from Peru by Mr. Lobb about 1845, and, compared with many others, of little ornamental character.

**Planchon's Golden Tropæolum** (*T. chrysanthum*, *Flora des Serres*, x., t. 1005).—A fine, yellow-flowered, climbing (perennial?) species with small, oval, petalate, entire, glandular, hairy leaves. All parts of the medium size flowers are of an almost uniform golden-yellow; the spur relatively short, the two upper petals much smaller than the calyx lobes, and the three lower much larger and toothed on the margin. A very pretty plant; introduced from the temperate parts of New Granada. I have only seen dried specimens and the figure quoted above.

**Wagner's Tropæolum** (*T. Wagnerianum*, *Flora des Serres*, vi., t. 553).—A perennial fibrous-rooted species; in habit and foliage this reminds one of a *Convolvulus* rather than a Tropæolum. It is apparently of twining habit, and it has triangular leaves on rather short petioles. The blade is 2 in. to 3 in. long, and the petiole is inserted just within its margin. Flowers about 2 in., three quarters of which is spur, the latter crimson, except quite at the tip. The lobes of the calyx are green and spreading, and of the same length as the five calyx, very narrow fringed, violet-blue petals. A very curious and beautiful species, of which I have only seen the figure quoted. It is a native of Columbia.

**Decker's Tropæolum** (*T. Deckerianum*, *Flora des Serres*, t. 490).—A very singular species with tricoloured hairy flowers and nudified, hairy, petalate leaves. Roots fibrous; stems climbing to a considerable height, and bearing leaves sometimes as much as 6 in. across. The spur of the flowers is about  $\frac{1}{2}$  in. long, and of a vermilion-red, except at the end where it is green, as well as the calyx lobes; and the petals are small, scarcely exceeding the calyx lobes, azure blue, passing into purple at the base, and very delicately fringed. This beautiful plant is a native of Tovar, in Venezuela, where it was discovered by Moritz and Karsten, who sent it to the Berlin Botanic Garden. There are several other species allied to this, natives of the same region, which are very ornamental. *T. marmoratum* has large, oval, petalate leaves beautifully veined and marbled something in the way of the leaves of *Cissis discolor*. *T. cirrhipes* is another of the same group worth mentioning. The flowers are borne on exceedingly long filiform stalks, which act also as tendrils to support the plant, as also do those of *T. Deckerianum*.

**Two-petaled Tropæolum** (*T. dipetalum*).—A very distinct species, formerly in cultivation on the Continent, if not in this country. It is remarkable in having only two petals, the three lower ones being suppressed. The two petals are large and conspicuous, entire, and oval-oblong, and, as well as the calyx, deep red or crimson. In foliage, too, this is very distinct, the leaves being somewhat pedately lobed with rather broad rounded lobes, and the stalk is inserted just within the margin of the blade. At the base of the long leaf-stalks are large, three-lobed stipules. The whole plant is glabrous, and has quite stout stems. Native of Peru.

**Five-leafleted Tropæolum** (*T. pentaphyllum*, Bot. Mag., t. 3190; syn., *Clymæcarpus pentaphyllum*).—This species agrees with *T. dipetalum* in having only two petals, but there the similarity ceases. It is a tuberous-rooted perennial, with rather slender, reddish stems, well clothed with leaves. The latter are 1 in. or 2 in. across, and palmately divided into five distinct oval or lanceolate leaflets; and the flowers are narrow, about  $\frac{1}{2}$  in. long. The spur is deep red and abruptly hooked near the base, whilst the lobes of the calyx are green, and the two very minute petals red. A very pretty plant, easily distinguished from all other species of the genus by the characters given. It is a native of Bucoes Ayres and Uruguay, where it is very common. Mr. Twœdie, who collected extensively in these countries, introduced it in 1829.

**Cluster-flowered Tropæolum** (*T. umbellatum*, Bot. Mag., t. 4337).—This is at once distinguishable from all other species by the flowers being borne in stalked clusters of four to six or more. It is a tuberous-rooted plant, the tubers, according to Prof. Jameson, weighing from 3 lb. to 5 lb. each. The slender, zigzag stem is well clothed with rather short-stalked, palmately five-lobed leaves 2 in. to 3 in. in diameter; and from the axils of the leaves, and slightly overtopping them, proceed the umbels of flowers. The latter are orange and red, with a green-tipped spur, and little more than 1 in. long, petals small and erect, as well as the lobes of the calyx, so that the flower is very narrow. A native of the lofty mountains of Peru and Ecuador, whence it was introduced by Lobb in 1846.

Among other species in cultivation, or having been cultivated, are: *T. Findeimanni* (Wagner—Regel, Gartenflora, ii. t. 58) is a very slender climber, with membranous, semicircular, indistinctly-lobed leaves, and small vermilion flowers about  $\frac{3}{8}$  in. long. The pointed spur is three times as long as the calyx lobes, and the petals are included. *T. Jarratti* (Paxt. Mag., v. 29), appears to be only a variety of *T. tricolorum*, with rather more yellow in the flowers. *T. sessilifolium* is easily recognised by its very small (about  $\frac{1}{4}$  in. long), almost stalkless, five-lobed leaves. It is a prostrate plant, with slender stems 5 in. or 6 in., or a little longer, bearing a few shortly-stalked red and yellow flowers of moderate size near their extremities. *T. Heyneanum* (Seemann's Jour. Bot., i. t. 5) is a very pretty species, closely allied to the Canary Creeper, but it has smaller orange-coloured flowers, with a straight, not hooked, spur, and the lower petals nearly as large as the upper. Seemann states that it was formerly in cultivation in Germany, and at the date he wrote (1863) Mr. Markham, who mentions this plant in his "Travels in Peru and India," had sent to Peru for a supply of the seeds. What the result was I have not been able to learn.

W. B. HEMSLEY.

[The specimens from which our plate was prepared were grown in Mr. G. F. Wilson's garden at Heatherbank, Weybridge Heath.]

### SAXIFRAGES.

The following are growing beautifully in my garden at Byfleet, Weybridge, and large numbers of them are now in bloom, viz. :—

<i>Saxifraga australis</i>	<i>Saxifraga Inghelsti</i>	<i>Saxifraga lasiophylla</i>	<i>Saxifraga ruparictis</i>
<i>Saxifraga Andrewi</i>	<i>crassifolia ciliaris</i>	<i>longifolia</i>	<i>rosularis</i>
<i>Saxifraga alpine</i>	<i>densa</i>	<i>Sternbergii</i>	<i>rotata</i>
<i>aretoides</i>	<i>elongata</i>	<i>marginata</i>	<i>Rhei</i>
<i>ambigua</i>	<i>Fortunei</i>	<i>marginata</i>	<i>Sternbergii</i>
<i>aromatica</i>	<i>Gaudini</i>	<i>Mollii</i>	<i>serotifolia</i>
<i>aspera</i>	<i>grecolandica</i>	<i>Mawiana</i>	<i>spatulata</i>
<i>Aizoon</i>	<i>Guthrieana</i>	<i>Melvillei</i>	<i>stellaris</i>
	<i>gibraltaria</i>	<i>moschata</i>	<i>Schraderei</i>
	<i>gracilis</i>	<i>nervosa</i>	<i>Stansfeldii</i>
<i>brevisifolia minor</i>	<i>Gauzei birsuta</i>	<i>nivalis</i>	<i>sponheimica</i>
<i>resularis</i>	<i>punctata</i>	<i>nepalensis</i>	<i>komana</i>
<i>compacta</i>	<i>polita</i>	<i>oppositifolia</i>	<i>flavescens</i>
<i>Bursariana</i>	<i>gracilis</i>	<i>pallida</i>	<i>condensata</i>
<i>Bucklandi</i>	<i>hirta</i>	<i>pyrenaica</i>	<i>tazetta</i>
<i>carinthiaca</i>	<i>Havortii</i>	<i>orbicularis</i>	<i>trifurcata</i>
<i>concinata</i>	<i>Hostii</i>	<i>rubra</i>	<i>umbrosa dentata</i>
<i>crisata</i>	<i>hypnoides</i>	<i>peninsylvanica</i>	<i>punctata</i>
<i>capillaria</i>	<i>lurata</i>	<i>pellata</i>	<i>serotifolia</i>
<i>cuneifolia</i>	<i>hybrida</i>	<i>pyrenaica</i>	<i>major</i>
<i>crisata</i>	<i>icelandica</i>	<i>pectinata</i>	<i>fol. var.</i>
<i>Churchilli</i>	<i>irrigua</i>	<i>paniculata</i>	
<i>canaliculata</i>	<i>inacta</i>	<i>pentactyloides</i>	
<i>caespitosa birsuta</i>	<i>incurvisifolia</i>	<i>pyramidalis</i>	<i>serrata</i>
<i>ceratophylla</i>	<i>lanceolata</i>	<i>pyramidalis</i>	<i>valdensis</i>
<i>cesia</i>	<i>lingulata</i>	<i>pyramidalis</i>	<i>Whiteleyi</i>
<i>crisata minor</i>	<i>ligulata</i>	<i>retundifolia</i>	<i>Wilkomiana</i>
<i>cordifolia</i>			

JOSEPH STEVENS.

### RHEUM PALMATUM VAR. TANGUTICUM.\*

BY PROFESSOR BALFOUR.

I HAVE received from Mr. G. P. Regel, Director of the Botanic Garden at St. Petersburg, five young Rhubarb plants, under the name of *Rheum palmatum*, var. *Tanguticum*. The plant was collected by Lieut.-Col. N. Prejevalsky on the north-western range of mountains of Mongolia, in the Tangut country, and in the solitudes of Northern Tibet. It is rare in the environs of Chertintou, but is said to abound near the source of the Tating and Etsina, further to the west. It is known to the Mongols as "Shara-moto," or Yellow tree, and to the Tangutans as "Djumptsa." The leaves of the plant are described as large, sometimes 2 ft. long by 3 ft. broad, and resemble those of *Rheum palmatum*, which has been cultivated in the Botanic Garden since the time of Dr. John Hope, the Professor of Botany in Edinburgh, and who read a paper on the subject to the Royal Society. The leaves, however, differ from those of *R. palmatum*, in being covered with longish and stiff hairs. The flower-stalk is said to attain a height of from 7 ft. to 10 ft., with a thickness of  $\frac{1}{2}$  in. near the ground. It does not branch, as in ordinary Rhubarbs, but is more compact, the flowering branches coming off at a very acute angle and running parallel to the stalk, as shown in the figure in the colonel's book. The root, when fully grown, is said to be about 1 ft. long, and of the same thickness. The flowering time is the end of June or beginning of July, and the seeds ripen towards the end of August. The Tangutans and Chinese dig it up in September and October. It is transported by land in winter and by boats in summer down the Hoang-ho to Pekin, Tientsin, and other ports, where the Europeans buy it, paying six or ten times more than its value at Sining. The plant is quite distinct from *Rheum officinale*, which has lately been introduced into European gardens as the true Rhubarb of commerce. According to Lieut.-Col. Prejevalsky, the plant yields the Kiakhta, or Kian-ao Rhubarb. Professor Maximowitch states that the dried roots (about 36 lbs.) brought home by the colonel, after having been carefully analysed and tested by Russian chemists and physicians, entirely agreed with the best Kiakhta Rhubarb, both in internal structure and in the number of crystals of oxalate of lime, the quantity of extract obtained from the root, and in the medicinal effect of the powder, and other preparations.

**Abronia fragrans**.—This is unquestionably the most remarkable of the genus. It differs from the well-known *A. umbellata* and *A. aromaria* in being usually more or less erect in habit, forming rather large branching tufts, from 1  $\frac{1}{2}$  ft. to 2 ft. in height, and covering when the root is strong, 2 or 3 square ft. of the ground, the stems being decumbent at the base. The flowers are produced in terminal and axillary umbels, and when fully expanded are pure white, diffusing a vanilla-like fragrance for some distance. During the earlier part of the day the limb of the corolla-like calyx is folded inwards, exhibiting only the greenish-white tint of the exterior, but at 4 p.m. the expansion commences, and an interesting transformation takes place. The flowers, which are larger than in any other species, expand several days in succession, and are produced till very late in the season. Plants will flower the first season if seed be sown early, but more strongly in subsequent years. In raising this plant no artificial heat should be employed, but the seed should be allowed to germinate at the temperature of a cool greenhouse, or even a cold frame. Being tap-rooted, the seedlings should be carefully transplanted when about 1 in. high into small pots of light soil, and after one shift may be eventually planted out where they are intended to remain. I have cultivated this fine plant for years past, and it was figured several years ago in the "Botanical Magazine" from specimens furnished by me.—W. THOMPSON, Ipswich.

**Housetop Gardening**.—My garden (says a writer in "Vick's Magazine") is on the roof of my blacksmith shop, two stories high, so you will see I have but little room, and labour under some disadvantages. Still, I had some success. My Balsams were all that could be desired. The *Azaleas* were the first to bloom; others followed soon, like the *Zinnias*, *Verbenas*, *Petunias*, *Portulacas*, *Pansies*, *Ten-week Stocks*, *Cinerarias*, *Asters*, and *Antirrhinums*. The greatest surprise was on the morning of August 5, when a *Datura* plant showed what a plant that behaved well might do by exhibiting forty pure white flowers, with their edges delicately tinged with lavender, fowers trumpet-shaped, from 7 in. to 8  $\frac{1}{2}$  in. long, and from  $\frac{3}{4}$  in. to 5  $\frac{1}{2}$  in. in diameter; every flower was a wonder. My garden on the roof was admired by hundreds of people, it being on view from two streets. Was it not the summer was one long drought, and most of our gardens in the city were quite parched, but ours showed no signs of suffering, unless neglected. If any lovers of flowers without a garden have a house with a flat roof they can grow enough flowers to satisfy any reasonable demand.

\* Read before the Botanical Society of Edinburgh.

## THE INDOOR GARDEN.

### GESNERAS AND THEIR CULTURE.

The species of Gesneras that are generally cultivated are mostly bulbous plants, but some of a deciduous herbaceous character are also grown. The greater portion of them are indigenous to Brazil and the South American continent, consequently they require a considerable amount of warmth in order to grow them successfully. Some, like *G. Cooperi*, bear a profusion of intensely vivid scarlet flowers, which remain long in beauty; others, of which *G. zebrina* may be taken as the type, in addition to their handsome red and yellow flowers, possess the most exquisitely marked leaves, the upper surface of which is clothed with a dense covering of reddish hairs, giving them a beautiful velvet-like appearance. The moderate size which Gesneras attain, and their natural free growth, render them well worth a place amongst the most easily managed of stove plants. The treatment by which *G. Cooperi* can be successfully grown may be taken as suitable for the other bulbous species. It may be propagated at different times of the year, according to the early or later time of its being started into growth; the most satisfactory method is by cuttings made from the young shoots, which spring freely from the crown, much in the way of a *Gloxinia*. Sussupping the plants, after blooming in the summer, to have been gradually dried off, they should, at the beginning of the year, be placed in a moist stove with a temperature of from  $60^{\circ}$  to  $65^{\circ}$  in the night, and a rise of  $10^{\circ}$  by day, giving just as much water as will slightly moisten the soil. So treated, they will soon commence to grow. When the shoots have attained a length of about 2 in., they may be taken off immediately under the first joint, removing the leaves from this; put them in a well-drained pan, in which is placed a little fine sandy soil, and filled up with silver sand. Insert the cuttings sufficiently far apart to prevent crowding, give a little water, and cover with a bell-glass. If bottom-heat can be supplied they will root quicker, but if the night temperature can be kept up to  $70^{\circ}$ , they will do without bottom-heat. As they strike readily, in the course of a few weeks they will have rooted enough to bear moving into small pots, which must be sufficiently drained, and filled with a mixture of sifted loam, to which has been added one-fourth of leaf-mould (also sifted), and as much sand as will give porosity to the whole; water slightly, and again partially cover for a few days with glasses, or put them in a propagating frame, to which admit air gradually, and as soon as they give evidence of making growth, by degrees inure them to the full air of the house. In the course of six or eight weeks they will have made considerable growth, and will require removal into pots 5 in. or 6 in. in diameter, using soil of a similar character to the first potting, only in a rougher, more lumpy condition. Through the summer subject them to an ordinary stove temperature, with sufficient air during the day, keeping them near the glass where they will receive the full volume of light, with a little shade in the middle of the day during bright weather. A neat stick to each will be necessary to support the shoot. I should not advise its being stopped, as the object this first season is to encourage all the leaf growth possible, upon which will depend the size and strength the tubers will attain. From their natural free habit of flowering, the strongest plants will very likely form flower-spikes towards the end of summer; but as the object is to get as much strength as possible into the tubers, I should recommend the bloom being pinched out, as, if allowed to go on, it will considerably restrict the growth of the plants. All through the season they must be attentively watered at the root and syringed overhead in the afternoons at the time of closing the house; keep the soil sufficiently moist so long as they evince a disposition to grow, after which cease syringing, give less shade, but do not allow the soil to become dry so long as the leaves retain their full vitality. When they begin to show signs of going to rest, gradually, not all at once, withhold water until the tops are dead down, at which time the soil should be almost quite dry. The pots should now be placed on a shelf, or in some position at the coolest end of the stove, where they will be secure from drip from the roof or water running from other plants. I mention this, for it is a very common occurrence to see the bulbs of

these and other plants when at rest put under stages or on damp floors, from which they either absorb moisture, or that which drips from above reaches them, by which means the soil, instead of being all but dry, is so wet, that it either causes decay or prematurely starts them into growth; neither must they be subjected to too low a temperature when at rest, or the tubers will rot. From  $50^{\circ}$  to  $55^{\circ}$  at night is as low as they can safely be kept at. Early in the ensuing year they should be shaken out of the old soil and removed to pots proportionate in size to that which the bulbs have attained. Those that have done well will at once bear moving into pots 8 in. in diameter; a size less will do for a smaller root. Drain and fill the pots with soil such as that recommended for the preceding year; the more fibrous material it contains the freer will be the growth of the plants. Always place the potting material before use where it will get a little warm; let it be in rather a dry than a moist state. It often happens with this, and with tubers of a similar character, that they are suddenly transferred from the dry soil in which they have been at rest to new, that contains too much moisture, from which they absorb so much as to cause their destruction. In potting, allow the top of the bulb to remain just above the surface of the soil, pressing the material moderately firm; place them on a shelf in a house or pit where the temperature will be from  $60^{\circ}$  to  $65^{\circ}$  during the night, with a proportionate rise by day. Give enough water to fairly moisten the soil directly they begin to push. It is important that they have sufficient light as soon as shoot-growth commences, as, if their first efforts in this direction be made in a dark situation, the shoots quickly become drawn up weak, a condition that no subsequent treatment for the season can rectify. As solar heat increases, give more warmth both day and night. The time of their blooming will vary with the more or less heat to which they are subjected, but they may be expected to show flower in April or May. When the bloom-spike appears, see that it does not get too much wet by syringing in the after-part of the day, as I have seen the individual unexpanded flowers caused to drop off by it. When the flowers begin to open the plants may be placed in a somewhat cooler situation, such as an intermediate house or a warm conservatory, away from draughts, keeping the soil while in such a position a little drier, but on no account must they be placed where too cold, or they will receive a check that will endanger their health, and cause the blooms to fall off prematurely. If used for decorative purposes in this way, as soon as the flowering is over, they should at once be moved back to the stove and regularly supplied with water until they exhibit signs of going to rest. If, on the other hand, they are not removed during the time of flowering from the stove, plants that are started early in the year, as these were, will generally push up a successional crop of young shoots, much in the way that *Gloxinias* do, which will bloom later in the season. During this second growth weak applications of manure water will materially assist them. Through the autumn give more air, and subject them to a drier atmosphere until the tops have died down; winter them as before. By retarding growth until late in the spring, they may be had in bloom through the autumn, if required. The flowers can be used for cutting, but they are better adapted for decorative purposes on the plant. If carefully managed through the winter, the tubers go on increasing in size, and will last for many years. This class of Gesneras may also be increased by division of the tubers.

The ornamental-leaved kinds, which also produce beautiful flowers, are, as I have previously said, mostly of a herbaceous character, and have scaly, tuberous roots, not unlike the nearly allied plants *Achimenes*. These will strike from cuttings made of the young shoots, either consisting of two or three joints with the top, or a couple, or even a single joint from the lower portion of the shoots, when not got too hard or woody, inserted in silver sand, and covered with a propagating glass, as recommended for those already treated upon; but they are more usually increased by a division of their scale-like tubers, which they form in considerable numbers. These may be either used whole or cut in pieces, according to the scarcity of the kinds or the quantity required; but although a small piece with care will grow, still, as naturally might be supposed, the larger the pieces the stronger the plants will be. For ordinary pur-

poses, the tubers used whole are the best. As this very beautiful section of *Gesneras* is the most useful when had in flower through the early months of the year, it is not wise to start them too soon; if started about March or the beginning of April it will be time enough. The most convenient practice with them I have found is to procure some good-sized propagating pans; drain, and two-thirds fill them with sifted soil made sufficiently light by the addition of a little leaf-mould and sand, and gently press the surface smooth; on this lay the tubers 2 in. apart, covering with  $\frac{1}{2}$  in. of similar material. At once place them in a night temperature of 60° or 65°, keeping the soil only slightly moist until they have begun to grow. As soon as the young shoots have pushed up 1 in. above the surface, move them singly into from 3-in. to 5-in. pots, according to the strength of the roots employed, potting in soil a little coarser than that in which they were started. With this section it is even more important than with the first mentioned to keep them near the light, as the general appearance of the plants is quite as much a matter of consideration as the flowers they ultimately make; for, unless all their leaves are retained in a fresh, healthy condition until the blooming is finished, half their beauty is wanting, and this is not possible if the leaf-development takes place where there is insufficient light. They require shade when the sun is bright, otherwise the leaves do not attain their wonted lustre. Increase the temperature of the house as the days lengthen, apply water to the roots regularly, and syringe overhead in the afternoons. By midsummer the strongest plants may be moved into 8-in. or 9-in. pots, the weaker ones receiving proportionately less room, or two or three of these may be grown in a pot of the larger size, but when sufficiently strong, they look best grown singly. They will need a thin stick to each shoot to keep them in an erect position. As the autumn advances cease shading and the use of the syringe, gradually decreasing the heat, but this should not be reduced lower than that in which they were first started. Their time of blooming will be regulated in a great measure by the heat they are kept in through the winter; in an ordinary stove they will come in through January, February, or the beginning of March, but where wanted so late as the month of March it is well to start a few bulbs after the time advised the preceding spring. After blooming gradually dry them off, storing where they will neither be too cold, nor so warm as to cause them to push before they are required. If room be an object, the tubers may be shaken out of the soil, and placed in paper bags in a little dry sand. Amongst a number of fine kinds, the following are especially deserving of cultivation:—*G. Cooperi*, *G. Barlowi*, *G. Donkelaari*, *G. glloxiniæseflora*, *G. cinnabarina ignea*, *G. exoniensis*, *G. zebрина splendidissima*, and *G. Leopoldi*.

**INSECTS.**—The continuous syringing recommended is generally sufficient to keep down red spider, thrips, and aphides, but should the latter appear, fumigate. They must be carefully guarded from the attacks of mealy bug, for if this insect gain a footing on the fine-leaved kinds, the sponging and brushing necessary for its removal almost always destroys the beauty of the plants.

T. BAINES.

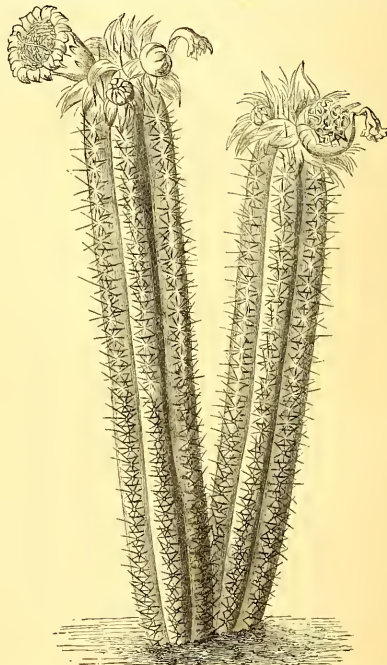
**Continuous Flowering of the Bougainvillea.**—I stated (see p. 79) that I thought too much stress was laid upon the ripening of the wood and the starving process frequently recommended to induce Bougainvilleas to flower, and spoke of a plant which flowered profusely for many months during the year without such treatment. This plant was green and flowering on till nearly last Christmas, when it was pruned. It was started afresh in February, the roots being richly top-dressed and watered, and it is now in flower again, and will soon, to all appearance, be one complete mass of blossom, as the long shoots, now flowering at their extremities, are, I see, breaking back at every joint, every one of which will produce bracts. The plant has been twice top-dressed at the root with rich soil, and I see that the roots are running all over the surface like little quills.—*J. S. W.*

**Utricularia montana.**—There will shortly be a good display of this beautiful and easily-grown plant in Messrs. Veitch's nursery at Chelsea. Some of the plants bear upwards of thirty large branching spikes of blossom, which, when fully expanded, will be most effective amongst the many choice Orchids with which they are associated. This plant may be successfully grown either in pots or pans, but it does best in wooden baskets, in which it spreads rapidly, emitting

fresh crowns out of the sides and bottom so as eventually to form a complete ball of hardy green foliage, and it never fails, under good culture, to produce an abundance of graceful spikes of white blossom. Utricularias must, however, have good drainage and an open compost consisting of fibry peat, broken crocks, and Moss, and, being almost aquatic, too much water can scarcely be given them. In pans placed in a tank in an intermediate house they would grow rapidly and flower freely.—*S.*

#### PILOCEREUS HOULLETTI.

This is a plant which possesses great beauty. It grows from 8 ft. to 10 ft. high; the stem is about 3 in. in diameter, very regular, with sharply-cut angles; the epidermis is coriaceous, spines pale brown, the apex set off with a tuft of soft, white, wool-like hairs about 2 in. long, which vanish with age, leaving hairs only on the head; the



flowers, which are dark brown, are about 2 in. long. Unlike other Cacti, this genus is peculiar in the flower, being composed for the most part of only one set of petals, gradually merging from the sepals. It is known in English collections as *P. glaucescens*. *J. CROUCHER.*

#### NOTES AND QUESTIONS ON THE INDOOR GARDEN.

**Todea superba.**—A few weeks ago a correspondent stated (see p. 232) that it is rare to get a stock of this Fern from spores. With a suitable situation there should be no difficulty. In my Filmy house, in which there are several old plants, the walls are lined with *Spbagnum*, and in it they germinate very freely. They are all self-sown. *Todea Wilkesiana*—a much rarer Fern—has also come up from spores. Of this I have some dozens of little plants.—*P. NEILL FRASER, Murrayfield, Edinburgh.*

**Primula amœna alba.**—For growing in fancy earthenware pans or rustic vases, few plants surpass in usefulness this beautiful white-flowered, hardy *Primula*. If old plants of it be parted every year, and a number of the pieces placed in large pans, they produce a mass of blossom that lasts, even in a sitting room, for a considerable length of time; and in a cool, airy conservatory they of course last much longer. When cut the flowers soon shrivel, and they cannot, therefore, be recommended in that state; but no one possessing a cool house should be without a good display of this *Primula* at this season of the year.—*C. S.*

## PROPAGATING.

FUCHSIAS intended for propagation should be pruned well in and got into a house, the temperature of which is about 65°, in Feb. and syringed two or three times a day; under such conditions they will make young growth rapidly. The cutting pots



Fig. 1.

should be the same as those for other soft-wooded plants, and the same treatment should be followed. The cuttings are best made as in fig. 1, as there is no waste, and they strike equally quick as if made with a joint, or, as in fig. 2, by single eyes if a large stock be required of a new or rare sort. The wood



Fig. 2.

should be cut down the centre with a small sharp knife, and the eyes put all round the edge of the cutting pot with the leaves inwards; none should be put in the centre of the pot. Some of the species, such as *F. spectabilis*, *Dominiana*, &c., are best inserted in small thumb-pots—one in a pot, as they



Fig. 3.

take longer to root, and very often one roots after the other at different times. *F. macrantha* will do well from cuttings, but it succeeds best if grafted, as in fig. 3, on *F. syringæflora*, which is a very strong grower. If put in the cutting box and not kept too moist, they will unite in about ten days, when they must be inured to light and air gradually. H. P.

**Grafting Camellias.**—A fair amount of success may doubtless be realised by the method described (see p. 385), but I think that the plan which has been for some years practised at the Chilwell Nurseries is much safer, as it does away with the necessity for bottom-heat, which is injurious to the Camellia. The stocks, which are about three years old, are grafted in the second week in August, and placed in cold frames in the house set apart for growing young Camellias. If plunged in coal-ashes they require very little water until it is time to take them out again, which, if the grafts have taken properly, will be about the second or third week in September, when they may be removed from the frame and placed on a bed covered with ashes, spar, or other cool, moist material. In the middle of February the head of the stock may be cut off and the old tying material removed. It is the safest plan to retie the graft, in order that it may not be loosened by any accident; care must, however, be taken that the worsted, matting, or whatever material is used, does not cut into the bark when the plant begins to grow. By adopting this method we have grafted some hundreds of Camellias at a time, with a loss of only 1 or 2 per cent.—CHAS. E. PEARSON, *Chilwell Nurseries, Notts.*

## GARDENING FOR THE WEEK.

## Indoor Plant Department.

**Cool Orchids.**—In addition to the older species of Orchids that evidently succeed better in comparatively cool quarters than in steaming hot ones, immense numbers have, in recent years, been introduced from the mountainous districts of South America, that not only require this cooler treatment with a view to their flowering satisfactorily, but whose absolute existence depends upon it. Yet amongst those that are now understood as cool orchids there is almost as great a difference in the temperature which they need as between that required by the intermediate section, representing many of the fine Cattleys and *Lælias*, and the occupants of the East Indian department, represented by *Aerides*, *Vandas*, *Saccolabiums*, and others; consequently it becomes a consideration how to treat such Orchids as need different degrees of temperature. This can no doubt be easily enough managed where there are several structures in which to accommodate them, but with many growers they have to be treated collectively in one house, in which case it is necessary to consider how to effect the compromise that thus becomes inevitable. Clearly it cannot be by keeping the house so cold as to just meet the requirements of such plants as those found in the high regions of the Cordilleras of Peru, otherwise the larger number of these cool plants which yet require a little more warmth than the first-named are sure to suffer. I have been led to make these remarks by frequently of late years seeing a number of these plants that were subjected to too cool treatment in bad condition, despite every attention that could be given them in other respects; therefore it is better where there is a mixture of these cool and still cooler plants grown together to keep such portion as do the best in the lowest temperature a few degrees warmer than might be desirable, were it not for inflicting positive injury on the warmer section.

**Root Moisture for Cool Orchids.**—Beginners in the cultivation of Orchids from these high latitudes often err by not giving them sufficient moisture, an abundance of which is indispensable; for, like all other plants that grow naturally in situations where the soil in which their roots are placed is in a perpetually swamp-like state, they are totally incapable of bearing for any length of time, their roots being in a condition even approaching to dryness.

**Dendrobiums.**—Many plants of *D. crassinode* and *D. Wardianum* will have, by this time, done flowering, and will be pushing up their growth freely; these species, though evidently enjoying a fair amount of warmth whilst growing, will yet flower more profusely if subjected to somewhat cooler treatment than they often are; too much warmth simply has the effect of elongating the bulbs with a diminution rather than increase of the blooms produced. The lovely *D. Falconeri* is generally grown much too hot, to which cause may be attributed the meagre production of flowers by which it is too often characterised. It succeeds best on a Sphagnum-covered block hung up close to the glass, in which position it gets dried up every day sufficiently to admit of its being freely syringed, treatment necessary to keep the young unexpanded leaves in the points of the growing shoots clear from yellow thrips, to which it is very subject. *D. devonianum* will, even in the case of such plants as either made their growth the preceding season late, or have been retarded, have their flowers fast advancing at the same time that the young growth will be pushing up freely. The baskets in which they are grown should be steeped in tepid water, so as to get the whole of the material moistened through. It is not advisable to put the plants in anything more than an intermediate house temperature whilst the flower is advancing; the individual blooms, although of unsurpassing beauty both in colour and formation, are yet short-lived, and if at all hurried it will contribute to their shorter duration, and cause their being deficient in the charming purple colouring on the points of the petals and sepals, which adds so much to their appearance. *D. Farnesii* and its many beautiful forms, also the different varieties of *D. densiflorum* and *D. chrysothoux*, will now be swelling up their flower-buds even if kept comparatively cool all through the winter. These, independent of their merits for home decoration, are amongst the finest of exhibition plants, but in the desire to retard them for this purpose they must not be kept too dry, for although moisture given freely at the root very much accelerates the growth of the flowers, yet if water be withheld too long I have often noticed that the flower buds perish.

**Angraecums.**—*A. sequepedale*, with *A. eburneum* and its varieties, will, in most cases, now be out of flower and growing freely. These are from the hot regions of Madagascar, and must have plenty of heat and moisture. They rank among the finest of Orchids, and are deserving of the best position in the house. If the stage on which they are grown is not sufficiently high, elevate them above it so as to get their heads well up to the roof.

**Calanthe veratrifolia.**—The fascination of new plants has been the means of consigning this, one of the very finest white Orchids in existence, to a position of little estimation, yet those who possess a good stock of it have a source from which they can cut the purest of white flowers for months. I have cut button-hole flowers from a single spike of this for twelve weeks in succession. It will now be fast pushing up its spikes, and care must be taken to keep it free from green fly, for, if there is one in the house, it will find it, which will quickly result in a colony of these pests being established, the presence of which spoils the colour of the flowers. Plants of this *Calanthe* that are in a weak state I should advise to cut out of the flower-stems as they make their appearance, as it will worth the sacrifice in order to get them strong, and by removing them before they are far advanced a much longer season of the

best growing period during the summer is permitted for completing its growth. With me it has succeeded much better in pure, good, yellow loam, with a little sand and broken charcoal, than with any addition of peat, but the pots must be well drained and the soil must not be over-watered. Where there are any doubts as to the roots not being in a healthy state, I should recommend the plants being at once taken out, and the decayed portion cut away, as much of the old material removed as can be effected without injuring the living roots, re-potting in fresh soil. The plant does not like too much room proportionate to the quantity of root it possesses. It requires a good amount of heat to grow it well, and shade during bright weather, otherwise its thin, broad leaves get injured; but it will not long remain in a healthy condition if kept too dark, or if the atmosphere is too confined through an insufficient admission of air. There is another form of this plant from Java, differing little in appearance from the Indian species, but so far wanting in purity of colour as to be not worth growing. C. Massee, of which there are two forms, one very much superior to the other, requires to be treated much like the last named species, except that I have found it do better in a little lower temperature. Like *C. varitifolia*, the flowering continues for a very long time, the spikes opening in succession, which, together with its distinct purplish-lilac colour, renders it well worth a place.—T. BAINES.

**Conservatory.**—In order to prolong the flowering season of such plants as are in bloom here, it will now be necessary to attend carefully to shading during the middle of the day in sunny weather. Scrim, a fabric made of flax, is much the best and cheapest shading material in the end. It outlasts considerably any other material I have ever tried. The finest quality of it will break the sun's rays without excluding too much light. Roof climbers will now require regular attention to keep them from becoming an entangled mass. The system of allowing the whole roof to become covered, as is frequently done, is objectionable. It excludes too much light from the plants underneath, especially in dull weather; it also spoils the general effect, which is much enhanced by confining climbers to something like one-fourth of the roof space, and leaving them to hang down gracefully at intervals; yet in this too much uniformity should be avoided by allowing some to hang lower than others. Let every means be employed to keep them free from insects, more especially scale. Azaleas that are brought into bloom in other structures for removal to the conservatory, will be benefited by sprinklings overhead with the syringe every afternoon and their flowers are fully expanded. They should also be shaded, especially the high-coloured varieties. They must likewise be well attended to with water, as during the development of their flowers there is a much greater drain upon the roots than at any other time, and if allowed to become dry the flowers suffer as well as the growth for the ensuing year. Geraniums and Calceolarias that are throwing up flower trusses should be encouraged by means of liquid manure, not too strong, especially in the case of Geraniums, or it causes them to run too much to leaf. Fumigate regularly, and not too severely. To be awake, and not too closely examined, to see that they do not suffer from thrips or red spider, as either quickly spoils them. Cockscobs, Balsams, Achimenes, and Hydrangeas should be well attended to, as these, with the plants previously mentioned, will be the principal things to be depended on during the following two months, when there is a much greater scarcity of flowering plants than during early spring. Chrysanthemums that have filled the small pots they at present occupy should be at once potted into their flowering pots; from 5-in. to 12-in. pots, according to the sizes the plants are required, will be found large enough for general use. If fine flowers are wanted stop the shoots during this month, but not later. A dozen really good blooms on a plant of the large-flowered varieties are preferable to three times the number of stavelings often met with. Plunge them at once in their summer quarters in ashes, which will prevent worms from getting into the pots, and will keep their roots at a much more equable temperature than when not plunged. The effect of rapid change in the temperature of the soil in an ordinary plant pot when not plunged is not sufficiently considered; during bright weather the sun's rays acting upon the soil raise the entire pot to a high heat in an unnatural degree, and therefore the cold chill of even our summer nights causes a corresponding reaction. The first batch of Primulas and Cinerarias will now require potting into thumb-pots, using good loam, well enriched with rotten manure and leaf-mould for the purpose, mixed with a little clean sand. Place the plants in a somewhat close pit or frame; shade them from bright sun and attend to them well with water. Pot off all cuttings struck of Euphorbias, Hydrangeas, and Primulas, placing them in a growing temperature near the glass so as to ensure short, stout growth. *Rhynchospermum jamaicense* is a useful conservatory plant, its fragrant white flowers rendering it a general favourite. It is a plant of easy management, requiring the temperature of a Vinery or intermediate house during its growing season. The different varieties of *Kalosanthes* will now be fast showing flower, and will be benefited by weak manure water. Get them properly tied before the shoots get too heavy. They are useful decorative plants for summer. Now is a good time to propagate them; strike freely in steam or peat, with an admixture of a little sand, giving very little water until they are rooted. Tie out Achimenes as they advance in growth, giving them all the light possible so as to induce a stout, blooming habit. A good number of the oldest plants of scarlet and pink Geraniums should be selected for keeping up the conservatory display during the summer and autumn, and a batch of the scarlet *Pelargonium Vesuvius* should be potted into 6-in. pots and turned out-of-doors, where they will be fully exposed during the summer months. With these I will not size that is required, but a thoroughly matured growth that will ensure their flowering freely when subjected to heat for winter decoration.

**Hard-wooded Plants.**—Azaleas will now be coming into flower without the assistance of fire-heat, and although with the increased temperature of the season they will not last in bloom so long as those that have been forced, yet the much brighter colours which they acquire under more natural conditions will compensate for their shorter duration. The house in which the yellow whist in bloom should be well shaded in order to prolong their flowering as far as possible. Remove all seed-pods from such as have done flowering, after which allow them a fortnight or three weeks to recruit their energies previous to re-potting. Use in the operation good fibrous peat broken into pieces proportionate to the size of the plants; add nothing, except as much silver sand as will not only ensure porosity, but also maintain a sweet, healthy condition of the soil for years, for Azaleas, with anything like fair treatment, are not short liverers. After potting, keep them in a cooler atmosphere than they have been in for a during such time, but give sufficient at top to keep the temperature from getting too high; 80° to 85°, with air, shade, and moisture will do no harm; on the contrary, Azaleas enjoy it. Plants that are vigorous and that push some of their shoots very strong, will be benefited by having the points of such shoots nipped out as soon as they show a disposition to outgrow their neighbours. If done whilst the growth is soft the plants will push several shoots which will set blooms with the rest of the plants. Attend as heretofore to the general stock of hard-wooded plants, and, by close attention, encourage early and vigorous growth.

**Stove.**—Allamandas in pots that have not made a sufficient number of shoots should have their branches wound round the trellis on which they are trained, bringing the points of the shoots downwards towards the top of the pot; this will have the effect of causing them to break freely, which growth will show bloom before it has advanced far. All stove plants that flower from the current season's wood will be benefited by liquid manure as their pots get filled with roots; but in all cases let it not be given too strong, and always in a transparent condition; if applied thick and muddy it closes up the surface of the soil, and does not enter the heart of the plant. We frequently get cold, cutting winds; therefore, where such is the case, never give air at both top and bottom of stoves, as it causes a through current of cold air, which is equally as injurious to vegetable as it is to animal life. We are frequently told that if the openings where the air is admitted are opposite the hot pipes, the air is warmed in its ingress by passing over the heated surface. To some extent it is, but not sufficiently; neither is it sufficiently charged with moisture to be allowed to rush onward on a windy day amongst young tender foliage at this season of the year, towards the autumn, when the object is to keep up late frosts, the case is different. Place *Gloninias*, *Tydeas*, and all soft quick-growing plants near the glass, so as to get all the light possible; otherwise, when they have to be removed for decoration elsewhere, or their flowers are required for cutting, they are so soft and flimsy as to be useless.

**Fern House.**—Plants that have not been re-potted for some time, and where it is not deemed advisable to give them more root room, may be assisted by the application of manure water; but in all cases see that the drainage is effective, otherwise its application will only aggravate the evil. If any plants are out-growing their bounds, either in pots or planted out, it is an easy matter to reduce this over-luxuriance by cutting away, more or less, according to circumstances, their oldest fronds whilst in a green, living state; this will be found to reduce the size of the fronds made afterwards, in proportion to the extent it has been carried out. The different kinds of *Dicksonia*, *Lomaria*, *Cyathea*, &c., that throw up their young fronds in a batch may have, when these are fully developed, the oldest fronds, if unsightly, cut away.

**Bedding Plants.**—*Pelargoniums* of all sorts, for planting out, should be gradually inured to the weather, and the hardier kinds all but fully exposed. Unless between hedges, under canvas, or beneath the canopy of some densely topped trees, it would be dangerous yet, however, to risk them out of frames or pits. Old stumps of *Fuchsia* may safely be planted out and staked, but those started into growth indoors must be kept there until the weather becomes warmer. *Cineraria maritima*, pricked out of frames or potted, should have the sashes tilted up in front and at back. *Centaurea* now strike freely from cuttings, therefore a stock of them should be secured. Boxes, pans, or pots containing *Gazania splendens* may be arranged out-of-doors along the base of a wall or hedge in a well-sheltered position. Pot off the youngest lot of *Verbena*, *Ageratum*, *Tropaeolum*, *Lobelia*, &c.; keep them in heat for a week or so until they begin to grow again, and then remove them to a cool house or clove frame, and gradually harden them off. Propagating *Dahlia* for ordinary use should now be at an end. Established cuttings and divided roots making growth should be removed to a cold frame, which should be kept close for a time, but eventually thrown open. Keep *Perilla* in a cool frame, and plant out Dell's Crimson Beet where it is to remain. *Alternanthera*, *Iresines*, *Coleuses*, and *Amarantuses* keep rather warm yet, and encourage good stocky growth. To these *Fuchsia Meteor* makes a fine companion, and from early spring-struck cuttings nice plants of it should be had for bedding-out. Sweet Peas, *Propagandium enanthe*, and *Propagandium Nasturtium* may be planted out in boxes in pots or beds in which they were sown; they are sometimes raised in narrow wall borders, and afterwards transplanted. Stocks, *Asters*, *Balsams*, *Tagetes*, African and French *Marigolds*, *Brachyocomeiberidifolia*, and similar plants, if in boxes, should be kept in frames, and the sashes should be tilted up both at back and in front; the *Marigolds* may be pricked out and kept in a warm position for another week or so if necessary. Supply sub-tropical plants freely with water at the root, and syringe them twice a day; a sprinkling of Tobacco-water from the syringe

now and then helps to keep them free from green fly and thrips, and is essentially useful in the case of soft-wooded plants. Gradually reduce the artificial heat where sub-tropical plants are kept.

#### Indoor Fruit Department.

**Vines.**—Pay great attention to the stopping and tying of shoots in late Vineries. Great care is needed in tying down tender shoots; when pressed beyond their strength they are very liable to break off at the base. Lateral growths are quickly produced after the shoots are checked; these should be pinched at the first leaf, and should never be permitted to proceed further than another leaf beyond this. The principal wood of many Vines is frequently suffocated by straggling lateral growths, which preclude air and light, and prevents the ripening of both fruit and wood. The earliest potting amongst young Vines should have made enough roots by this time to feel the benefit of weak applications of liquid manure, which may be given with much benefit at every other watering. Dissolved sheep and cow manure and guano, mixed together or separately, are substantial fertilisers, but it is great waste to give liquid manure when the ball of soil is very dry, as it passes through at the bottom and runs away without doing any good. Dry soil about all plants should first be moistened with clean water, and there is then every chance of the fertilising property of the liquid manure resting about the roots when applied a short time afterwards.

**Pines.**—Where a great number of Queens have been started into fruit simultaneously they will ripen together, unless some of them are retarded, in order that they may come in one after the other. A long succession is best obtained from a batch of this description by removing some of the plants with the fruit attached, when the latter is not quite half ripe, into a shaded house or room, with a temperature of about 50°, and where a circulation of dry air is going on. A fruit which does not become dead-ripe in a close, warm stove in a week will not arrive at that state for more than a month when subjected to this treatment. When it is intended to keep the fruit back for a considerable time, removal should take place shortly after colouring has begun. The flavour is seldom deteriorated much through the ripening being retarded.

#### Flower Garden.

Spring flowers, such as Pansies, bedding Violas, Daisies, Aubrietias, Forget-me-nots, Alyssums, single and double yellow and crimson Wallflowers, Trillium grandiflorum, Trolliuses, Saxifrages, Tulips, &c., are now in perfection, whilst fine-foliaged plants are beginning to be extremely pretty. Edgings of *Echeveria secunda* glauca and others, together with *Sempervivum* of various sorts, should be made at once, for if properly hardened off previously they will stand a slight frost with little harm. Funkias have now begun to grow, and, if necessary, may be lifted, divided, and re-planted. Remove from beds of Cannas, in which the roots were wintered in the open ground, the mulching of leaves, litter, or Grass, which were covered up at the plants last year, and allow to grow, and the beds should be top-dressed with some well-decayed manure and loam. *Spiraea filipendula* makes a fine summer edging for beds, and it may now be transplanted, as may also variegated Grasses, for the same purpose. *Polemonium cœruleum variegatum*, variegated Arabis of different sorts, autumn-sown plants of the golden-leaved Feverfew, Japanese Honeysuckle, and bedding Pansies and Violas. Carnations wintered in pots should now be planted out and staked; also Hollyhocks propagated this spring. The commoner Yuccas wintered in frames may now be consigned to the open borders, as may also Pentstemons, Phloxes, Antirrhinums, and Irises. From the base of clumps of Pampas Grass cut away the most decayed leaves, and administer a thorough soaking of water to the roots. *Campanula carpatia* may be divided and re-planted; this makes a grand edging for a shrubby border, as does also the *Nepeta violacea*, the herbaceous stalks of which should be removed so as to give freedom to the young growth. Sow Polyanthuses and Alpine Auriculas at once on a warm border, and divide and transplant the old ones as soon as they have done flowering in a somewhat shaded border; they thrive best in a good loam mixed with leaf-mould; it is, however, unnecessary to disturb the old stools unless they have become overgrown. Wallflowers may still be sown, but the earlier now the better. Pansy seed may also be sown, cuttings propagated, established plants transplanted, and the seedlings from sowings made early in April in boxes or frames pricked out or planted permanently.

#### Hardy Fruit.

The prospects of all kinds of fruit look not possibly be better, and we may now feel comparatively safe. Unremitting attention will now be required to ward off the attacks of aphides, for, if once these pests get a footing hold upon the trees, all hopes of fruit that is fit either to be seen or eaten are at an end, and the crop of next year is also endangered. Tobacco powder or snuff, applied through a flour dredger, is the best remedy I know till the fruit is set, but afterwards, frequent washing with clear water will keep down all kinds of insects, and prove beneficial in a variety of ways. It should be applied with a certain amount of force, as through a syringe, garden engine, or hose. Keep a sharp look out for grubs on Apricots and caterpillars on Gooseberry bushes, and as there is no remedy so effectual as hand-picking, it should be done at once. Pears, Peaches, and Apricots, that have set their fruit thickly, should be thinned out as soon as it can be seen which fruits are likely to swell best. As to thinning, it is very difficult to give precise directions, for experience alone must teach how thin they ought to be, or how many or much fruit a given tree is capable of bringing to perfection. Quality, rather than quantity, should be aimed at in fruit culture; certainly, one large and well-flavoured

Pear, Peach, or Apricot is preferable to two small ones, and especially with the two latter kinds, the stones of which are a consideration. When thinning, the guiding principle should be to have each fruit clear of its neighbour, evenly distributed over the tree, and fully exposed to sun, air, and light. Young recently-planted trees will require to have the shoots regularly and pinched, trained, or tied into the form they are to assume; in doing which care should be exercised to have the tree equally balanced; that the flow of sap may be alike over all parts. Any shoots that manifest a tendency to grow stronger than the rest may be checked by bending them downwards and keeping the lateral growths closely pinched off; but weak shoots should be allowed to retain all lateral growths made, at least for a considerable period. Canker and gum are the inevitable consequences of too tight ligatures and injury from nails, or bruises in other ways, all of which should be guarded against. Strawberries have made rapid progress during the last few days, and are now throwing up their flower-stems. If it has not yet been done, a mulching of long litter should be applied to them, for the double purpose of keeping the fruit clean at ripening time, and to prevent the too rapid evaporation of moisture.

#### Kitchen Garden.

**Sowing Beet, Planting out Lettuce, &c.**—The principal crop of Beet should now be sown, and, as this is a deep-rooting plant, the ground should be deeply dug and well pulverised. The latter operation is essential for the generality of crops, and for none more so than those that penetrate deeply into the soil and are of a bulbous or tuberous-rooted character. The seeds of this vegetable, not suffering from the attacks of birds or insects, like many others, do not require sowing so thickly; but sufficient seed must be put in to secure a crop without having resort to filling up blanks by planting; for, although Beet will succeed best when thus treated, yet it entails more trouble, and, in dry localities in hot seasons, these plants do not root so freely as some others. Plant out Lettuces that have been sown in the open air as soon as they are large enough to handle; if they are removed to where they are to grow when the leaves are 1½ in. long, they suffer much less than if allowed to get larger before removal. Upon this, in a great measure, depends their ability to stand long without running to seed; much also depends upon their receiving plenty of water until they have taken a firm hold of the soil. Hoe and stick Peas as soon as they are large enough, and keep the soil well drawn up to the stems of Cabbages or Cauliflowers, or they may suffer from the wind, especially in exposed situations. As Potatoes may their appearance aboveground draw the soil well up to them so as to protect them from the slight frosts that are still liable to occur. Potatoes that are planted at the foot of south walls will be much benefited by an occasional soaking with water.

#### Extracts from my Diary.

May 13.—Sowing Sorcerera, Salsafy, Radishes, and Early White Snowball Turnip. Potting late-stalked Coleus and Alternanthera. Pricking off Antirrhinums, German and Ten-Week Stocks. Sticking and earthing up Peas. Dusting Turnips and other seeds just coming up with wood-ashes, to keep off the fly. Looking over Cucumbers and Melons, stopping them, and removing all weak shoots and male blossoms, and fertilising them where required.

May 14.—Sowing Green Curled and White Batavian Endive. Pricking out Lettuce, Cauliflowers, and Asters. Planting out Galeolarias, Pelargoniums, Golden Pyrethrums, and other hardy bedding plants. Thinning out Beet and filling up all failures. Watering newly-planted Cauliflower and Lettuce plants. Digging out Celery trenches and getting manure into them. Looking over Peaches, Nectarines, and Apricots on the walls, nailing in the leading shoots, and disbudbing them where required.

May 15.—Sowing Carters' Giant White Cos and All the Year Round Lettuces. Potting Vegetable Marrows and Ridge Cucumbers. Thinning out Spinach and Turnips. Preparing stakes for Dahlias and Hollyhocks. Watering Cucumbers, Melons, Potatoes, Carrots, and Beans in frames. Looking over Strawberries, and picking off all weak and late blooms. Putting stakes and strings to Broad Beans and earthing them up.

May 16.—Potting on Chilies, Cucumbers, and Pelargoniums. Planting out Vegetable Marrow plants under hand-lights. Fumigating Melons to kill green fly. Looking over Fig trees and stopping all young shoots that require it. Picking the dead leaves off Cauliflowers, and giving them a good earthing. Looking over Vineries, tying down all young shoots, stopping them, and thinning the bunches where required.

May 17.—Sowing Cardoons, Chervil, Thyme, and Mustard and Cress. Potting on small Dracenas and Palms for dinner-table decoration. Planting early Savoy and Brussels Sprouts. Mnlching late Strawberries with long chaff cut from stable litter. Syringing Rose trees with Quassia-chip water to kill green fly. Watering Pines all through, and putting stakes to any that require it. Taking down all wall-rose protections, and storing them away. Hoeing amongst all growing crops.

May 18.—Potting off Balsams, Petunias, and Phloxes. Planting out Lettuces, Cauliflowers, and Tomatoes in the open ground, over the Peach hedges, and tying in the young shoots. Getting all potatoes earthed up as opportunities occur. Thinning out the main crop of Parsnips, Onions, and Carrots. Weeding walks, mowing, and cleaning up the pleasure ground, and rolling down all gravel and turf that require it. Renovating linings for frames. Fruit in use for dessert—Pines and Strawberries.—W. G. P., Dorset.

## TREES AND SHRUBS.

## TREES AND SHRUBS FOR DENSELY POPULATED DISTRICTS.

Those who desire to succeed in planting operations in London, *i.e.*, in the most densely inhabited portions of it, must, without doubt, select their trees and shrubs from a very limited list; nevertheless, it is more satisfactory to plant such as will grow, although few in number, than such as will prove an everlasting eyesore. Let any one take notice of such evergreens as Hollies, Rhododendrons, Laurels, and nearly all the Conifers, and he will at once see how useless it is to plant them in the expectation that they will give satisfaction; so, also, with trees, as, for instance, the Lime, Horse Chestnut, and Sycamore, whose leaves are scorched up by the month of July. I therefore recommend those about to plant such material to pause

before using it too freely. I am aware that occasionally one sees such shrubs and trees in a thriving state, but there is a great difference between those that are well established and were planted when conditions were much more favourable than now and those planted at the present time. One of the very best shrubs, in my opinion, for densely populated districts is the oval-leaved Privet, so justly stated by Mr. Gordon (see p. 410) to be superseding all others for forming hedges. It may fairly rank as a sub-evergreen in London, retaining its leaves in the most exposed situations until new growth occurs, while in sheltered positions it is really evergreen. It is in every respect a noble shrub, whether planted singly or in shrubberies, and for hedges nothing can possibly be better. I can strongly recommend it to those who desire to form a hedge round a churchyard, for instance. It is cheap, transplants well, and is a sure grower. In a few years

it makes fine bushes, well furnished, some 10 ft. in height. The Japanese Privet is also a useful shrub for beds or borders, and one which withstands the smoke. It has fine, broad foliage and a spreading habit—altogether, a most desirable evergreen. The common Privet is likewise useful for hedges or shrubberies, and should find a place in every town garden of moderate extent. The Aucuba, although it makes poor growth, is generally a shrub of good appearance, whilst the berried varieties are decidedly handsome. It should be one of the principal shrubs used for town planting. The *Euonymus* is another excellent subject not sufficiently appreciated. It has a good habit, and whether planted singly in the shrubbery, or trained against walls, it is equally acceptable. The common variety is the only one which succeeds well, the atmosphere of London having but little effect upon its foliage. Box should, on no account, be overlooked; it forms a pretty shrub, and, although it grows slowly, if sheltered by other shrubs it succeeds fairly well. The Gum Cistus, especially when young, is a desirable

addition, its beautiful, but ephemeral, flowers expanding in profusion during the summer months. The common Furze and Broom both thrive well in London, and are extremely gay during spring and summer, as are also the Portuguese and Spanish varieties. For banks, rockeries, and similar places, few shrubs can equal the double-flowering Furze and dwarf *Hypericum*; they withstand smoke, bloom profusely, and soon spread over a large space; the *Hypericum*s are also very useful for carpeting purposes in shady places. The evergreen Honey-suckle is a vigorous-growing shrub; for filling up shrubberies and for placing against walls and fences it will be found useful. The list of deciduous shrubs is far more extensive than that of evergreens. Among the best may be mentioned the Bladder Senna; this has pretty foliage and flowers, followed by singular-looking seed-pods. The Dogwood is useful, on account of the colour of its wood; and *Deutzia scabra* is a good flowering

plant. The varieties of Elder are all vigorous growers, and should not be overlooked in planting large beds and borders; they have dense foliage, and for placing in out-of-the-way situations, or at the back of smaller shrubs, they are unsurpassed; they grow rapidly, and soon occupy spaces under trees where few other plants will grow. *Forsythia suspensa* is another early free-flowering shrub, and one equally well adapted for shrubbery or wall. The Lilacs should, of course, find a place in every garden, and they succeed fairly well in London. In some seasons they flower most profusely, even in the most densely populated districts. The Mock Orange should be grown in every collection for the sake of its fragrant flowers. Too much praise cannot be bestowed on *Ribes sanguineum* as a town shrub; it succeeds admirably, and few plants excel it as regards the beauty of its flowers, which expand early. The broad-leaved Buck-



"A Big Tree." By Van Goyen.

thorn is another of those excellent spreading shrubs which are indispensable on account of their strong-growing and smoke-resisting qualities. Sumach, especially the Stag's-horn and Fern-leaved kinds, form magnificent shrubs, with heavy and beautifully-divided foliage that remains in good condition until late in September. These should be sheltered from sharp cutting winds. Among *Viburnums*, the well-known Snowball is most useful, blooming very freely in favourable seasons. The Weigela, blooming, as it does, early in summer, is an undoubted acquisition. *Yuccas*, too, are suitable for nearly every sheltered position, whether it be in the shrubbery or in the angles of buildings. Nearly every variety succeeds in London, and are very ornamental.

Amongst trees, none that are evergreen are, as far as I know, suitable for town planting. For planting in shrubberies, or singly, or in avenues, the following may be used with advantage, *viz.*, the *Ailantus* and *Catalpa*, two trees that are furnished with magnificent foliage. The double-flowering Peach and Cherry are also really charming trees, flowering, as they

do, early in spring. The Thorns are likewise most desirable, as all of them flower freely and are finely scented; some of them, too, are much admired for their fruit, which is very ornamental; only the deciduous varieties should be used. Of the Planes and Poplars, much is already known; they rank amongst the most useful of trees for permanent planting. Their dense and elegant foliage, continually in a fresh, green condition until October, is a most desirable quality in a London tree. They grow rapidly, forming fair-sized trees in ten years. As regards the Poplars, they are much diversified with respect to character of foliage and growth, as, for instance, the spiræ-like Poplar, the White Poplar, and the Black Italian. Than Willows nothing can be better for moist situations, in which they grow vigorously, and the foliage and habit of some of the varieties are light and elegant, especially the weeping kinds.

Among climbing plants useful for covering walls, fences, or buildings the Ivy and Virginian Creeper occupy the first rank; both being rapid growers, and clinging naturally to walls, they associate well, one being evergreen and the other deciduous. The Pyracantha is an evergreen, and one of the best for fronts of houses; its fruit, which is borne in large bunches, produces a brilliant effect and remains on the branches all the winter. Privets may be trained against walls with good effect, and in such positions they bloom profusely. The Euonymus and Forsythia, as already mentioned, are most useful for this purpose, especially for low walls; they fill up the bare spaces left below larger climbers. Jasminum nudiflorum, producing primrose-coloured flowers freely in winter and spring on its bare green twigs, is a beautiful addition to this class of plants. Nor should the Vine be omitted, as when carefully trained it is a very excellent subject, grows vigorously, and produces an abundance of broad satiny foliage.

This list might be further increased, but I prefer giving the names of tried subjects, and I would recommend those who have planting to carry out in densely populated districts to give the above mentioned trees and shrubs a prominent place whatever else they may choose to try by way of experiment.

Southwark Park.

CHARLES DENNIS.

### "A BIG TREE," BY VAN GOYEN.

HERE we have a fine example of the productions of an early master of the Dutch school, who has been long famed for the air of repose that he managed to give to his landscapes. Van Goyen delighted always in calm waters, reflecting the dark shadows of the trees growing on the bank, and as constantly introduced fishermen drawing their nets in the calm of sunset or of early morn. He was noted for his quickness in painting, a cause, no doubt, of the indifferent preservation of some of his works; and his facility with his pencil was even greater, so that we can picture him as he slowly was journeying down some sluggish stream, immortalising (for our benefit in this instance) some fine old pollard tree that grew by the river's brink. Born at Leyden in 1596, and dying in 1656, he just escaped the stormy times of war, so foreign to his quiet-loving nature, that desolated the Low Countries not long afterwards.

E. H. W.

**Evergreen Hedges.**—My experience is exactly the reverse of that of "W. T." (see p. 400). He says that Thuja Lobbi does not grow so fast as Cupressus Lawsoniana. About five years ago a neighbour of mine planted a hedge of the latter, and at the same time I made one of Thuja Lobbi. My hedge, though considerably more trimmed, is now fully from 1½ ft. to 2 ft. higher than his, both having started about the same size and under equally favourable conditions. Moreover, Thuja Lobbi is better closed and like what a hedge should be, but Cupressus Lawsoniana has the richer colour. If planted in rich soil Yew is by no means a slow grower after the first two or three years; but the densest, most perfect evergreen hedge I have ever seen was one of the Chinese Arbor-vitæ, so dense that apparently a wren could with difficulty have penetrated it.—J. H. W. T., Carlou.

**Eucalyptus globulus.**—This is likely to prove perfectly hardy, at least as far as ordinary winters are concerned. Our plants of it have now passed through a third winter quite uninjured, and are now starting into new growth. W. WILDMATR, Hookfield, Hants.

## THE FLOWER GARDEN.

### YOUNG LILY BULBS INDEPENDENT OF THEIR PARENTS.

At page 252, Mr. Groom says:—"If 'Dunedin' will illustrate the totally distinct character of Lily bulbs in such a manner as to prove that neither directly nor indirectly is the succeeding year's flower-stem affected by cutting down the leaves while they are yet green, he will confer a boon on many cultivators, who, up to the present time, have attached great importance to retaining the foliage in health as long as possible." Without professing to draw any line of distinction between the characteristics of "all other bulbs" and the Lily, I shall endeavour to comply with Mr. Groom's invitation, so far as the Lily itself is concerned.

When the parent Lily bulb has liberated a germ, and as soon as that germ has begun to vegetate, what is it that causes it to adhere to the core or base of the bulb on the spot where it was liberated? Simply microscopic, hair-like, almost transparent rootlets, drawing or absorbing double-refined nutriment, if I may so call it, from the juice of the tender new core on which it is seated. These rootlets begin to be formed before the stem, and are, therefore, the first part of the young plants which protrudes from the seed-bud, the stem not rising until some time after the rootlets have been in action. The core or fleshy substance at the lower part of the bulb may be called the crown of the root and the base of the stem, for here the root and the stem effect a junction or connecting link, the one descending and the other ascending, forming parts of a common axis. The correctness of what I state may be made more apparent if, after a time, the parent bulb be cut in two right down through the centre, as it will then be seen, by the aid of the microscope, that the roots pass down, not simply from the base of the bulb, as some believe, but from the base of the stem itself, through the core. It is here, also, that in some Lilies adventitious buds, or small offsets, occasionally appear on the outside of the edges of the bulb, or where the fleshy scales join the descending axis; but these need never be mistaken for the legitimate central seed-bud. The roots, in their growth, keep pace with the development of the stem, so that, by the time the young stem has grown up near to the apex of the bulb, and before the parent bulb has begun to bloom, the roots of the new bulb will have grown some inches in length; but, being mixed up with the old roots, and having thus become apparently a tangled mass, they escape the notice of the merely superficial observer. When the parent bulb has been in bloom for some time, it then begins to lose strength gradually and to decay. This shows that the object of its growth is accomplished, for it now droops, and, in a short time, the leaves, stem, roots, and scales all perish. In some cases, vitality seems to linger on for a little longer, but the vital spark has fled, and there is now a total and permanent cessation of all the vital functions. The root, stem, and leaves constitute what are called the organs of nutrition or nourishment. Fluid matters are taken up by the cells of the roots from the soil; they are conveyed to the leaves, and there, under the influence of air and light, they are fitted for the purposes of plant life. The functions of the leaves appear to be a combination of those of the lungs and stomach of animals; they not only modify the food brought to them from the roots, so as to fit it for increasing the size of the parent plant, but they also absorb nourishment from the atmosphere, by means of which the vegetative functions are carried on—all tending to the production of the flowers. When the bloom is complete, the leaves cease to perform their functions; and, if not cut down at once, they decay gradually, and remain for a long time as withered unsightly appendages. Nothing can restore them; nor can they, in the slightest degree, aid the new bulb; for that bulb, even when the parent bulb is in full bloom, is wholly independent of any assistance from outside its own immediate organisation. To say, then, that the same identical bulb will ever bloom again is simply a mistake, possibly arising from the fact that the new bulb springs up from the very side, or within less than the hundredth part of an inch of the old flower-stem; which is, I admit, quite enough to mislead any one who only examines the outward or visible appearance of the bulb. To say, also, that either directly or indirectly the

succeeding year's flower-stem is affected by cutting down the leaves of the old plant while they are yet green is another mistake; for the roots of the new bulb have been drawing nourishment from the soil for a length of time before the parent bulb has actually begun to bloom. "Under such circumstances the new bulb must perfect itself solely by the aid of its own roots." There is no doubt of this, for all the sustenance that the old bulb could by any possibility afford has been exhausted in bringing to maturity and in perfecting its own bloom. In such a case we might ask, What is the death of a Lily? I answer that it is the loss of all susceptibility of renewed action; or, in other words, it is a want of the power to vegetate, though the requisites for vegetation are present. Then what is life? Of the nature of life, or the vital principle, science does not profess to be able to give an explanation. In using the term we only mean that power or quality resident in certain structures, by which they are enabled to incorporate with themselves those nutritive particles of matter which they require, and to reproduce structures of their own species or type. The term of vegetable existence, from the period of germination till the final decay of the plant, is extremely various. Nature has ordained that the term of the Lily's existence shall be two years. How can we prove this? By facts which Nature places before us. At the end of March last year I took up six bulbs, and, after dissecting them, sent three of the specimens to the office of THE GARDEN. Last month I also took up six bulbs and dissected them, and they are now lying before me while I write. Now the point is this: there can be no more correct description of those now lying before me than that which was sent with the specimens last year, and which will be found in THE GARDEN of March 31, 1877, page 260. This description has been a true one for thousands of years that have passed, and it will be a true one, year after year, until the chapter on Lilies shall have come to an end. From this the inquirer may learn that in the Lily we have a birth and a death every year, that is, the birth of a young germ and the death of the old bulb, a new fully developed bulb coming forward every year to take its stand between them. Those who assert that the old bulb, for the time being, does not every year decay and die, can know very little correctly of the true organic underground structure of the "Old World Lilies."

At page 357, I am glad to see Mr. Hovey's name once more, but he certainly does puzzle me. In his first letter he says:—"If a plant be broken off in June when 6 in. or 7 in. high, the bulb will die. If cut down in July it will go off into divisions of small bulbs; and if cut down in September the bulbs will only be about half size." He now says:—"It does no more injury to cut away the flower-stem of *L. candidum* when in full bloom than it does to cut off the flower-spike of a Hyacinth. The only safe and sure way to speedily raise good, large, sound, white Lily bulbs is to cut away the flower-stems as soon as they appear aboveground, every inch of growth weakening the bulb." Mr. Hovey tells us this, and he tells us further, that his experience of Lily culture extends over no less than a period of thirty years; he may therefore mean more than he now says, and his next letter may possibly clear it all up. I may now tell him, in return, that my experience goes a little farther back than his. In the Manse garden of my native place in Dumfriesshire, more than forty years ago, I took great delight in the cultivation of all kinds of Lilies that I could procure; and here, since that time, in the neighbourhood of London, I have found it a most pleasing and healthful recreation, after my public duties were over, to devote many of my leisure hours to the study of the Lily, more especially to that portion which includes its underground growth and interior action. In what I have written from time to time I have propounded nothing that I did not think was supported by facts. I trust, therefore, that, however imperfect my communications to THE GARDEN may have been, my time has not been entirely thrown away.

DONEDIN.

**Large Holly Tree.**—The following are the dimensions of a Holly tree growing here: Height, 50 ft.; circumference of stem at 3 ft. from the ground, 3 ft. 6 in. It has few branches, having grown among other trees in a plantation with no room to spread; and it is unfortunately dying, some boys having ripped off a large portion of its bark for bird-lime.—J. H. W. T., *Carlisle*.

## THE KITCHEN GARDEN.

### ASPARAGUS PRIZES.

It was a happy thought to offer the Asparagus prizes, as announced in THE GARDEN of April 20 (see p. 355). Next to Peas, probably Asparagus is the most highly prized vegetable. It is also the one that is often less satisfactory than most others. Even the best way of using it is, as yet, undetermined. Some only eat a mere knob on the point of the shoot; others prefer a good honest 6 in. or more of green stalk. The former is assuredly a most wasteful method of using Asparagus; the major portion of it is as white as ivory and almost as hard, and it is used as a stick to hold on by while the delicious morsel on its crown is duly dipped in butter and devoured. Some information ought to be given in the promised printed instructions as to which of these two forms of Asparagus are to be rewarded; both are recognised and grown even at Argenteuil, the green being called English Asparagus, and the huge timber with edible top on the end the true Argenteuil. Is the latter really a distinct and superior variety, or does the surface and far-apart mode of culture make all the difference? There is much obscurity and mystery about the so-called varieties of Asparagus. The Giant of one place becomes very dwarf indeed, and small and short in another; Conover's, too, seems to become marvellously like the old sort after a few years' cultivation. I have just received two varieties of Asparagus seeds from Argenteuil, the true and the wild, and should like to be further informed of the difference between them. Is not, for example, the English Asparagus, sold under this name in the Parisian markets and eaten with a fork, merely the small of the large stools? Certain it is that locality and soils have more effect on Asparagus than mere difference of sorts, if such there be, or varieties of culture. Hence the importance of requiring the competitors to furnish particulars of the soil and subsoil on which their Asparagus was grown. Soil makes or mars the Asparagus in various ways. Our greatest difficulty here has arisen from a sort of red rust eating into the roots and the crowns. No matter how well the plants start and thrive for a year or two, the fibres get cankered, and the crowns often destroyed by a species of rust that seems fatal to the longevity and vigour of the plants. The finest three or four-year-old plants even get broken down in this way. Complete changes of soil have been tried with little effect. Our loam seems singularly destitute of fibre and considerably impregnated with iron. Various composts and mixtures have been tried with more or less success, but without reaching very satisfactory results. By no previous means has our Asparagus yet reached the best standard of Covent Garden, to say nothing of the tremendously large French Asparagus. I therefore mean to try the plan suggested of planting on a bit of the best kitchen garden ground at wide distances, and without any special preparation. Our kitchen garden is on the chalk, and the latter is within 30 in. of the surface in many places, though some of the Asparagus beds are over 3 ft. deep. Would the proximity of the chalk be likely to originate or spread the root rust? The culture is fairly high, as far as dressing with manure, salt, manure water, &c., is concerned, and it is exactly such as has commanded greater success with far less trouble in other localities. I may add that the average of the neighbourhood is considerably below Cambridge, Ely, Colchester, and Battersea. Colchester is, in fact, famed for its Asparagus, and I believe that it is grown in rich black soil. There is very little such soil about Bury, unless by the side of the river Lark; and in gardens so placed the Asparagus is finer and far healthier. Will any one give their experience of Asparagus culture on loam over the chalk, and near to the latter? Let us trust that substantial improvement in Asparagus culture may be brought about by the handsome prizes to which allusion has just been made.

D. T. FISHER.

[There is, unfortunately, no more erroneous statement than that only the tip of the large imported Asparagus is edible. It is often stale, but even when it has been a week exposed in a shop, besides the time lost in carriage, it is edible to from 4 in. to 5 in. of its length when properly boiled. The shoots are very susceptible to injury from light. We shall only know how delicious it is when such shoots are cooked freshly gathered from our own gardens, in which they may be

grown to perfection. Nobody who has really tried Asparagus in all stages, and who has had the chance of eating this large, partially blanched Asparagus fresh, cares about any other kind, except in soup, or in the various ways cooks use Asparagus in dishes, apart from the best of all ways—that of eating it alone. The kind of Asparagus grown throughout the United Kingdom is often suited for soup and cutting up in small dishes. In France this is obtained for like purposes by close planting occasionally, but usually this kind is obtained from forced plants. These afford the small green shoots desired. The beds for forcing give a good supply of this throughout the winter and spring, and long before large Asparagus is plentiful. In winter and spring this small Grass is the more valued. Asparagus properly grown and cooked is, in our opinion, not second to any vegetable, and is far before Peas. It is frequently grown well in market gardens, though rarely so well as it might be grown, but it is often a complete failure in private gardens; and the reason is quite clear—ten plants where one ought to be. The term English Asparagus has no common acceptation in France, though no doubt it has been used by some one alluding to the shoots cut in England. The question of varieties is an interesting one, and ought to be finally settled. From inquiries made on the spot, we are inclined to think there are at least two good varieties—an early and a late. A trial of 100 plants of these has lately been made by one of our friends, and similar trials ought to be made elsewhere till this most important point is settled. Still, we think sorts are of far less importance than culture; though it is probable that the excellent Argenteuil race is the best and largest. London shops are now full of Asparagus that comes from Toulouse and other distant parts of France that might be grown as well in England, and have the additional advantage of freshness. It was a knowledge of such facts, arising from personal observation of our own old method and that pursued about Argenteuil, that led to the idea of the prizes now offered in the hope of making English culture of Asparagus, imperfect and neglected up to the present time, as good as that pursued in any other country. Some original illustrations are being prepared to illustrate what we intend to publish on the subject; and as soon as these are engraved we shall issue the circular. Meanwhile, the essential point for the present is to plant, and plant thinly. In France, at this season, plants are sent off in great numbers from Argenteuil in a dry state—all healthy one-year seedlings. Mr. Fish's soil is evidently very unsuitable for Asparagus, and we should recommend his going "near the river."] "

#### THINNING ROOT CROPS.

It may be taken as a general fact that far more seeds are sown everywhere than is really necessary, though perhaps, beyond the extra expense incurred in its purchase, no great harm is done if the thinning be commenced early, as, when there are an abundance of plants to select from, there is every probability of securing a better and more even crop. In garden culture, mere size is not so much a consideration as quality. Large coarse vegetables are not looked upon with any favour in good establishments, but rather the reverse; and the fact should be allowed to carry due weight in apportioning the space for each plant to occupy. The most perfect way of thinning vegetables is to begin early, removing the weaker plants first, so that when the thinning is finally completed the best plants only are left at suitable distances. Let anyone take any given number of seeds out of any sample, sow them at equal distances apart, and treat all exactly alike until the crop is fit for use; and yet there will be a considerable variation, even in the best stocks, in both size and quality. Hence, sowing more seeds than is necessary is not all loss, as it enables the cultivator to select the best plants to stand for the crop. Of course, the better the seeds the less need be sown. In thinning root crops, the first operation may be performed with a small, sharp hoe, cutting clear spaces through the rows at small intervals, leaving the plants standing in small isolated patches. In the course of a few days they should be gone over again, and all the weakly plants removed by pulling them up. After another interval of a week or two the plants should be finally singled, leaving, of course, the best. Doing the work tentatively gives a power of selection that, if properly taken advantage of, secures an even, regular crop. If it be desired, the thinning of such crops as Carrots and Onions may be so arranged as to leave the final singling till the plants or roots are large enough for use; but I do

not recommend the plan, as, if the weather be dry, drawing the roots up lets the drought into the land, and a present benefit is obtained at the expense of a future loss. All hoeing is best done when the surface of the land is dry, but the after-thinning and final singling-out should be done, if possible, during a showery time, as then any little disturbance or disarrangement of the soil around the permanent plants will be immediately rectified. As regards the distances that each plant should be allowed to occupy, very good Carrots for table use may be grown 4 in. apart in rows, with from 12 in. to 15 in. separating the drills. Parsnips should have 6 in.; Salsify and Scorzonera the same; Chicory 8 in.; Beet 9 in.; Turnip from 6 in. for the earliest crop to 12 in. or 15 in. for later ones; Onions may be left at distances varying from 2 in. to 6 in., according to the purpose for which they are required. But, of course, the more space given, the larger the bulbs will grow, all other things being equal.

E. HOBDAV.

#### CANKER IN PARSLEY.

"CHEF'S" remarks (see p. 419) on this subject are sound and good. The following hints may be added to them, for Parsley is a most important crop, and not a few have lost good situations and thousands more been made most uncomfortable in them through the failure of Parsley. It grows like a weed when there is plenty, and seems to stand quite still for a month or more together when scarce. Cures for canker in Parsley there seems none. The best preventive is fresh, rich, deep soil and a thin plant. Parsley seems to poison the land like Clover. Not only should no one ever take two crops of Parsley in succession off the same ground, but the longer the intervals between the crops the better are they likely to be. A deep soil is also best for Parsley. It does well on heavy soils if these be lightened a little with burnt earth, ashes, &c.—the refuse of burnt rubbish of any sort. Soot I have found the best manure for Parsley. This may be dug into the ground, applied as a top-dressing, and also employed in a liquid state to flood the crop with during dry weather. I have never found the sun injure Parsley in good soil. Parsley should be sown in rows from 15 in. to 18 in. apart, and the plants thinned to distances of 6 in. to 9 in. from each other. Treated thus, Parsley leaves become highly ornamental, and the produce is finer as well as greater than by the usual mode of crowding the crop. Finally, a loose surface maintained by frequent scarification is of great importance to the free and healthy growth of Parsley. It specially dislikes a hard soil, either above or below, and thrives best on soils at once warm, free, and rich. For winter supply there is no mode so sure and certain as the potting up a dozen or more of 8-in. pots, and placing them in a forcing or other hot-house at a temperature of 60° or so. This treatment produces a magnificent supply of Parsley, at once clean, sweet, tender, and ornamental. Not a few Anthuriums, Ferns, and other plants are grown for their foliage alone that are not one whit more beautiful than will-grown pots of some of the finer and more profusely curled Parsleys. D. T. FISHER.

**How to Lengthen the Asparagus Season.**—Having frequently noticed Mr. Grieve's practice in reference to this matter, as described in last week's GARDEN (see p. 418), it affords me much pleasure in testifying to his great success. His practice differs from that of most people, inasmuch as he forces the whole of his beds every year, which, as he affirms, by no means weakens or exhausts the plants. Few better investments could be made than that in a few hot-water pipes, a simple boiler, and a few frame-lights, as described by Mr. Grieve; and these are really all that is needed to command a supply of this choice vegetable. From Christmas to April or May, the time of cutting in the open air, the advantages of hot water over manure-heat must be shown. It is regular, can be depended upon, and at once applied or withdrawn at pleasure. Manure-heat is most capricious in its action; if at one time burns, at another starves the plants. The heat rises and falls without any regard to the wants of the cultivator, and it takes considerable time to neutralise the evils of excess, or to make up for a deficiency of manure-heat. In the end, too, it is probable that fire-heat is the cheaper of the two, and, as Mr. Grieve says, once the Asparagus is fairly started, very little heat is needed to keep it growing.—D. T. FISHER.

**Carters' Summer Broccoli**—This has yielded me a good supply late in spring, and is altogether an excellent Broccoli for this part of the country.—J. WENFIELD, *Llanstephan*.

**Tomatoes.**—I know of no vegetable that has grown in public favour so much as Tomatoes. We have been gathering them from pots for some time back. When—as is usual—they are planted outside in small pots in May, it is August generally before they are ripe; but this season I have been growing them in 9-in. pots, and have to-day planted out the first batch—full of green fruit, large plants 4 ft. high; I therefore fully expect to have them ripe in June. I find Green Gage to be the earliest and to make the best salad.—R. G.

## ANSWERS TO CORRESPONDENTS.

Questions from correspondents who do not send their names and addresses in full (not necessarily for publication) cannot be answered. The questions are usually submitted to good practitioners in their several departments. Whether questions are answered or asked in this department, we shall be greatly obliged to any readers who bring able to help our correspondents, will kindly furnish answers. Questions cannot always be answered in the same week in which they are received.

**Abnormal Azalea Bloom.**—On the back of one of the petals of an Azalea bloom which I send you may be seen a growth of small stamens. Is this abnormal growth of frequent occurrence?—C. J. L. [No; it shows the close connection that exists between all parts of a flower, and the readiness with which one may take the place of the other.—M.]

**Double Yellow Primroses.**—I send a blossom and leaf of a double yellow Primrose, a seedling from among many that are growing in the gardens here. Is there one of its class as good in the market? It is a very free bloomer.—WILLIAM HOPKINS, Alderholt. [It is, we think, the best by far of any double yellow Primrose we remember to have seen, the colour being very good and the flower large.]

**Orchard Hone Caterpillars.**—I send you some caterpillars which are injuring my fruit trees in pots in a large span-roofed house, 130 ft. by 30 ft.—THOMAS CLARE, Whitley Park. [The small green caterpillars which are injuring your Pear trees are those of a small moth belonging to the family of Looper. These caterpillars draw the young leaves together by a web and can be easily seen and killed. Kindly send us a few more of the caterpillars for breeding purposes.—W.]

**Melons for the Open Air.**—Can you inform me of a kind of Melon hardy enough for open-air planting on the ridge, the plants having been raised under a frame and hardened off?—F. M., JUN. [You might try Manro's Little Heath, Golden Gem, or Suttons' Tom Thumb, all of which are hardy sorts, but we fear the result will not be very satisfactory.—S.]

**Trichomanes reniforme Fringing.**—Can any of your correspondents inform me if this Fern ever fruits in this country? I have two plants—one of them large—but hitherto they have not borne any fertile fronds, and I do not remember to have seen it in fruit anywhere.—F. N. F. [This species of Trichomanes has hitherto seldom produced, under cultivation, fertile fronds. I have not seen them more than two or three times, but they are very beautiful.—W. H. G.]

**Tarred Felt.**—Is this injurious to plants? A Rose tree trained over the roof of a summer house has lost all its shoots—a mishap which I attribute either to frost or the tarred felt. Which is at fault—the frost or the felt? and is there any remedy?—H. M. O. [The tarred felt would not injure your Roses, i.e., if dry before the Roses were trained over it. Of course if the felt has been fresh tarred without removing the Roses, injury would be sure to accrue; but surely you have not done that? Frost is no doubt the delinquent; on them back at once and all will be well.—W. W.]

**New Zealand Flax.**—Are the seeds of this long in coming up? We put some in last spring and again this year, with and without hot-bath, but without success.—R. A. G. [Seeds of this plant do not retain their vitality long enough to withstand the journey from New Zealand to this country. Although they may appear quite plump and fresh they will not grow, and ought never to be either sown or sown. On the other hand, home-saved seed, if sown as soon as gathered, comes up quite freely; but this probably cannot be purchased in seed shops.—T. S.]

**Gum Cistus (Cistus ladaniferus).**—How is this propagated? By cuttings or seeds? If the former, which is the right season for inserting them and how? Also Cistus roseus, C. incanus, and C. salicifolius.—A. M. A. [Cistus ladaniferus is multiplied by cuttings; as are also all the Cistuses and Helianthemums. They likewise grow freely from well-ripened seeds. Berberis fascicularis may be propagated either from seed or layers.—B.]

**Planting Water Lilies.**—I wish to grow the native, large white, Water Lily in a pond joining a river. Can you let me know if I should obtain plants or seed, and how and at what time of year they should be immersed? The depth of the pond varies, but I suppose from 3 ft. to 4 ft. is about the right thing. Who has them for sale?—J. H. W. T., Corlew. [Rootstocks are the best, and they may be planted any time during the winter or spring. In the case you describe they only require to be each tied to a brick or stone, which will keep the rootstocks against the bottom till they have rooted.—A.]

**Roses and the Cloire de Dijon for Panches and Walls.**—Kindly name two or three Roses (not the Cloire de Dijon) best suited to climb over a porch having a N.E. aspect; also two or three climbers best suited for training on the walls of a house having the same aspect (not Virginian Creeper). Will *Fyrus japonica* or *Jasminum nudiflorum* do? The soil is Norwood clay.—R. H. P. [As climbing Roses for a porch having a north-east aspect, I should recommend *Felicite perdue*, *Boursault Amadis*, *Laura Davoust*, *Ruza*, and *Tea Belle de Bordeaux*. Both *Fyrus japonica* and *Jasminum nudiflorum* will succeed against the walls of a house, and to these you may add *Clematis Flammula*, *Lonicera flexosa*, and *Garrya elliptica*.—A. P.]

**The Best Apple Trees for Ornamental Planting.**—I have begun to plant fruit trees for ornament, and having, I think, found out the Pears that form the handsomest trees for town or pleasure grounds, I shall be grateful to any of your readers who will tell me of the kinds of Apples that form the largest and most ornamental trees.—F. L. [The following sorts are free

gro wers, and have handsome blossoms and fruit, viz., Adams' Pearmain, Barrington, Duchess of Oldenburgh, Emperor Alexander, Fearn's Pippin, Flower of Kent, Glory of the West, Golden Noble, Golden Winter Pearmain, Hambleton Deux Ans, Hawthornden, Irish Peach, Kenish Filleback, Early Bough, Lord Suffield, King de Månage, Northern Greening, Reineette de Canada, Wadhurst Pippin, Warner's Mine, White Astrachan, and Yellow Ingestrie.—W. W.]

**Earl Preventive** (see p. 429).—In order to prevent rust, thoroughly scrape and clean the surface of the boiler, and then paint it with red lead or boiled oil. To prevent radiation, cover with Leroy's non-conducting composition for steam boilers.—W. V. M.

**Plants Figured.—A. K.** The plants you name may all be obtained through any of the larger metropolitan nurserymen. Some of them are scarce, but all are obtainable.

**Names of Plants.—P. E. S.** *Hederaea tulipiferum*.—*S. Ritchii*, 1, *Gymnogramma Martensii*; 2, *Adiantum affine*; 3, *Athyrium*, too indistinct and imperfect; 4, *Athyrium filix femina corymbosa*.

**Rose Houses.**—What is the best form of house for the cultivation of Roses—standards, half-standards, climbers—on their own roots? My garden is in such an exposed position that to grow them out-of-doors is attended only with disappointment. In a recent number one of your correspondents objected to side ventilation, and urged that the air should not strike the trees. How can this be avoided, and yet provide sufficient ventilation? My Rose house is about 60 ft. long by 16 ft. wide, and is ventilated by both sides opening, and the ridge rising. What other system can be adopted?—W. C., Newcastle. [The best form of house wherein to cultivate Roses is a span-roof one running north and south, in a fully open situation, where there is nothing to intercept light, and it should be glazed down to within 1 ft. of the ground level. Means of admitting air, both at the sides and roof, is an absolute necessity; but it should never be given at the sides during winter and spring where more or less forcing is carried out; later in the season, when the older foliage becomes matted and the young leaves less tender, air will require to be admitted freely both at top and sides.—T. B.]

**Azaleas after Flowering.**—What is the proper treatment of young Azalea plants after flowering? They are from 12 in. to 15 in. high, and were potted off last autumn into 6-in. pots. Should they be re-potted? If so, into what sized pots? Should they be put out in their fresh pots in the open air, in a shady place, kept well watered, and returned to the house early in autumn (September)? Should the extreme points of the shoots be trimmed off? If so, when?—J. T. [Azaleas potted last autumn, if they have not been kept in a growing temperature through the winter, unless they received a very small shift at the time of being moved, will scarcely require potting this summer. They are said to be 12 in. or 15 in. high, but this conveys an imperfect idea of their size. If the diameter be at all proportionate to the height, and they are in a healthy vigorous condition, they would be better placed at once in 9-in. pots than allowed to remain as they are; but on no account put them out-of-doors whether newly potted or not. Though very common treatment, it is the worst course with these plants that can be followed. They should be kept always wholly under glass during the summer in a growing temperature; if in the north of the kingdom by the aid of a little fire-heat in dull weather; in the south by shutting up early, so as to make use of the sun's warmth; syringing well overhead every afternoon until the flower-buds are fairly visible; then give more air and leave off syringing. Do not keep them too wet at the roots, but water before the soil is ever allowed to become as dry, as is necessary for many hard wooded subjects; pinch out the points of such shoots as are over-strong and taking an undue lead. These also should be tied down, which will tend to equalise the strength.—T. B.]

## Questions.

**Sleep-producing Australian Shrub.**—Can any of the readers of THE GARDEN kindly inform me of the name of an Australian shrub the leaves of which, placed in a basin of water, have the effect of producing refreshing sleep?—A. S. L.

**Shading.**—Is it advisable to white the inside or outside glass of a greenhouse—I mean the roof, and what is the best mixture? Would white lead and turpentine be good? or would it injure such climbers as *Tecoma*, *Tropaeolum*, and others?—W. S.

**Thuja gigantea.**—Is this as hardy as the common American *Arbor-vitae*? Would the *Arbor-vitae* family be generally likely to succeed under tall trees, there being no low branches or undergrowth to interfere with them?—R.

**Green Fly on Orange Trees.**—How can I best get rid of green fly or blight on a large Orange tree in the border of a greenhouse? It appears very healthy, has a large number of Oranges, and is full of blossoms nearly expanded, and which, I fear, will be injured by syringing. Washing and brushing the leaves have been tried, but the blight appears again the next morning.—S. H.

## SOCIETIES AND EXHIBITIONS.

## ROYAL HORTICULTURAL SOCIETY.

MAY 7.

THIS was one of the best meetings as regards exhibits that has been held this year. Orchids, Azaleas, Gloxinias, and Roses formed the principal features, the latter being shown in considerable numbers both in a cut state and in the form of plants.

First-class Certificates were awarded as follows:—

**Rhipidopteris peltata gracillima** (Veitch).—A garden variety, with finely-cut pinnae, previously alluded to in THE GARDEN.

**Azalea Madame Charles Van Eckhaute** (Veitch).—A kind with large semi-double flowers of snowy whiteness, of good substance. Well worth adding to any good collection.

**Coleus George Bunyard** (Veitch).—A distinct kind, having fiery-crimson leaves, broadly margined with bronze and green.

**Adiantum Lawsonianum** (Veitch).—A garden variety, with light, triangular-shaped pinnae. Very distinct, and well worth culture.

**Primula acaulis sulphurea major** (Veitch).—An excellent variety, bearing a profusion of large, double, sulphur-coloured blossoms. Should be grown more or less in every garden, however small.

**Marica pacifica** (Bull).—An Iris-like plant from the South Pacific, bearing curious flowers, with large, white, waxy sepals, blue and white striped recurved petals, edged with brown and yellowish spots.

**Iris Leichtlini** (Elwes).—An hybrid, the result of a cross between *I. asiatica* and *I. iberica*, with unusually large flowers.

**Bomaria Caldasii** (Ellacombe).—A very ornamental variety, bearing large trusses of orange-scarlet, beautifully spotted, funnel-shaped flowers.

**Aquilegia alpina superba** (Dean).—A seedling of a deep bluish-purple colour. Well worth growing.

**Gloxinia Beauty of Anerley** (Willa).—A superb flower of extraordinary size, and of a deep velvet-crimson colour. One of the best Gloxinias of its kind which has been raised for some time.

**Saxifraga calyciflora** (Atkins).—A plant consisting of neat rosettes of glaucous leaves and bearing dull purple flowers on short stalks.

**Coleus Kentish Fire** (Williams).—A brilliant kind, distinct, and well worth attention.

**Camassia Browni**.—A strong-growing Lilywort, bearing very large spikes of beautiful blue blossoms. A great improvement on the well-known *C. esculenta*.

Certificates were also awarded to *Auricula Salvia* (Dean), *Dioscorea retusa* (Veitch), *Anemifidictyon Phyllitidis tessellata* (Williams), and a botanical commendation was awarded to *Androsace sarmentosa* (Atkins), a beautiful rock plant, which, at certain seasons of the year, has leaves which become glaucous. It bears small trusses of pink blossoms.

**Roses**.—A large collection of these came from Messrs. Lane & Son, Great Berkhamsted. The plants were dwarf and remarkably fresh, both as regards foliage and flowers. Among the most noteworthy kinds were well-flowered examples of Paul Neron, John Kaynes, the dark crimson Prince Camille de Rohan, and Julia Touvais. This group was rendered more effective by being edged with neatly-grown plants of Ghent Azalea and the variety *mollis*. Messrs. W. Paul had a group of larger plants, consisting of such kinds as the cream-coloured Madame Hippolyte Jamai, the rose Paul Verdier, Star of Waltham, and the beautiful Tea-scented Madame Margottin. From Messrs. Veitch & Son also came an excellent collection of bushy, well-grown plants, bearing a profusion of fresh, well-formed blossoms, among which we noted remarkably good examples of the delicate Madame Lacharme and the creamy Madame Villermoz, one of the best of pot roses, and one which has been shown so well and often this season. Dupuy-Jamin was well studded with large, rosy-crimson blossoms, and dwarf plants of Marquise de Castellane were unusually fresh and pleasing.

**Orchids**.—A grand collection of these came from Sir Trevor Lawrence. It consisted of remarkably well-flowered plants of *Odontoglossum Cervantesii* and its varieties; *O. aseptum*, bearing magnificent spikes of prettily-marked, chocolate blossoms; *O. vexillarium*

roseum, bearing the largest flowers we have ever seen; the scarlet-orange *Ada aurantiaca*; *Lælia majalis*, bearing large, gorgeous, violet blossoms; and *Dendrobium thyrsiflorum*, furnished with large, pendant clusters of blossom. A large specimen of *Cattleya Skinneri* was very attractive. The group was backed up by *Oncidium Marshallianum*, bearing strong branching flower-spikes from 4 ft. to 5 ft. long, gracefully beset with bright yellow, chocolate-spotted flowers. Mr. Wilm, the Uplands, Birmingham, sent a plant of *Odontoglossum cirrhosum*, bearing a remarkably fine spike of blossom. It was nearly 4 ft. long, branching, and was thickly covered with beautifully-spotted flowers.

**Azaleas**.—These were well shown by Messrs. Veitch & Sons, Chelsea, and Mr. Charles Turner, Slough. The former exhibitors had massive specimens of attractive kinds, which were much admired on account of their profusion of blossom, and their being of a less formal character than is usually the case in specimen Azaleas. We noticed fine examples of the Flag of Truce, still one of the best of the semi-double white kind, the rich orange-scarlet, purple-flushed Stella, and the attractive white violet-striped Madame Mielze. Among newer kinds shown in the shape of small plants, one named Harry Veitch was admired for its distinct rose-coloured blossoms, which reminded one, as regards colour and delicacy, of the beautiful *Odontoglossum vexillarium*. Other good kinds were the semi-double Roi des Belges, Oswald de Kerchove, and the brilliant Flambeau. Mr. Turner's group, which consisted of medium-sized, shapely dwarf standard plants of the choicest kinds, was rendered very attractive by being interspersed with healthy plants of *Cocos Weddelliana* and other Palms, Ferns, and Grasses. Among the most attractive kinds were the beautiful white magnifica and Madame M. Lefebvre, associated with the conspicuous semi-double Juliette, a kind with striking deep rosy-purple imbricated blossoms. The large-flowered grandis and the brilliant orange-scarlet *Non pour le Commerce* showed off to advantage with the attractive *Jean Vervaens*, a kind with rose or salmon-coloured flowers, conspicuously tipped with white.

**Cut Flowers**.—Mr. Elwes, Preston House, Cirencester, sent a very attractive collection of hardy flowers, consisting of bright-looking Tulips (species), the beautiful blue *Phlox divarica* (from North America), splendid spikes of the British *Orchis mascula*, the North American *Lady's-slipper* (*Cypripedium pubescens* and *C. parviflorum*), bright in colour, and good in form and size. In this group were also several very attractive *Sparaxis*, *Cycolobotras*, and a beautiful branching spike of the New Zealand *Arthropodium paniculatum*, bearing white, starry flowers. *Fritillarias*, *Leucocoma*, and *Trillium* were also all represented, also several beautiful *Irids*. Messrs. Paul & Son, the Old Nurseries, Chestnut, sent excellent stands of cut Roses, among which we noted bright and well-formed blossoms of *alba rosea*, Prince Camille de Rohan, bright scarlet *Duc de Rohan*, Charles Lefebvre, and Captain Christy; also the beautiful rich creamy-yellow *Belle Lyonnaise*, fine blooms of *Souvenir d'un Ami*, and Madame Villermoz, associating effectively with the deep pink *Annie Laxton*, *Mrs. Raby*, and other valuable kinds. A large collection of cut blooms of *Rhododendrons* came from Messrs. Veitch & Sons, also *Magnolias*, Ghent *Azaleas*, *Viburnum Lantana*, and *Wistaria japonica alba*, a kind seldom seen, but one which would be of great value for associating with the blue-flowered kind. Mr. Parker, Tooting, sent a collection of herbaceous plants, consisting of *Scilla campanulata* and its varieties, and *S. nutans* and its varieties, the latter bearing unusually large and brightly-coloured flowers; also *Iris obliquens*, *Iris alba lutea*, *Iris biflora*, a beautiful *Iberia* named *Tenoreana*, and a purple *Viola* named *Delabordei*. Mr. J. H. Goodacre, The Gardens, Elvaston Castle, Derby, sent fine cut spikes of *Stephanotis* and *Bougainvillea*. Messrs. William Paul & Son also had a large collection of cut *Roses*, among which we noticed large blooms of *Star of Waltham*, bright blooms of *Madame Charles Wood*, and good examples of *Magna Charta* and *Louis Van Houtte*. Mr. Cannell, Swanley, sent magnificent blooms of seedling *Mimulus*; also blooms of white and salmon *Vesuvius Pelargoniums*. A good collection of blooms of *Maréchal Niel* was shown by Mr. Mayo, Oxford. Cut blooms of *Rose La France*, from Mr. Iggleden, were admired on account of their bright colour. Mr. Wheble, Bulmarsh Court, Reading, exhibited blooms of *Rhododendron Russellianum*, cut from a plant in the open air fifty years old, 15 ft. high, which this year bears five hundred blossoms. Messrs. Barr & Sugden sent a collection of *Daffodils*, *Anemones*, *Scillas*, *Sparaxis*, and other hardy flowers. Mr. R. Dean sent cut blooms of *Cheiranthus Alleni* and *C. Marshallii*; both kinds possess the same habit of growth, but the flowers of the former are much darker than the latter. A beautiful variety of *Primula amœna* named *laciniata* was also shown; its flowers are of a bright rose, and the petals deeply cut and very ornamental.

**Miscellaneous Subjects**.—Messrs. Veitch & Son exhibited an attractive group of new plants, consisting of *Erythrina marmorata*,

a beautiful variegated form of a well-known wall plant, and likely to be largely grown on account of its showy green and cream-coloured foliage. Finely-coloured plants of *Phyllanthus roseo-pictus* were also shown; also *Acalypha Maceana*, *Tillandsia zebrina* major, bearing a large, sword-like, brilliant scarlet flower-spike. Well-flowered plants of *Hemanthus cinnabarinus* were shown in good condition; also a garden variety of *Todea*, named *plumosa*, a small-growing kind, with graceful, and somewhat finely cut pinnae. Mr. B. S. Williams, Holloway, sent a very attractive collection of plants, consisting of finely-flowered specimens of *Franciscosa calycina*, *Azalea*, *Boronia*, &c.; also neat, one-shaped plants of *Erica ventricosa coccinea minor*, and *Genetyllis talipifera*. Several choice *Orchidee* were also noticeable in this group, among which may be mentioned finely-flowered plants of *Dendrobium Falconeri* and *D. Devonianum*. Panfuls of *Primaula amoena alba* were very attractive, as were also fine healthy specimens of the new *Dracuna Bausei*. Messrs. Rollison & Sons, Tooting, showed an extensive collection of *Azaleas*, *Heaths*, *Palms*, *Orchids*, and other attractive subjects, edged with small *Ferns*, *Colerases*, &c. The same firm also sent a large basket of plants of *Primaula cortusoides amoena*, which made an attractive feature; also a well-flowered plant of *Iris iberica*; and Mr. Aldous, South Kensington, sent a group of decorative plants, consisting of *Lily of the Valley*, *Ericas*, *Ferns*, *Fuchsias*, &c. Mr. Turner, Slough, sent a basket of plants of a single *Petunia*, *Mont Beauty*, a strong-growing kind with very large purple flowers with white centre, and well adapted for covering pillars, stones, or roots; from Messrs. Paul & Son, the Old Nurseries, Chesham, came a basket of plants of the golden *Philadelphus coronarius folius aureus*. Messrs. Osborn & Sons, Fulham, sent a group of healthy *Palms*, *Crotons*, *Yuccas*, and other useful plants; also baskets of plants of *Harrison's Musk* (*Mimulus moschatus Harrisoni*) and *Gentiana acutilis*, to show their attractive character when grown in masses. Large groups of named *Gloxinias* were shown from the Royal Horticultural Society's gardens, Chiswick; and from Mr. Wills' nursery, Anerley, came a large collection of seedling kinds, well flowered and of great merit. Mr. Wills also contributed an artistically-arranged group of *Orchids*, *Ferns*, *Gloxinias*, *Palms*, &c., which attracted much attention.

**Fruit and Vegetables.**—Mr. Iggulden, gardener to R. Baker, Esq., Orsett Hall, Romford, sent a basket of fruit consisting of black and white Grapes and a Melon, all of which were creditable for the season. Mr. Miles, The Gardens, Wycombe Abbey, sent excellent fruit of the Black Circassian and Elton Cherries, and Mr. L. Killick, Langley, Maidstone, sent Apples, Gooseberry Pippin, Sturmer Pippin, Kingswood Crab, and Wellington in good condition. Mr. Gilbert, Burchley, showed good examples of Foster's Seedling Grapes, Early Beatrice Peaches, Hathaway, Excelsior, and Carters' Green Gate Tomato; also beautiful examples of Myatt's Prolific Kidney Potato.

In the afternoon twenty-five new members were elected, after which Mr. Elwes delivered an interesting lecture on the Tulip, giving the history and distribution of nearly all the known species of that plant, many of which have been in cultivation for upwards of 300 years. Some of the best kinds the lecturer had before him in flower, and others were illustrated by coloured plates in old books. Though some species are found nearly all over Europe and Asia, the most appear to come from Turkey, Hindostan, and Asia Minor. There are very few species found in Japan, *Tulipa stellata*, which is the smallest as well as the earliest, being perhaps the only one. This kind blooms in January or February, unless cut off by frost. The lecturer, whilst fully recognising the importance of the garden Tulips, which are imported from Holland every year in such large quantities, was of opinion that more interest and enjoyment were to be derived from the many different wild species than from any of the florists' kinds; he also generously offered to give any one desirous of cultivating the species any information that laid in his power, as well as help them to secure bulbs. From experience, Mr. Elwes found that the best way to keep choice Tulips was to cover them during the winter months with hand-glasses, or to take them up and store them away every year, and especially was this necessary in wet soils and districts. Many good kinds had been almost lost to cultivation through neglecting this precaution.

#### SQUILLS FOR THE WILD GARDEN.

THESE must always play an important part in the wild garden. Their variations in colour are endless, ranging, as they do, from the most intense purple-blue to a delicate sky-blue, and with markings varying from the richest blue to the deepest purple. Of reds there is almost every shade, and many of the whites vie with the *Lily of the Valley* in elegance and density of bell. To Aiton's typical form of *Scilla campanulata* we have to add *S. campanulata minor*, *S. campanulata minor purpurea striata*, and *S. campanulata aperta* with its

conspicuous spreading flowers of rich blue. The emperor and empress of the family are, however, *S. c. maxima cœrulea* and *S. c. m. atra cœrulea*. *S. patula*, which may be said to be half way between *S. campanulata* and *S. nutans*, and its large-flowered variety *S. p. grandiflora*, next deserve attention. Following these come *S. nutans belgica* and our own native *Bluebell Squill* (*S. nutans*). The *campanulata* section is represented by pinks of various hues and whites of various sizes, and to the *patula* section also belong whites and pinks, while *nutans* has also great variations in shades of pink and white. *S. nutans lilacina* is a charming kind, its white colour being faintly tinged with lilac. I am indebted to Major Trevor Clarke for this beautiful little variety. Before closing our list we must not omit *S. cœrulea*, the latest to flower, though not the least decorative, a variety which is only represented in pink. These constitute only a portion of the varieties of Squills which I cultivate. I have at least fifty so-called varieties in my collection, all more or less distinct, which have been gathered together from many sources both in this country and on the Continent, but as neither science nor horticulture would be benefited by the rest as many forms, I purpose fixing upon twenty of the best and using the same as mixtures. P. BARR.

**Romneya Coulteri and Genetyllis Hookeri in the Isle of Wight.**—*Romneya Coulteri* has proved itself to be quite hardy in the Isle of Wight. A plant of it which I had from America of very small size about a year ago is now doing well, and will be a fine sight in the summer. It has been in the open ground for more than a year. The plant, however, which has surprised me most in point of endurance is *Genetyllis Hookeri*. Sir W. Hutt planted it out last year in the open border in his garden at Appley Towers, and it is in splendid condition now, and quite a mass of bloom. This may well lead to other experiments with the same class of plants in the south of England.—H. EWELANK, *St. John's, Ryde*.

**Sparaxis and Ixias.**—It will doubtless be interesting to know that at the present time I have *Sparaxis* in full flower in the open ground. They were planted in January, 1877, and were protected last winter with a straw mat rolled over them at night and unrolled during the daytime. The bulbs themselves are perfectly hardy; what they require is a little protection for the foliage, which, when the bulbs are left in the ground, is shot up early in winter. Were they, like Daffodils, to throw up their foliage in spring, they would remain in all parts of this country unharmed. In a few days I shall have *Ixias* in bloom under similar conditions.—P. BARR.

**Fruit Prospects in Hants.**—Notwithstanding our fears, fruit prospects are now most cheering, and the puzzle is, how comes it that so little injury has been done by the late severe weather? Peaches are a better crop than they have been for years past. Apricots are marvellously plentiful; every blossom seems to have set; but perhaps I ought to add that our trees were well protected. Plums are magnificent; Cherries the same; Pears have not bloomed so thickly, but all are set and swelling freely; Apples are now in full flower, and look extra vigorous; Goosecherries have suffered somewhat, but Currants will be a full crop. Altogether, fruit prospects in this district are encouraging.—W. WILDSMITH, *Heckfield, Hants*.

**Fruit Crops in North Notts.**—We have not had such a genial beginning of May as has occurred this season for many years back, for up to this date (the 6th) the temperature has been above the average, and with a rainfall of 71 parts of an inch; vegetation has therefore grown amazingly. The show of fruit-tree blossoms, such as Apples, Pears, Plums, and Cherries, is abundant, and the fruit will be sure to set well, should no cold east winds set in. The keen frost on the morning of April 1 has somewhat thinned the crops of Apricots, where the trees were not protected, as well as Peaches and Nectarines, and some of the earliest opened Pear blossoms on the walls, but this only on exposed aspects. On the glass-covered wall here the fruit on the above kinds of trees has set thicker than usual, causing much thinning already. Small hardy bush fruits, such as Goosecherries, will be good crops, although injured a little on the tops of the bushes by the frosts in the beginning of April. Currants and Raspberries are now in full flower, and Strawberries show well for a good crop. I never had early Pears so forward as they are at this date in May; Ringlender is in pod, and, owing to the rows being protected from sparrows in the winter months with wire protectors, the foliage has not been nipped so much as usual. The earliest planted Potatoes have yet had no check from frosts, and some of the American early sort named Alpha will be ready for lifting in two or three weeks, where grown at the bottom of a south wall.—WILLIAM TILLERY, *Welbeck, Worksop*.

The Maiden-hair Tree from Cuttings.—Mr. G. Berry increases *Salsiburia adiantifolia* freely from cuttings in the nursery at Longlat. The cuttings are put in in lines in autumn.—V.

"This is an art  
Which does mend Nature: change it rather: but  
THE ART ITSELF IS NATURE."—Shakespeare.

### SNOWDROPS AND SNOWFLAKES FOR WASTE PLACES.

It may seem strange to say anything about Snowdrops, especially at Midsummer; but then there is the summer Snowflake, which, although not a Snowdrop, is commonly looked upon as the summer representative of that universal favourite. Though Snowdrops are gone, however, it is just the time to prepare for a spring display of these ever welcome flowers by planting them by the bushel, or, in other words, sowing them broadcast. Whoever has seen the Snowdrop at home, in the copses and thickets of many parts of England, must have felt a pleasure totally different from that of seeing it in gardens and shrubberies. About a mile from where I live is a fine wood, with a green drive up the centre of it, and a stony-bedded brook crosses a portion of it and runs through a park. In one of the wildest parts of this wood are a few clumps of Snowdrops, and although I have as many of these plants as most people, I always go every year to see these Snowdrops in the wood. Now there are hundreds of miles of woodland walks and drives in the kingdom where one simply walks among trees. How interesting such places might be made by planting them with Snowdrops and similar plants. We have all heard of the Lily of the Valley woods at Woburn, and how jealously they are guarded. But plant such things in



abundance, and they need not be guarded at all. The fact is, there is too much conservatism as regards these sorts of flowers. Some imagine that flowers of this or any other class never ought to be out of a garden. They may as well imagine that a bird never looks well except in a cage. If all surplus stock of Snowdrops, Crocuses, and even Hyacinths were distributed in the woods and copses, and by path sides in gentlemen's grounds, a feature would be added to many of them which they do not at present possess. The great fault to be found with most of the places in England is, that no matter how great their capabilities may be, gardening only begins at the garden gate. What I have said in reference to the Snowdrop also applies to the summer Snowflake (*Leucojum aestivum*). This has some claim to be considered indigenous. It is a very hardy, somewhat stately-looking plant (that is, compared with the Snowdrop), and its introduction into damp spots in woods and groves would be charming. The seed-pods of this plant are very handsome, large, and pendulous. I may add that for all places, especially those that are wild, the single kind is infinitely superior to the double sort. THOMAS WILLIAMS.

*Ormskirck.*

### TREATMENT OF IMPORTED LILIES.

"DUNEDIN," whose close reasoning and admirable method have carried to my mind a conviction of his accuracy, would confer on me, and probably on others, an obligation if he will so far descend from the level of physiological investigation to the region of practical horticulture, as to say whether or not he confirms the deduction I draw from his last letter (p. 385). He says, as to imported bulbs of *Lilium auratum*, planted in spring, that they flower so late that the new bulb, which at the time the old bulb flowers, should liberate the germ of the third bulb, cannot do so for want of heat. I propose, therefore, to

grow on my imported bulbs, of which I planted a good number this spring, as fast as I can, this summer and autumn, in heat, so as to make them flower as early as possible. If at and after the time of flowering, which will probably be late in the autumn, I put them in a hot-house, I should infer, from what "Dunedin" says, that the new germ will be liberated, and will vegetate and flower the year after next, after which it will be safe. If this be correct, the buyers of imported bulbs may take comfort, and the wholesale loss of these bulbs, spoken of by several of your correspondents, will be arrested, simply by growing them for two or three years under glass. It is clear that, if planted previously in the open ground, they will be lost. I fear, however, that even if the third year's germ be thus preserved, by substituting artificial heat at the flowering time late in autumn for natural heat at the flowering time in July, the germ, coming into birth several months later, will itself flower late, and its offspring again will be late, and so on *in perpetuum*; so that not for many years, at any rate, will they be got to bloom early enough to be grown in the open ground. If a germ, liberated in July, will flower in July two years afterwards, a germ liberated in, say, October will not flower till October two years afterwards. The remedy for this would be to promote quick growth, so as to make the plant flower a little earlier each year, until at last it was got to flower early enough to be planted in the open ground while the weather was still hot enough for the germ to vegetate. May I ask for a little further information as to the effect of cutting down the flower-stems of *Lilium candidum*? Mr. Hovey says (p. 387) that to produce good bulbs speedily the flower-stem should be cut down when it appears above the ground. Does he mean that the plant should be prevented that year from flowering at all? If so, I presume that he recommends it only in the case of young bulbs or offsets, not of those which are already of flowering size. Will he also kindly say to what other sorts of Lily the same plan applies? I recollect that one of your recent correspondents said he always cut down *L. longiflorum*. Mr. Hovey speaks of this as an old piece of knowledge; but to learn, one must not be ashamed of asking questions, even at the risk of being put down as an ignoramus.

E. HARVEY.

**Sikkim Rhododendrons**—I have sent you three sorts of Rhododendrons cut from the open ground. The darkest is, I believe, Thomsoni, which has been beautifully in bloom for these five or six weeks past, and it was used in quantity for church decoration at Easter. The plant is 9 ft. high, and about as much through. Owing to the rough wet weather which we have had, I am unable to send you a good specimen, but you will see that there is from five to seven flowers in each truss. *R. cinnabarinum*, which is 8 ft. high, is now covered with flowers, and, from the specimen sent, you will see how profuse they are. It is, I consider, as regards beauty, second to no other hardy shrub. *R. Dalhousie*, also sent, was planted out in the spring of last year, and therefore its hardiness has not been proved, like that of the others which have been out-of-doors for many years. *R. niveum* is another distinct hardy early-flowering and beautiful variety, but this year its flowers were injured by frost in the beginning of April. They are planted on high sheltered situations.—J. GARLAND, Killerton, Eweter. [The specimens sent are magnificent, the cream-coloured flowers of *R. Dalhousie* being unusually large and beautiful. The gem of the collection is, however, *R. cinnabarinum*, with its drooping clusters of brilliant, orange-scarlet blossoms, each not unlike, as regards form, of our largest-flowered Fuchsias. As Mr. Garland truly says, this is second to no hardy flowering shrub, and it is one which should be in every garden in which it will succeed.]

**Rodgersia podophylla**.—This is undoubtedly one of the most striking novelties that has ever been added to our list of hardy, fine-foliated perennials. It is a member of the Saxifrage family, though in the absence of flowers remarkably unlike one. The chief point of interest is its leaves, which are developed direct from the roots. The leaf-stalk rises quite vertically to a height, it is said, of from 3 ft. to 4 ft.; but in the specimen which I had examined at Kew it is but 15 in. in height. The blade of the leaf consists of five wedge-shaped divisions, each 1 ft. in length and 9 in. in breadth at the widest part, radiating with almost mathematical precision from the apex of the leaf-stalk, and spreading horizontally. Each division is again divided into three or six pointed lobes with toothed margins and the whole leaf shines with a metallic lustre. Its flowers are borne on branching spikes, which also spring from the roots, but are inconspicuous and of a whitish-green colour, much resembling those of

the Hieracium-leaved Saxifrage (*S. hieracifolia*). Altogether, it is unlike any plant I know of, of the nearest approach to it in habit being some of the species of *Amorphanthales*. Should it prove of easy propagation, I predict for it a brilliant future, as I feel assured by the rate of growth in the Kew specimen, which I observed last year was but a small one, that, with special culture, it would soon attain the height of 3 ft. to 4 ft., as asserted, and that the blade of the leaf would be also developed in proportion, say to 3 ft. or even 4 ft. in diameter. What a grand acquisition, therefore, would this not be in producing a sub-tropical effect! It is a native of North Japan, and was first introduced to cultivation a few years since at the St. Petersburg Botanic Garden.—W.

**Choice Rhododendrons Hardy at Edinburgh.**—We find *R. lepidotum* to be perfectly hardy, and to bloom very freely even in a small state. Many of our plants of it had two or three flowers on them when they were not more than 1 in. high. Along with the seeds from which we raised *R. lepidotum* came some of what proves to be an exceedingly dwarf form of *R. glaucum*. It also flowers freely with us when only 2 in. high, and forms a pretty dwarf tufted bush, very distinct from the usual form. Most of the Indian Rhododendrons are hardy here. We have Thomson's now in glorious bloom. The following are growing out-of-doors without protection and have flowered with us, viz., *ellipticum*, *Fortunei*, *fulgens*, *Hodgsoni*, *Falconeri*, *longifolium*, *Blandfordianum*, *virgatum*, *cinabarinum*, *c. majus* (a very fine form), *barbatum*, *argenteum*, *eruginosum*, *camptocarpum*, and *Wallichi*. *R. fulgens* is one of the finest; the colour more vivid than any sort which has yet bloomed here.—W. W. JOHNSON, *The Lawson Company's Nursery, Edinburgh*.

**Rainfall in May at Bury St. Edmunds.**—We have just experienced the most continuous fall of rain that has occurred in this neighbourhood for many years. It commenced to fall about 5 a.m. on Tuesday, the 7th, and continued until 10 p.m. on Wednesday, the 8th, being forty-one hours, and amounted to 2.63 in., or more than 2½ in., a considerable item in a district where the mean annual rainfall barely exceeds 25 in. The wind was from east and north-east.—P. GRIEVE, *Culford*.

**Boronia Drummondii.**—This, one of the most showy and beautiful of the genus, has flowers of a bright pink colour set off to advantage by golden anthers. Even in a small state this *Boronia*, under good culture, never fails to produce abundance of bloom on every small shoot, and, if kept in a light airy house, its flowers will last for several months in good condition. A quantity of plants of it now in bloom in Messrs. Rollison's nursery at Tooting make a very attractive display. Wherever hard-wooded plants are grown this *Boronia* should find a prominent place. There is also a white-flowered variety of it which is equally worth culture.

**Dendrobium thyrsiflorum.**—The best example of this attractive Dendrobe which we have seen for a long time is now in bloom in Messrs. Veitch's nursery at Chelsea. It bears four drooping spikes as uniformly furnished with flowers as the stem of a massive Hyacinth. Each spike bears no fewer than sixty large flowers, with rich golden labellum and pure white petals. The showy character, as well as the free-flowering qualities and easy culture of this plant, make it one of the most valuable of Orchids.

**Speckled Gloxinias.**—Among the many seedling Gloxinias now in flower in Messrs. Veitch's nursery none are more striking and distinct in character than what may be termed a new race, with speckled flowers, resembling in appearance some of the newer kinds of Tydes. Their colours vary from pale blue to bright crimson; the flowers are upright in habit, and are in every way well worth adding to any collection, however small.

**Anemone palmata alba.**—This beautiful white-flowered variety of the Cyclamen-leaved Anemone is now blooming freely in the Hale Farm Nursery at Tottenham. Its flowers are very showy, the under sides of the petals being slightly tinted (with yellowish-green and violet, whilst the inner side, which is as white as snow, is set off to advantage by a bright golden centre. It succeeds best on warm borders or on rockwork.

**Auricula Silvia.**—The progress made in all sections of Auriculas during the past few years is remarkable, and it is satisfactory to find that new and improved kinds continue still to be raised. The beautiful Alpine variety shown under the above name by Mr. Douglas, gardener to F. Whitbourn, Esq., Loxford Hall, at a recent meeting at South Kensington, at which it received a first-class certificate, fully confirms these remarks, the substance, form, and colour of its flowers being all a step in advance in the right direction. It is a large, maroon flower, with a smooth, yellow paste, and one which will no doubt become a favourite with Auricula growers.

## THE FRUIT GARDEN.

**An Ornamental Fruit Wall.**—In carrying out some alterations lately it became necessary to build a wall across the end of our ground, and as fruit is a desideratum, and the wall having a due south aspect, it was deemed necessary to utilize it for fruit trees. Now fruit walls in dressed grounds, as one usually sees them, are not very ornamental, and in order to remedy this, I put a glass coping along the top 3 ft. wide, and, to further add to the appearance, placed, at 10 ft. intervals, a light 1½ in. column to support the front, up which I purpose training the lightest and most graceful climbers, which I think will not materially interfere with the fruit trees. The whole is arranged thus—Border, or rather terrace, 2 ft. wide, 3 ft. high; front edge, 5 ft. of turf; 4½ ft. walk; 5 ft. turf; and 6½ ft. from edge of turf to wall. These two strips of turf are made to correspond, containing, as they do, alternately small specimen shrubs and 3 ft. circles of Roses, at 8 ft. intervals; that part of the border between the edge of turf and the foot of the columns will be planted with low-growing flowering plants in a pretty manner. Altogether, it has an appearance quite different from that of ordinary fruit borders, and might be very well tolerated in the most select dressed grounds.—T. SMITH, *Newry*.

**Fruit Crops in the Midlands.**—I am happy to bear testimony to the good accounts given of our fruit crops (see p. 375) by Mr. Tillery, of Welbeck. Now fruits of all kinds promise to be abundant. Pear blossom was this, but, every bloom appears to have set, and the growth of the young fruit is most satisfactory. All vegetable crops are looking admirably. Peas sown in November are podding, which is at least three weeks in advance of former years. I never remember seeing Asparagus grow so thickly and abundantly; in fact, our whole garden is like one vast hotbed, and I anticipate a year of plenty.—R. GILBERT, *Burghley*.

**Fruit Prospects.**—Cherries and Plums have passed through the ordeal of the spring bravely and well. I never saw such a fine set on that best of all Plums in any situation—the Jefferson. It is, however, on a north wall. Golden Drops, on an east wall, were rather forward to escape the severe frosts which culminated on April 1. The lekworth Imperatrice, on the same wall, was later, and with protection, has set freely. As a rule, this most useful of all late Plums, sets shyly. This season the set is thick indeed. But Plums are capricious about the crop they finally elect to carry, and not seldom shed the major portion of their fruit when about the size of small Cherries. The Victoria Plum is, as usual, clustered thick with fruit. Cherries promise well, and the floods which we have had will ensure a heavy crop of Strawberries, which are just coming into flower.—D. T. FISII.

**Frost and Unexpanded Blooms.**—We have hitherto considered fruit tree blossoms to be safe from frost, so long as they remained in the bud or unexpanded state, but this year much of the bloom was certainly "nipped in the bud" by the frosts which occurred in the last week in March, and more especially on the morning of April 1. I quite agree with Mr. Fish (see p. 408) that the petals are much harder than the stamens and pistils, as the fine weather that succeeded April 1 brought out the petals in abundance, but only, in many cases, to raise false hopes of fruit crops, as those of the early Plums, Pears, and Gooseberries that were in a forward bud state have expanded and dropped off, although the flowering season was the most propitious we have had for years during the rest of April and early in May. Late fruits have, on that account, expanded and set their crops rapidly and satisfactorily.—J. GROOM, *Henham*.

**The Gooseberry at Longlet.**—Seldom does the poor Gooseberry get due honour. We ourselves prefer them to Grapes, but many wonder at this, and we do not expect disciples. At Longlet, however, the merits of the Goose berry seem known, as there is a border and wall securely covered with wire netting, so as to form a Gooseberry house nearly 300 ft. long and 12 ft. wide. This is for the long preservation of the keeping kinds from the attacks of birds, and we have never seen such good provision to this end. With this plan the Gooseberry may be eaten in good condition for a long time.

**The A Bec Peach.**—Allow me to inform Mr. Groom (see p. 438) that this fine early Peach can be obtained true from Messrs. Veitch of Chelsea, to whom I have supplied buds from my original tree. If Mr. Groom will turn to the "Florist and Pomologist" for January and March, he will there find it figured and fully described. Having grown this Peach for a number of years, I can strongly recommend it as a variety suitable either for open walls or for growing under glass, where it ripens about twelve days later than the Early Grosse Mignonne. It is said to have originated at Beilly, near Lyons, and to belong to the group that produce leaves with round glands and flowers of the largest size.—W. COLEMAN, *Easton*.

## NOTES OF THE WEEK.

**A Blue Bush in May.**—*Solanum crispum* appears to be hardy in Ireland, and an old specimen of it, in flower now in the Botanic Gardens at Glasnevin, is about 12 ft. through and over 7 ft. high. It is in full flower—one sheet of lovely light blue blossoms. It looks as if a field of Blush Potato blooms were gathered together into one huge nosegay. It is the more valuable from the scarcity at this season of blue-flowered shrubs. Indeed, we do not remember at any time to have seen a shrub of the same order of beauty and colour. It is a plant to be noted by all having gardens in mild or seashore districts. One does not visit the Botanic Gardens at Glasnevin at any season without experiencing pleasant surprises of this sort. It is a garden which, while doing excellent work as a botanic garden, and being stored with a wealth of beautiful hardy flowers and tree life, of great value to all horticulturalists, does not make the word "science" ridiculous by using it to justify narrow-minded and most unscientific exclusiveness.

**New and Rare Irises.**—The following Irises are now in flower in the Kew collection, viz., *Iris balkana*, a handsome species of the bearded section, bearing large flowers of a bright claret-purple colour; in habit and form of flower it resembles *I. Chamairis*; it is a native of Northern Thrace. *I. rubro-marginata* is also a new species, but very inferior in point of beauty to the preceding, though distinct in foliage, the leaves being bordered with a reddish-purple line, as its specific name implies; its flowers are about the size of *I. pumila*, but of a dull purple colour, and very fugitive. It is a very dwarf plant, not more than 5 in. in height, and is found in the neighbourhood of Scutari. *I. Rédoutéana*, although not new, is far from being common. Mr. Baker puts it as a variety of *I. lurida*, but it is a taller and more slender plant, and its flowers are very much darker in colour. *I. Douglasiana*, one of the bearded section, is also an uncommon plant, which has, however, much to recommend it; its foliage is very distinct, presenting, as it does, a ribbed surface; and the base, and also the flower-stalks, are tinted with a dark red colour; its blossoms are light purple, streaked with white, and very handsome. It is a native of California, and was introduced to gardens about five years ago by Messrs. Veitch.—A.

**Double Scarlet Geum.**—This Geum, which has been in existence for some years, is not nearly so often met with in gardens as it should be. It is perfectly hardy, easily increased by division of the root, thrives well in any good garden mould, and from early in April until the end of September established plants of it yield abundance of bright orange-scarlet double blossoms, which in a cut state are quite equal, or even superior to those of the double scarlet *Pelargonium*. They last in good condition for some time after being cut; and when it is considered that a good supply of them can be had with little or no trouble for six months in the year, no garden, however small, should, one would think, be without this plant. Good established roots of it lifted late in the autumn, and wintered in a house or pit, would, if kept close to the glass, and given plenty of air and water, and a little heat after Christmas, no doubt produce good flowering plants for the cool conservatory full of flower in February, or even earlier. We lately saw large beds of it in flower in the Hale Farm Nurseries, where they form an attractive feature.

**Plants in Flower in the Botanic Gardens at Glasnevin.**—Among many interesting plants in flower here, and noted during a hurried visit, are a very remarkable hybrid *Sarcocolla*, exactly intermediate between *S. flava* and *S. rubra*, and having large red flowers of singular beauty; *Eurya Gunniata*, a handsome evergreen bush in the open garden, with flowers like a showy *Michaelmas Daisy*; the Winter's Bark Tree; *Veronica Hulkeana*, very pretty against walls in the open air; *Crinum ornatum*, very large, and handsome, flowering since the beginning of May in borders in front of hothouses, and in a well-sheltered position; *Gypsophila cerastioides*, a gem of the genus, and a showy and neat Alpine plant from India; *Erigeron multiradiatum*, also a handsome dwarf Indian Alpine plant.

**Orchids at Chelsea.**—Amongst the many fine Orchids now in bloom in Messrs. Veitch's nursery we noted the largest-flowered variety of *Lælia purpurata* we have yet seen. Its petals and sepals are of ivory whiteness and of remarkable substance, and the lip is richly coloured. *Cattleya Mendellii*, in the same house, is blooming freely; its flowers are unusually large and gorgeous, having broad, imbricated petals of transparent whiteness, the lip being delicately tipped with violet. *C. Mossii aurea* is likewise very attractive, its rich golden-purple-tipped lip setting off to advantage its massive violet petals. *C. lobata*, too, a variety not often seen in flower, is here blooming freely, as is also a fine plant of *Vanda téres* growing round a thick stick, which it clothes with healthy green leaves. This Orchid is seldom seen flowering freely, but the one in question being

subjected to cool treatment, and kept dry at the roots during winter, now bears several spikes of curiously-formed, waxy, red and yellow-tipped blossoms. *Masdevallias* will soon be in full flower, as will also large plants of the rare *Vanda Parishii*. *Oncidium crispum* is furnished with masses of rich chocolate blossoms, one plant of it just coming into flower bearing six unusually strong spikes. A large-flowered and highly-coloured variety of *Vanda Fieldingii* is bearing long, drooping spikes of sweetly-scented blossoms, and *Aerides Veitchii* and *Saccolabium vittatum* are also at present equally attractive.

**A "Weeping Willow" for the Conservatory.**—*Grevillea Mangleyi*, now in flower in a cool house at Glasnevin, is even more graceful in habit than the Weeping Willow, the cord-like shoots falling vertically and densely, and the foliage being peculiar and graceful. It is a valuable plant for those having a large winter garden or conservatory. The flowers are very slender, of ivory whiteness, and produced towards the apex of the falling twigs.

**Caladium La Perle.**—One of the most distinct forms of this useful decorative plant which has come under our notice for some time may now be found in several of the principal London nurseries under this name. Its leaves, which are produced on stalks about 1½ ft. or 2 ft. long, are transparent, reminding one of silver tissue paper. They are traversed with light green veins, and are partially suffused with delicate pink or violet. Whether or not the plant will retain this character remains to be seen, but should such be the case this variety will assuredly stand in the foremost rank amongst *Caladiums*.

**Azaleas at Clapton.**—A fine display of Indian *Azaleas* may now be seen in Messrs. Lowe's nursery at Clapton. The plants, numbering some 60,000, are of home growth, and, as far as can be judged from appearance, they are superior to imported plants. It is only during the past few years that growing Indian *Azaleas* in quantity in England has been tried, but it is now found to succeed satisfactorily. The two kinds most largely grown in this nursery are the rose and white varieties of Bernard André.

**Seedling Pansies.**—We have received from Mr. Caudwell, of Wanage, blooms of seedling Pansies, all excellent in their way, and showing what, with a little attention, can be obtained by means of careful cross-breeding and selection. The blooms in question vary from cream-colour to crimson, and there are also many beautiful striped and blue kinds. A bed or border planted with such Pansies, irrespective of height or colour, would doubtless prove a continual source of interest.

**Hardy Plants in the College Gardens.**—Among interesting subjects now in flower in the College Botanic Gardens at Dublin are *Edwardsia grandiflora*, a very fine specimen on a wall, with numerous flowers; *Anemone palmata*, very fine as a border plant; *Iris susiana*, in fine flower in the open border; and *Rhododendron chamaecistus*. *Sparmannia africana* has survived the winter in the open air in this garden. The variegated New Zealand Flax thrives well in the borders, and *Selinum decipiens* is remarkable for its fine foliage, even among the many fine-folaged plants in the Order to which it belongs.

**Seedling Columbes.**—We noticed in Mr. Ware's nursery at Tottenham the other day some seedling Columbes, many of which are distinct and beautiful. Some of their flowers were of a delicate violet, others were cream-coloured, pale yellow, blue, and white; some being of large size and of fine form. No particular attention had been paid to cross fertilisation, but, nevertheless, some of them are quite equal to many named hybrids sometimes found in gardens.

**Double Striped Vesuvius.**—Sports from this *Pelargonium* seem to be endless. One of its sports striped with white has been named *New Life*, and another with a double scarlet flower has been called *Wonderful*. There are also single white and salmon sports from it, and now we have received from Mr. Knight, of Batle, a striped form of *Wonderful*, or it might be called a double *New Life*.

**The Flamingo Plant.**—There is now a fine display of various forms of the scarlet-spathed *Anthurium Sobczermanianum* in Messrs. Veitch's nursery at Chelsea. The variety called *Wardi*, a coloured plate of which was given in THE GARDEN (see p. 12), is conspicuous for its broad, brilliant scarlet spathes, and for growing in the form of large specimens it is doubtless the best variety; but, associated with it, are forms with smaller spathes, which are equally desirable for general decorative purposes, and their flowers, moreover, are much more eligible for cutting. A kind named *Palmeri* is a very desirable one, and makes a fine feature. Its spathes, which are produced in great abundance on long stalks, are much narrower than those of any other variety, and taper to a sharp point, many of them measuring from 4 in. to 6 in. in length. Associated with Palms and similar plants in one of the glass corridors, these *Anthuriums*, which are represented by plants of all sizes, are exceedingly effective.

## NOTES FROM KEW.

**Hardy Trees and Shrubs.**—*Jamesia americana*, from the Rocky Mountains, a Saxifragaceae shrub closely allied to *Hydrangea*, is now in flower; in a wild state it is a very rare and local plant, and was originally found on Alpine ridges in Colorado territory by Dr. James, the discoverer of *Rubus deliciosus*. The white blossoms, nearly  $\frac{1}{2}$  in. in diameter, are borne freely on terminal cymes. This species first produced flowers in this country in the collection of the Rev. H. N. Ellacombe. *Mespilus grandiflorus* is a fine little tree with glossy green leaves and large, pure white flowers; as a single specimen or to plant in the mixed shrubbery it is equally desirable. *Cytisus ramentaceus*, a native of Dalmatia, has hairy leaves and upright racemes of large yellow flowers; this is sometimes seen under the name of *Petteria ramentacea*. *Colletia spinosa* is a very peculiar South American member of the *Buckthorn* family, and the leaves are sometimes altogether suppressed; this much-branched, extremely spinose shrub is now covered with its bell-shaped, whitish flowers. *Kerria japonica*, or rather the double form of that plant, ought not to be passed by without notice; its numerous bright yellow blossoms show up well in the mixed shrubbery border. The leafless branches of the Judas Tree (*Cercis siliquastrum*) are now gay with thousands of small purple flowers; this tree attains a considerable size if allowed time and room. Many readers of THE GARDEN must be familiar with the fine avenue of this tree in the Paris Jardin des Plantes.

**Hardy Herbaceous Plants.**—Two distinct and well-marked forms of *Trollius asiaticus*, named respectively *Fortunei* and *japonicus*, are very fine; both have flowers of a somewhat deeper orange colour than those of the type. *Aethionum jucunda* is a rather rare and very handsome Crucifer; it forms a compact, cushion-like mass of pleasing, pale purplish flowers. *Iberis Tomerensis*, from Italy, is a very free-flowering and desirable plant, the blooms of which are at first white, though afterwards they gradually assume a purple tint. *Romanzovia unalascensis* requires little care; it is a pretty, low-growing annual with white flowers and light green round leaves. *Tiarella cordifolia* is a charming Saxifragaceae perennial with upright racemes of pure white flowers borne on scapes about 6 in. or 9 in. in height; this is found in a wild state from Canada to Virginia, and is prettier than perhaps any of the cultivated species of the allied genera *Mitella* and *Heuchera*. *Raoumouia pyrenaica*, a peculiar little Pyrenean herb, has rough leaves and a short scape bearing several purplish flowers. *Honstonia cœrulea* is a lovely little rock plant, which seems to do well at Kew; at any rate better specimens may be seen there than the one to which a cultural commendation was given at the Royal Horticultural Society's show of May 7. The lovely blue-blue flowers of this beautiful North American rock plant are produced in great profusion. *Cortusa Matthioli* and *C. pubens* are blooming side by side; the former has bright red flowers, whilst the latter has light rose-coloured ones. *Phlox divaricata*, a North American species with lavender-blue flowers, is a striking border plant; it was amongst the cut flowers exhibited by Mr. Elwes last week. *Craspedia Ritchei* is a very peculiar Australian Composite with Gnaphalium-like leaves, and flower-stems 1 ft. in height, crowned with dense, globular heads of yellow flowers. *Globularia trichosanthes* is a little Eastern species with heads of blue flowers. A most uncommon looking plant is *Mertensia maritima*, a native of the northern seacoasts of Britain; the pretty flowers, which are pink on opening, change to blue-purple, and contrast beautifully with the very glaucous, rather fleshy leaves; many a garden could be made bright with the British flora alone. *Euphorbia pilosa* var. *trigona*, carpa makes a fine show with its tall stems (3 ft. or more in height), surmounted by numerous heads of yellow-green bracts and flowers. *Iris balkana*, from Turkey, is a very charming species of dwarf habit, and has dull, claret-coloured flowers. *Polygonatum rosemum* is peculiar (in a genus where perhaps all the other species have white or whitish-green flowers) on account of its pretty little rose-coloured blossoms; it is a native of Siberia, and grows about 6 in. or 8 in. high. *Helonias bullata* is a North American bog plant, with a rosette of oblong leaves and a stout scape about 18 in. high terminated by a dense raceme of purplish flowers. The Californian *Calochortus elegans*, although not so handsome as some of its congeners, is well worth growing; the very hairy petals are white above and dark purple below. The Oriental *Ornithogalum latifolium*, with its large leaves and tall stout scape bearing a raceme of large, long-stalked, fine white flowers, is very showy.

**Greenhouse Plants.**—A most conspicuous and elegant plant for the decoration of the greenhouse and cool conservatory is the New Zealand *Veronica Huilkeana*; the large, much-branched panicles bear numberless flowers of a delicate mauve colour. *Gompholobium polymorphum superbum*, one of the most handsome of the Australian Leguminosae, has small leaves, borne on thin twining stems, and large, pea-shaped crimson flowers. *Boronia elatior* is a lovely species,

with small, pinnated leaves and drooping, bell-shaped, rosy-pink blossoms; this, as might be expected from its name, grows to a greater height than most of the other species of this very beautiful genus. *Viburnum plicatum*, although in reality a hardy shrub, flowers well in pots and makes an excellent greenhouse plant; it is a native of North China, and, like the *Gaulther Rose* (*V. Opulus*), has globular heads of snowy-white, neutral flowers; it differs, however, from *V. Opulus* in the oblong, plaited, serrated leaves. The short, dark green, Acanthus-like leaves and purplish flowers of *Grevillea acanthifolia* make an extremely pretty combination; this species is well worth growing, if only on account of its neat habit and handsome foliage. *Phylidrum glaberrimum*, recently introduced from the South Pacific by Mr. W. Bull, is a useful decorative plant; the leathery, dull green, sword-shaped leaves are about 2 ft. in length and 1 in. in breadth, and from the centres of the tufts of leaves spring the flower-stems, which overtop them by 1 ft.; the flowers on the erect panicle, as well as the bracts and panicle branches, are white, the anthers orange-red. *Orchis foliosa* is a lovely terrestrial Orchid from Madeira, which attains a height of 2 ft. or more; the noble, glossy green leaves set off beautifully the large spike of purple flowers. Altogether, this is a very striking plant. *Fabians imbricata*, with its Heath-like leaves and lovely, trumpet-shaped, pure white blossoms, is a charming Chilean shrub; this does well in the open air if a sufficiently sheltered position be chosen for it.

**Stove Plants.**—Foremost in rarity, and perhaps also in beauty, is the tropical African *Adenium speciosum*. This peculiar member of the Dogbane family has gouty stems and branches, and brilliant, rosy-crimson, Allamanda-like flowers. *Billbergia Middendorffiana*, from tropical America, though possessing flowers in themselves quite inconspicuous, makes a fine show; the lower half of the central leaves are a brilliant reddish-crimson, and amply compensate for lack of beauty in the flowers.

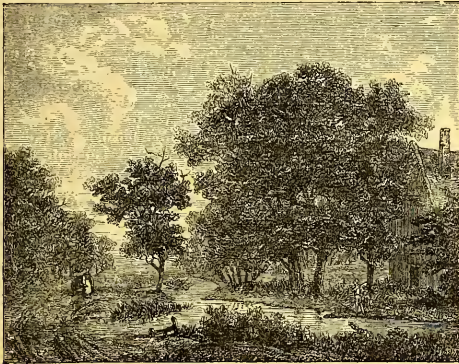
**Orchids.**—The North Indian *Cœlogyne ochracea* is a charming plant; the sweetly-scented flowers, which are borne in upright racemes, are pure white, with the exception of the lip, the lower half of which is orange-yellow. Similar in size and habit is *C. elegans*, but in this the orange is nearly suppressed. *Dendrobium cariniferum* has hairy stems and leaves and thick, wax-like flowers, whitish, except the lip, which is marked and lined with deep orange. *Madevalla coriacea*, from New Granada, has greenish flowers, spotted and lined with purple. Another New Granadian species, *M. Trochilus*, has a very tall, angled scape; the long, tawny-yellow tails and the dull reddish-brown of the remaining parts of the flower impart a peculiar aspect to this species. *Odontoglossum spectrum* is a very pleasing and showy plant, the flowers being of a uniform light yellow, copiously spotted and blotched with cinnamon-brown, and the lip being nicely fringed. †

**Caccinia glauca.**—I have no wish to refute the statement made by Mr. Thompson in THE GARDEN (see p. 274) in reference to this plant, as I suspect the description to have been drawn from a specimen in a depauperated condition; but if he could see it as now growing in the herbaceous ground at Kew, he would, I think, modify his remarks. It is apparently in a rich soil, and has made stems about 2 ft. in length, and rises to nearly the same height; moreover, the flowers are over 1 in. in diameter and last a long time in good condition; they are, as Mr. Thompson says, of a pinkish colour when first expanding, but they afterwards change to blue. This, together with the distinctive character of the foliage, which is very glaucous and beset with short prickles, renders it a really handsome plant quite equal to any of the *Borage* family at present in flower.—A.

**Continuous Blooming of Bougainvilleas.**—I have read with interest the remarks of "Chet" (see p. 79) and of "J. S. W." (see p. 446) concerning the blooming of *Bougainvilleas*, and I wish to ask whether spectabilis was found to bloom as freely as glabra under the same treatment. I have found the treatment recommended to suit glabra admirably, but not spectabilis. That variety flowers on the previous year's growth, while glabra flowers on that of the current year; therefore the more vigorous the growth, the more abundant the bloom. I have seen spectabilis grown in various ways and under various kinds of treatment, but the way under which I have seen it flower best is where the roots were restricted in an intermediate house fully exposed to the sun, and where it was pruned as one does a Peach tree. The roots were never allowed to get very dry at any time. I saw lately the best bloomed plants of this variety that it has ever been my good fortune to see. They were growing in a small stove with little or no fire heat, and they were one mass of bloom. They had been grown in the same sized pots for these last ten years, with a little top-dressing now and then when the roots got washed bare. These never got pruned, but were allowed to grow at will, the longest shoots being not more than 15 in. in length when the growth was completed. W. W., Eaglehurst.

## LANDSCAPE BY HOBBEEMA.

Any one who has visited Grenoble, in its fair valley, hemmed in by snow-capped Alps, and examined its museum, will at once recognise in this print a friend that only needs to be seen to be admired. Hobbema, a Dutchman, born about 1629, and brought up amid the flat expanse of Holland's ditch-divided plains at a time when Dutch art was at its best, learnt from his master, Solomon Ruysdael, to seek always for pictorial effect in carefully arranged masses of light, and shade, and sunny atmospheres rather than in bold mountainous outlines unknown to him in his own country. With a Dutchman's characteristic love of home, yet with a true artist's spirit, he has known how to paint his own country's quiet landscapes when seen to the greatest advantage. From the first, Hobbema rose to notice through the truth and beauty of his skies and clouds, which are best seen in a flat country, such as



Landscape by Hobbema.

Holland; and that, combined with his fidelity to his subject, has given him a fame that is green and fresh even after the lapse of two centuries. E. H. W.

**Training Clematises.**—When Clematises are grown for covering large spaces on walls or any unsightly objects, the wood should be well thinned out at the winter pruning, the healthy vigorous shoots only being retained, which should be securely fastened at regular intervals apart, and as the young growth progresses, which it will do rapidly in April and May, it should be trained carefully over the space to be covered until the plants commence to flower, when they should be allowed to grow as they please; but if allowed to do so at first, the shoots become so entwined as to form a tangled mass, from which it is impossible again to separate them without breaking; and as they mostly flower at the extremities of the current year's growth, great care should be taken to retain them intact, or the quantity of flower will be greatly diminished.—J. G.

**Chestnut Hybrid Tea Rose.**—"R. H. P." asked (see p. 454) for names of Roses suitable for a north-east porch. I do not see included in the list given him the Chestnut Hybrid. In my garden on a wall where all the other Tea-scented sorts and Noisettes (including Gloire de Dijon) show but too plainly the severity of our March frosts, the Chestnut Hybrid is covered with vigorous blossom buds, the foliage is good, and there is no sign of aphid or leaf-roller, a good proof that the vascular system of the plant is uninjured. This Rose is not, in my opinion, appreciated as it deserves. Perhaps the attempts of growers to push it into the front rank as an exhibition Rose have placed it under a cloud, where its true merits are obscured. I look forward to the time when, in company with that universal favourite Gloire de Dijon, it will be one of the chief ornaments of walls and gardens throughout the land.—P. *Frome*.

**Papaver umbrosum.**—This is a strikingly brilliant plant, which takes up and perpetuates the waning glory of Anemone fulgens. Plants of it raised from seeds sown last spring are now in flower here, and are decidedly the most brilliant blooms in a garden full of blossom.—H. M., *Bromsgrove*.

## THE FLOWER GARDEN.

## LOBELIA PUMILA GRANDIFLORA AND VIOLA BLUE PERFECTION.

SINCE the introduction of *Lobelia pumila*, a few years ago, its popularity has become universal, and, grown in suitable soils, it is a perfect gem; but, unfortunately, its beauty is comparatively short-lived. From its early habit of flowering and sturdy, compact growth, it is necessarily a favourite wherever an early display is required; its demise, therefore, so early in the season detracts from its general utility, and doubtless militates against its popularity with those who do not take proper steps to prolong its season of flowering, or who do not endeavour to find a suitable substitute for it. The *Viola Blue Perfection* is the plant of all others for this purpose, and is especially adapted to low-lying, damp localities for autumn flowering. In order to be successful, there ought, however, to be something like concert in relation to the time and mode of propagating the two sets of plants. The best way in which to secure a stock of *Lobelia pumila* is by cutting a few of the old plants down early in autumn before they have exhausted themselves with flowering; or, what is still better, to keep a few plants in reserve, either in pots or boxes, behind a north wall, or some partially shaded place, where there would be less tendency to flowering than if they were kept in an open situation. The pots or boxes should be filled with 1 in. or 2 in. of any rough material, such as the riddings of leaf-mould, immediately over the crocks, filling up the remainder with any light rich soil that can best be spared, the object being to produce a non-flowering state of growth, a condition to be recommended in all cases for stock plants. Towards the middle of September the plants will require a shift to a more exposed situation, in order to harden them before winter weather sets in; and they should be housed early in some airy position barely affording protection from frost. This *Lobelia* is very impatient of much moisture during the short, dull days of winter, and it succeeds best on a shelf, near the glass, in a warm greenhouse, where it can get plenty of air and light. In starting the plants in spring the change to a warmer climate should be brought about gradually, avoiding a saturated atmosphere till the plants are in a free-growing state; after that, heat and moisture are conditions essential to their health and well-being.

This *Lobelia* is propagated by division or by cuttings, if any one likes to take that trouble. If there be a good stock in hand propagating may be deferred till late in March, as plants raised earlier in the season are likely to come into flower before the proper time; indeed, before other subjects furnish anything like a combined effect. Where the stock is limited, or where large quantities are required, there is, of course, no other alternative than to begin propagating early, in which case the best plan to adopt is to keep pulling the first batches to pieces, and to continue the practice in rotation to the end of the propagating season. A short time ago we pulled our earliest batch to pieces and re-planted the detached portions in boxes, removing all flowering points at the same time. This improves the vigour of the plants and prolongs their season of flowering fully a fortnight later than would otherwise be the case. The chief aim in the cultivation of this *Lobelia* should be to avoid premature flowering according to the time when a display is expected, making allowance for climate and locality. Another good way of prolonging the flowering season is to cut the plants over with a pair of hedge shears early in August. When that can be done they invariably break away and flower profusely a second time, but no plan equals that of having a stock of the *Blue Perfection Viola* at hand to plant out on the first favourable opportunity after the *Lobelias* are past their best.

The *Violas* are easily propagated, and are unsurpassed as autumn-flowering plants. They luxuriate in a moist climate if the soil be not of a too tenacious character, but they require somewhat special treatment to come in as a succession to the *Lobelias*. They may be readily propagated out-of-doors with the assistance of a glass frame or hand-light early in July. The cuttings should be inserted in a mixture of leaf-mould and sand, run through a fine riddle, and kept moist by means of a fine-rosed watering-pot or syringe. When the cuttings are

well rooted, choose a cloudy moist day for planting them out on a sheltered dry border for the winter; they may remain till the following April or beginning of May, when means should be taken to keep them from flowering before they are required in August. This is done by removing them to a north or west aspect, and planting them out in leaf-mould only, in order that they will lift with good balls, and receive no check in the course of being transferred to their autumn quarters. The point of each plant should also be pinched out, and by the time they are required to take the place of the *Lobelias* they will be well furnished and coming into full flower.

W. HINDS.

### SUMMER FLOWER GARDENING.

The latter part of May and the early part of June is always a busy time in flower gardens. Bedding-out, as it is termed, then requires full attention, and, previous to beginning to plant, every thing should be in readiness, in order that the work may be done quickly when it is started and under favourable weather. It is always a safe plan to have the soil for bedding plants moderately rich and firm in the beds. For this purpose we never use cow manure, but the Grass which we are now cutting in the pleasure grounds is all thrown into a heap, and in autumn is mixed with its own bulk of leaves, and in February or March it is dug into the flower beds. This is found to be an excellent manure for all kinds of bedding plants. When it is dug in the beds should be left in a rough state, unless they have been filled with spring flowers, when the manure must be dug in immediately before the beds are filled with their summer occupants. In that case the surface may be made fine and ready for planting at once. Most people will, of course, please themselves as regards the way in which they make their beds, but in my opinion raised hillocks of soil are much more unsightly than flat surfaces. All the hardiest plants should be planted out first. *Calceolarias* may safely be put out the first week in May, and so may *Pyrethrums*, *Carnations*, and all kinds of plants not required to be grown in a strong heat in spring. Before any of the plants are put in the beds, however, each bed in the design should be roughly traced out on paper, and the position which each plant is to occupy should be marked on it. This obviates confusion at planting time, and in the case of some plants being put out before the others, such as a row of *Pyrethrum* round one bed and a centre of *Calceolarias* in another, they can always be planted in their proper places, and the right distances left to fill in with other plants. A plan thus prepared to work by is a great help at bedding-out time, but it is of still greater assistance in autumn, when the numbers of each plant required can be recorded. Where there are only a few beds to fill and plenty to put in them, people can indulge in putting the plants in close enough for immediate effect, but in large gardens this can seldom be done. When plants are put in widely apart the soil in which they are planted should always be rich, because when they begin to grow they soon fill the beds; on the other hand, when they are put in closely together, the soil should be rather poor, or the plants soon become a disorderly mass. *Calceolarias*, *Pelargoniums*, *Verbenas*, and plants of that kind may be planted from 8 in. to 1 ft. apart in ordinary soils. For present effect, some plant as close again as this, but the result in the end is not more satisfactory than in the case of wide planting. *Alternantheras*, *Iresines*, and all dwarf carpet bedding plants should be put in from 3 in. to 4 in. apart. A moderately rich soil suits these plants much better than an excessively rich one; both growth and colour are more refined in the former than in the latter. All kinds of succulents of the half tender type should nearly touch each other when first planted together in beds. The hardy or Alpine sorts may be allowed space according to their habit of growth, but none of them should be planted too wide, as few of them, except creepers, will extend very far in one summer; and to see more space bare than is covered with plants is not desirable.

The most important matter connected with bedding out, however, has yet to be named, and that is, hardening off the plants. I know from experience that this is often more difficult than raising or planting them out. In many places there is no scarcity of accommodation for bedding plants in early Vineries,

Peach houses, &c., in February and March, but it is bringing them from these warm houses to the open beds in May without injury that requires study. Light deal frames with glass sashes are the proper places in which to harden them off, but few indeed have enough of these to meet their requirements. Many temporary erections can be put together, such as screens, but when these cannot be depended on to ward off 5° or 6° of frost and cold winds, the plants should not be placed in them until, say, the 1st of May. Previous to this they must be kept in the coolest house available. Our plan is to grow every plant as rapidly as possible up to the first week in April, and then to begin to harden off as gradually and as quickly as circumstances will permit. It is, however, wrong to do this too quickly, especially if the plants have been grown in a strong heat previously. Some plants may not seem to suffer much from a sharp change such as this, but it does check them, and they often show it even after midsummer. In our own case we always harden off as soon as the plants are large enough. Our earliest spring-rooted *Coleuses*, *Iresines*, *Verbenas*, &c., have been out in the open air since May 1, and they look now in the best of health. After working the lights off and on them in frames for three weeks, they were turned out between the Raspberry rows, which are 6 ft. apart and about the same in height. They are completely sheltered from the wind here, and at the same time they are fully exposed to the sun during the best part of the day—conditions exactly what they require, as sunshine is the best of all hardening agents. Plants set under the shade and shelter of trees and walls never get properly hardened off, and when they are kept there, until they are taken straight to the beds and planted they suffer about as severely as planting them direct from under glass. Showery weather is a fortunate occurrence during bedding-out time; the labour which it saves is very great, and the advantage which it confers in starting the plants freely into growth at first is no small advantage at the beginning of a hot summer. When the ground is so wet as to stick to the feet boards should be used in planting. As each bed is planted the Dutch hoe should be run carefully between the plants, leaving the surface neat, level, and free from large stones. This should be done whether the soil be wet or dry. When the plants have to be turned out during dry weather, they should be thoroughly watered two or three days after planting; one good watering at that time will do more good than damping the surface every day for two months. Tender plants of a sub-tropical character should be planted last, and careful and gradual hardening off is especially necessary in their case, as a check to them at first often makes them unsightly during the whole season. Surplus plants of all kinds should never be thrown away when a spare corner can be found in which to plant them, for they produce cuttings in autumn and save the bedding plants, which is no small consideration, as many flower gardens are much disfigured by half of the plants being out away for cuttings just when they are at their best.

CAMBRIAN.

### NOTE ON A NEW RHUBARB.

From a note by Professor Baillon in the Monthly Bulletin of the Linnean Society of Paris, we learn that M. Colin, pharmaceutical chemist at Verdun, the author of a creditable "Thèse" on Rhubarbs, received some time since (as stated by Professor Baillon in the "Dict. Encyclop." (3, iv., 428), from Mgr. Chanvean, the plant which the latter considered to be the source of true Chinese Rhubarb. This plant has now flowered, and from an examination of a specimen forwarded by M. Colin, Baillon is of opinion that the species is *R. hybridum*, of which, however, it must be considered a variety characterized by more elongated leaves that are also more acute at the apex and more irregularly out at the margin. The flowers are small and white, often male, and constructed nearly as those of *R. hybridum*. A piece of the root presents the characters of a very good Rhubarb, analogous to that of *R. officinale*. The author proposes to call the plant *R. hybridum Colinianum*. This further tends to corroborate the opinion already expressed by the author that the origin of the good kinds of Chinese Rhubarb is multiple. Thus we have *R. hybridum Colinianum* and *R. officinale*, from the latter of which he has seen Rhubarb of very good quality in Parisian commerce, whilst Prejevalsky states that *R. palmatum* undoubtedly affords the excellent Rhubarb of Thibet. The author insists on the influence exercised

on the quality of the drug by the method of collection, the season when this is made, probably also the process of drying, &c. He adds that it is also necessary to take into consideration the part of the plant which constitutes the drug, as this determines its histological characters. A Rhubarb furnished by the stem or a part very close to the stem will differ from one obtained from the root. In R. officinale, for instance, where the aerial stem and its subterranean portion takes on a great development relatively to the root, he has found that the latter part may also acquire a considerable development, and that portions taken from it, and which would be naturally employed in commerce, present very considerable differences from those shown in the stem, and, indeed, have scarcely any of the characters there found and considered essential in a Rhubarb of the best quality.—“Pharmaceutical Journal.”

### NEW DWARF CANDYTUFTS.

THESE are in reality very dwarf tufted-growing and highly floriferous forms of *Iberis umbellata*. The following are the descriptions of them printed in the Report on Annuals grown at Chiswick in 1877, and published in the “Journal of the Royal Horticultural Society” (v. 42):—

“*I. umbellata nana rosea*.—Height, 9 in.; umbels very large and flat; petals broad, white, tinged with rosy-pink. A novel and very effective variety.”

“*I. umbellata nana alba*.—Height, 9 in.; umbels large; the petals broad, pure white. A very showy, distinct, and splendid variety.”

These were the only two certificated out of fifteen kinds of Candy-tuft grown for trial, their superiority being so distinctly apparent.



Dwarf Hybrid Candytuft.

Being hardy, free-blooming annuals, as suitable for the smallest as for the largest gardens, we have no doubt they will become highly popular, as they deserve to be. The plants branch from the very base, forming a corymbose tuft of branches only a few inches high, each branch being tipped by one of the showy broad-petalled umbellate flower-heads. The white is valuable for its density of growth and purity of colour; the rose-tinted one for its novel and beautiful colour in addition to its dwarf tufted growth. Our descriptive notes run thus:—

*I. umbellata nana rosea*.—Height 9 in. to 10 in., densely branched, forming a flat head of numerous corymbs of flowers; branches stout, erect, crowded, each bearing a succession of flower-heads; leaves alternate, linear, lanceolate, with a depressed central rib; flowers in dense, flat, corymbose heads, the individual blossoms large, unequal-petaled as in the type, of a beautiful soft rosy-pink. Quite a new colour amongst the annual Candytufts, and very chaste and pleasing.

*I. umbellata nana alba*.—Habit, stature, and general character as in the former; flowers and flower-heads large, pure white, very showy. A really useful acquisition.—“Florist.”

*Iberis gibraltaria*.—Allow me to direct attention to the tender and delicate beauty of this *Iberis*. Cuttings of it taken last summer are now each crowned with a beautiful head of bloom, in colour soft rosy-lilac, fading off to white at the edge. Unfortunately, the frosts in March killed my original plant, which covered a considerable area of rockery. Perhaps this *Iberis* is not perfectly hardy.—H. M., Bromsgrove.

## THE INDOOR GARDEN.

### ACHIMENES AND THEIR CULTURE.

AMONGST the many forms of Gesneraceous plants there are none more generally useful for decorative purposes than the Achimenes, as with ordinary management, and the aid of a little artificial heat at starting, they may be grown and flowered in any warm greenhouse with the greatest success. To amateurs, therefore, who have only a limited amount of room, and who wish to make the best display of which their means at command will admit, Achimenes are just the plants, as not only are they very showy, but, as they die down at the end of the season, they may be stowed away during the winter, and thus afford room for other plants to occupy their places. This is a great consideration, for in a general way plants when they have done blooming, get so maltreated that they are of little use afterwards, but with such as go to rest naturally and require no further attention till the time of starting them again arrives there is no danger of this, as they may be left to themselves. The only care requisite with Achimenes is to see that they are properly ripened during the autumn after their tubers are fully formed, and the way to get them in this desirable condition is, when their flowers fade, to stand them in any cold pit or frame where they can be kept close and syringed or watered overhead occasionally, so as to maintain their foliage fresh and healthy as long as possible. The mistake many make with these plants is in drying them off too rapidly, and when this occurs the tubers shrink away or rot; if they do not do this, they never possess that amount of strength or produce such fine plants as they otherwise would. The best place to store them is in a warm house or shed, where they can be stowed free from drip or moisture, as the soil must be perfectly dry to insure their safety; and not only this, but it is necessary that they should be left in that in which they grew, as in no other way do they winter so well. I have tried them repeatedly in sand, but never found it satisfactory, and now always leave them intact in the pots, where I find them in first-rate order when spring comes round.

Those who have not the good fortune to have a stock of these most useful plants will find the present a good time to procure them, as they may now be packed in a small compass and easily sent by post or rail. The following dozen are among the best and most distinct and are sure to please:—*Adelaide*, *Delahorte*, *Aurora*, *Eclipse*, *Excelsior*, *Gibsoni*, *longiflora*, *longiflora alba*, *Harry Williams*, *Mauve Queen*, *Meteor*, *rosea magnifica*, *Stella*, and *Williamsi*. To make a good mass in a 6-in. or 8-in. pot requires from seven to twelve tubers, according to the strength of the variety grown, and whether it be naturally of a branching habit or otherwise; but as most of them admit of being trained well out, the latter number will not be too many. The best way to grow them is to start them in pots about three parts filled, and as they get a few inches high, gradually add more soil, in which they soon form surface roots, and start away with great freedom. Being exceedingly fond of water, after they get well established, free drainage should be provided by using plenty of crocks, and over these some half-decomposed leaves or coarse peat, that the interstices may be kept open and clear, for although they are moisture-loving subjects, anything approaching a wet, sour condition is inimical to their welfare. For growing them in, nothing suits them better than about three parts leaf-mould or refuse peat to one of loam, a mixture in which, with a little sand added, they will revel and increase at a rapid rate by forming a great number of tubers. A common hotbed or any forcing house where a genial, moist atmosphere is kept up answers well to start them, but wherever placed they must be shaded, and if stowed where they can get this naturally without the light being obstructed, they will come much shorter jointed and be all the stronger for the fuller exposure. In summer, when the light is more intense and the sun bears greater power, an ordinary frame or pit, where they can have a thin mat thrown over them, will be found to answer admirably, as then they may be closed early and the floor kept damp by heavy syringing, which is just what they like and require to keep them in good health and full vigour.

Besides being so serviceable for pot culture, Achimenes are even more ornamental grown in light wire baskets and sus-

pended from the roof, in which way they show off their beauty to the greatest advantage. When required for this kind of work they should be started first, and the baskets prepared to receive them, by being coated with Moss inside, and then filled with rough peaty soil, in which the plants may be distributed and either pegged or tied, so as to regulate them and give them the requisite support. In pots, sticks are necessary for this; the neatest and best for which purpose are the small twigs from the Privet. These, being of the same colour as the stems of the Achimenes, are not observed, which is a great thing in their favour, as nothing detracts so much from the beauty of any plant as to see it studded all over with skewers, like a porcupine's back. In cases where it is desired to add to the stock of any kind that might be scarce and dear, it may readily be done by means of cuttings about 3 in. long made from the tips of the shoots. These should be put in in close, moist heat, where they will root in less than a fortnight, and make strong-flowering plants in a month or two. Those from which they are taken will soon break again, and be little the worse for the loss. S. D.

#### NOTES AND QUESTIONS ON THE INDOOR GARDEN.

**Selaginella denticulata for Bordering Shelves.**—I was greatly struck by the appearance of this Club Moss, a few weeks ago, in a conservatory where it was planted on the extreme edges of the benches or shelves. In my estimation a more graceful and pretty plant could not be found for the purpose. It was about 3 in. wide, and hung quite 6 in. below the bench on which it was planted, while at every 3 ft. apart were placed plants of *Panicum variegatum* and *Tradescantia zebrina* alternately. All three are common old plants, but are far too useful, I think, to be allowed to die out. Anyone having a few *Selaginellas* will be amply repaid in a few weeks' time if they will stick a few pieces of it around the edges of their house shelves. It is a rapid-growing plant, and when, so to speak, it gets shabby, it only wants cutting close in, when it will break out again thicker and greener than ever. I put in a thin layer around the centre bed of a Fernery a fortnight ago, and I am pleased to say that it is forming already quite an attractive border.—J. PERKS, Worcester.

**Shading for Houses.**—Properly-constructed and serviceable blinds are expensive, and exterior contrivances of this kind are of little value unless they can be secured from damage from wind, &c. The old practice of whitewashing a roof is useful, but it has a glaring and ghastly appearance under bright sunlight; and it is in violent contrast with the foliage about it. For something like 150 superficial feet of glass a good mixture can be made of  $\frac{3}{4}$  lb. of Brunswick Green and 3 lb. of size; the latter should be boiled, in order to melt it, then the two should be mixed together, and diluted when wanted. If this be laid on carefully in spring, it will last all through the summer. It is particularly recommended for a cool-house, or for a Fernery.—D.

**Renovating an Old Marechal Niel Rose.**—About six or seven years ago I planted a Marechal Niel Rose at the back of a new Viney; it was a young plant, budded the previous year on a Brier stem about 2 ft. high. It grew famously, and for several years produced an abundance of its fine golden blossoms in March and April. About eighteen months ago I noticed all round the point where the bud had been inserted the bark cracked and contorted, and evidently in a most unsound condition; the health of the plant, too, was falling off, as evinced by the weakly growth and smaller flowers. Well, I had a wooden case made 12 in. square to enclose the stem on three sides, and secured to the wall by a halfpenny on each side. The box or case was long enough to reach from the ground to a point 6 in. above the junction of the bud and stock, enclosing that part completely. When finished the box was filled with rich, turfy soil, and kept moist; this was done about a year ago, and I find the box is now nearly full of healthy roots, that have pushed out from the part which appeared so unsound at the point of union. The plant also is pushing strong young shoots, and appears to have taken a new lease of life. The remedy is simple and easily applied; and this Rose, on both the Brier and Manetti, after two or three years is very apt to become unhealthy and ultimately die, from a cause to which may be attributed an imperfect union or some incompatibility of the stock to supply so strong-growing a Rose. I have previously seen with dwarfs on both Brier and Manetti, by top-dressing annually, I could draw out a new stock of roots from a higher point up the stem, and the plants seem to benefit from this annual renewal, as it were.—E. HOBDAY.

#### TANGLED THICKETS.

The æsthetic mind is influenced by very various types of beauty. Now we are pleased with grace, elegance, finish in form, refinement in colour; now by sombre hues and rugged boldness of outline. Whilst we admire the "meadows trim with Daisies pied," the stately Oak or specimen Conifer, and the wondrous sheets of blue and green in our coppices, now filled with Dog's Mercury and wild Hyacinths, we may yet retain a thorough admiration for the less striking colours and less regular features of the tangled thicket. Some of the most graceful and altogether most charming combinations of native plants ever seen are those in these same tangled thickets. The Honey-suckle clambering over the wild Rose, waterside Willows half smothered in white Convolvulus and purple Bittersweet, or such a mass of Brambles and Bracken, as that in our engraving from the woods of Meudon. The lovely forest queen, the silver-rinded Birch, under whose shade the thicket grows, is perhaps the best tree for such a purpose, owing to its irregular outline and the scant shade of its green waterfall of leaves, which allows most herbaceous plants to grow beneath it. Foxgloves, double Gorse, or Broom look well in such a situation, while Heather and Harebells enjoy a sandy soil as much as the Birch itself. The beauty of the double pink Bramble, and of several foreign species, is not half recognised at present, nor is the autumnal value of the berries, ranging from green through reds to black, or, in the Dewberry, "Shining, dim powdered with a downy blue." Three plants could hardly be found with a finer contrast in outline and colour of foliage than the Birch, the Bramble, and the Brake. If the bright green of the graceful Fern is not sufficient relief to the sombre leaf of the Bramble, there is the added light of the silver stems, and nothing can excel the tints of Bracken in autumn. The beauty of the combination is seen in all its natural glow in Miss Alice Havers' "September," in the Royal Academy exhibition. When every large establishment has its wild garden, we shall hope to enjoy near home the charms of many a tangled thicket. G. S. BOULGER.

**Out-door Propagation of Chrysanthemums.**—I am probably not the first to try cuttings of the *Chrysanthemum* in the open air without protection from the winter's cold. Nevertheless, there may be among your readers some who will be interested in the experiment, and would like to know the result. Those sorts only were tried which happened to offer the greatest number of cuttings. They are *Astrea*, *Eve*, *Guernsey*, *Nugget*, *Lord Derby*, *Mrs. Sharpe*, *Princess of Teck*, *Queen of England*, and *Golden Queen of England*. No hand-glass or covering of any kind has been used to protect them, and their locality is that of a well-sheltered border, which, owing to the presence of some buildings on its eastern side, the sun's rays do not reach till about the beginning of March, and which is always in shadow after mid-day. Nearly all are growing vigorously, and one or two look as if they intended to outstrip all that I have raised in the usual way. Most of them were put in during the months of January and February. I find late spring cuttings of *Pelargoniums* to strike readily in this border.—B. S., Uppingham.

**Buffalo Horn Manure.**—This is simply the very fine shavings and scrapings from the manufacture of horns. It is of extremely light composition, one bushel weighing about 30 lb., and has somewhat the appearance of chopped Lichen. It was in due course tried and tested in various ways, in comparison with ordinary stable manure, guano, some patent chemical manures, &c. 1. By admixture with the soil for the potting of plants, and for planting; also as a top-dressing. 2. As a top-dressing by itself. The subjects operated upon were Vines planted out—Vines in pots; Peaches and other fruit trees in pots; Fuchsias, *Pelargoniums*, &c.; each of these subjects being treated in a corresponding manner with the other manures. The soil used in each case was the same—a pure, sandy loam, totally devoid of organic matters, and so wretchedly poor that those plants treated without any of the manures scarcely grew at all. The results as to growth in each example treated with this manure were eminently satisfactory, the plants soon assuming a very deep green hue of foliage, and growing most luxuriantly; more marked than in either of the others. Where used as top-dressing, also, the roots very soon permeated through, and grew most luxuriantly. In my opinion—after two seasons' trial of this manure—I consider it to be one of the most efficient, easy of application, and certain in its results.—A. F. BARRON, in "Journal of the Royal Horticultural Society."

A TANGLED THicket: BIRCH, BRAMBLES, AND BRACKEN.



## GARDEN BOTANY.

(Continued from p. 441.)

CLASSIFICATION OF DIVIDED SIMPLE LEAVES.—The remarks on the venation of leaves will help us here, as the lobing of the leaves follows the same type as the venation, and there are palmately and pinnately-lobed leaves. When the lobes radiate from the apex of the petiole, as in fig. 147, the leaf is palmately lobed; and when they diverge from the midrib the leaf is pinnately divided (fig. 148). Each of these two types of lobing present different degrees, but we need only recognise

Fig. 147.—Palmately lobed, simple leaf of *Abutilon venosum*.

two of each type. When the lobing is not below the middle the affix *fid* is used, when below the middle the affix *partite*. Thus the leaves when divided, as in figs. 149 and 150, are termed palmatifid, and palmatifid when more deeply cut, as in figs. 147 and 151. The pinnately-divided series exhibit the same modifications (figs. 152 and 153). The divisions of cut leaves are called lobes or segments, and these may be entire or toothed, or again lobed. In *Echinops sphaerocephalus* (fig. 148) the leaf is pinnatifid and the lobes pinnatifid; but, in order to avoid circumlocution, the leaf might with propriety

Fig. 148.—Pinnately lobed simple leaf of *Echinops sphaerocephalus*.Fig. 149.—Palmatifid leaf of *Sterculia platyfolia*.

be termed bipinnatifid or twice pinnatifid. Division is sometimes carried to the third or more ramifications, as in the Parsley and Camomile families, and then the prefixes *tri* or *multi* are used, and the outline of the entire leaf and the ultimate segments described. It may be well to remind the reader again that many botanists call these deeply-divided leaves compound, whether the segments are jointed to the petiole or midrib, or continuous; but, in so doing, it seems to us the only valid distinction is sacrificed without any counterbalancing advantage.

CLASSIFICATION OF COMPOUND LEAVES.—These are of two types, the digitate (figs. 154 and 155), and the pinnate (figs. 156 and 157). The separate parts are called leaflets, and they are either sessile or stalked (petiolulate), but usually very shortly. In strictly compound leaves the leaflets are distinctly jointed

Fig. 150.—Palmatifid leaf of *Lavatera arborea*.

or articulated to the petiole or its ramifications. The ramifications of the petiole are termed primary rachis, secondary rachis, &c. Leaves of the digitate type vary principally in the number of leaflets. A very common number is three, as in Clover (fig. 154) and many other members of the same family; such leaves are called trifoliate. The genus *Oxalis* offers a familiar example of this type of leaf. Occasionally there are only two leaflets (binate), and in many of the Orange tribe the leaf is reduced to one leaflet, which is distinctly articulated to the top of the petiole. The Horse Chestnut (fig. 155) usually has seven leaflets, and some of the Araliaceae even more. In *Epimedium alpinum*, &c., the leaves are twice or thrice divided in a ternate manner, that is, in triple ramifications, the ultimate branches (rachises) bearing each three leaflets on long petiolules. The Meadow Rue (*Thalictrum flavum*) has a compound leaf of the digitate type. The pinnate pattern presents more numerous modifications; and is pinnate, as in the Roses, bipinnate in *Casalpinia*, *Acacia*, *Mimosa* (figs. 156 and 157), and *Gleditschia*, and tripinnate in *Aralia spinosa*, according to the number of branchings. At first sight, the leaflets of some of the compound leaves, especially of the very large ones, might be mistaken for leaves;

Fig. 151.—Palmatifid leaf of *Potentilla reaca*.Fig. 152.—Pinnatifid leaf of *Scolymus hispanicus*.

but the absence of buds at their bases indicates their true nature. The ultimate branches which bear the leaflets are called, leaflets inclusive, pinnae, and the usual number of pinnae is mentioned in descriptions. In *Mimosa pudica* (fig. 157)

there are only two pinnae to each leaf, whilst in *Acacia* (fig. 156) they are quite numerous. The approximate number of leaflets on each pinna should also be noted, and this is expressed by *uni*, *bi*, *tri*, or *multi*-jugate, according as there are one, two, three, or many pairs of leaflets, or by the number of leaflets in figures. Another thing to observe is the odd or even number of leaflets on each pinna; when there is an odd terminal one, as in *Rose* leaves, the leaves are termed *unequally pinnate*; when there is no odd leaflet, equally pinnate.

**DIFFERENT KINDS OF LEAF ON THE SAME PLANT.**—The prevailing rule is that the leaves of a plant are very much alike, or present no remarkable differences from each other; but

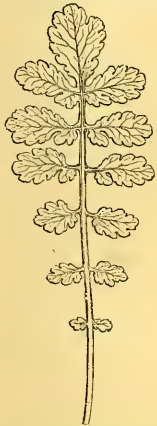


Fig. 153.—Pinnatifid leaf of *Chelidonium majus*.



Fig. 154.—*Trifolium pratense*; an example of a plant having trifoliate leaves.

there are several noteworthy exceptions to this general condition of things. For example, the first leaves of seedling plants above the cotyledons are frequently very unlike those which follow, or are characteristic of the adult plant; in other plants the leaves on flowering and barren branches are very dissimilar;

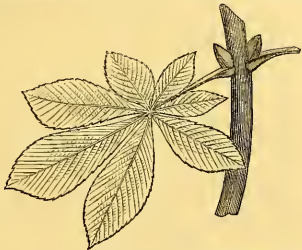


Fig. 155.—Digitate leaf of Horse Chestnut.

the root-leaves and stem-leaves of herbaceous plants are commonly different; and, finally, there are plants which almost invariably bear two distinct types of leaf.

**DISSIMILAR CAULINE AND RADICAL LEAVES.**—The leaves borne around the crown of the root at the base of the stem are termed radical leaves or root-leaves, in contradistinction to cauline leaves, or those scattered on the stem. It is useful to make this distinction, because the radical leaves often differ materially from the cauline, usually in being more highly developed. Frequently the cauline are sessile and the radical petioled, one set entire and the other lobed. The Hare-bell (*Campanula rotundifolia*) is a good illustration of this peculiarity. When this plant is in flower, we usually find only the

long, narrow, sessile, cauline leaves, and we may be pardoned for believing that the specific name is an inappropriate one; but the radical leaves, which soon decay and often disappear, have long petioles and a roundish blade. Another instance—the Fiddle-leaved Dock (*Rumex pulcher*), which has the first



Fig. 156.—*Acacia grandiflora*; leaves bipinnate.

radical leaves constricted in the middle and somewhat fiddle-shaped, and the upper ones oblong without any constriction.

**VARIATION IN THE LEAVES OF THE SAME SPECIES.**—Although the leaves of trees and shrubs rarely deviate from their normal form, it sometimes happens that a branch here and there will put forth leaves of a totally different shape or colour, and the same thing often occurs in a batch of seedlings from the same parent. As a rule, these varieties or sports can only be propagated by asexual means—that is, grafting or budding, or



Fig. 157.—*Mimosa pudica*; leaves bipinnate.

from cuttings—though varieties of this kind become fixed in time. One of the most remarkable instances of variation in the foliage of different individuals of the same species is afforded by *Karivia umbellata*, an Indian Cucurbitaceous plant.

W. B. HEMSLEY.

**Violas.**—Let me recommend Dickson's *Viola multiflora* as an excellent *Viola*, of a colour as rare as it is beautiful. I would also recommend for an effective bed *Viola* Sir Walter Scott (Perfection or Blue Bell will do almost as well) and the improved dwarf *Dactylis elegantissima*, placed alternately. Nothing can be more delicately refined; both plants are hardy and easily propagated.—HERBERT MILLINGTON, *Bromsgrove*.

## GOLD-LACED POLYANTHUSES.

It is pleasing to observe that these hardy spring flowers are being so much sought after, but it is to be regretted that spurious kinds are being sent out for good, old, coveted sorts. A far better way to stop this imposition than that suggested by Mr. Dean (see p. 406) would be to prosecute the culprits; or, if this would be considered too troublesome, the next best plan would be to publish their names and addresses. When in the north of England, a few weeks ago, I made inquiries about the old varieties of Polyanthus, and I find that some of them, so far as is known, are lost to cultivation. Two of the sorts named by Mr. Dean are not to be had, viz., Beauty of England and Kingfisher. Of the last-named, the Rev. F. D. Horner has one plant, which probably represents the stock of it. Probably the best Polyanthus in cultivation, Cheshire Favourite, can be purchased for 1s. 6d. to 2s. 6d. per plant. Exile and President are about the same in value. Earl of Lincoln, Lancer, George IV., Formosa, Rev. F. D. Horner, Bonny Bess, Black Prince, and Telegraph are all more or less plentiful in the hands of private growers about Manchester and Newcastle; and that very old sort, Pearson's Alexander, is in existence, but as only a few of it are in the hands of private growers, it may be difficult to obtain it. Indeed, I know several growers who will not part with their plants, except by way of exchange. Still, when a person who knows how to manage his plants is able to get the right sorts, it does not take very long to make them plentiful. It is interesting to raise seedlings, and seed saved from the very best sorts will certainly produce something good. Cheshire Favourite would be the best variety as a pollen parent; it seems to have all the best qualities of a Polyanthus in the highest degree, and, as it is now very freely distributed in all directions, it only remains for growers to do their best to produce something better. Exile is also a good flower; indeed, it stood "premium and first" at Manchester in competition with Earl of Lincoln, Cheshire Favourite, Lancer, President, George IV., &c. It has the fault of not fattening in the pip, but on the above occasion this was not apparent. Buck's George IV. is a grand flower, and should be in every collection. It was shown in fine condition early in April at Newcastle-upon-Tyne.

In order to grow the Polyanthus well it requires a rich, unctuous loam, and when the flowering period is over the plants should be put out in the open ground; they must be kept quite clear of red spider and green fly, both of which play sad havoc with the leaves. Green fly is easily destroyed by fumigating; red spider will not thrive if the leaves are frequently syringed, and the plants kept in a healthy growing condition. For border cultivation seedlings are in a healthy state. The seeds should be sown at once in boxes, using fine loam, leaf-mould, and a little silver sand. If the box be placed in a hotbed, the seeds will germinate quicker and better than they otherwise would do. When the seedlings are old enough to handle I prick them out either in boxes or on a piece of prepared ground out-of-doors. The plants should be about 2 in. or a little more apart, and when the leaves quite cover the ground the seedlings may be transferred to their blooming quarters, either as isolated specimens in the herbaceous border or in beds; I prefer the latter. A bed of lacéd Polyanthuses, planted at Loxford nearly ten years ago, has flowered finely every year since. The only attention required is to keep the ground free from weeds and to dig out portions of the plants where they are too thick; the bed has also occasionally been surface-dressed with fine soil, well enriched with rotten manure.

J. DOUGLAS.

**Naturalising Primroses in Woods.**—"A. P." is right in drawing attention (see p. 407) to the naturalising in woods and waste places of the many and varied forms of garden Primroses which we possess. Lovely as is the common Yellow, it would in no respect suffer by being associated with its more brightly coloured relations. Of the many plants that are fit subjects for naturalising, the Primrose is that which is best calculated to repay any labour that may be expended on it. It has, too, the additional merit of being one of the easiest to obtain a stock of. On many estates the Primrose grows in wild luxuriance. In these natural situations some thousands might be turned out annually at a trifling expense and with the best prospects of success. Why is it that many of our choicest kinds are so scarce, and that few can boast of a really fine and early display of bloom? Simply because they have to exist in conditions which are foreign to their nature and inimical to their well-being. The Primrose thrives in shady woods and hedgerows, where it is protected from the strong summer heat either by the foliage of trees, or by herbage. In gardens, on the contrary, it is often exposed to the full blaze of the summer sun either in beds or borders. An extra hot summer comes, and the plants are so enfeebled, that they never recover, and eventually disappear. I cannot imagine anything more interesting than the introduction of our garden varieties into the woods and dells of this country.—J. CORNHILL, *Blyth*.

## PLATE CXXVIII.

## ABELIA FLORIBUNDA.

Drawn by H. HYDE.

Few Natural Orders include more valuable subjects for the garden, taking into consideration the number of species contained in them, than the Caprifoliaceæ or Woodbine tribe. Consisting chiefly of flowering shrubs and climbers that are either hardy or require but slight protection in winter, and being, moreover, of remarkably easy culture, there is scarcely a garden in which representatives of the Order are not to be found. Although the individual flowers are generally small, and in but a few species particularly brilliant in colour, they are freely produced and often in large corymbs that afford a beautiful display; many of them are also delightfully fragrant. The flowers of the Weigelas, Viburnums, Loniceras, and Snowberries are always interesting, on account of their simple and modest colours. Among the most beautiful members of the tribe is the subject of our plate, a plant long known to British horticulturists, but one which of late years has unaccountably gone out of favour. The *Abelia floribunda* is a low shrub of sub-erect habit and somewhat straggling branches; the leaves are opposite, small, and smooth; the flowers axillary, and produced at the extremities of the branches, either singly or in corymbs of twos and threes; they are 2 in. or more in length, and, as will be seen, of a purplish-crimson colour; the tube, which is narrow at the base, gradually enlarges upwards and expands into five equal lobes. It is a native of Mexico, and was discovered about thirty years ago by Galcott, on the Cordilleras of Oaxaca, and by Linden on the peak of Orizaba, at elevations between 9000 ft. and 10,000 ft. All the other *Abelias* are natives of China and Japan, with the exception of *A. triflora*, figured previously in THE GARDEN (see Vol. X., p. 55), which is found in Northern India. *A. floribunda* is tolerably hardy in Devonshire, Cornwall, the Isle of Wight, the south of Ireland, and in a few other favoured localities, but in England generally it must be treated as a greenhouse plant. It was successfully cultivated as a rock plant by Messrs. Veitch at Exeter, where its branches were almost pendulous, and its large showy flowers extremely effective. When grown in pots a mixture of loam and peat in equal parts makes a suitable compost for it. In order to induce the plants to flower freely, medium-sized pots should be used, good drainage secured, and the wood well ripened, which is best effected by the plants not being re-potted till after the roots have completely filled the pot. Under ordinary greenhouse treatment, they will flower during the spring months, and continue a long time in bloom. Our plate was prepared from specimens supplied by Dr. Moore, from the Botanic Gardens, Glasnevin.

**Tropæolum speciosum.**—It is quite true, as Mr. Hemsley observes (see p. 443), that though this fine species is being continually recommended in the gardening papers, it is a plant one rarely sees. I know where it grows without any care, but here no amount of coaxing will induce it to grow successfully, nor do I know of a single good plant of it anywhere in this district. It seems to prefer the north. At Drumlanrig Castle, in the wet climate of Dumfriesshire, I believe it does well, and I have seen it growing in the most gorgeous profusion in front of a cottage just under the shadow of the Etrick Forest, near Gala Water. I have heard of it doing well in some parts of Nottinghamshire, but good examples of it are the exception rather than the rule. *T. polyphyllum*, I am afraid, is something after the same nature, so far as I have yet seen; and, besides, it is from the same country, which strengthens the suspicion. The south of Chili, I suppose, more remarkable for its rains and moisture than anything else, and it would seem that these *Tropæolums* cannot thrive under any other conditions.—J. S. W.

**Persian Lilace for Forcing.**—Any one having large bushes of these in the open ground, if not otherwise required, may turn them to good account by cutting off their roots to within 15 in. of the stems, lifting the stems, and placing them in large pots or tubs. If kept well supplied with water, placed in heat, and kept well syringed overhead, they will receive little or no check, and will yield abundance of blossom. After flowering they may be again planted out to be re-lifted in autumn. In this way Mr. Ollerhead, of Wimbledon House, gets more bloom from a few plants than could be obtained from a large quantity of such plants as are usually employed for forcing.—S.





## THE KITCHEN GARDEN.

## CULTIVATED LETTUICES.

By D. GUIHENEUF.

The cultivated Lettuce (*Lactuca sativa*\*) is not a species, not having, as yet, been found growing wild anywhere, but an improvement on a wild sort, probably due to skilful cultivation. Lamarck believes the Oak-leaved Lettuce (*Lactuca quercina*) to be the starting point, but this is doubtful; and, being now a cultivated sort, it has lost its natural characteristics. Besides, the Oak-leaved Lettuce is a native of the Isle of Caroline, in the Baltic Sea, whilst Lettuces were first cultivated in southern and eastern countries. *Lactuca perennis*, now grown in France, cannot be the type, being perennial and having blue flowers. De Candolle says *Lactuca sativa* is from *Lactuca Scariola*, but he adds afterwards *Lactuca Scariola* is probably the *Lactuca sativa* returned to its wild state. Others, with more reason, say that it is the *Lactuca virosa*, which, being brought under cultivation, has lost its poisonous properties and hairy appearance. This is, however, a matter which will never be satisfactorily settled until some persevering horticulturist sets about the improvement of our wild species. Another difficulty is the fact that some varieties have white seed and others black or yellow seed. But if we know little or nothing of the origin of our cultivated Lettuces, the history of their introduction into English gardens is still more obscure. Turner mentions that in 1530 a gardener received a reward for bringing Lettuces to Hampton Court, and in 1597 Gerard describes several sorts, but throws no light upon their introduction into England. He only says that at that time Lettuces were eaten before supper. In 1640 Parkinson describes many varieties, and in 1652 Lettuce was a common vegetable. In French bibliography we find that about the year 1540 Rabelais sent from Rome to the Cardinal d'Estrées, at Paris, the first seeds of Lettuce which were sown in France; but, prior to 1530, I know of no record of Lettuce being grown in England, and must suppose that it was imported by the monks, who at that time had the widest connections abroad; but, should the Dutch have grown it before the above-mentioned dates, it is probable that it was imported from Holland. Lettuces have been cultivated from the remotest times by the Greeks, the Romans, and the Egyptians, who perhaps received them from China or other places in Asia. Herodotus (484 years before the Christian era) called Lettuce *Thridax*, and says that it was a pot herb and salad of the first rank, and that it was eaten before and after meat. The Romans ate Lettuces after supper with the view of procuring sleep, but in Doinicien's time the custom was changed, and they were served as *entrées* at their festivals; and this prevailed for a long period, even until Gerard's time, in England. The Lettuce was called *Lactuca botica* by Columella (forty-four years after the Christian era), and Pliny says that great pains were taken to earth them up with sand to blanch and make them heart. What sorts of Lettuce were cultivated at that time it is impossible to say, from the diffuse and uncertain descriptions given of them. Sueton says that a statue was erected to the memory of Antonius Musa for having cured the Emperor Augustus with Lettuce. After this Lettuces were in great repute at Rome, and were grown all the year round.

## Uses.

The cultivated Lettuce when young contains plenty of water and mucilage, and a milky juice when old, which makes it bitter and narcotic; these two last properties, however, are removed by blanching. Lettuce is cooling and of easy digestion, but contains little nourishment. It promotes sleep; therefore, it should not be much used after dinner, especially during hot weather. Lettuce is cultivated nearly all over the world, and its daily consumption is enormous. It is used in the form of salad, seasoned with oil, vinegar, salt, and Pepper; even mustard, according to taste, is added in some localities

in France. Country people substitute melted butter or cream for oil, and sugar is also sometimes added. To Endive, Corn Salad, Celery, Celeriac, and all other salads, Lettuce is a good addition. Some kinds, such as Neapolitan and Bossier, are good when boiled, on account of their coarseness; hearts of young tender Lettuce are delicious, if boiled with Green Peas. In lobster salad Lettuce is indispensable. The Curled varieties are not only useful as food, but valuable for garnishing cold meat. Indeed, the French, who excel us in making Lettuce salad, would not consider a dinner complete without it. In order to have the true flavour of Lettuce, the outer leaves should be cautiously taken off, the blanchéd heart only being used without being washed, and the leaves should not be cut to pieces, as is generally seen on English tables. Of the immense quantities of Cos Lettuces that are consumed in England, chiefly in London, during summer by the working classes, some idea may be formed by the hundreds of cartloads that are brought weekly to Covent Garden Market. Of these the largest portion is eaten raw at tea-time with salt and bread and butter.

## Seed.

The seed is white, black, or yellow; small, flat, oblong, sharp and pointed at the upper extremity. It retains its vitality for about four years. One ounce contains about 23,000 seeds. Lettuce seed is sometimes sold very cheap, but in most cases such seed is grown without the least care, the seed-bearing plants not being selected or even transplanted. Good seed is invaluable, and therefore a fair price must be paid for it.

## Varieties.

There are three classes of Lettuces, viz.:—1, Cabbage Lettuces (*Lactuca sativa capitata*); 2, Cos Lettuces (*Lactuca sativa romana*); 3, Cut-leaved Lettuces (*Lactuca sativa foliosa*); each class consisting of an indefinite number of varieties. Other classes could easily be made were the colour of the seed taken into account and the curled varieties; but this would only complicate the descriptions already too much confused. Each variety being popular in certain localities, I have described a great many; but still I have been careful to select the best. Old varieties, of doubtful value or name, for want of accurate descriptions, have been omitted. Two centuries ago only some dozen varieties were described, some of which are still under cultivation, with new names. At the end of the eighteenth century a collection of 100 varieties could easily have been procured from France, Germany, and Holland; and at the present day over 200 varieties are in cultivation, exclusive of some 600 synonyms. Most of these have originated in France, Germany, and Holland; a few come from America, and a very few have been raised in England. The task of eliminating the varieties is a very hard one, and requires a good deal of practice; therefore, errors may have crept into the following list, which I will be obliged by anyone pointing out:—

## Class I.—Cabbage Lettuces.

Including those with spreading, round, or flat heads; such Lettuces are by far the best flavoured and most crisp, and are those chiefly grown on the Continent. The different sorts may be divided as follows: Spring or forcing Lettuces, summer Lettuces, and winter or hardy Lettuces.

## Spring or Forcing Lettuces.

Cabbage Lettuces are seldom forced by English growers; in fact, all the Lettuces which are sold during the spring in Covent Garden Market are imported from Paris; they are very tender, crisp, and sweet, and the price moderate, being about 2d. each. It has been said that Lettuces could be forced with the same success in London as in Paris, but that is a mistake. A clear atmosphere and sunny weather, as in Paris, are indispensable for such culture, and the damp, rainy, cloudy winter months in London will always baffle the most skilled gardener in his attempts at Lettuce forcing.

1. Earliest Forcing Black Lettuce (French—*Laitue orpèe à graine noire*, L. *petite noire*; German—*Grüner früher schwarz korn steinkopfsalat*).—Hearts readily, not very firm, quite white. The name black Lettuce has been given on account of the seed being quite black. This variety is the only one which can be forced closely

\* Nearly all the popular names of the Lettuce are derived from *Lactuca*, as may be seen by the following:—English, Lettuce (Lettuce of some old writers); French, *Laitue*; German, *Lektich*; Italian, *Latuoga*; Spanish, *Lechuga*; Portuguese, *Letuça*; Brazilian, *Alface*; Dutch, *Letuw*; Danish, *Lektuk*; Swedish, *Laktuk*; Polish, *Laktuka*; Russian, *Lektuk*; Lettick; Indian, *Kahan*; Celtic, *Letuz*, &c.

shut up. It is the sort chiefly used by the Paris market gardeners for forcing as follows: The seed is sown in the beginning of September in a well-prepared spot, under a frame or cloche (bell-glass), and the young seedlings are transplanted as soon as they are fit to handle. When ready for planting, about October 10, a cold, slanting bed, about 3 ft. wide, is prepared and covered with about 3 in. of leaf-mould. If the cloches are to be used they are placed alternately in three rows; their places are marked on the soil, and five Lettuces are planted under each. If in frames six rows in each will be sufficient, but care is taken to keep the plants as near the glass as possible. They are shaded if necessary, and in time of frost covered with mats. Old beds can be used for that purpose after stirring and cleaning the soil, as the Lettuces need little or no heat, but they should be kept clean and close. Such Lettuces will be fit for use in the beginning of December. This variety succeeds well under cloches when it often fails under frames on account of the unavoidable admission of air. A second sowing should be made about Oct. 10, on a mild bed under cloches, sufficient seed being put in to produce from twenty-five to thirty plants under a cloche. These should be transplanted as soon as they have made a few leaves. In the beginning of December prepare a slanting hotbed, about 16 in. high; cover it with 3 in. of leaf-mould; dispose the cloches or frames as before, and plant four or five Lettuces under each cloche, or fifty or sixty under each frame. These will be ready for use about the end of January and February. Do not under any circumstances admit air, and keep out frost by means of mats, but in the case of sharp weather put hot fermenting material around the frames and between the cloches; but light must be given as freely as possible. Should the Lettuces get frozen, do not expose them to the sun until they have become thawed. Examine the beds often in order to destroy insects, and clear off decayed leaves, so as to keep everything clean and sweet. Take up the young Lettuces with great care, and replant them with the finger instead of a dibber. Sowings and plantings are made in succession to meet the demand; but the last period for planting this variety is February, to be ready in March. Some plant a Cos Lettuce in the centre of four others under a cloche; others plant their Lettuces on a Carrot bed under frames, the Lettuces being removed when the Carrots want room. Lettuces for exportation, packed with their roots in small boxes in Paris, reach London in about thirty-six hours. The above is the small white Lettuce seen in Covent Garden in winter.

**2. Earliest Forcing White-seeded Lettuce (French—Laitue crêpe à graine blanche).**—This is similar to the preceding, but differs in the colour of the seed. It is not, however, so much esteemed by market gardeners as the black-seeded, and therefore it is not so frequently used for forcing. The two varieties just named often withstand the winter in the open ground when slightly protected, but their size is insignificant, and when sown in the open ground in March they run to seed before hearing. They are only good for forcing.

**3. White-seeded Gotte (White Tennisball).**—This is a very early small kind; leaves spreading, yellow-green, slightly wrinkled; heart of medium size and loose; the earliest after 1 and 2. It is well suited for forcing under frames, but not under cloches unless



White-seeded Gotte Lettuce.

plenty of air be admitted. It is preferable to No. 1 for private gardens. Sow in October and transplant as in the case of No. 1, planting definitely from December to February. The produce will be ready for use in March and April. Paris market gardeners plant on the same beds after No. 1 has been used, thus producing a constant succession of new Lettuces. It requires air as often as the weather will permit; if planted under a cloche three plants are sufficient.

**4. Black-seeded Gotte (Black Tennisball).**—Almost similar to the preceding in appearance, and can be used for the same purposes. These two varieties are used for early sowings in January and February under cold frames, and then planted in the open ground on a well sheltered border. It is a common practice to sow them in February and March in the open ground amongst Leeks, Carrots, Onions, and other slow-growing vegetables, their quick growth allowing them to be removed before they damage the crops with which they are associated; but in the open ground they seldom attain perfection before running to seed. Seedlings left on the beds are useful for planting in the open ground in March, and the produce will be fit for use in May.

**5. Tennisball (Green Tennisball, Black-seeded).**—This is one of the oldest of Lettuces, and one which was extensively cultivated on the Continent 100 years ago. It is now chiefly grown in England and America. Leaves small, few, concave, wrinkled, blistered, and dark green; head small, tolerably solid, crisp, tender, and somewhat flat; it is a good keeper, and a hardy and early variety for forcing in spring or for the open ground during winter. If sown late even strong established plants will not bear the frosts. In summer the head is loose, and runs quickly to seed. Inferior to many other sorts.

**6. Laitue Dauphine (Black-seeded).**—One of the many varieties used in France for forcing or for early sowing. Leaves small, undulated, wrinkled, and of a dark green colour; head small, flat,



Laitue Dauphine Lettuce.

green, stained with brown on the top; of second-rate quality. It should be sown in February under glass for forcing, in March for spring use, and in September for winter. It is grown only on account of its hardness. If protected it runs quickly to seed.

**7. Victoria Red-bordered (White-seeded).**—Leaves small, undulated, a little wrinkled, and light green in colour; head of moderate size, green, tinted with brown on the top, crisp, tender, and well flavoured. It can be sown in January and February under glass for forcing, in March on a bed or in the open ground between Onions, Cabbage, &c., and in September for winter use, but for the last season other varieties are better adapted. In summer, or during dry weather, it runs to seed before Cabbaging. It should be planted about 15 in. apart, if possible, on a sheltered border.

**8. Tom Thumb, or Stone Tennisball (Black-seeded).**—Leaves numerous, small, thin, and wrinkled; plant, dwarf, compact, and early, producing a delicate head, firm, tender, and whitish-green. One of the best of Lettuces, forming a beautiful heart, with scarcely any outer leaves, and standing long before running to seed. On account of its earliness it can be used for forcing, for early sowing



Tom Thumb, or Stone Tennisball Lettuce.

in the open ground, for summer, and for late sowing for autumn use being small, it should not be planted far apart. It will grow in any soil, but will not stand the winter. It is a kind which cannot be too highly recommended.

#### Summer Cabbage Lettuces.

Some make the curled varieties a section, but that is somewhat difficult to do, for some are only half curled. The Cabbage Lettuces are much the best flavoured, the most productive, and of easy cultivation and quick growth. They are everywhere grown in great quantities. The curled varieties are the largest, but they are coarse and of inferior quality. They, however, withstand rough weather and bad soil better than the common Cabbage kinds.

**9. Brown Genoa (Black-seeded).**—A first-class, medium-sized Lettuce, cultivated all over the Continent, where it is known under a great many synonyms. It is, however, but little appreciated in England. Its leaves are small, crimped, and dark green in colour, with a few brown spots; head small, firm, round, and pale green, becoming brown-red on the top; very tender, delicate, and well-flavoured; half early, and a good cropper. It should be sown in February under glass, in March in the open ground, in April for

summer use, in June for autumn, and in August for winter, but it must be protected against sharp frosts. It is a kind which cannot be too highly recommended.

**10. Greystone (White-seeded).**—A first-class summer Lettuce, and one which is grown in almost every country under a multitude of synonyms. Leaves large, round, slightly wrinkled, of a green-



Brown Genoa Lettuce.

grey colour; heart tender, crisp, very large, round, brown-red at the top, not very firm. The chief merit belonging to this variety is its outer leaves being few and comparatively small. The seed should be sown in March and April under glass or in the open air, and successively, in order to have a constant supply during the summer, even until October. Transplant about 1 ft. apart; it is in every way a capital



Greystone Lettuce.

Lettuce, and one well deserving of extensive cultivation. It is largely used by the Paris market gardeners, a fact in itself sufficient to recommend it.

**11. Royal Summer Cabbage (White-seeded).**—The number of synonyms which this variety bears shows it to be one of the best of summer Lettuces. It is about 10 in. across, firm and regular, outer leaves large, slightly wrinkled, often torn or lacerated on account of



Royal Summer Cabbage Lettuce.

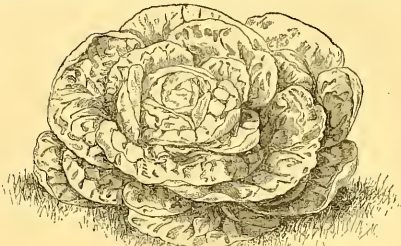
their crispness and tenderness. The whole plant has a peculiar yellowish-white colour. Dry, hot weather suits it perfectly, but it often gets spoiled through wet; therefore, it is strictly a summer Lettuce. It should be sown from March to May.

**12. Berlin Summer Lettuce (Black-seeded).**—This has a somewhat golden colour, quite distinct from all others; head large and firm; leaves large, blistered, very tender, and of first quality, except in wet seasons. It should be cultivated exactly like the Royal Summer Lettuce, to which it has some similarity in appearance. It will not stand the winter.

**13. Versailles Summer Cabbage (White-seeded).**—One of the best of summer Lettuces. It resembles the Royal Summer, but is earlier, larger, and much hardier; head large, oval, and firm; leaves large, wrinkled, and of a whitish-green. It can be had in spring, summer, and autumn, but not in winter.

**14. Grand Admiral (Grand Admirable, Admirable Imperial).**—This is a white-seeded sort of the first quality, provided it does not suffer from drought or wet; leaves large, wrinkled, undulated; heart of medium size, firm, and tender. A dwarf flat Lettuce, of a fine yellow colour, stained with brown on the top and at the extremity of the leaves. It should be sown in spring for summer use only; for other seasons it is too late and of doubtful quality. One of the best of summer Lettuces.

**14a. Negro-head or Normandy (Yellow-seeded).**—Leaves round, undulated, and occasionally wrinkled; head globular when fully developed, not firm, green, washed with brown-red at the top; where the soil does not suit it or the weather not genial it shoots from the base. It is a second early Lettuce of doubtful quality; it



Grand Admiral Lettuce.

does not turn out well even in dry summers, and it will not withstand a severe winter; it cannot, therefore, be recommended, though it is a favourite in some parts of America. Its name, Negro-head, is derived from its colour, and the colour of the seed is peculiar. Another yellow-seeded variety, quite green in colour, is used in summer, and is also cultivated in France, but this, I think, has never been introduced into England. These are the only two yellow-seeded Lettuces with which I am acquainted.

**15. Perpignan Lettuce (White-seeded).**—This was sold as a novelty in Germany a few years ago, though it was known in France for some sixty years or more. Leaves large, round, fleshy, lying flat on the ground, and of a dark green glazed colour; ribs large and strong; heart very crisp and tender. It is a kind entirely different from all other varieties. It grows well in dry soil, and bears heat better than any other Lettuce with which I am acquainted without



Perpignan Lettuce.

running to seed. It should be sown in spring for summer use only. Some seedmen are trying to obtain two or three varieties of this Lettuce, but in doing so they will only destroy the good qualities of the original type.

**16. Imperial (Asiatic Imperial Head).**—This is a white-seeded kind, with large almost round leaves of a tarnished green colour; head large and firm, regular, and of uniform colour. One of the best summer Lettuces, half-early, tender, and crisp, but it soon runs to seed. It will withstand a mild winter. The Turkish or Butter Lettuce is similar to this, but it is black-seeded.

**17. Brown Dutch (Black-seeded).**—Leaves large, round, waved, green stained with brownish-red and much wrinkled; head of medium size, globular, and loose. One of the leading varieties, both in America and in England. It is of good quality, especially if grown in rich soil, but it will only succeed out-of-doors in mild winters.

**18. Spotted Cabbage (French—Laité panachée or sanguine).**—This is a white-seeded kind; it has leaves of medium size, round, undulated, and wrinkled; in colour it is copper-green spotted with brownish-red; head globular, but loose. Very fine and curious looking in salad, tender, and second early. It succeeds equally well in winter, spring, and summer, but it is chiefly used as a winter Lettuce. An improved strain of this is now offered by seedsmen; it heads better, and the plant is wholly brownish-red in colour instead of being only spotted.

**19. Spotted Cabbage (Black-seeded).**—Head firm, regular, green, washed and spotted with bright red on the top. A curious-

looking variety, but superior to the white-seeded. It will not, however, stand the winter. The two above varieties, though very attractive, are seldom if ever cultivated in England.

*Curled Summer Cabbage Lettuces.*

**20. Early Simpson Lettuce (White-seeded).**—Head large, oval, but not firm; leaves large, undulated, somewhat curled at the margin, and wrinkled in the centre. The whole plant is of a distinct whitish-yellow colour; very crisp and tender; an improvement on



Early Simpson Lettuce.

the Curled Silesian; a favourite in the United States, where it is largely cultivated at the present time by market gardeners. It should be sown in spring from March to May, for summer use only.

**21. Californian Curled.**—This American Lettuce has been sold this season in England for the first time. It is described as being curled, lacinated, and very ornamental, keeping long before running to seed, and growing to a large size. Last summer I saw about 100 plants of it (probably the first grown in Europe); they were about 8 in. in diameter, elegantly curled, slightly wrinkled, of a fine yellow-green colour, and quite distinct. It is a pretty pyramidal kind, and one which is very useful for table decoration if grown in pots.

**22. Neapolitan Cabbage (White-seeded).**—One of the largest and latest. Leaves undulated, of good substance, much wrinkled, and curled at the margins; ribs thick; head large, round, and regularly Cabbage-shaped. The whole plant is of a pale green colour, but during hot weather the top sometimes gets brownish. Its heart is so



Neapolitan Cabbage Lettuce.

firm, that seedmen are obliged to divide it to allow the stem to run to seed. It is sweet, tender, and very mild flavoured, though not so delicate as some other sorts. It should be sown in spring for summer use only, and should be planted 2 ft. apart. It grows freely in any soil.

**23. Malta or Drumhead (French—Laitue de Malte; German—Trommelkopfsalat).**—This fine white-seeded variety has now become



Malta, or Drumhead Lettuce.

a standard Lettuce, which is much more cultivated in England and in America than on the Continent. It is said to be a variety of the white Silesian. Leaves undulated, large, a little cut but not curled at the margin; ribs large; head high, flat, drumhead-like (whence the name), large, crisp, and tender. The whole plant is of a uniform

pale green colour. One of the best of summer Lettuces, and one which has a great number of synonyms, a sure indication of its excellence. Successional sowings of this variety should be made from March to June for summer use. It withstands the winter well if slightly protected, though it cannot be recommended as a winter Lettuce, many other varieties being superior to it.

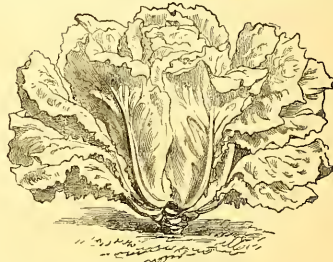
**24. White Batavian (White Silesian, Laitue Batavis blonde).**—Leaves large, wrinkled, pale green, bordered with brown; head very large, loose, Cabbage-shaped, yellowish-green tinted with brown, crisp, commonly coarse, but liked by some. This, the type of a great many varieties, is well adapted for summer, autumn, and winter use if protected from sharp frost; but for forcing or for early spring



White Batavian Lettuce.

sowing it is too late, and takes up too much space, each plant of it requiring 24 in. It grows in any situation, withstands summer-heat well, and is a favourite with most people.

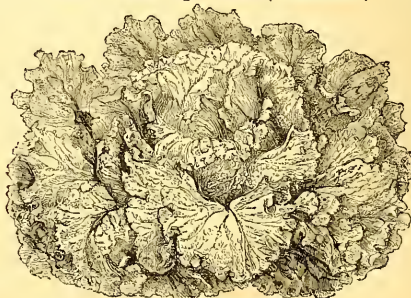
**25. Brown Batavian (Brown Silesian, Laitue Batavia brune).**—A large, late, white-seeded variety, the outer leaves of which are large, fleshy, coarsely wrinkled, undulated, and frilled on the margin; it



Brown Batavian Lettuce.

head brownish-green, large, and moderately firm. It is a hardy, free-growing Lettuce, of second-rate quality on account of its large, coarse midribs. It is well adapted for summer, and also for winter use if the frost be not too severe; being so late, it requires to be sown early in March and April. The annexed cut hardly does justice to the plant.

**26. American Gathering Lettuce (White-seeded).**—This was



American Gathering Lettuce.

introduced from America into Germany in 1872, and into England in 1873. Its habit is that of a Cabbage Lettuce, but it does not heart

at all; the leaves are beautifully curled and wrinkled, the outer ones spreading, the inner ones closely folded together, forming a large, white, tender, crisp centre. The plant grows to a very large size, is very hardy, dark green, elegantly stained with brownish-red over the top and at the extremity of each leaf. It has a fine appearance. It should be sown early in spring for summer use.

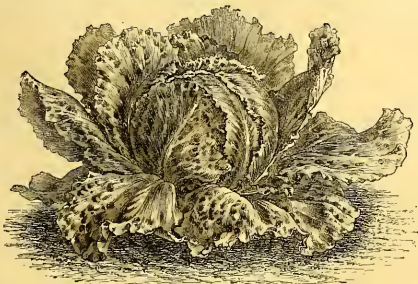
**27. The Hanson Lettuce (White-seeded).**—This was obtained a year or two ago from America. It is said to attain a very large size, and to be very hardy, but up to the present time, its qualities



The Hanson Lettuce.

have not yet been ascertained. It resembles the Neapolitan Cabbage Lettuce in habit, hearts well, and grows freely, the whole plant being of a beautiful butter-yellow colour.

**28. Bossin Lettuce (French—Laitue Bossin).**—This is the largest of all Lettuces. It is a black-seeded late variety, which was brought into general cultivation on the Continent about ten years ago. Its leaves are large and curled at the margins; midribs very thick and prominent; heart very large, but loose. It is a Lettuce of the Slesian type, and one which in appearance and colour is intermediate between the white and brown sorts. It is used for culinary



Bossin Lettuce.

purposes only, its coarseness making it unfit for salad. It should be sown from February to the end of May in the open ground or under cover, and it should be planted at from 1 ft. to 2 ft. apart. It bears the heat of the summer well, but is not good for winter.

#### Winter Cabbage Lettuces.

The following are the only sorts in general cultivation which can be trusted to stand the winter well, but many summer varieties are also occasionally cultivated during winter on the Continent, where the temperature is milder than that of England. As a rule, they are planted on a southern aspect on an elevated border along wall sides, and consist chiefly of the following sorts, viz., Tennisball, Dauphine, Victoria, Brown Genoa, Imperial, Brown Dutch, Spotted Cabbage (white-seeded), Drumhead, and White and Brown Batavian; but a severe winter will destroy a quantity, if not the whole of them.

**29. Hardy Hammersmith (Green Winter Cabbage Lettuce).**—This is a white-seeded kind, and the best winter variety in cultivation, being very hardy and keeping long before running to seed. It is,

therefore, largely grown by London market gardeners, standing, as it does, the frosts better than any other sort; leaves of good substance, wrinkled, of a glossy dark green or whitish-grey colour; heart medium-sized, moderately firm, crisp, and well flavoured. It should be sown two or three times in succession from the 15th of August until the 15th of September, and it should be transplanted in October, giving it a well-protected border, consisting, if possible, of a light, dry soil. It will be ready for use in April and May. When planted in a wet, cold soil it throws out in spring several shoots from the bases of the bottom leaves.

**30. Large Winter Cabbage or Madeira (White-seeded).**—A good winter sort; head of medium size, not very firm, green, brownish on the top; leaves broad, large, undulated, stained with brown; remains long before running to seed, and is ready for use at the same time as the Hardy Hammersmith. Its quality varies in accordance with where it is grown; it requires a warm, dry, south border, and should be treated in every way the same as the Hardy Hammersmith.

**31. All the Year Round (White-seeded).**—A fine variety much esteemed in England; leaves wrinkled, and much folded alongside the midribs, of a pale green colour; head small, crisp, and tender. As is indicated by its name, this variety can be grown all the year round, and sowings of it must be made accordingly. It is a good spring and summer Lettuce, though other varieties are superior to it. Its quality is better than that of ordinary winter sorts, but a long and severe winter will destroy quantities of it if not protected, and the remainder will soon run to seed; nevertheless, it is well worth extensive cultivation in this country.

**32. Brown Winter Lettuce (White-seeded).**—Leaves numerous, small, folded, and wrinkled; head of good size, globular, and moderately firm; in colour green and brownish-red on the top. One of the best of winter Lettuces, very hardy, tender, keeping well, and of good flavour. It is extensively cultivated in the western districts of France.

#### Class II.—Cos Lettuces.

French—Laitue Romaine, or Chicou; Italian—Lattuga Romana; Portuguese—Alface Romano; German—Bind Salat (*Lactuca sativa romana*; *Lactuca sativa longa*).—The word Cos is said to be derived from the Isle of Cos, or Stanchio Island, Asiatic Turkey, where it was at one time largely grown; others say the Isle of Cos is its native country, whence it was imported to England. It derives its French name, Laitue Romaine, from this Lettuce having been extensively cultivated by the Romans; in fact, the first seeds of Lettuce sown in Paris came from Rome, but I presume that a century or so ago all kinds of Lettuces were called Laitue Romaine, and we can see from the more or less diffuse description of Lettuces given about that time that numbers of Cabbage Lettuces were called Laitue Romaine. It is only a form of the Cabbage Lettuce; in fact, plants intermediate between the two types are occasionally met with. It differs from the Cabbage Lettuce in the leaves (instead of being folded and inverted over each other, and forming a heart like a Cabbage) standing nearly upright, more or less spreading, and in some varieties a little folded over each other at the top, thus forming a cylindrical conical shaped plant about 1 ft. high. It is coarser and not so finely flavoured as the Cabbage Lettuce, but is more hardy, and succeeds better under bad conditions than the latter. It never blanches, but the inside leaves become more tender and of a lighter green by tying up. Notwithstanding, it is the leading, and the most extensively cultivated salad Lettuce in England. Cos Lettuces may be divided into summer and winter Cos kinds. Like Cabbage Lettuces, the number of varieties and synonyms is indefinite, each province having its favourite kind, of which a bad and good stock make two or more varieties. The following are the best:—

#### Summer Cos Lettuces.

**33. White Cos (Paris White Cos, Alexander Cos, Hooper's Incomparable White Cos. French—Romaine blonde Maraichère).**—This is a white-seeded kind, and the best summer variety. Its leaves are large, erect, crisp, slightly wrinkled, serrated, pale green, and hooded at top, thus forming a heart, and blanching without tying. It is a large, fine Lettuce, and the one most generally cultivated during summer. To have it in perfection it requires a somewhat heavy soil. It does not withstand the winter well, and runs quickly to seed if sown in the open air too early. It should be sown from March to April, which is the best time for transplanting it into the open ground; it will then be the latest of all Cos Lettuces in running to seed, as it bears heat better than any other popular variety. Like

all good varieties, it has numerous synonyms; Giant White Cos, Sutton's Superb White Cos, and Webb's Monstrous White Cos are only selected stocks of the above. The London White Cos differs



White Cos Lettuce.

from the Paris White Cos in its leaves being more erect, not serrated or wrinkled, and in their being of a lighter green; but, owing to the two sorts being so much mixed together, it is useless to make two different varieties of them.

**34. Green Cos** (French—Romaine verte Maraichère).—A leading white-seeded variety, much harder than the White Cos, which it resembles. Its outer leaves are large, erect, dark green, and hooded at the margin, forming a fine plant, which hearts and blanches without tying. This variety grows a little larger than the White Cos, and the heart is very crisp and tender. It withstands the winter well with a little protection, but runs quickly to seed during summer; therefore it is chiefly used by market gardeners for winter cultivation under glass. It should be sown in September and October, like the Gote Lettuce, No. 4, with which it associates well. Some growers even plant four Lettuces around one Green Cos under a cloche. It should be sown in January, and afterwards yields an abundant crop during spring; this variety is, in short, used for forcing in winter and spring, whilst the White Cos is used for summer and autumn. Though it hearts well alone, a little tying will be an advantage. It is often planted in January and February under glass between Cauliflowers, Carrots, and similar crops.

**35. Kingsholm Cos** (White-seeded).—Leaves large, of good substance, and of a greyish colour, very distinct, the centre ones much hooded at the top, forming a large heart, very tender and of the finest quality. This is by far the best summer Cos, and the best hearting kind without tying. It is admirably adapted for hot climates and dry soils. In many hot places abroad it has resisted the drought better than any other Cos. Furnishing, as it does, a fine salad a month after all other varieties have run to seed, it cannot be too



Kingsholm Cos Lettuce.

much recommended. Market gardeners seldom use it for winter cultivation on account of its being so late and not being very hardy; but, sown during the spring, it will be found invaluable. This variety has never been grown extensively in England or on the Continent, and though it has been known for many years, it has only lately been brought to England under a new name. It has, however, acquired the reputation which it deserves. Synonym—St. Alban's All Heart Cos Lettuce.

**36. Magnum Bonum, or Florence Cos** (Black-seeded).—Probably the largest of all the Cos Lettuces; leaves very large, roundish, thin, spreading, wrinkled; midribs large, of a very light green colour; a very large-hearted Lettuce with the assistance of tying. A capital summer variety, very tender, and running to seed with difficulty, but very late. It should be sown from February to



Magnum Bonum, or Florence Cos Lettuce.

June, and planted about 16 in. apart. It seldom stands the winter. The white-seeded variety is similar to the above, but perhaps larger.

**37. Sugar-loaf Cos**.—A first-class variety of medium size; leaves erect, slightly wrinkled, oval, and regular; brown coloured, and on the top brownish-red, forming beautiful hearts without tying, even when half grown. It should be sown in spring like other Cos



Sugar-loaf Cos Lettuce.

Lettuces. It stands drought well, and should be planted about 12 in. apart. It is well adapted for sowing under glass during winter.

**38. Ground Cos** (French—Romaine pomme en terre).—This new black-seeded variety, which has been known for three or four years on the Continent, is probably derived from the Egyptian Cos, which it resembles, but it is much smaller. Its leaves are erect, hardly wrinkled, of a dark glossy green, the centre ones being yellowish from being much pressed and folded together, but the plant never hearts. It grows nearly in the ground, and hence its name. It has been recommended for winter and summer cultivation, but, when other good



Ground Cos Lettuce.

kinds are taken into consideration, it hardly deserves a place in our gardens at all.

**39. Monstrous Cos** (Black-seeded).—This Lettuce may be said to be about intermediate in habit of growth between the Sugar-loaf and the Bath Brown Cos. Its leaves are spreading, large, and brown-coloured, the centre ones being beautifully bronzed even in a young

state. Good for summer and winter use. It should be planted 14 in. apart.

**40. Spotted, or Leopard Cos (White-seeded).**—Leaves broad, short, narrow at the base, and wrinkled; at the centre irregularly bordered, and all inclined outwards; spotted and streaked with brownish-red, becoming darker in the centre; midribs prominent; does not heart at all, but the centre can be rendered very tender and crisp by tying. This variety withstands summer heat well, and also cold. It is very sweet, beautiful in appearance, and deserves a place in every garden, though moderate only as regards size. It is much later than the White Cos. It should be sown at the same time in spring as other varieties, and it is sometimes used as a winter sort. Watering over the leaves when the sun shines greatly increases the intensity of the spots.

**Spotted Cos (Black-seeded).**—Similar to the preceding, from which it only differs in the colour of the seed.

**41. Artichoke-leaved Cos (French—Romaine à feuille d'Artichaut; German—Artischocken blättrige Bindsalat).**—This is a black-seeded, monstrous variety, brought into reputation by the celebrated French agronomes, Mathieu de Dombasle, but now almost out of cultivation. Its leaves are narrow and jagged, like those of the Globe Artichoke, all radical, upright, very numerous, and forming a thick tuft; midribs brown, sometimes purplish, the whole plant being of a dark or brownish-green colour. It does not heart, but, nevertheless, it is very tender, succulent, and fine in flavour, especially the inside leaves, which are of a pale green colour; tying a few days before it is used greatly improves it. It is a winter and summer variety, but when sown in June or July it is invaluable late in the autumn when other varieties have disappeared or have been killed by frosts; at that time, indeed, its flavour is at its best. It grows in any soil or situation, and is the largest cropper of all Lettuces; therefore it would be useful in little gardens so difficult to crop about London. It grows about 12 in. high. If cut an inch or so above the ground the stem soon produces half-a-dozen small heads. It should be sown from spring until autumn, according to the time at which the produce is required, and the plants should be set from 12 in. to 18 in. apart, according to the character of the soil. If sown in August for winter it will grow to a very large size during the spring.

The preceding summer varieties may also be employed for winter use if planted late and protected from sharp weather, but it would be unwise to trust to them, for a long period of wet, cold weather would partially or entirely destroy them, whilst the following varieties will withstand any kind of weather:—

#### Winter Cos Lettuces.

**42. Brown Cos (Bath Cos, Berkshire Cos, Improved Bath Cos).**—This is a white-seeded variety, the leaves of which are large, spreading, smooth, and brown coloured. It is very hardy, and one of the best for winter cultivation. It grows to a large size, and with a little tying hearts well. Though the brown colour is objected to in salads, this variety is appreciated for its heart, which is large, and contains a quantity of tender, crisp, white leaves, slightly tinged with brown on the midrib.

**43. Bath Cos (Black-seeded).**—This resembles the preceding. Its leaves, which are spreading, serrated, and wrinkled, are of a



Egyptian Cos Lettuce.

greenish-brown colour. Midribs brownish-pink. As to quality, it is the same as that of the above. Donnett's Giant Bath Cos is an improvement on the preceding. Its leaves are thicker, shorter, and more spreading; it also grows to a larger size, and keeps better.

The above are chiefly winter Lettuces, which should be sown in the end of August and planted out in October on a warm border, about 1 ft. apart. If young plants be stored in a warm corner and protected from frost they will be ready for planting in the open ground in February, and will produce a good crop during the spring. The

two above varieties are erroneously called English Lettuces by London groengrocers.

**44. Egyptian Cos (Egyptian Green Cos, Brighton Cos, Early Green Cos).**—A very old white-seeded variety, the leaves of which are closely erect, with a regular margin, oval, and of a dark green colour; midribs very strong. This sort grows to a medium size, and requires tying in order to blanch the centre leaves and render them tender. It should be sown in August and September for winter, and in November and December for spring use. It requires some slight covering in the case of severe frost. In summer it runs to seed before heading.

**45. Green Winter Cos (Black-seeded).**—This, one of the best of winter Lettuces, is somewhat similar to the Paris Green Cos; it is very hardy, but of coarse quality. Its leaves, which are short, strong, wrinkled, and serrated, are of a green colour, and do not heart without being tied. It should be sown in August and September,



Green Winter Cos Lettuce.

and planted out in October in a sheltered place protected from severe frost.

**46. Improved Spotted Cos (Black-seeded).**—An improvement on the white and black-seeded Spotted Cos. Leaves bright green, erect, spotted with brownish-red, forming a heart, which is, however, improved by tying. This variety is hardy, stands the winter well, and is about a week later than the two other spotted varieties.

**47. Red, or Blood Winter Cos (Black-seeded).**—Leaves strong, large, erect, and not wrinkled, the whole plant being of a



Red, or Blood Winter Cos Lettuce.

dark red colour; the centre leaves form a little heart, but do not cover each other. It bears the winter better than any other sort. It should be sown in August and September, and planted out in October and November for use in March and May. It is worthless for summer planting. There is a white-seeded variety similar to it, but of inferior quality.

#### Class III.—Cut-leaved Lettuces.

These are seldom, if ever, cultivated in England. They are, however, appreciated on the Continent, especially in Belgium and Holland. They consist of small early Lettuces, which are sown amongst other vegetables under glass from December to March, and in the open ground from March until spring-sown Lettuces are ready for use. As soon as they have from two to three small leaves they are cut, and are ready for the salad bowl. They are very tender, and really delicious mixed with Corn

Salad, Batavian Endive, Celery, &c., but used alone they are not good, on account of their watery consistence. The varieties from 1 to 6 described above are well adapted for the same purpose, but the best is—

48. Dutch (Kropdunsel), which is very early; its leaves are round, of a fine yellowish-white colour; and it is, in fact, the only sort of Lettuce that is grown in the Netherlands.

49. Endive-leaved or Boston Curled Lettuce.—Leaves spreading, wrinkled, and curled like those of Endive; whitish-green in colour; seeds black and very small; stands the winter well. Neither so early nor so good as 48. It should be used and cultivated like the Oak-leaved Lettuce, about to be mentioned.

50. Oak-leaved (Spinach Lettuce—a species; *Lactuca quercina* (De Candolle), and probably the same as *Lactuca palmata* (Wildenow) and *lacinata* (Roth); Black-seeded).—The annexed illustration is that of a young plant started to seed, and, therefore, does not show accurately the habit of this variety. Its leaves are all radical, from 6 in. to 10 in. long, lyrate, cut, and divided, like those of an Oak. The plant forms no heart, and is cultivated for the sake of its young leaves, which are used in a cut form for salad. It should be sown in February and March under glass amongst other vegetables, or in April in the open ground. The leaves should be cut as soon as



Oak-leaved Lettuce.

they are sufficiently developed, and sowings must be often repeated, as during the summer it runs quickly to seed. If properly treated, after the leaves are cut it soon will shoot again. It is generally grown as an annual, but I presume it would last for many seasons. It is of a yellowish-green colour, and is often confounded with the Endive and Artichoke-leaved Lettuce.

Before concluding my list I must add the two following species, which cannot be classed amongst the preceding:—

51. Perennial Lettuce (French—*Laitue vivace*).—This plant, which is a native of Central Europe, grows from 2 ft. to 3 ft. high, and has smooth, pinnatifid leaves, toothed on the upper part. Its flowers are large and blue, shaded with purple. Though seldom cultivated, it has for a long period been used in France as a vegetable. Roots if buried in the fields by the plough produce during the spring fine white tender leaves, which if cut below the ground just above the roots furnish a most wholesome salad. The young, tender green leaves are also used cut up in salad, and the fully-developed leaves are used like Chicory or for boiling. From seeds sown in April and June, roots will be produced during the next spring which will yield an abundant supply of small and large leaves, or if treated during the winter like Chicory (*Barbe de Capucin*) or Witloof, &c., forced a little, a constant supply of white salading will be obtained during the most barren time of the year.

52. *Lactuca angustana* (Allioni)—(synonyms—Asparagus Lettuce, Aosta Lettuce; French—*Laitue Asperge*, *Laitue d'Aoste*; German—*Spargel Salat*).—An old annual species, said to be a native of the valley of Aosta, between St. Pierre and Villanova, in Piedmont, also of Mont St. Bernard, on the banks of the torrent. Some years ago it was sold as a novelty by German seedsmen. It somewhat resembles in appearance a Cos Lettuce, but it never hearts. Its leaves are entire, toothed, hastate, from 8 in. to 10 in. long, and from 1 in. to 2 in. wide, of a dark green colour; midribs strong and smooth, and sometimes used as Asparagus; hence its name. The flowers are yellow, and the seed white. It should be sown in March under glass, and in April and May in the open ground. The young seedlings should be planted out about 13 in. apart in well prepared soil, and should be seen before they run to seed.

### Cultivation.

Lettuces thrive best in a warm, light, rich soil, the only one in which good-flavoured Lettuces can be obtained. It should not, however, consist of half manure, as it does in the Paris market gardens. Nevertheless, such soils may be cropped to any extent; on one day may be seen a large piece covered with Cabbages, Cauliflowers, or other vegetables; a few days afterwards it will be planted with Lettuces; and eight or ten weeks after that with some other crop. Under such a system three



*Lactuca angustana*.

or four crops may be taken from the same spot during a season. Lettuces grown so luxuriantly by means of manure and water are tender, but watery, and not finely flavoured. Transplanting is necessary to obtain large heads, except in the case of Lettuces sown under glass or in the open ground amongst other vegetables. For planting, select a cloudy day; draw furrows 1 in. deep, plant in them, and water; in about a fortnight afterwards stir up the soil, filling up the furrows. Avoid watering during sunshine, and never water over full-grown plants; it darkens their colour and rots the hearts, especially those of Cos Lettuces. Lettuces germinate very quickly; if dipped in spirits—say pure alcohol—for twelve hours they will show young leaves in from twenty-four to forty hours after sowing. Generally, seed sown in the open ground during summer produces young plants in three or four days' time, if well treated. A covering 1-5th in. deep will be sufficient.

SPRING LETTUCES.—The eight first-named varieties are the best in cultivation at the present time. 1, 2, 3, 4 are the best for early forcing, and for sowing under glass from October to January. 5 and 6 are well adapted for second sowings in January and February, and 7 and 8 for the third sowing in February and March, or for sowing in the open ground as soon as the weather will permit. In France, where the climate is genial enough for sowing Celery, Leeks, and other vegetables in the open ground, the four last-named varieties should be sown at the same time on the beds, and removed as soon as they are ready for use, thus making room just when the other seedling crops require it. 1 to 6 are often sown among Cauliflowers, Melons, and other plants under glass during the winter without injuring them in the least.

SOWING LETTUCES.—No approximate date can be given for sowing; it depends on the weather, the country, and on the purpose for which the produce is required. As a rule, small successional sowings are better than transplanting from the same bed a second time. Sow in beds well prepared and always, if possible, cover with leaf-mould or thoroughly decomposed manure. Protect against sharp weather if early in the spring, and shade during hot days in summer. Keep the beds clean and water when needed; thin out to  $\frac{1}{2}$  in. apart, and plant out as soon as the seedlings have four or five leaves; then destroy the bed. The ground being well prepared, plant at a good distance apart, according to the soil and the variety; 12 in. asunder for common varieties and 18 in. for others will be sufficient. Hoe frequently and mulch in hot countries, and water when necessary. Such attentions will ensure a good crop, for, when Lettuces suffer from drought, they acquire a bitter taste, and soon run to seed, even when young before

hearing. The common Cabbage varieties prefer a light, rich, calcareous, warm soil, whilst the curled sorts are better suited for heavy and wet ground. The order in which they are described corresponds as nearly as possible with their quality. The Tom Thumb, on account of its earliness, may be sown late in summer, when it will be ready for use before winter sets in.

**WINTER LETTUCES.**—Three consecutive sowings, made between the 15th of August and the 1st of October, are necessary in order to get seedlings for planting in October and November. They should be set in a well prepared border, exposed to the south, and when possible protected by a wall. They should be shaded and watered well as often as may be required. If the winter be severe, numbers of the first planting will be destroyed, whilst those of the third planting will withstand it, and afford a good crop a little later, but in mild winters those first planted will be ready for use early in the spring, and the others will come in in succession. Winter Lettuces planted at the same time will come into use all at once, but when protection is at hand in case of sharp weather (leaves, straw, &c.), nothing need be feared. Beware of snails and slugs during mild wet days in February, just when Lettuces commence to grow. At that time a good deeping will be most beneficial, and if a few seedlings have been planted in a corner they will be found useful to replace those which have perished during the winter. The Hammersmith and the Madeira are the leading varieties for that purpose; plant them 1 ft. apart in private gardens, but market gardeners do not allow them so much space.

**CUT-LEAVED LETTUCES.**—About the culture of these there is nothing particular. They may be sown at any time during the winter under glass amongst other vegetables, and in the open ground in spring. Immediately they are cut give the place where they grew a good hoeing to destroy their roots. In the Netherlands, market gardeners sow these Lettuces on every piece of ground which they have at command, until their gardens look as if they were covered with a yellow carpet.

**COS LETTUCES FOR SUMMER AND WINTER.**—These are treated the same as Cabbage Lettuces, but the former are about a week later than the Cabbage kinds, and like a heavier soil. A week before they are wanted tying them round with straw or some similar material makes them tender, and blanches them. Some, however, as the Kingsholm Cos, can do without tying, but others, such as the Florence, Blood-red, and brown Artichoke-leaved are improved by it. For forcing, the Green Cos is the best. I have nothing to add to what has been previously said as regards kinds from 1 to 4. The Green Cos is that chiefly used in France and by Paris market gardeners, whilst the White Cos is the leading sort in England. In short, Lettuces are held to be so valuable on account of their quick growth, that they are planted in every spot, and in all gardens, between rows of Cabbages, Cauliflowers, Vegetable Marrows, and Cucumbers, and on Celery trenches, and they are removed just in time to make room for other crops.

**INSECTS.**—The cockchafer is very disastrous to Lettuces in France; it cuts the roots during summer, but in England this pest need not be dreaded. Snails and slugs are more troublesome, inasmuch as they destroy the seedlings on the beds when planted. Quicklime, which does not injure the plants, spread over the ground during wet, mild mornings and evenings, will destroy all that it touches.

## NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

**Cauliflowers Buttoning.**—"Cambrin" attributes this to over-maturing, and no doubt this frequently causes "buttoning," but over-frosting is quite as injurious as over-maturing; and the hard frost which we had here on the 1st of April seems to be sending all the exposed plants into buttons, whilst those protected only with glass lights seem safe and sound, and are spreading their leaves wide and looking extremely promising.—D. T. F.

**Potatoes for Forcing.**—I have this season had thirty lights employed in forwarding this the prince of spring vegetables. The varieties which I have grown are Veitch's Ashtop, Myatt's, and Alpha; but for crop and flavour Myatt's are a long way ahead of the others. Alpha, compared with Myatt's, is a lump of clay. Ashtop is good in flavour, but not half a crop. I shall in future grow all Myatt's, and, except a south border for very early lifting, Myatt's Prolific will form the staple of my early kinds both outside and in.—R. GILBERT, *Burghley*.

## GARDENING FOR THE WEEK.

### Indoor Plant Department.

**Pot Roses** that have been forced through the winter, to supply flowers to succeed those that furnished the earliest bloom without pruning from the buds formed through the autumn, will, by this time have produced all the flowers they are capable of, and will require immediate attention to prepare them for another year's work. The principal difference in the treatment of these from such as furnish the first flowers without being autumn-pruned is that they do not require any cutting back in the spring, but treating in a way to mature and solidify all the wood they have made through the winter whilst being forced, and to still further encourage them during the summer to make as much more growth as they are capable of in the open air; for it must ever be borne in mind that the ability in these pot-grown Roses to produce flowers will be proportionate to the size and strength they attain before being pruned and introduced to heat in the winter much more than upon any subsequent treatment they are subjected to whilst undergoing the forcing process.

**Preparation for Turning Out-of-Doors.**—In taking Roses from the house or pit where they have been located through the winter, where constantly under the influence of some artificial heat, they should by no means be placed at once in the open air, as, although the season for cold weather is now passed, exposure directly without any preparation would immediately check both root and top growth, which would stagnate them for some weeks; instead of which it is desirable that as much growth as possible should be encouraged early in the season, so as to afford full opportunity for its getting well ripened before the autumn approaches. With this view the plants should be accommodated in a cold pit for two or three weeks, where, by sufficient air at night without suffering by it, all such plants as require more root-room should at once be potted, using soil of a similar character, and treating them in other respects as advised recently for the earliest-bloomed portion that had produced their flowers about Christmas from last summer's shoots without pruning; the main difference being that in the Roses now under consideration no pruning at the present time must take place, this operation being deferred until shortly before they are put in to force the ensuing winter.

**Position when Turned Out.**—After they have been gradually inured to the open air in the way suggested, let them have a thoroughly open situation where they will get plenty of air and all the sun possible, which will not only further the development of stout summer growth, but render them less liable to the attacks of mildew, to which these forced Roses are always more pre-disposed than such as are never subjected to indoor treatment. At the time of turning out examine every plant carefully to see that it is free from that parasite, otherwise it will quickly spread over the whole of the foliage, which it is most desirable to retain in a healthy condition as long as possible, as upon its existence in a great measure depends the plants' ability to grow on at once freely. Roses that have been forced in such a manner as the above, and on coming into flower were removed to conservatories or ordinary greenhouses for decorative purposes, will to some extent have undergone a hardening preparation for turning out; yet if a few square glazed lights could be placed over them temporarily for a week or two it would be all the better, as the leaves of any plant, however hardy, formed under glass are always extremely sensitive to full exposure to the sun out-of-doors. Plunge the pots of the whole in coal-ashes, as recommended for the plants first removed outside. Such as do not need re-potting, or surfacing with new soil, will be much benefited by the use of manure water. Whether this be made from guano, stable or sheep manure, or the like, it will be a great advantage, and a moderate addition of soot is stirred in with it, sufficiently long before use to admit of its becoming clear. Not only does the soot act as a powerful fertiliser, but, more than anything else, it is distasteful to worms; if already existing in the pots, it will cause them to decamp, and prevent their ingress to such as are free from them.

**Roses on Walls, Buildings, &c.**—The ability to produce a full succession of flowers through the summer and autumn by Chinese, Noisette, and Hybrid Perpetual Roses in such positions as the above is, in a great measure, dependent on the treatment they at present receive. If aphides, red spider, and other insect pests—to which Roses, more than most plants, are subject—are allowed to prey upon the foliage, it quickly loses its vitality, which not only gives the plants, shortly after midsummer, an unsightly appearance, such as they should not assume before autumn, but it proportionately reduces their ability to make a second growth, from which successional flowers are to be expected. On high walls, where the syringe cannot be so effectually used, where there are any considerable quantities of Roses so grown, the garden engine should be regularly employed, never allowing the insects to get ahead. In addition to this, the roots should be well supplied with stimulants. Roses on the walls of dwellings have often a very limited extent of border space that admits of being dug and manured; consequently, it becomes necessary to do all that is practicable to invigorate them. They are extremely fond of manure water, and will bear it applied stronger than many plants, and in no situation can it be used with better effect than to such plants as here described. By liberal applications of it, and keeping the heads of the plants clean in the way recommended, Roses on walls can be kept so as to maintain a healthy appearance, with a succession of flowers, until the autumn, very different from the rusty-brown garb the foliage too often assumes after the first flowering is over, rendering them much more objects painful to look upon than pleasing in appearance. There are two things essential to success in

Rose culture on walls, even much more so than in the open ground—the timely destruction of insects and a continuous supply of fertilising elements to the soil; otherwise, despite their unsparing beauty for the short season in which they produce their principal crop of flowers, it is better to dispense with them and substitute other plants requiring less attention.—T. BAINES.

**Pelargoniums**—show and fancy varieties—will now be fast pushing up their flowers, and will be assisted by clear manure water. For home decoration, it is neither necessary or advisable to tie them out so regularly as when they are intended for exhibition; use only sufficient sticks and ties to support the plants and prevent them having an untidy appearance. For summer and autumn decoration nothing is more useful for greenhouses than the Zonal varieties of Pelargoniums. Keep these near the glass, so as to induce short, stout growth, and do not allow them to become exhausted with flowering at the present time, as they will be much more useful after the show and fancy sorts are over. Pot on young plants of Balsams, giving them soil well enriched with a good sprinkling of sand and one-fifth of leaf-mould, in which all quick-growing plants of this description root freely. Late herbaceous Calceolarias will now be coming into bloom. See that these are free from aphides, or every flower will be crippled. These are gross-feeding plants, and delight in manure water, bringing it strongly to the surface of the soil. The old but beautiful blue-flowered *Plumbago capensis* should be grown in all. It is a plant easily managed, and, when in bloom, well bears removal to a dwelling house, where it continues in flower for some time. It is most useful grown in small pots of a 6-in. or 8-in. size. It will thrive in any soil—loam or peat—sufficiently porous. Kalceanthes, which are easily grown and are excellent decorative plants, will now require sticks and ties to support their heavy heads of flower that are fast coming to maturity. They are subject to aphides, which get into the points of the shoots and completely spoil the flowers, but are not easily detected. In these plants, except by the yellow hue they give to the leaves. Dip in Tobacco water, or smoke any that may be affected.

**Specimen Herbaceous Plants.**—If for exhibition purposes, these are generally grown in pots, and to have them well established, they should be potted last year. The pots should all be of one size, say 8, 9, 11, or 12-in. pots, as may suit special requirements. In order to have the pots well filled it may be necessary to insert therein several plants together, especially such small kinds as Aubrietias. Keep them at present in cold pits, and have the pots plunged in Cocoa-nut fibre or coal ash. If the flowers are backward keep on the sashes, but tilt them to a little, so as to admit plenty of air. The following are commonly used for exhibition purposes, *viz.*, *Yucca filifera*, *Veronica* of different sorts, *Delphiniums*, *Tradescantias*, *Irises*, *Cornifolia*, *Centranthus*, *Dicentra spectabilis* and *eximia*, *Centranthus ruber*, *Iberis coreana*, *Astilbe japonica*, *Spiraea palmata* and *venusta*, *Erodium Manescavi*, *Betonica grandiflora*, *Aquilegia corulea*, *californica* and *glandulosa*, *Campanula persicifolia coronata*, *Pyrethrum roseum fl.-pl.*, *Lychnis viscaria fl.-pl.*, *Phlox decussata*, and *Alpine* varieties, *Primulas* of sorts, *Statis latifolia*, and others.

#### Indoor Fruit Department.

**Vines.**—As each Vine in the early houses is cleared of its crop the foliage should be thoroughly syringed with clean water, so that any insects that might hinder the ripening of the wood may be washed off. Those parts badly infested with red spider or thrips must be syringed two or three nights in succession, and a thorough drenching with the garden engine or some equally strong power once a week will greatly help to preserve the foliage, which should be kept as long as possible in a healthy state. Where it is not necessary to close the ventilators for the benefit of tender plants full air may be left on all night in Vineries after the fruit is cut. Any straggling lateral growth which may have been allowed to grow while the fruit was ripening should be cut in to the part whence it started, so that the buds upon which dependence is placed for next year's crop may have every chance of becoming matured. It is a great advantage at all times, more especially in the case of early forcing, to have the wood completely ripened; and now that the nights are getting milder, air in small quantities may be admitted continuously in all Vineries in which grapes are swelling; this supplies the interior of the house with fresh air, which is more conducive to the free and perfect development of the fruit than a close atmosphere. As soon as syringing is discontinued, admit of the fruit colouring, the flow pipes may be painted over with sulphur. It is a waste of fuel to light Vinery fires on fine mornings; a little artificial heat in the evening is generally sufficient to keep up the temperature, and a liberal supply of air should always be admitted in the morning to prevent the temperature from rising too high and scorching the foliage, which is liable to occur. Planting out young Vines in the growing state is a system which may be practised with the best results. Those propagated from eyes this spring are the most suitable for the purpose; with these I never knew a failure to occur; but that cannot be said respecting those grown in pots the preceding season, out back in autumn, and planted while making their second year's growth. The latter are generally stronger than the former, but a healthy shoot, 4 ft., 5 ft., or 6 ft. in length, with abundance of fresh, fibrous, uncoloured rootlets, makes a substantial and sure formation for immediate and future success. The exact time to plant is not of much importance. It may be done now or at any time between this and the middle of July; but, of course, where the space is empty and the Vines ready, there will be no objection to sowing Vines raised in boxes and root-pruned by cutting the soil and roots into squares, as previously advised, are best for this sort of planting, as they can be lifted and planted without ever being placed in pots, which

sometimes interferes with the right direction of the roots. Those propagated in pieces of turf have the same advantage. If the plants have been confined to pots, which is a common way of growing them, the ball and roots need not be much disturbed in planting. Any which have begun to take a circular course should, however, be spliced and placed in such a direction as to enable them to extend readily into the border. Planting may be done in the same way as that recommended some time ago for one-year-old canes. Watering must be punctually attended to in order to prevent the foliage from flagging; and should extremely sunny weather set in, a shading of thin canvas should be used during the hottest part of the day. With a little attention, the whole matter may be performed without the Vines sustaining the slightest check, and by autumn they will be a two-month in advance of what they would have been had they been retained in pots this season and planted out next spring. Among black Grapes for a small house, Black Hamburg and Black Alicante are most suitable, and among white kinds Duke of Buccleuch and Trebbiano. The first named, both black and white, will ripen well with little attention by the end of June, and the other two will keep in good condition, if protected from frost and damp, until February. For a mixed early house, on a larger scale than that just alluded to, Black Hamburgs, including Muscat Hamburg grafted on the common kind, are most suitable, and among white sorts Foster's Seedling, Royal Muscadine, and Beckland's Sweetwater. For a late mixed house, Lady Downes, Alicante, Gros Colman, Barbossa, and Mrs. Pince are the best black varieties, and Pearson's Golden Queen, Muscat of Alexandria, Syrian, Trebbiano, and Raisin de Calabria, the best white sorts. The first house may be made to furnish ripe fruit from the middle of May to the end of September, when the late Grapes will maintain the supply in a moderate way until well into spring. Some daily growing varieties in one house, but some of the latest Grapes up to the country, come from the same house, *viz.*, Alicante kinds. Where many varieties exist each house may be planted with a different variety, but that is the exception rather than the rule.

**Pines.**—The principal work in Pineries at present consists in airing and damping. On very hot days the pathways should never be allowed to become dry, for an arid atmosphere is not beneficial to many Pines, at whatever stage of growth they may be. Where the damping matter is dry, it should be thoroughly saturated with water. Still shut up early in the afternoons, and a little air should be admitted throughout the night, putting it on at about six o'clock in the evening and gradually increasing it from six o'clock next morning, as it becomes necessary. Keep plants showing fruit successively to the Queens well supplied with water at the root. In addition to the insects previously mentioned as being injurious to the Pine ants, which are plentiful in many places, are often troublesome in the case of the fruit. They do not meddle with it when green, but when ripe they either make holes for themselves, or enter by the reuts which frequently occur in over-ripe fruit, especially in the White Providence and Prickly Cayenne varieties, and it is difficult to get them cleared out when once they get established in such quarters. Their numbers may be greatly thinned, however, by placing a few saucers containing treacle or honey near their runs. Where such enticing traps are employed they seldom pay much attention to the fruit. A sponge soaked in either of these sweets serves the same purpose, and when filled with ants the latter may be destroyed by immersing them in hot water.

#### Flower Garden.

Now plant out Pelargoniums, Verbenas, Lobelias, Ageratums, and Petanias. In putting out these summer bedding plants, account should be taken of the time when the greatest display will be required. When it is desirable to have the whole a complete sheet of bloom as early in the season as possible, it is necessary to put the plants in the beds much closer than when the greatest effect is wanted later in the season. In the neighbourhood of London, in most large gardens, if the flower garden is not at its best before the close of the London season its value is, comparatively speaking, lost. In places where the principal display is not wanted before August, the plants should be put in further apart, or they become exhausted before they are required to be at their best. A medium course will, perhaps, be the best in most cases. The distance between the plants will, in some measure, be determined by their size and strength when planted and the nature of the soil. In this style of gardening it is a desideratum to have as good a sheet of bloom on the beds for as long a period as possible, but the plants are crowded together so that they cannot hold the place of many becoming bad. Individual tastes vary in the arrangement of a flower garden, as in other matters, yet there is no reason why anyone should confine his practice to the conventional ribbons, lines, circles, or segments of circles, which it would appear almost impossible to eliminate from modern flower gardening. There are irregular combinations of different colours and plants many years ago that has never been surpassed in pleasing effect. Take, for instance, the beds of Mangle's Variegated Geranium and Purple King Verbenas, planted together so as to run into each other as irregularly as possible. This and many similar mixtures did much to remove the objectionable formality, with reason complained of by many at the present day. It is not alone by a judicious blending of colours in an informal way that summer flower gardening might be stripped of its greatest defects as seen from an artistic point of view, but much might be done in the form and height of the plants associated together. To do this, it is not necessary to plant large coarse-leaved subjects in the midst of low-growing flowers. From the same point of view, it is not necessary to assess there are numbers of light plants of elegant habit that would relieve the too even surface of colours in mass without hiding or nudly shutting out from view all that it is desirable to be seen from any point. The old

*Humea elegans*, now in the shade by plants not possessing half its merit, is one that well illustrates the habit and style of the subjects required for relieving the even surface of form and colour. *Acacia* *limbata* is well adapted for the purpose, as also *Cordylus australis*, *Acer negundo* variegatum, in specimens varying in height from 2 ft. to 4 ft., according to the situation for which they were required. Where carpet bedding is carried out all the plants used, except those tender ones named above, should be put in the places they are to occupy, filling the others in afterwards. On all dressed ground, such as herbaceous borders and amongst shrubs, the use of the hoe and the rake must be kept up, so that the whole may have a tidy appearance. During the present growing weather the mowing machine must be in frequent use, for, if the lawns be allowed to get too long, not only is it objectionable in appearance, but more labour is entailed. Thin or curly-sown annuals; the remnants of many beautiful specimens are rarely seen during being often sown in out-of-the-way places, under the drip, shade, and impoverishing influence of the roots of deciduous trees. If, perchance, they happen to get an open situation, where they might have a chance of showing their true character, they are too often allowed only a fourth of the room they require. Let every species and variety have enough room to grow to its full natural size, by which means the flowers will individually be much larger, and the duration of the plants flowering will be considerably extended. What are known as sub-tropical plants are generally somewhat tender, and their planting may with advantage be deferred for a short time; if possible, the site selected for them should be somewhat sheltered, as they consist principally of species with large and ornamental leaves, which are very apt to be disfigured if exposed too early to cold and boisterous winds. Such plants should be of considerable size when planted, and should have been gradually inured to exposure in the open air. They should be planted in beds of rich or highly-manured soil, and should be abundantly supplied with water during dry weather, in order to induce a rapid and luxuriant development of the magnificent foliage which constitutes their chief beauty, and which, in suitable situations, amid appropriate scenery, seldom fails to produce an effect which is remarkably pleasing.

#### Kitchen Garden.

The rapid growth that most vegetable crops are making necessitates continual watchfulness. Early Turnips will now require thinning, as also Carrots, as soon as they are strong enough in the top, to do this. It may be taken as a rule that any crop which requires thinning is benefited by this being done as soon as the plants are large enough to handle. We frequently see this deferred until they are so large that their necessary removal always seriously disturbs the roots of such as are to remain. In thinning early crops, especially of such succulents as Turnips and Carrots, too many should not be removed, for, as soon as they are large enough for use, a portion all over the beds may be gathered, which will give more room to those left to increase in size. Early Carrots, 4 in. apart at the sowing, will do well, and need no thinning. Do not get too large before they are staked, as, if broken down by the wind, they never take kindly to the supports. As soon as the surface gets sufficiently dry, ply the hoe on all vacant spaces; not only is this disturbance of the soil desirable for the destruction of weeds, but it is also a means of helping the ground to retain its moisture—a matter of great importance in dry situations. Thin out the early crops of Spinach sown between rows of Peas and in other situations. A not uncommon practice is to leave three times the number of plants of this vegetable that there ought to be struggling for existence, the result of which is that there is not a single leaf more than half-developed, the whole being correspondingly tough and stringy, running to seed much sooner than it would if allowed sufficient room. In thinning, leave the plants 6 in. apart.

**Sowing Late Peas.**—Peas for late use should now be sown. Except in favourable situations these late sowings are very liable to be affected by mildew, but much may be done to prevent or mitigate the evil. There are several causes that tend to develop this parasite—a want of water, sowing too thickly, and an insufficiency of air; and, if the land be poor, the evil is thus aggravated. For these late crops the most open position in the garden should be chosen, and if the rows are at long distances—say 36 ft. apart—with the intervals occupied by some low-growing crop, a better chance will be afforded them of being benefited by the wind, which is unfavourable to mildew. The ground should be well and deeply manured, so that the roots may have plenty to sustain them during intervals of dry weather; they should also be sown thinly. By attending to these matters, and never allowing them to want water, which should be so applied as to moisten the soil as far as the roots extend, Peas may be had late, when, with some, they are held as much in estimation as the earliest crops. For the latest crops many advise the small early sorts to be sown, but these are often not satisfactory, as they produce little, and often come in prematurely. Any approved tall kind, such as Emperor of the Marrows or No Plus Ultra, will be found to succeed the best.

**Tripoli Onions Sown in Autumn.**—Where large mild Onions are required for cooking, these can only be got by giving them sufficient room. They should at once be thinned out 8 in. or 9 in. apart, and, if the soil was not sufficiently rich at the time of sowing, the produce will be much larger if it now receives a sprinkling of guano and soot, mixed in equal proportions. Delicate flavoured Onions are much esteemed for culinary purposes; but, unless they are grown freely in soil well enriched, they cannot be had.

**Planting Cauliflowers, Cabbages, &c.**—The earliest sown Cauliflowers and Cabbages will shortly be large enough for planting out.

If the soil in which they are planted is at all dry, give a good soaking before taking them up, by which means they will lift with plenty of roots, and receive proportionately little check.

**Vegetable Marrows.**—If the weather be warm, these may now be put out in the open ground. See that the plants are thoroughly prepared by gradual hardening in a cold frame, with plenty of air previously, or they will be some time before they make any progress. If hand-lights can be placed over them for a fortnight it will much accelerate the growth, tilting them at the opposite side from which the wind blows in the daytime, and closing down at night. The ground should be made very rich for quick, rank-growing plants of this description. Sow more seeds in a hotbed, Vinery or greenhouse, planting out next month.

**Tomatoes** should now be placed in a cold frame with plenty of air during the day, so as to have them well hardened before planting; where they are turned out whilst in a tender state, even if the ensuing weather be fine, they frequently remain dormant for two or three weeks, which seriously interferes with the quantity of produce, as if the growth be at all checked, most of the warm weather is over before the first fruits are ripe.

**Water Supply.**—The greatest want in many gardens is an adequate supply of water, especially in the kitchen garden, the nature of the crops requiring very much moisture. This is more seriously felt on dry soils, yet it frequently happens that, at comparatively little cost, a copious supply might be drawn from higher ground; in which case it can frequently be made available, in the least costly manner, as regards labour, by the use of a hose pipe and tap turned on amongst the growing crops. Where there is a considerable extent of vegetable ground, and where the walls are covered with Peaches and Nectarines—that must be plentifully watered, both overhead and at the roots—pumping is slow work, to say nothing of the frequent unsuitableness of water so obtained for application to any growing plant. Again, the means of conveying water from wells and tanks to the different crops is often not the best. The ordinary water-barrows sold by the general makers are the very worst used—mounted on miserably low wheels, they require three times the force to drag them that would suffice were they properly constructed and of a reasonable height. There is also very often deception as to the size, whether they be made of wood or galvanised iron. Such as are advertised to hold 30 gallons or so will generally, when measured, be found full when they contain 18 or 20. Where, as is the case in most gardens, large or small, the water has to be applied by hand, there is nothing that effects a greater saving in labour than a good water-barrow; the wheels should be 4 ft. high, with a crank axle under the body of the barrow, which should be made of strong galvanised iron, rivetted, made with a good large spout, and hung so as to enable the load being easily tipped over. It should hold from 60 gallons to 70 gallons, with a handle in front fixed in the usual way to the irons that stand upright from the axle and on which the body is hung. Such a barrow, if properly constructed, and the wheels made to run easily, can be moved about on anything like level ground by one man, and with much greater ease than the low-wheeled inventions that will not hold one-third of the quantity. Those who have the good fortune to garden on deep alluvial soil with a cool bottom, or on moisture-holding, peaty land, may think themselves well off in a dry season, but in far the greater number of gardens, even where everything possible in the shape of deep cultivation, liberal manuring, as well as mulching, is carried out, if water is not used freely the crops will be small in quantity and equally wanting in quality; but, where water is used without stint, the produce resulting from it amply repays the cost. One of the first considerations I should urge upon all who prefer an abundant supply of good, tender, wholesome vegetables to the tough, fibrous produce of dry, hardened soil, is to provide the best means for applying water.

#### Extracts from my Diary.

**May 20.**—Sowing two rows each of the following sorts of Peas: Giant Emerald Marrow, British Queen, No Plus Ultra, and Omega. Potting on large Tomatoes for fruiting in pots. Planting out another three: light frame with Telegraph Cucumbers, and one with Green-flesh Melons. Mulching late Strawberries with chaff cut from stable-litter. Clearing off Broccoli stumps, manuring the ground, and getting it dug up for another crop.

**May 21.**—Sowing Canadian Wonder French Beans, and Early Snowball and Strap-leaf Turnips. Planting out two rows of Williams' Delicieux Celery. Putting in cuttings of Telegraph and Tender and True Cucumbers. Potting on double Potanias and Tricolor Pelargoniums. Pricking off Celery and Broccoli plants. Planting out Leeks in deep drills. Looking over Sea Kale beds and thinning out the crowns. Tying up Brown Cos Lettuces to blanch. Weeding walks and hoeing amongst all growing crops.

**May 22.**—Potting on Pelargoniums of sorts for autumn and winter blooming. Pricking off Stocks, Asters, and double German Wallflowers. Looking over the Asparagus beds regularly, and keeping them closely cut down. Nailing and tying in the young shoots on Rose walls, and washing them where required with Quassa-chip water to kill green fly. Earthing up all Potatoes that require it, and renovating the hings round manure frames.

**May 23.**—Sowing Early Horn Carrots for drawing young. Planting out a large space with Early Dwarf Elm Savoy; also Tomatoes against a south wall. Watering Potatoes, Carrots, and French Beans in frames; also the fresh-planted Cauliflowers, Lettuces, and other plants. Looking over the Peach walls, disabbling the trees where required, picking off



## ANSWERS TO CORRESPONDENTS.

**Phorium tenax.**—"T. S." is quite correct in his statement that seed of this plant, imported from New Zealand, is useless, and should not be sold. But the failure can hardly be due to the mere interval of two months required for the voyage thence. It may possibly be attributable to the changes of temperature experienced by the seed during its transit. Nothing is better proved than the fact that seeds of *Phorium tenax* ripened in Europe will retain their vitality for at least six or eight months. I recently sowed a few seeds of the *P. Colensoi*, of last year's crop, and every seed is growing. I have also on two occasions sown seeds of the *P. tenax* with equally satisfactory results.—W. THOMSON, Ipswich.

**Royal Fern** (*Osmunda regalis*).—Would this grow in the open air in London on the south side of Regent's Park? and what sort of ground does it require? Could I get roots of it in Covent Garden?—W. A. B. [The Royal Fern will grow well in any moist somewhat shady situation, and would doubtless succeed in the locality you name provided these conditions are afforded it. Boggy soil suits it best, but it will grow in any good light garden mould. Roots of it may be bought in Covent Garden, and nurserymen also sell it.—S.]

**Chrysanthemums.**—I inserted some cuttings of Pompones last November, and now they are about 12 in. high. Should I stop them? Do they require another shift, and when should I give them the last?—W. S. [The plants, having rooted, should be stopped at once. They should then be shifted into pots one or two sizes larger than those which they occupy in about ten days (say the 25th of May), and will be ready for another stopping about the middle of June; they can be shifted into their blooming pots (9-in. pots are suitable ones for Pompones) about the end of June, and finally stopped the second week in July. Stopping after this would be likely to interfere with their blooming satisfactorily. By adopting the method just recommended, free bushy little specimens (which are exceedingly handsome and useful for conservatory decoration) will be obtained.—R. T. D.]

**Saxifrages for a Rockery.**—The names of a few of the best Saxifrages for this purpose will greatly oblige.—P. J. N. [Saxifrages are nearly all good for the rockery and therefore it is difficult to select. Try the following—

Saxifraga	Saxifraga	Saxifraga	Saxifraga
sizoides	ceratophylla	granulata	pectinata
Aizoon	coriophylla	Hiculin	purpurascens
Andrewsii	cordifolia	hypnoides	rutosa
arietoides	Cotyledon	juniperia	Rochelliana
sepera	crassifolia	longilata	sermentosa
Biddera	Cymbalaria	lingulata	tonella
cesia	dispensarioides	longifolia	valdensis
caespitosa	Gemm	oppositifolia	

**Raspberry Suckers.**—Can any one suggest any way of preventing Raspberries from throwing up suckers between the rows of plants, where they cannot possibly be left.—J. T., *Macedon*. [Digging deeply between the rows causes suckers to be pushed up in larger numbers than they otherwise would be. Instead of digging, just break up the surface slightly with a fork, and mulch with half-rotted manure. Cut off such suckers as are not required as soon as they appear.—S.]

**Snowflakes.**—In answer to "R. F.," I have to state that my experience of all the Snowflakes is unfavourable. I get plenty of leafage, but little or no bloom.—H. M., *Bromsgrove*.

**Daisies on Lawns.**—Can you inform me what is the best method of getting rid of Daisies from turf? The area is too large for what I believe to be the only really effectual remedy—hand-weeding. Is Watson's Lawn Sand useful?—G. J. P. [It is said to be so; and try it and let us know the result.]

**Names of Plants.**—*A. K.*—1. Scilla nutans. 2. *S. N.* rosea. 3. *S. N.* alba. 4. *A. Ranunculoides*, but too diminutive to say with certainty which kind.—*Thunbergia Welts*, *Cephalotaxa Fortunei*.—*J. D.* 1. *Solanum crispum*, a Chilean shrub. 2. *Eupatorium ageratioides*.—*J. R. D.* *Crataegus lobata*.—*O. 1.* Columbine, one of the forms of *Aquilegia vulgaris*. 2. *Euphorbia Cyprisensis*. 3. Variegated Grass (much smaller and more compact than Ribbon Grass). We think there is a small Bambusa in cultivation very like the Grass sent. 4. Raised from seed from the flower; some species of *Polygonum*, not worth garden culture.—*M. & D.* The flower looks very unlike *Aquilegia scerulea*. It may be a variety or a hybrid from that springing up from seed. Seedlings from this plant vary in a remarkable way.—*Major F.* A very handsome specimen of the *Brompton Stock*.

**Cucumber Disease.**—Permit me to solicit the experience of your correspondents in reference to this disease. I have been a successful grower of Cucumbers for years, and I have at the present time a well-constructed span-roofed house full of well-grown plants apparently vigorous and healthy—such plants as one might expect to cut good Cucumbers from wholesale; but, singular to say, scarcely a fruit will they produce. At a certain stage the fruit cankers and with one or two exceptions refuses to grow, a jelly-like exudation oozing out of both the young fruit and in some cases the leaf-stalk. This in time becomes rusty in colour, and when cutting out surplus growth, this substance exudes freely and looks not unlike ice candles. The varieties grown are Tender and True Improved and Telegraph, for all purposes the former perhaps the best in cultivation. My plants are growing in fibrous loam and leaf soil, in which they root very freely. There is a sort of fungus which we have had some trouble to keep in check, and which I believe proceeds from some

Oak slabs that are laid over the hot-water pipes as a bottom for the bed; but, nevertheless, I do not think it has caused the disease to which I have just alluded.—J. E. ROSE, *Muswell Hill*. [This is evidently a case of "gumming," and a bad one—a disease to which the Cucumber is subject when growing too vigorously in some soils. It is questionable if the plants affected can now be cleared of it. The best thing that can be done is to keep the plants thin and let the shoots grow without much stopping; and the house should be freely ventilated, reducing the supply of moisture overhead at the same time. If this be done and the diseased fruits be cut off, washing the gum carefully off the stems as it appears, the plants may outgrow it, as the Posh does sometimes. Perhaps, however, re-planting in fresh and poorer soil would be the wisest course under the circumstances. It is hardly likely that the fungus alluded to caused the gumming, but it may be harmful in some other way. Wooden bottoms should never be laid under hotheds, as they are sure to germinate fungi.—J. S. W.]

**Black Fly on Peaches.**—Can you suggest any efficient remedy for this pest? Tobacco smoke has been used to such a degree as to partially destroy both foliage and fruit, but all the larger insects survive. Several of my friends, who have purchased trees from the same firm which I unfortunately patronised, are suffering in a similar manner, and have done so for the past three or four years. Every care has been taken during the winter to paint the trees with sulphur, &c., and to whitewash the walls, but all to no purpose. There seems nothing for it but to burn the trees and plant something else. Does this black fly infest Vines?—J. R. C. T., *Birmingham*. [Much the roots of the trees with good rotten manure, and give them plenty of water when necessary, in order to induce healthy growth; also ventilate freely, to keep the atmosphere of the house moist. The best remedy we know of is Quassia chips dissolved in water; but if you procure Quin's book of "Garden Receipts" (Macmillan & Co.) you will find that many other good remedies are therein mentioned.—S.]

**Soil for Oranges and Lemons.**—What is the best soil for Oranges and Lemons grown in tubs?—J. C. G. [The best soil for Oranges and Lemons is, no doubt, the soil of the Azores, particularly that of the island of St. Michaels. In England Oranges are very fruitful in the iron-loom of Sussex; argillaceous loam is poison to them when the lime is in excess. Select a rich loam, as little calcareous as possible, and mix the bulk of the loam with charcoal to the amount of about 10 per cent. In the Italian Orange and Lemon plantations the trees are not manured with stable manure; in fact it is carefully avoided; they are manured with greasy rags. Therefore, to the charcoal add oily rags or wool waste (which can be got from the Leeds and Bradford factories) in the proportion of 25 per cent. or thereabouts, and 65 per cent. of loam free from lime, or as free as can be obtained. Keep the trees in an airy house, but not bright. The rays of the sun passing through glass injure the tough leathery leaves of the Orange.—T. F. R.]

**Plants for a Cool Greenhouse.**—I have been erecting a small conservatory on the north side of my house, merely to keep out draughts and cold, and which I have not means of heating. What plants would be most suitable to keep in it winter and summer to make as much effect as possible? or could I heat it by any oil stove or otherwise than by fire and flue, which I cannot erect?—VENATOR. [The selection of plants for an unheated greenhouse is always a difficult matter, inasmuch as even the hardiest subjects dislike having their roots frozen when confined in either pots, boxes, or tubs, a condition that is almost certain to occur in severe winters where no fire-heat can be applied. I should recommend the house being warmed by means of hot-water pipes and a small boiler, heated by an oil lamp, &c., if there be no way of warming it by a small apparatus of the ordinary kind. The least possible satisfaction is derivable from an unheated plant structure, as through the winter and early spring, when flowers are the most acceptable, few can be had. A conservatory placed on the north side of a dwelling, and consequently shaded by it, is in the worst position for growing plants, and such as will bear shade should principally be selected. They may consist of a few *Camellias*, *Myrtles*, the hardy *Yucca recurvata*, *Chamaerops Fortunei*, or *humilis*; *Acacia lophantha*, *Phorium tenax*, *Richardia aethiopica*, *Agapanthus umbellatus*, *Aspidistra lurida variegata*, *Campanula pyramidalis* (white and blue), *Lachenalia tricolor*, *Lilium lancifolium* *spiosum*, *album punctatum*, and *mburum*; *sanatam*, and *eximium*. These might be placed in the open air in spring, when frosts are over, and brought into the house when coming into flower. A good stock of *Chrysanthemums*, grown in the open air in pots in summer, and taken into the house before injured by frost in the autumn, would be useful, as would also *Fuchsias*, stored away in the winter, out of the reach of frost, and brought into the house in spring, where they would grow

nd flower during the summer. There should also be a good supply of Hyacinths, Tulips, Narcissi, Crocuses, and Scilla sibirica in pots; also autumn-sown Stocks, kept in pots through the winter, Primulas in pots, especially the beautiful *P. cortusoides amœna*, wintered in a frame. These should be intermixed with some of the best pot varieties of hardy Ferns. If no heating be possible, the pots of all plants that are kept in the house through the winter, such as Camellias, Myrtles, and the like, should be well covered with dry Fern (Bracken) during the time of frost; this will doubtless be more or less objectionable in appearance, but it will be less so than anything else that could be employed. I am, of course, presuming that in the centre of the house, where such plants are placed, no stage will exist, but that they will be simply set on the floor; but without seeing the house, or having many more particulars about it, it is difficult to give the most suitable advice respecting it.—T. B.

#### Questions.

**Colourless Blooms of Marechal Niel Rose.**—Can any of your readers inform me of a mode of treatment for this Rose which will render the blooms of the much admired rich golden colour? I have it growing both in the open air as standards and on a wall, and also in a greenhouse, and I find that the flowers are always of a very pale yellow tint, although the trees appear to be in perfect health and blooming freely. I at first attributed the want of colour to their growing on high ground in a somewhat exposed position, but I find that there is the same fault under glass.—B. A.

**Weeds in Ponds.**—Can any one suggest a means of killing weeds in a small pond? Ducks keep them down to some extent, but not enough? Is there any poison which would kill the weeds outright? If so, how should it be applied, and in what quantity? The pond is about 60 yds. long, from 10 yds. to 20 yds. wide, and nowhere deeper than 5 ft. (generally much less). The waste water flows through a deep drain into a river about 60 yds. wide and from 10 ft. to 15 ft. deep (which I mention because, in this case, I imagine there would be no risk in the use of such a poison as I wish to find).—E. W. W.

**Top-dressings for Strawberries.**—At p. 436 there is a paragraph relative to the preservation of Strawberries from slugs, snails, &c., written by Mr. D. T. Fish. He there recommends three dressings of the plants with soot and lime. Will he inform me whether I am to do so now, when the most of my Strawberry plants are in full bloom, or whether it will do the flowers harm?—H. B. J.

**Gorse Covert.**—I want to get up a Gorse covert on a piece of dry granite soil. The land, about eight acres, has a southern aspect, and is now producing bunches of short mow Furze, with coarse Grass in the intervals, which together make a tough surface. I shall esteem it a favour if any of your readers can inform me what would be the best preparation for the land to receive the seed, the proper time for sowing, the quantity of seed per acre, and the kind of treatment that would ensure the most rapid growth.—A Novice.

#### GARDEN CATS.

SOME of your correspondents who write on this subject evidently do not see the difference between cats in a garden and garden cats. Where the garden is used by cats simply as a playground or rendezvous, such as small gardens in the immediate vicinity of towns generally are, there is no doubt that cats are very troublesome, as they merely go there to scratch, fight, and disport themselves in a way anything but calculated to improve the condition of smooth seed beds or newly turned out, delicate plants. In a neighbourhood where cats are plentiful the gardens are certain to be visited by them, whether there is one that belongs to the premises or not, and without a good deal of care these strangers will occasionally be shut inside the houses at the time when the lights are closed, and then, if there happens to be a couple that are strange to each other and a fight takes place, woe to the plants, for one or other of the combatants is sure to take up its ground on the top of any specimen strong enough to support it, and there claw and fight with a pertinacity which, whether or not sufficient to repel the assailant, will be destruction more or less to the plant or plants on which it has placed itself, as I know to my cost, half-a-dozen valuable specimens being almost ruined in a single night. This is, however, altogether outside the question, as such an occurrence is just as likely to happen where no cats belong to the place as where they do. I have tried to do both with and without cats in large garden for many years, and I feel certain that, if properly trained to their work, they are most useful. A good many years ago I had a house of ripe Grapes attacked by a mice, and those who have had any experience of such pests in such a place will not need to be told how injurious they are, going, as they do, from bunch to bunch every night, and destroying the berries on the shoulders of each. On this particular occasion I had a number of bunches that I intended to exhibit at several places where I knew the competition would be very keen. I tried poison and half-a-dozen different kinds of traps, but to no purpose; they

preferred the Grapes to the most dainty baits with which I could tempt them. I tried Gorse tied round the stems of the Vines, pieces of tin similarly applied—both of which under like circumstances I had frequently used before—and every device that I had either ever heard or could think of; but without avail. Night after night the destruction went on. Knowing the dislike they have to being where a cat, however young, is, I got from a neighbour a very tame kitten, about some eight or ten weeks old. It was kept confined to the Vinery altogether, and after the first night we saw no more of the mice. Whether they were caught, or decamped, I cannot say; most likely the latter. Henceforward the kitten was encouraged to remain in the houses, and very soon it got used to moving about amongst the plants—Orchids and others of a valuable description—without ever from the first doing the slightest mischief. After this I brought up two or three kittens (all females; I would not have a male cat in a garden), and never was without several that had been from their infancy used to being in the sheds, houses, and about the garden generally, and I do not recollect on a single occasion afterwards being troubled with mice or rats either in the houses or kitchen garden. All that is necessary is to take care that the cats are, from the first, so thoroughly tame that they are not afraid of any one, strangers included, otherwise they are liable to upset pots in their attempts to get out of the way; and they must also be regularly used to the houses, from the kitten state upwards. Those who speak of cats knocking down and breaking plants in springing after mice evidently have never studied their nature at all. Cats do not run and rush after their prey, but watch deliberately until the mouse, rat, or whatever it may happen to be, comes fully out into an open place, where there is no obstruction, and then they make their spring, rarely failing to secure their prey.

As to poisoning mice or rats about houses, it is a practice to which I would on no account resort. One or two mice, small though they are, that have been so destroyed, and that have crept away to die, will be most offensive for quite a week in even a good-sized house, a fact of which I have often had disagreeable evidence, even when the different preparations of phosphorus have been used, which the vendors say dry up the poisoned animals so quickly that no disagreeable smell arises from them, which is simply incorrect. And where rats have been poisoned, I have known floors to be taken up and drains opened at very considerable cost, whereas if the simple precaution of having two or three cats had been taken, well used to being in as well as outside the houses, no rats would have been seen. In places where game is preserved near a garden, cats are difficult to keep after they get twelve months old. In this case the best way is to bring up a young one or two every six months. There is, too, a great difference in the breeds of cats; the smallest and those that have the least disposition to get fat and heavy are by very much better for the destruction of both mice and rats than large ones, which are comparatively less watchful. T. BAINES.

*Southgate.*

**Blue Tits and Caterpillars.**—I placed an old tea-kettle in an Apple tree in my garden, and it was taken possession of by a pair of blue tits, which reared four young ones in it. When they were being fed, before they could fly, I had the curiosity to count now and then how many times the old ones fed them in a given time (a quarter of an hour), in order, if possible, to calculate at what rate they were destroying the caterpillars which infested my fruit trees and the neighbouring Oaks, and I found that it averaged about once every minute, and they generally had two or three caterpillars at a time. Reckoning them at two would give 120 in an hour, or 1920 in a day of sixteen hours, from four in the morning till eight at night, and at this rate, in the three weeks during which the young were in the nest, 40,320 caterpillars would be destroyed. Of course, the young ones would not require so many the first week or so, but if we take into consideration what the old ones destroyed during the time of building, laying, sitting, and feeding their young, it would be equivalent to make up for what the young did not require during the first week or ten days. My only object in giving these particulars is to show the enormous good such birds do as insect destroyers, and that if they are mischievous among the fruit buds at certain times they more than compensate for the damage during the summer months.—J. HAM, *The Wren's Nest, Ashwood Bank, Worcestershire.*

**Lawn Mowers.**—I find from experience that McKenzie's "President" Lawn Mower is a very good one. It is simple in construction, very easily worked, and the readiness with which the bottom plate can be adjusted to the knives is a great improvement.—J. WOODBRIDGE, *Syon House, Brentford.*

"This is an art  
Which does mend Nature: change it rather: but  
THE ART ITSELF IS NATURE."—*Shakespeare.*

### TROPEOLUM SPECIOSUM AND POLYPHYLLUM.

SOUTH country cultivators can grow many plants successfully which it is mere waste of labour and time to cultivate in the north; on the other hand, we find many beautiful plants that revel in the moisture and usually sharp soil of the north. Among the latter we may reckon these two beautiful species of *Tropæolum*. To establish speciosum here it is merely necessary to dig in a handful of the long succulent rhizomes in a shrubby border, or at the foot of a hedge or wall. It will not make much show the first year, but in every succeeding year it will increase in beauty and multiply like a weed; but, unlike a weed, it is quite harmless. It does not exhaust the soil, and its tender tendrils swing from branch to branch of the most delicate shrubs, or the stouter herbaceous plants, such as *Larkspur*, *Antirrhinum*, *Campanulas*, and the like, without the least injury to them. One peculiarity it has which is rather bewildering to one not acquainted with its habits—it is a great traveller. Plant a colony of the roots in a carefully selected corner, and they will appear in due course, though of weakly growth the first season. You will look anxiously for them in the same place next year, but probably in vain; they will not appear, and you will think—"Ah! that is just what I heard of this *Tropæolum*; it is a delicate plant, and does not agree with our climate." But you will be surprised some fine morning in July to see a coruscation of coral-like blossoms, set in delicate grass-green foliage, suspended on a bush or trellis several feet, perhaps even yards, from the carefully-labelled spot where you planted the roots. I have seen it forsake a border and break out in the middle of a gravel walk. It will never, however, if soil and climate suit it, forsake a wall or hedge, though appearing at different places thereon. *Tropæolum polyphyllum* does not seem to travel at all. It makes a charming contrast to the other, with its yellow flowers and glaucous leaves; but it is not such a beautiful or striking plant. I think it is fortunate that the same plants do not succeed all over the kingdom. By choosing those which suit the different districts we obtain the best results and avoid that sameness in effect which is one of the besetting snares of modern gardening. I always mentally protest against that favourite phrase of commendation, "This charming plant should be in every garden." *Geranium*, *Calceolaria*, and *Lobelia* are in every garden, and who cares for them now? SALMONICEES.

—Perhaps there may be some truth in the remarks of "J. S. W." (see p. 468) about the capricious nature of *Tropæolum speciosum*, and with me, both north and south, it has always grown and flowered satisfactorily with this exception, that in the north of Scotland it almost becomes a "weed." I was much struck with the beauty of this plant last autumn at the various stations along the Highland Railway, more especially about Forres, where one had to restrain oneself from exclaiming "prodigious!" at the masses of fiery scarlet clinging to the fences. I have found the following mode of treatment to answer in the southern counties. Usually I believe this plant is propagated by means of the fleshy roots, but I merely take off cuttings in the ordinary way when they are about 4 in. long; these shoots are produced freely about the end of September after the plant has flowered, and by placing them in a gentle heat they soon root, and when fit for potting off they are put into 3-in. pots, wintered in a cool house, and finally planted out about the middle of May. When the site is chosen I always take about a barrowful of the existing soil away and replace it with good turfy loam; when planted, it is desirable to place a spreading branch for the plant to cling to. When young, it is impatient of handling, and it never looks so well as when allowed to ramble naturally. Being of a very accommodating character, this *Tropæolum*

can be used in a variety of ways. Last season the most effective combination produced here was by training some shoots of *Clematis Jackmani* over a plant of *Jasminum nudiflorum* and allowing a *Tropæolum speciosum* to ramble freely amongst them. Such a combination as this is pleasing, and takes off much of the stiffness usually seen amongst climbers. *Ragley Gardens, Alcester.* A. HOSSACK.

—Like "J. S. W.," I have not been able to get this plant to grow, though in the north I have seen it in great beauty. At Bowhill, Selkirk, there is scarcely a cottage that is not covered with it, and it grows in the greatest luxuriance; such at least was the case a few years ago. It takes some little time to get it well established, and rainfall and a good climate may have a good deal to do with its success. Bowhill is about 540 ft. above the level of the sea, and has an average annual rainfall of about 38 in.—J. M.

### HORTICULTURE AT THE PARIS EXHIBITION.

THE special competitions which are to take place each fortnight during the exhibition in Paris are held in the twenty houses placed here and there in the gardens of the Champ de Mars and Trocadero. The first two shows have not been so well responded to by exhibitors as might have been expected, a circumstance no doubt caused by the delay that has taken place in furnishing the houses; but several fine collections were nevertheless contributed. Among the first of these, the Rose trees, Rose bushes, and dwarf tree Roses of Messrs. Leveigne & Son and M. Margottin, nurserymen of Paris, were remarkable as regards the quantities exhibited of choice varieties and fine blooms. M. Margottin, jun., had some fine specimens of Roses in pots cultivated in the English style. M. David, of Versailles, furnished a group of *Anthurium Scherzerianum* in flower, a magnificent variety, the spathe of which measured nearly 6 in. in length. M. Bertrand, an amateur residing near Paris, also showed *Anthuriums*, which filled one house entirely. On ten specimens there were no fewer than forty to fifty blooms all remarkable for size and colour; these plants occupied the centre of the house, while the tables around were furnished with younger ones, each bearing from three to six flowers. The general effect thus produced was most satisfactory. M. Lemoine exhibited a fine collection of *Azaleas*. Messrs. Chantrier Bros., nurserymen, Montfontaine, had twelve new *Dracenas* raised by them from seed. These plants differed, entirely in appearance from those of Mr. Wills. Some of these were not all that could be desired; but a brilliant future is no doubt in store for the kinds named—*Regis*, *Bergmani*, *Verloti*, *Chantrieri*, and *macrophylla*; this last has very broad and handsome green leaves, and is altogether a magnificent plant. The collections of *Gloxinias* from M. Duval, of Versailles; the *Calceolarias* and *Cinerarias* from Messrs. Vilmorin, Andrieux, & Co.; the charming varieties of *Primula japonica*, of all shades, from pure white to deep red, and the baskets of annuals, from the same exhibitors, were much admired. The *Pansies* of M. Bastillard, of Boulogne; the plants of *Mignonette* in pots of M. Machet, nurseryman, Troyes; the *Bromeliads* and *Orchids* exhibited from the Jardin de Luxembourg, also deserve mention; but the chief point of attraction is the splendid collection of plants from Mr. Wills, of South Kensington. This is placed in Mr. Boyd's conservatory, and is a marvel of good taste and arrangement. The house is supported by three columns, which are entirely covered by pieces of cork bark, on which are growing *Ferns*, *Begonias*, *Bromeliads*, &c. The bases of the columns are surrounded by charming clumps, in which Palms play an important part, and on cork rockwork are *Ferns*, *Dracenas*, *Anthuriums*, *Gloxinias*, &c., while around the sides of the conservatory are other groups bordered by rockwork, and containing all the new plants introduced within these last few years. Among these many be mentioned *Dracena ignea*, *Elisabethæ*, *Ernesti*, *Mrs. Wills*, *voluta*, *Cantrelli*, and, above all, *Willisi*, a kind remarkable for its fine habit and bright colour. The *Crotons lanifolium*, *Queen Victoria*, noble, *Rex*, *Challenger*, &c., are also grand in their way, as are likewise the *Anthuriums Veitchi* and *Waroqueanum*, *Lomarias*, and *Dieffenbachias*. In short, Mr. Wills' exhibits are as remarkable as a whole as in detail, and they attract universal attention and admiration. The open air *Rhododendrons* form an important feature. They are situated at the foot of the terrace in front of the palace of the Champ de Mars, and cover a surface of more than 5000 ft. Seen from the terrace which overlooks them, the effect of these *Rhododendrons*, covered by millions of flowers, is magnificent. They consist of the best varieties from the nurseries of Messrs. John Waterer, of Bagshot, and Anthony Waterer, of Knapp Hill. Messrs. Truffaut, of Versailles, Moser Croux and Paillet are also among the principal exhibitors. A. T.

## MIMULUS CULTURE IN POTS.

I HAVE occasionally seen, in country districts, Mimulus grown by cottagers as window plants, and with astonishing success. I have also met with good plants of them at cottagers' shows thoroughly well grown and flowered. Mimulus have been much improved of late. The introduction of the copper-coloured *M. cupreus*, some years ago, placed in the hands of cultivators an admirable subject with which to cross other kinds, and it has been successfully and well used for that purpose. We are now familiar with strains having large and handsomely-marked flowers, but they are, nevertheless, not so generally grown as one could desire. The fact is, a little special treatment is needed. The plants require a cool, shaded, airy position, and they should not be allowed to suffer from want of water. A cool north house suits them best, and here a fine display can be had all through the summer and autumn by keeping up a succession of plants. The seed is so small that a mere pinch will produce many plants, and if a little be sown in a pan or pot in some gritty soil in September, by January the young seedlings will be quite strong enough to pot off singly into 3-in. pots, and finally shifted into 5-in. pots to flower; or, if larger specimens be wanted, into 8-in. pots. The Mimulus is quite hardy; no heat is required, but by keeping the plants in a greenhouse all the winter they make certain progress. A little more seed can be sown in the end of February, and the produce of these two sowings will yield quite enough plants to keep up a good supply through the season.

Mimulus succeed best in a north house where the floor can be sprinkled with water and the plants occasionally syringed. In a house where the temperature is high green fly is apt to attack them, but where they are kept cool and growing vigorously in a moist atmosphere this pest rarely troubles them, and, if it does, a good fumigation with Tobacco smoke soon kills them. If there be a few exceptionally good varieties, a selection may be made for seeding from and for propagating by division of the roots. If the plants be cut down after they have done flowering and put into a cold frame they will throw up a number of shoots from the roots, and if these be divided and potted into good soil, they in course of time make excellent plants. But the cultivator should always make a point of raising a few seedlings; it is so pleasant to watch the expanding flowers, and even if some prove of an inferior character, some will certainly be satisfactory. A good strain of seed cannot fail to yield a good supply of plants.

There is no reason why Mimulus should not be grown in the open border, but heavy rains and rough winds injure the plants severely, and soon rob them of their beauty. If planted out, the plants should be supported by stakes so as to lessen the chances of danger from wind, and if dwarf growing plants can be put about them, they will not only act as a screen against wind, but will help to keep the soil moist and cool. A pleasing effect could be secured by a bed of Mimulus somewhat widely planted with mixed Verbenas as a base. This combination would be sure to give satisfaction; and the carpet of Verbenas would supply the coolness and moisture at the roots above recommended. Phlox Drummondii or Petunias kept pegged down and dwarf Chrysanthemum-flowered Asters would also serve for a base; and, in fact, many combinations of this character might be worked out. Above all, a few plants should be well-grown in pots, for it is in this way that Mimulus are seen to best advantage. D.

**Rock Roses.**—In the out-door garden at this season there are few more brilliant sights than that afforded by masses of these beautiful evergreen shrubs, and, as they are of the easiest possible culture, they cannot be too highly recommended. They belong to the genus *Helleborus*, and are, with but few exceptions, dwarf and compact in growth, and their flowers, which much resemble single Roses in miniature, are borne in great profusion, and present a remarkable diversity of colour. The common Rock Rose (*H. vulgare*) is extremely variable both in habit and colour, and from it has sprung the host of varieties enumerated in trade lists; indeed, we need but this species to represent, for garden purposes, the variation, illustrated in all the dwarf shrubby species of the family. There is also a double-flowered and a variegated-leaved variety of it. The kinds forming bushes of all or growth are also very desirable; the most strikingly beautiful in

flower at the present time are *H. formosum*, a Portuguese species bearing large yellow flowers with a very dark spot at the base of each petal, and *H. Libanotis*, a kind that bears smaller pure white flowers. Last, but not least, may be mentioned the *Truffe* *Suo Rose* (*H. Tuberosa*, so called from its truffe-like tubers), a very dwarf herb with broad leaves, very different in aspect from the preceding, and one which bears blossoms as large as those of any of the family, of a bright yellow with a dark centre. All the varieties of the common Rock Rose will thrive in an ordinary border, provided it be exposed, but they look more natural and are more luxuriant on sunny banks, or on rough parts of a rockery. The common sorts are indifferent as to quality of soil, but prefer a rich loamy compost. A collection of named varieties may now be seen in the pleasure grounds at Kew.—A.

**National Carnation and Pinks Society.**—We have received the schedule of the southern section of this Society's show, which is to be held in conjunction with the meeting of the Royal Horticultural Society on July 23. The prizes offered are in every way satisfactory, and ample provision has been made for amateurs as well as for large growers. In most of the classes five prizes are offered, so that a good competition may reasonably be expected.

**Hardiness of Larix Kœmpferi.**—I notice in THE GARDEN of the 20th ult. (see p. 363) [an inquiry as to the hardiness of this tree, and in the reply it is stated that there are no large specimens of it in England. I was in London in 1859, at a sale of plants brought home by Mr. Fortune. Among them were some fine specimens of Larix Kœmpferi. I purchased a number of these for our grounds in America, and the best of them has now a height of 35 ft. Since it has been planted the cold has been as low as 14° below zero, Fahr., and this tree has sustained no injury. It may, therefore, be considered perfectly hardy with us. Our largest specimen is very beautiful. Its rich pea-green tufts of leaves grow on the upper sides of the branches, and, like the Cedar of Lebanon, it is most beautiful when seen from above. It bore cones last year, but they were not fertile. We have endeavoured to propagate it, without success. We can find no stock on which it will grow, and fear we shall have to rely on seedlings only.—S. B. PARSONS, Kissena Nurseries, Flushing.]

**Meeting of Fruit Growers.**—On Tuesday, the 14th inst., a dinner took place at the "White Hart," Borough, professedly of gentlemen of Kent engaged in the growth of fruit, and of salesmen of the Borough Market. Mr. W. Mills, of Farningham, presided. It was remarked, however, that but few of the salesmen attended. Mr. Wood, in responding to the health of "The Growers," said at seventeen years of age he had ten acres of fruit land to manage, and he now had about 200 acres, which, however, he wanted to reduce, owing to the independence of the laborer and other matters. He spoke highly of the salesmen. Mr. Arnold, of Spitalfields, defined "the true grower" as a man who sent his fruit to the salesman to dispose of and stayed at home. A discussion on the practice of demanding a deposit on all baskets before the fruit left the sellers' hands resulted in approval of retaining the practice, one gentleman candidly admitting that he had made a summer-house out of empty crates, &c.

**Erythronium americanum.**—Referring to the notice of this plant (see p. 365), where it is stated to have flowered at Henley-on-Thames, I may add that I have flowered it for some years, having about four years ago collected some hundreds of roots of it in America. I planted it in various situations, but it flowered very sparingly; and the number of roots are evidently greatly diminished.—HARRY BUCKLEY, *Wheeler's Road, Edgbaston, Birmingham.*

**Lobelia pumila and Viola Perfection.**—Referring to Mr. Hinde's excellent notes on these plants (see p. 491), allow me to inform him that if he will substitute *Viola Blue Bell* for *Viola Perfection* he may do without *Lobelias*, and consequently save the additional labor of planting *Violas* to succeed them in August. *Viola Blue Bell* planted in February never fails to give a full succession of flowers from March to the end of November.—W. W.

**Rodgersia podophylla.**—This is certainly a very striking and curious plant. I introduced it from Japan in 1874. Here, however, it is not quite hardy; it likes a peaty soil and a shady situation; it is easily propagated by cutting the stoloniferous rootstock from one of which I remember to have made as many as twenty plants in one year. It was, if I remember rightly, named by Professor Asa Gray, in honour of Captain Rodgers, who had a command in the American-Japanese expedition.—MAX LEONHART, *Baden-Baden.*

**White Asparagus.**—I perfectly agree with your remarks on Mr. D. T. Fish's letter on Asparagus (see p. 452). I have eaten the large white Asparagus both in France and Germany, and have found it edible almost down to the end which one holds in one's fingers, and more delicious than any green English Asparagus. The reason of this is that the cooks abroad not only understand boiling it better, but with a sharp penknife they peel off all the outer hard skin. This latter is the great secret of tender Asparagus.—M. C.

## NOTES OF THE WEEK.

**Fine Clematises Out-of-doors.**—The Hon. and Rev. J. T. Boscawen has sent us from Lamorran, Probus, two magnificent blooms of Clematises. One measured 7 in. in diameter and the other nearly 9 in. Mr. Boscawen states that they were cut from plants that have grown out-of-doors for many years, and that reach half way up to the top of his house. He adds that he never cuts down, so the blossoms are from the old wood.

**Verbasum olympicum.**—A beautiful and stately plant of this is now in full flower here; its flower-stem rises to a height of 6 ft. or more, with many branches, the flowers on which open at the same time as those on the main stem; they are deep glossy yellow, the whole a showy pyramid consisting of many hundreds of flowers.—MAX LEICHTEN, *Baden-Baden*.

**Double-blossomed Furze or Gorse.**—The fine effect produced by this plant may just now be seen to advantage in the park at Farnborough Hill, Hants, where there are hundreds of bushes of it dotted about, and also in groups. Associated with the Copper Beech, especially as a background, the effect is charming.—W.

**A Yellow Torenia.**—Our correspondent, M. Lebenf, informs us that he has a yellow Torenia about to flower. This will at once settle the question as to the presence of yellow and blue flowers in the same genus.

**Lilies at Tooting.**—We are now on the threshold of the Lily season. The first to bloom in my collection is *Monadelphum* and *M. Scovitisianum*, two beautiful yellow varieties; the former is distinguished by its primrose anthers, the latter, as a rule, by its larger flower and its maroon anthers. I hope to give you a record from time to time of what is in bloom among my Lilies, and it would be interesting to compare the time at which they flower in various parts of the country under similar circumstances, *i.e.*, Lilies grown in the open ground without protection.—P. BARR.

**Azalea indica as a Hardy Shrub.**—I have the White Indian Azalea now in flower in the open air in the form of three plants that were turned out into our Rhododendron beds three years ago. Although we never give them any protection, they continue to improve yearly, and promise to be interesting objects amongst choice shrubs. The largest of the three is about 4 ft. high and as much through, and at present on solid mass of bloom. We mean to try a few more in a bed by themselves. *Eriostemon intermedium* and *Nerium splendens* are also doing well with us on a west wall. The *Eriostemon* blooms satisfactorily every season.—JOHN MORRISON, *Narrow Water Castle, Warrenpoint, Co. Down, Ireland*.

**Dendrobium chrysoxum.**—In Messrs. Low's nursery at Clapton hundreds of plants of this showy Dendrobium may now be seen in bloom, making a very attractive display. They are growing in small wooden baskets, and the number of flowers produced from such comparatively small specimens is remarkable, and can only be attributed to the healthy condition of the plants and the matured state of the bulbs. *D. snavissimum*, a plate of which was given in THE GARDEN (see p. 166), is also finely in bloom. Thousands of plants of other kinds are opening their flower-buds.

**Exhibitions of Irises.**—The Iris is now what may be termed in mid-season. *Pumila* and most of the dwarf varieties have done flowering, and the larger forms of the germanica type are rapidly opening. Many of your readers may be desirous of making themselves acquainted with the varieties of this, the freest-flowering and most accommodating of the family, and to give facilities for inspection I have arranged to have a collection on exhibition at the Horticultural Gardens, South Kensington, and also at 12, King Street, Covent Garden.—P. BARR.

**Oxalis violacea alba.**—This is one of the showiest plants in my rock garden. It is quite hardy, has been in bloom since April, and will continue so for several months to come; the individual flowers are large and produced in bunches in great abundance, the clear white of the flowers being brightened by the large somewhat glaucous foliage. I consider this a first-rate plant.—M. LEICHTEN, *Baden-Baden*.

**Rock Plants at Edinburgh.**—We have sent you plants of *Iberis spheerata* and of *Saxifraga Wallacei*, lifted from the rockery here out-of-doors, where for more than six weeks they have been the admiration of all visitors, and, in spite of the changeable, showery weather, they have flowered well; they are certainly most effective plants on the rockery in spring. We exhibited some of the *Saxifraga* at the great show of the Royal Caledonian Horticultural Society here on April 10, and were awarded a first-class certificate for it. It is much finer than any other *Saxifraga* with which we are acquainted.

The *Iberis* is a seedling from *I. sempervirens*, having as large heads of flower as *I. corifolia*, but coming into bloom three weeks earlier, and, as the flowers are of good substance, they last a long time.—DICKSONS & Co., 1, *Waterloo Place, Edinburgh*. [Both the plants sent are very showy and excellent of their kind. The *Saxifraga* is a valuable variety, but whether a seedling or one of the very numerous so-called species of the Mossy group, few but experts in *Saxifragas* could say. We fancy we have seen something like the *Iberis* before under the name of *I. Garreuxiana*.]

**Asparagus Culture in France.**—As an illustration of the extent to which Asparagus is planted in France, we may say that one grower alone, M. Godefroy Lebenf, of Argenteuil, disposed of four hundred and thirty-six thousand plants during the planting season now closing.

**New Park at Hastings.**—The extension of St. Andrew's Gardens, Hastings, to be known hereafter as the People's Park, is being carried forward under the superintendence of Mr. Marneck, and will, when completed, prove an additional attraction to visitors.

**Specimen Orchids.**—A special prize for a specimen Orchid is offered by Sir Trevor Lawrence, Bart., M.P., for competition at the great show to be held at South Kensington, on May 28 and three following days. The prize is of the value of £10, and is offered for the best specimen consisting of a single plant—not a specimen made up with several small examples, as is so often done to the injury of small growers.

**Gladiolus Colvilli albus.**—This is a fine variety for conservatory decoration. Now (May 20) we have plants of it in 5-in. and 6-in. pots, each bearing from sixteen to eighteen spikes, on each of which there are, on an average, four or five flowers. The latter are individually large and pure white, with just a slight trace of pale green down the middle of each petal. Its flower-spikes are about 2 ft. high, and they are thrown well up above the foliage, of which there is no scarcity.—J. M.

**Masdevallias at St. John's Wood.**—There will shortly be a fine display of these brightly-coloured, singular-looking Orchids in the Pine-apple Nurseries. Grown in the front of a large, light, airy house, the plants have made large, thick, leathery leaves, and are furnished with an unusual amount of flowers, which, being stout and hardy, are larger and much brighter than those produced on plants grown under less favourable circumstances, and they also last longer. We also noticed plants of *M. amabilis lineata* bearing flowers of a much richer colour than those of the type, whilst those of *M. Lindeni* and *Harryana* were very bright. Considering how easily *Masdevallias* may be grown in any cool, light, conservatory in any aspect, their culture should extend much more rapidly than is even now the case, for few Orchids possess flowers more brilliant in colour or more interesting in form.

**International Horticultural Exhibition.**—A meeting was held at South Kensington on Tuesday last to consider the desirability of holding an international exhibition in London in 1879. Mr. G. T. Clark occupied the chair. There was a good attendance of the leading horticulturists, among whom were Messrs. Veitch, Williams, Bull, W. Paul, George Paul, Baines, Wills, Dean, Kellock, Moore, Rollisson, Dr. Denny, Dr. Hogg, and others. It was decided that, should an exhibition be held in London in 1879, that a committee and secretary should be appointed to carry out the arrangements.

**Rhododendrons in the City.**—The authorities of the Bank of England have entrusted Messrs. John Waterer & Sons, of Bagshot, to furnish a supply of Rhododendrons to be planted in the garden attached to the Bank, and we understand that the plants are already in the positions which they are to occupy.

**A fete given by Baron Alphonse de Rothschild to the Princess and Princess of Wales during their visit to Paris was remarkable for the beauty and novelty of its floral decorations. In the supper-room, in the centre of a table in the form of a horseshoe, was raised a large block of ice; this was decorated with flowers of the most beautiful description. There were also some plants, too, not yet in commerce, and only to be found in the fine houses at Ferrières, under the direction of M. F. Bergman.**

**Clematis montana.**—I have just now on the front of my house a large plant of this well-known Clematis in full flower, and I never saw anything more beautiful. The greater part of the house is covered with a sheet of pure white flowers, so dense that one can scarcely see any leaves, except those of a Jargonelle Pear, through and over which the Clematis has rambed. This is still one of the most useful of early flowering Clematises, and, being a very strong grower, exceedingly useful for covering walls, trellises, &c. I am surprised that it is not more widely known and planted than it is.—W. W. JOHNSTON, *Edinburgh*.

## NOTES FROM KEW.

**Hardy Trees and Shrubs.**—Unquestionably the most beautiful of the many shrubs at present in flower are those belonging to the Heath family. Omitting the many species and varieties of *Rhododendron*, the hardy *Azalea* deserves special mention. Every shade of colour, from white to blood-red, and from yellow to purple, is furnished by the numberless varieties which, both from natural variation and by the skill of the hybridist, have been derived from *Azalea pontica* from Asia Minor, and the American species *A. celsæ*, *A. nudiflora*, *A. viscosa*, and others. A large collection of these forms in the pleasure grounds is just now one of the most striking features at Kew. For elegance and beauty combined few trees surpass *Halesia diptera* and *H. tetrapetra*, the former from Georgia and Florida and the latter from Virginia and southward. In the United States *H. diptera* is called the Snowdrop Tree and *H. tetrapetra* the Silver-bell Tree; both produce their lovely, white, bell-shaped flowers in great profusion, even in a small state. *Cistus Berthelotianus*, from the Canary Islands, is a splendid species, with deep rosy-pink flowers nearly 3 in. in diameter; it, however, requires a very sheltered position in the open, or else a place on the wall. Another member of the Rock-rose family, *Heliathemum Liliacoides*, from the Mediterranean region, is a neat little shrub, about 18 in. in height, with Gorse-like leaves and panicles of pure white flowers, each of which has a brush-like tuft of golden-yellow anthers. *Gonista hispanica*, from Southern Europe, is a dwarf, spiny shrub, so dense in growth and so covered with its corymbose racemes of flowers as to look, from a distance, like a large, golden-yellow cushion. *G. scariosa*, another South European species, is a desirable plant of neat habit and a very free bloomer; it attains a height of 2 ft. or more, and a small branch of it has a considerable resemblance to the Dyer's-greenweed (*G. tinctoria*) of our English meadows. *Oslearia argophylla* is a shrubby Composita from Australia, having large leaves dark green above, silvery-white below, and much-branched, umbellate panicles of creamy-white flowers; the leaves (like those of the Woodruff of Britain) become very odoriferous when dried, and exhale a powerful but agreeable scent of Musk; this shrub does well on a wall. *Spiræa cana*, from Dalmatia, is a very pretty, dwarf bush, with small, hairy leaves and white flowers. The Russian *S. hypericifolia*, a larger grower than the last, has also white flowers, which are most freely produced. *Ecochordia grandiflora*, from North China, is sometimes classed with the Spiræas; it has, however, much larger and more handsome white flowers than any of the true Spiræas. *Rhodotypos karrerioides* is a Japanese shrub with pure white flowers (followed by purple berries) and toothed, plaited leaves.

**Hardy Herbaceous Plants.**—The finest of this weak's herbageous plants, if we take a blaze of colour as the standard, is the Eastern Papaver orientale var. *major*; this handsome perennial has large brilliant scarlet blossoms, each of the petals bearing a blotch of black at its base. The Columbine too are now furnishing their splendidly striking blossoms in abundance. One of the most striking is *Aquilegia atrata*, an Alpine species, with black-purple flowers. *Ionopodium acaule* is a very dwarf Crucifer from Portugal; this charming little plant hardly attains a height of 2 in. or 3 in., and is covered with its delicate lilac flowers. *Podophyllum peltatum*, the May Apple, wild Lemon, or Racoon Berry of the United States, in a shady and damp situation produces its large white flowers very freely; the active resinous principle from the rhizomes is called podophyllin, and is much in demand in some places as a medicinal agent and substitute for mercurials—it is, indeed, sometimes called vegetable mercury. The Oriental *Ethionema grandiflorum* is a shrubby Crucifer with linear leaves and long racemes of deep rose-coloured flowers. *Saxifraga cymbalaria* is a pretty little annual with bright yellow flowers and leaves exactly like those of the Ivy-leaved Toad-flax (*Linaria cymbalaria*); it is well worth introducing to the rockery, as it will sow itself and never become a troublesome weed. *Viola palmata*, from the United States, is a desirable perennial with pretty palmate leaves and purple flowers. The North American *Pentstemon confertus* is an excellent plant for the front of the herbaceous border; its racemes of purplish flowers are borne on short peduncles and are very pretty. *Camassia esculenta*—the Quamash of the North American Indians—ought to be in every garden; its tall scapes, bearing numbers of handsome, large blue flowers, make a fine show. *Tolipa australis* is a South European species with golden-yellow flowers, the segments of the perianth being narrow. *Borago laxiflora* has the rough leaves of all its class and delicate sky-blue flowers borne singly on rather long stalks; it grows to a height of from 1 ft. to 1½ ft. *Echium rubrum* is a very fine plant, with narrow leaves and red flowers. *Polemonium humile*, from North America and Siberia, is a lovely little perennial not more than 3 in. in height; the leaves are pinnate, and the flowers blue, with a yellow centre. *Anthericum Liliago* var. *algeriense*, an Algerian form of the St. Leonard's Lily, grows taller and bears flowers

rather larger than those of the type, *Astragalus fruticosus* is a Siberian plant of dwarf, compact habit, having pinnate leaves and heads of purple flowers. A colour rarely met with is furnished by *Lathyrus intesus*, a desirable yellow-flowered perennial.

**Greenhouse Plants.**—*Acradenia Franklini*, a Tasmanian member of the Rue family, named after Lady Franklin, may now be seen in flower in the Winter Garden; it has opposite, ternate, fragrant leaves and corymbose panicles of white flowers; it is a shrub of dense habit, and is suitable for planting out in a cool conservatory. *Bossia lynchophylla* is perhaps the most charming and elegant of all the greenhouse plants now to be seen in flower at Kew; the long, slender, pendulous branches are so thickly clothed with fine orange-yellow and red-brown flowers as almost to hide the narrow leaves. *Leptospermum myrtifolium* and *Kunzea sericea* are two nearly allied members of the Myrtle family; both have conspicuous white flowers and are well worth cultivation. *Phyllocactus Schlimii* has large, fiery-scarlet flowers, and seems to blossom well even in a small state; it is a very desirable sort. For training along the rafters of a glass-covered corridor, or even for planting outside in sheltered situations, *Bignonia speciosa*, from North America, can be thoroughly recommended; it is a handsome climber, with dull orange-red flowers. One of the most beautiful of the Indian *Rhododendrons* is *R. Veitchianum*, with large flowers, pure white, with the exception of the base of the upper portion of the corolla, which is shaded with yellow.

**Orchids.**—*Dendrobium anoumum*, from Borneo, is a showy species, with large flowers similar to those of *D. macrophyllum*, and, like those, rather unpleasantly scented. *D. Bensoniæ* has white petals and sepals; the shell-shaped lip is broadly bordered with white, the remaining portion being light yellow, which changes to deep orange, with the exception of two crimson-purple blotches. *Oncidium Schlimii*, from the province of Oçana, in New Granada, has a long, straggling panicle of yellow and brown flowers; it is a handsome and distinct species. *O. sphacelatum* has a long panicle of flowers, which are remarkable for the fine yellow and rich brown of their sepals and petals. *Odontoglossum maculatum* has brown sepals, the petals and lip being light yellow, blotched with brown. The Mexican *Lycaste Deppei* has greenish sepals; the petals are white, spotted with purple towards their bases, the bright yellow waved and crisped lip being bordered and spotted with crimson. *Pholidota imbricata* is much more curious than pretty; it is an Indian epiphyte, with long, imbricated, pendulous, two-ranked spikes of whitish flowers, which present a striking resemblance to the tail of the rattlesnake.—†.

**Erysimum pachycarpum.**—In the Kew collection we noticed the above new Crucifer in flower, and, though as yet not fully developed, it bids fair to be very ornamental. It has stout, erect stems about 15 in. in height, clothed with long lance-shaped leaves. Its flowers are borne in terminal racemes, and are of the colour and size of those of the well-known *E. profusianum*. It is a native of Sikkim Himalaya, and in the "Flora of British India" we find it described as attaining a height of from 2 ft. to 3 ft., with the other parts developed in proportion. Its length of duration is not mentioned, but whether it be a biennial or perennial, it will eventually become, most probably under cultivation, a desirable acquisition.—W.

**Clematis Viticella rubra grandiflora.**—Undoubtedly in the large group of Clematitides now in cultivation we get the finest hardy decorative plants for the garden that can well be imagined. They are useful in many ways—as greenhouse and conservatory climbers planted out to run up pillars, as specimen plants for the house and exhibition table, as climbers for walls, poles, verandahs, &c., in the open air, for covering rootwork, and for bedding out; there is scarcely a spot in which the most robust-growing types will not grow and bloom. They do well as a summer covering for low walls, but it is necessary that the wood be cut back close to the ground in early spring, and the main shoots stopped back three or four times to induce them to push lateral growths. The stopping is done just above the first joint. The effect is to make the plants bloom a little later, but this is compensated for in the immense number of flowers produced. Bright touches of colour are indispensable in the Clematis where telling effects have to be produced. The variety which heads these remarks is peculiarly well adapted for this purpose. It is the variety *par excellence* that can lay claim to be a red-flowered Clematis. "The blooms are not large, but they are produced with remarkable freedom, and it is also a continuous bloomer. It possesses a singularly robust habit, and it is, therefore, well adapted for planting in shaded, moist situations, and where it may be too cold or too wet for the more delicate forms to do well. A selection of six varieties of good, free-growing, hardy Clematitides might consist of *Jackmanni*, *rubella*, *languinosa nivea*, *Star of India*, *Lady Bovill*, and *Viticella rubra grandiflora*.—D.

## THE FLOWER GARDEN.

### CHANGING THE SEASON OF FLOWERS.

THIS is well-nigh as changeable as fashion in dress, and is, possibly, even more capricious. Plants and flowers rise and fall in public esteem without much or any good reason. Fortunately, however, plants, like fashions in dress, return. There are also changes in flowers in regard to seasons, partly, perhaps, inevitable, but many of them are also capricious. Take, for example, two well-known and almost universally grown flowers—Gloxinias and Petunias. Both used to be looked upon as autumnal flowers, as a matter of course, and were looked for and expected as much in the autumn as Deutzias, Spiræas, and Lilacs are now in the early spring. But these fashions have changed. Gloxinias are fast becoming winter-blooming or early spring plants, a purpose for which they are as well adapted as Gesneras; and, as you reminded us in THE GARDEN (see p. 407), single Petunias are among the most useful and showy of spring-flowering plants. The double varieties are almost as useful for these purposes. In fact, while great pains and

many stoppings have been needed to compel the Petunia to bloom in the late summer and autumn months, it is only needful to put in cuttings or sow seeds in the autumn or winter, and to leave the plants alone, to have a fine show of blossom in the spring. Wintered on shelves near the glass, rather under-potted or basketed, Petunias are among the finest and earliest of spring-blooming plants. It is astonishing they are not more employed for brackets and as basket plants, or for the clothing of dwarf walls under glass. The variety amongst them is almost endless, all being beautiful, and the perfume of many varieties as sweet almost as that of Violets, though to some the smell of the foliage is unpleasant.

The succession and profusion of bloom is likewise wonderful. Take another plant—the Crested Celosia, or Cockscob. This has now given place to improved forms of what used to be designated only useless sports, viz., the feathered varieties, but these are now much used for winter decoration, while the old Cockscobs were midsummer or autumnal plants, and one of them in the stove in winter would have been considered as much or more out of place as a large hot Plum pudding on a town tea-table. But the Celosias grace, with their feathery sprays, not a few Christmas tables now-a-days.

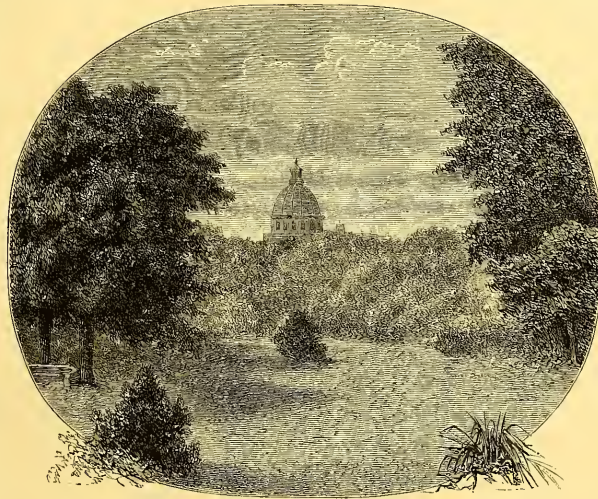
These are but mere samples of the change of fashion, and there really seems no reason why the feast of beauty should not only be perpetual, but that greater freshness and newer charms should be added to it by changing the seasons of many more flowers. The immense increase of skill and augmentation of resources within reach of horticulturists, while adding largely to the richness and variety of our gardens, have tended in not a few cases to monotony. One always sees the same flowers and eats the same vegetables and fruits at the same season everywhere. In a word, by our forcings and retardations the feast of beauty and of other garden products is in danger of becoming not only continuous, but also terribly monotonous.

The next great move in advance may probably consist largely in the change of fashion and season of garden produce. To take another simple illustration, Mignonette and Stocks are almost universal in the spring. Why should not a second edition of the same, with variations, return to the window garden and conservatory in the autumn, and be carried far through the winter? The same practice might be adopted with Nemophilas, Virginian Stocks, Clarkias, Collinsias, and many other annuals.

The glorious race, again, of tuberous Begonias can be forced into beauty early in the spring. Many, also, of our modern Pelargoniums respond to the cultivator's wishes in regard to time. Coleuses, too, with all their well-nigh infinite variety of colouring, may be had as brilliant, though of course with more trouble in winter than in autumn. Caladiums respond to heat and moisture, after a temporary rest, at any season.

These examples are sufficient to show that it is possible to change the fashion by changing the season of flowers, and the same principle is equally or even more applicable to fruit and vegetables. Indeed, it has already been largely done, and beauty and plenty in the best gardens have become perpetual.

But this is not what is meant here and now, but rather the creating of a new sensation by having garden produce of all kinds out of season. No doubt such changes may make considerable demands on skill and require additional labour; but, if desirable, these considerations should not hinder their adoption. In purchasing a work of art the first question should not be, What will it cost? but is it genuine and of real merit? If it is, the picture or statue is likely to be cheap at any price in this age of tawdry tinsel and made-up shams. The same rules should be applied to gardening matters, not that these changes of fashion in gardens are necessarily expensive; seeds and plants are cheap enough, and



In the "English" part of the Luxembourg Garden.

the cost of flowering them at one season rather than at another need not be very serious. If such and other changes of fashion in gardens be desirable, they should be adopted and carried through in a generous mood and with a light heart. A parsimonious spirit, ever grumbling at past and fearing prospective expenses, is at once unjust to skill and incompatible with the pursuit or enjoyment of art. D. T. FISK.

**Views in Town Gardens.**—In town and suburban gardens there are frequent opportunities of adding to the beauties of the landscape by allowing portions of adjacent buildings to be seen. To do this effectually, however, requires some skill, as if it be desirable to show portions of certain structures, it is no less so to hide many others. Hiding ugly buildings is, indeed, a more important point with the city gardener than leading the eye to beautiful ones. The example shown in our illustration is in the English part of the Luxembourg Garden at Paris, across the lawn of which the dome of the Pantheon may be seen.

**Primroses in Woods.**—If seed of the richly-coloured garden Primroses could be had as abundantly as seed of the Polyanthus, it might be possible to sow it freely in woods and waste places, and thus secure a stock of plants. But seed is not to be had in abundance,

and therefore it is not probable that anyone will care to trust to the chances of growth in a wood that which they have to raise with so much care for their gardens. Even were it possible to introduce coloured Primroses into woods, could they be secured from the deprivations of flower collectors? However, assuming that seed could easily be sown in enclosed places, why does not some one make a start with seed of high-coloured Polyantheses? And, perhaps, if these were to be grown intermixed with the wild Primrose, some effective hues of colour might be produced on the latter as a result of cross breeding. Mr. Cornhill asks, Why is it that many of our choicest kinds are so scarce? and replies, because they are not grown under natural conditions, but in the full blaze of the summer sun, which induces loss of foliage and feebleness. That such a result might follow if these beautiful Primroses were grown on a hot, gravelly soil, in the full glare of the sun, there can be little doubt; but the character of the soil makes all the difference. Here we have many hundreds of all sorts of colours, and even the choicest kinds growing in beds in the full glare of the sun all the summer, but we rarely lose a plant. The soil is a stiff, clayey loam, moist in winter, and burns and bakes in summer, but the plants do well. From our large number of plants, however, but little seed is to be had, as they begin to flower so early that we do not get hot, warm, dry, fertilising weather until nearly all the bloom is past. A showy plant that has produced over 100 flowers may yield a dozen pods of seed, or loss. Nothing could give us more pleasure than to see these Primroses growing in woods, but few would, perhaps, care to meet the expense incidental to the securing a hundred or so of plants for the purpose.—A. D., *Bedfont.*

### MY WILD GARDEN.

In this, my third article on this subject, allow me to mention that florist flowers, such as the different varieties of Pansies, Dahlias, variegated Pelargoniums, and others of a similar character, would be wholly out of place in the wild garden. Beginners contemplating the formation of a wild garden should collect what seed they can get during the coming season from the wild plants growing about the roadsides, hedges, ditches, fields, and woods, and should sow them at once in beds in order to secure an abundant supply the following year, as well as sow them on selected spots in the wild garden, so that if any of these fail they can be supplemented with little seedlings. Collecting seed, too, from foreign perennials is indispensable, as they can be advantageously grouped to harmonise with the indigenous plants. A few hints regarding the beauty of a wild garden at this season (early in May) may be interesting to some of your readers. To begin, let the eye picture to itself a carpet of Forget-me-not (*Myosotis sylvatica*), with a few single plants of the white variety intermingled sparingly with *Primula sinensis* (which is exceedingly pretty associated with the blue *Myosotis*), Tulips, Wallflowers, Blue Bells, *Die-dytra*, and patches of Cowslips, together with scattered plants of the *Heracleum giganteum*, the leaves of which give a striking effect. These are surrounded by flowering shrubs, such as White Broom, Lilac, *Kerria*, *Ribes aureum*, *Berberis stenophylla*, double flowered and Bird's Cherry, double Gorse, *Lonicera tatarica*, and the common Laurel. Last, though not least, we have the charming *Malus floribunda*, groups of *Trollius* in shady parts, *Oxalis Acetosella*, breadths of *Vincas*, *Asperula odorata*, *Primroses*, and, scattered amongst the Grass, Cowslips. *Orchis mascula*, of which there is a white variety, Blue Bells (common and others), *Narcissi*, and *Liliums* I find often fail if the ground be very wet.

As to planting, let us now imagine a spot somewhat densely shaded by deciduous trees. In such a place I would put the Winter Aconite, single Snowdrop, and *Vinca major* and minor. These should be in large irregular patches, and so arranged as to form one natural mass. With these I should mix *Arums*, *Aralia racemosa*, *Astilbe rivularis*, *Ranunculus auricomus*, *Spurge Laurel*, *Euphorbia amygdaloides*, *Chelidonium majus*, *Fool's Parsley*, *Heracleum giganteum*, *Sphondylium*, and *pubescens*, *Angelicas*, *Dipsacum*, *Hartstongue* and other Ferns, *Paris quadrifolia*, *Borage*, *Funkias*, *Saxifraga cordifolia* and *virginiana*, *Spiræas*, *Glechoma hederacea*, and a few patches of *Enchanted's* Nightshade. These, judiciously distributed, will produce a charming effect. A mount or rough bank might be planted with Red and White Thorns and *Laburnums* at 9 ft. apart for the purpose of supporting climbers, such as the varieties of *Clematis*, *Honeysuckles*, *Calystegias*,

*Briers*, *Virginian Creepers*, *Bryonia dioica* (which, when allowed to trail on the Grass, is very pretty), and *Bittersweet*. Sow the ground all over with *Myosotis disitiflora* and some of the *Rose Campion*; also plant some bulbs, such as single *Hya-cinths* and *Van Thol* and red Tulips. At least two sorts of *Clematis* should occupy one support. Another part of the garden might be filled entirely with the *Iris* family, which are both numerous and pretty, and not averse to partial shade. The ground should be well prepared for their reception, and a little manure would be of benefit to them. A shady place should also be selected for the varieties of *Trollius*, which may be intermixed with *Omphalodes verna*, and also for the *Os-munda regalis*. The place in which these are planted should also be rather damp. The ground should be deeply dug and cleared of all roots. If some peat can be had to mix with the soil, so much the better. By the side of these plant some of the *Spiræa* family. *Oxalis Acetosella* associates well with the *Os-munda*; breadths of *Lily of the Valley* look well, and for this the ground should also be deeply dug, and mixed with a few stones or broken bricks. When the leaves begin to wither divide the roots into small portions, and plant them about 6 in. apart. These soon reward the cultivator for any amount of trouble to which he may be put regarding them. Another interesting patch might consist of a mixture of *Wood Anemones*, *Crocuses*, *Star of Bethlehem*, *Lily of the Valley*, and some of the autumn *Crocuses*. TEWENSIS.

### SOME OF THE MORE IMPORTANT HARDY EXOTIC PLANTS FOR THE WILD GARDEN.

Acanthus	Crambe cordifolia	Iberis	Polygonum
Achillea	Crocus	Inula	Pontederia
Aconitum	Cyclamen	Iris	Potentilla
Aconitum	Delphinium	Lathyrus	Pyrethrum
Ajuga	Dentaria	Leucocjum	Ranunculus
Allium	Dianthus	Lilium	Ranunculus
Alyssum	Dodecaheon	Lilium	Salvia
Anchusa	Eranthis	Lilium	Sambucaria
Anemone	Erigeron	Lupinus	Saxifraga
Angelica	Elymus	Lycchia	Scabiosa
Antirrhinum	Erythronium	Lysimachia	Scilla
Aquilegia	Erythronium	Lysimachia	Scilla
Arabis	Erythronium	Malva	Sempervivum
Artemisia	Erythronium	Medicago	Silene
Asclepias	Euphorbia	Melissa	Silphium
Asperula	Euphorbia	Mentha	Smilacina
Aster	Fritillaria	Monarda	Solidago
Astragalus	Funkia	Muscari	Spiræa
Althea	Galega	Narcissus	Stachys
Astrantia	Gaultheria	Naphar	Stachys
Aubrieta	Goutdiana	Oenothera	Sternbergia
Betonica	Geranium	Omphalodes	Symphytum
Bryonia	Geranium	Ononis	Thalictrum
Calystegia	Gentiana	Opoponon	Tracesantia
Campanula	Gypsophila	Ornithogalum	Trillium
Cardus (exotic)	Hedysarum	Orobos	Triteleia
Kinda	Helianthus	Oxalis	Trollius
Centauria	Helianthus multi-	Paeonia	Tulipa
Centranthus	florus	Papaver	Uvularia
Cerastium	Helleborus	Phlomis	Veronica
Clematis	Hemerocallis	Physoslegia	Veronica
Colecium	Hepatica	Phyteuma	Viola
Corydalis	Heracleum	Phytolacca	Viola
	Hiacium	Polygonatum	Vinca

### FLOWERS IN CHURCHYARDS.

As this subject is now attracting attention, perhaps a few remarks from one who resides within a stone's throw of a very pleasant country churchyard where grave-gardening is carried to a great pitch may be read with interest. The churchyard in question is pleasantly situated on the northern border of the county of Durham, and overlooks the valleys of the Tyne and Derwent. It has a northern aspect, and is within a mile of the first-named smoky stream. Although the remains of many rich persons are interred here, it is mainly among the poorer classes that one sees good attempts made at grave gardening. The flowers employed consist chiefly of Wallflowers, common English red and white *Daisies*, and the beautiful *Forget-me-not* (*Myosotis disitiflora*), while what may be termed the permanent stock consists of *Hellebores*, *Rose-mary*, *Weeping Willows*, *Irish Yews*, and in some instances, *Roses* of various sorts, but the *China* or *monthly Rose* predominates. I had almost neglected to mention that *Saxifrages* play an important part, some graves being entirely covered with one or more varieties of them, with an evergreen shrub or a plant of *Christmas Rose* at the foot. One of the handsomest combinations at the present time (May 19) is a centre of dark *Wallflowers* (*Harbinger*) with a belt of yellow *Wall-flowers* (*Raby Castle*), the whole being deeply margined with *Myosotis*

disaiflora. In directing attention to this simple country burial ground, I have no wish that it should be set up as a paragon of excellence; on the contrary, I think that there is great room for improvement. No systematic plan is carried out or attempt to beautify the place in general; each one is content to make what he owns look well, irrespective of what may be next to him. I think that something might be done in the direction of keeping our ancient churchyard in a more becoming manner. For instance, after the trees, flowers, shrubs, &c., are planted by friends over their deceased relatives' graves the place might be kept in order by the powers that be, as far as regards the levelling down of grave tops and keeping the Grass from growing waist-high.

TYNEDALE.

## CUTTING DOWN LILIES.

"DUNEDIN" asks (see p. 386) for the passage referring to cutting down Lily stems before the leaves had faded. His own words (see p. 28) read thus: "I have cut down the stems when the plants were in full and fresh bloom without in the slightest degree affecting the growth of the new bulbs, which at this time are themselves sending down roots, by which they can gain subsistence sufficient to make them independent of the parent bulbs;" and, in reply to Mr. Hovey, "Dunedin" reiterates much more emphatically the advantage of early planting, and states that no harm resulted from lifting the bulbs in full bloom on June 30 and exposing them to the atmosphere during six of the hottest weeks of the year. It was to the evil effects which such advice might have on the uninitiated in Lily culture, who might be led to practise this method indiscriminately in the case of all kinds of Lilies, that I took exception; whereas it was only on the white Lily (*Lilium candidum*) that the experiment was made. And Mr. Hovey's communication, to which I would refer (see p. 387), fully illustrates the different effects which the cutting-down process has upon different classes of Lilies. If "Dunedin" had lifted any of the varieties that only form leaves on their flower-stems, he would not have experienced such satisfactory results. And, to my mind, the result of this experiment upsets much of "Dunedin's" theory respecting imported Lilies; as, if I understand him rightly, it is the seed-bud or germ that is so much affected in the removal, that it fails to germinate if haply it should be liberated, necessarily causing the speedy death of the bulb. Yet, in the case referred to, the parent bulb was out of the ground at the date (July) at which the germ would be formed. "Dunedin" quotes Mr. Baines in one instance as having confirmed his views, but this was only as regards *L. candidum*, for Mr. Baines is too well versed in plant culture to recommend the same treatment for all classes of Lilies simply because they are Lilies. I have read "Dunedin's" arguments with interest, and I feel sure that he would be the last person who would like to have his teaching end in a barren or fruitless controversy. But scientific experiments, however valuable in regard to matters horticultural, may be more than counteracted by an apparently trifling incident in cultural details, and this discussion is no exception to the general rule; for although "Dunedin" states positively (see p. 386) that he has observed a singular similarity in the organisation of all Lilies, it is well known in practice, even by those entirely unacquainted with the organisation of Lilies, that entirely distinct methods must be adopted to attain the maximum degree of perfection in each class, for, as is clearly explained by Mr. Hovey, a grower of lengthened experience, the treatment that would benefit *Lilium candidum* would be death to *L. speciosum*. And as to *Lilium giganteum*, no one expects it to flower a second time; but successive bulbs are grown, so as to have some in flower every year. In the case of this Lily the old bulb decays altogether, leaving some young progeny outside the bulb to keep up the stock. That early flowering Lilies are the best for open air culture I am fully convinced; and although the later autumn flowering varieties of the *L. lancifolium speciosum* section may be grown with tolerable success in favourable seasons and localities, I feel sure that those who have not grown and flowered them under glass have a treat in store; they will not only get finer and more perfect blooms under glass, but better bulbs for succeeding years' operations.

J. GROOM.

— Permit me to say to Mr. E. Harvey (see p. 457) that, in my opinion, his plan is the right one, and that with care he need not fear

arriving at a successful result sooner than he at present seems to anticipate. I think, however, that under glass there will be no necessity for attempting "to promote quick growth, so as to make the plant flower a little earlier each year;" for, if he succeeds in preserving the germ at the critical period of its existence, the plant will itself return to its natural time of flowering. I procured some imported bulbs of *L. auratum* at the end of February last year, and they did not bloom until November (indoors, of course). They are now in the open ground, 3½ ft. high, and indicate a very early bloom this season. It is more than likely, however, that Mr. Harvey will meet with some disappointments through bad bulbs. Those bulbs of *L. auratum* which I got were principally for dissection, and I found, on cutting them open, that the seed-buds, or where they ought to have been, were all eaten away, in more than 50 per cent. of them, by small, thread-like worms, about ¼ in. in length. More might be said on this point, but at present time presses. With regard to his inquiry about "cutting down the flower-stems of *Lilium candidum*," I think he will find some useful hints in my reply to Mr. Groom (see p. 451). I have written another article, which I believe will be found practically useful by many of the readers of *THE GARDEN*; but, in order to make it thoroughly complete, I am collecting and dissecting specimens for the photographer of offsets of the first year, bulbules or small bulbs of the second, third, and fourth years, together with fully-developed bulbs, all showing the interior organs of reproduction, and the wonderful harmony and similarity that exists in the structure of these organs, in a dozen or more distinct species of our Old World Lilies. I have made a careful search at the British Museum and other public libraries, and have met with no book which contains anything that at all comes near to what I propose to produce. I feel, therefore, justified in saying that if the photographic representation be carefully reproduced in the columns of *THE GARDEN*, the number which contains it must become valuable to amateurs and Lily growers in general as being a trustworthy and practical work of reference.

DUNEDIN.

## DICENTRA (DIELYTRA) SPECTABILIS.

MAY I be permitted to make a few remarks *apropos* of "D.'s" article on this most beautiful plant. First, as to its name. It was, I believe, first named by De Candolle *Dielyttra*, the common gardeners' name *Dielyttra*, which is etymologically meaningless, originating in a clerical error. Owing to this fact, most botanists are agreed to cut the Gordian knot by substituting the name *Dicentra*, which has the same meaning as *Dielyttra*, viz., "two spurs." It would be well if this name were universally adopted. A vernacular name, "Dutchman's breeches," which is hardly an elegant one, does not seem generally known. It reminds me of Edmund Lear's admirable parody of the plant, under the name of "Many-peoples *apsidownia*," in his "Nonsense Botany." "D.'s" description of the plant is tolerably accurate, though some of his analogies are rather far-fetched. The leaves are, I think, comparable to those of its allied *Fumariads*, to those of the Columbine, and of some of the Meadow Rues, rather than the *Faony*. The calyx consists of two scale-like, caducous sepals, like those of the Poppy; the corolla of four petals in two pairs, the outer pink, saccate, and semi-ovate (half heart-shaped), the inner white, narrow, and spoon-shaped. It is misleading to students to compare the outer petals to the hooded sepals of the Monkshood. A flower has but one corolla, and the term "perianth," being merely technical for floral envelope, includes both calyx and corolla, and is altogether distinct from a column. In an *Iris* we have simply a six-leaved perianth and three stamens overlapped by the three petaloid lobes of the stigma, and in *Orchide* we have pistil, anthers, and some of the perianth leaves thoroughly blended in a central column. *Dicentra* presents a very remote resemblance to either case, as might be expected, seeing that its position is as far apart from theirs as is pole from pole. The bases of the filaments adhere loosely to those of the outer petals, and the somewhat abnormal anthers and the two little crenulated lobes of the stigma are merely shut in by the two inner petals, which are partially adherent at their tips. The stamens, though in two bundles of three each, seem normally four, since only the middle filament in each bundle bears a whole or two-celled anther, the lateral ones having half-anthers or rather one-celled ones. The flower secretes honey at the base of the two saccate petals, and humble bees reach it by inserting their proboscis through a small hole left between the face of the outer and the back of the inner petals. They probably occasionally effect cross-fertilisation by carrying on their hairy under-surface the pollen of a young flower whose inner petals have just gaped for the first time under the influence of bright sunshine to an older blossom whose anthers have lost their pollen exposing the stigmatic surface.

G. S. BOULGER.

11, Burlington Road, Westbourne Park, W.

## VIOLAS GROWN FOR TRIAL AT CHISWICK.

The following kinds of *Viola* have received First-class Certificates:—

**Flowers Yellow.**—**CORISANDE** (Dean).—Plant of very free, vigorous growth; free flowering; flowers of fair size, pale yellow. A very early flowering variety continuing in bloom for several months. Excellent. **CROWN JEWEL** (Dean).—Plant of free-spreading habit; free flowering; flowers of medium size of fine round form, clear bright yellow. A good variety. **GOLDEN PRINCE** (Fromow, 1877).—Plant of fine free habit; free flowering; flowers of medium size, bright yellow, with eye pencilled. Stands the dry weather well.

**Flowers White.**—**VESTAL** (Dean, 1877).—Plant of fine compact habit; very free flowering; flowers of medium size, pure white. Excellent. **LADY SUSAN GRANT SCUTTIE** (Stuart).—Plant of fine compact habit; free flowering; flowers large, well displayed, and of good form, of a bluish-white. A good variety. **PILGRIM PARK** (Dickson & Co.).—Plant of vigorous branching habit; very free and continuous flowering; blooms well displayed, very large, pure white, with yellow eye.

**Flowers Lilac.**—**ORMISTON** (Stuart).—Plant of fine habit; free blooming; flowers large, well thrown up above the foliage, dark lilac striped with purple. A very showy variety. **RUBRA LILACINA** (Dickson & Co.).—Plant of free dwarf habit; a profuse and continuous bloomer; flowers large, of good substance, rich lilac, with distinct blotch on under petals. Stands dry weather well. An excellent sort.

**Flowers Mauve-purple.**—**BLUE BELL** (Dean). **HILLSIDE BEAUTY** (Stuart).—Plant of fine vigorous growth; very free flowering; flowers large, of a dark mauve-purple colour. An excellent variety, and stands the fine weather well. **AMENA MAGNIFICA** (Dickson & Co.).—Dwarf, spreading habit; free flowering; flowers small, mauve, with distinct yellow eye, and upper petals dark. A good variety. **BLUE KING** (Dean).—Plant of fine dwarf, compact habit; free flowering; blooms well displayed, lightish blue, with distinct bronzy spot on under petals.

**Flowers Purple or Blue.**—**GEORGIA** (Stuart).—Plant of very fine dwarf, compact habit; very free and continuous flowering; flowers well displayed, of a purple hue. A good variety and lasting. **HOLYROOD** (Dickson & Co.).—Plant of dwarf, branching habit; very free and continuous bloomer; flowers large, rich deep purple, with small yellow eye, and distinct blotch. Stands the dry weather well. **SUTTON COURT BEAUTY** (Fromow).—Plant of fine dwarf, spreading habit; very free and continuous bloomer; flowers large, of a fine rich purple colour. A splendid variety. **WAVELEY** (Robertson & Galloway).—Plant of free-growing, spreading habit; very free and continuous bloomer; flowers large, bluish-purple, with large yellow eye, and distinct blotch on the under petals. A splendid variety.

**Flowers Dark Violet.**—**LADY DIANA** (Gray).—This is very similar to *Distinction* and *Lady Sophia*, but is of more compact growth, and consequently was awarded a certificate.—“*Journal of the Royal Horticultural Society.*”

**Iberis gibraltaria.**—This *Iberis* has not proved to be hardy with me, even during such a mild winter as that through which we have just passed. I do not think it can be classed as a hardy plant; on the contrary, it ought to be grown in a frame or cool greenhouse through the winter. Whether moisture or a low temperature killed it I cannot say, but I observed during the winter that the foliage began to fall, and then the stems decayed, and the plants died altogether. I was not particularly charmed with the habit of the plant, as it was coarse and straggling, and in no case developed into a neat, compact bush. I regard *I. corifolia* as the best and handsomest of the family; its small, rounded trusses of pure white flowers are perfect in form and excellent for bouquets and button-holes. The plant has a good compact woody habit, and forms a handsome, neat bush.—A. D.

**Narcissus Bulbocodium.**—This with us flowers every year most freely. We have had its beautiful flowers in profusion, two or three on each bulb, for the last two or three weeks, and it is still out. Our hot, light soil especially suits this and *Iris iberica*.—ALEX. WALLACE, *Calchester.*

**Gentiana acaulis on Mounds.**—Nothing can be more satisfactory than *Gentiana acaulis* grown on mounds. The latter are of small size and covered with a layer of stones. The first attempt in the gardens under my charge to grow this *Gentian* on mounds was made about seven years ago, and the mounds then formed are now so well covered that they appear as if quite solid with bloom. Anything more beautiful than the appearance they present cannot be imagined. Good turfy loam is the most suitable for the formation of the mounds, and September is the best month in which to plant. The only attention requisite after the planting is to water thoroughly three or four times in the course of the season.—“*Gardeners' Magazine.*”

## THE FRUIT GARDEN.

## WALLING IN THE ROOTS OF FIGS.

Of all the different kinds of fruit now grown in the open air, there are none with which so many fail as the Fig; and yet, in its native clime and under certain conditions of treatment, it is one of the most fruitful trees in existence. Those who have seen it in pots with its roots cramped and restricted must have been struck with the great yield of such plants over others ten times the size where they have full liberty to ramble; and, therefore, if we only think for a minute, the cause of this barrenness would present itself to our minds. Gross growth is never conducive to fertility; and with a Fig, the wood of which is naturally so sappy and pithy, and requires so much ripening and hardening, there is no chance of getting it into a bearing state unless coercive measures are used. Under a clear, foreign sky there is no necessity for this, as there the wood made becomes thoroughly mature; but in our moist climate, with but comparatively a small amount of sunshine, this is not the case, and artificial means must therefore be resorted to in order to bring about the desired result. This is the most readily accomplished by bricking a certain space in and concreting the bottom in such a manner as to render it impenetrable to roots; and not only should this be done, but the bricks should be laid in cement, or they will soon find an outlet between them. A pit thus formed that will hold a cubic yard or so of soil is large enough to supply the wants of any ordinary-sized Fig tree, and the expense of doing it is but slight, compared with the permanency of the work and the exceedingly satisfactory returns that will be made for the outlay. No half measures are of any avail, and nothing short of confining them like this is of any use, as, do what one may by way of root-pruning, the effect is only temporary, for they are soon running far and wide again and become as rampant as ever. Until I adopted this plan of walling in, I could never depend on getting a crop, but now there is no difficulty in the matter, as the trees, instead of making a foot or two of soft, worthless wood, only make at most 3 in., and this becomes so hard as to be quite unaffected by frost. Another characteristic of this wood is that it is closely jointed, each of which produces a Fig; and although these may not be quite so large as others obtained from trees where they can run riot, they are always of far better quality. It is singular that the Fig of all deciduous trees should bear removal better at the spring of the year than during the autumn; but it is, nevertheless, a fact that it does so, and this being the case, any one that may have trees that are not as fruitful as they may desire, will do well to set about their improvement at once. Although it is full late to transplant, unless they can be lifted with pretty good balls, it is better to undertake the work now than to defer it, as the corrective measures adopted will at once take effect on the growth and ensure a crop of fruit next year. The way to set about it is, first of all to dig the holes, say a yard or so square more or less, according to the size of the plants to be operated on, and then proceed to line round the sides with bricks on edge laid in some good, quick-setting cement. Previous to doing this, however, the bottom should either be concreted or paved with bats, and the interstices grouted in so as to effectually fill them, and when the whole is dry and hard, it will be ready for putting in the Fig. These being rather advanced, extra care will be needed in digging well round them, that they may be lifted with a good portion of earth, and if this be done, and a heavy watering given when filling in around them, scarcely a leaf will flag, but they will at once set about forming fresh roots and quickly become re-established. The kind of soil most conducive to fertility in the Fig is that containing a large amount of calcareous matter; and, therefore, in planting, fine chalk should be made free use of, first incorporating the same with the earth that was dug out in forming the holes, or if this should happen to be gravelly or bad, then with any other more suitable that may be at hand for the purpose. Manure, rich soil, and stimulants of all kinds should be avoided, as anything in that way can be given in a liquid state later on if required, which, with a heavy crop to carry, is sometimes needed. A mulching, however, of some kind of littery matter is always desirable, as it is a great help in keeping the roots more uniform both as regards heat and moisture; and with all fresh

transplanted trees this is a most important point, that should always be borne in mind, for if their wants were more attended to in this respect, failures would not be of the frequent occurrence they are. Figs treated and restricted in the above-named way require little or no pruning or further attention, beyond an occasional thinning to let in the light and air among the branches, and thus afford a more full exposure of the fruit to the sun. In the case of those on walls, the best way to manage them after confining their roots in the manner advised is to simply secure the main branches to stout galvanised iron staples driven into the joints and allow the breast wood to grow as it will. Occasionally this may be shortened back, or the long portion cut entirely out, so as to keep the whole nearer home, that it may have the full benefit of the shelter and warmth afforded by the building on which they are trained. I always make a practice of doing what little thinning is ever needed during the summer and not later than June, as then the trees have the solar rays to ripen the wood, but, except to remove a few suckers now and then, it is very seldom the knife is required. Pruning, as generally carried out with Figs, does more harm than good, as the cutting out of one strong shoot is often the cause of several others starting to take its place. I would therefore urge all who have hitherto failed in getting a good supply of fruit to try the plan of pinching them for root room, and if they do so, I am quite sure they will be more than satisfied with the result.

J. S.

**Beurre Dumont Pear.**—This is a sample of a young Pear tree (pyramid) as trained in M. Jamin's garden at Bourg-la-Reine,



near Paris—a very instructive little fruit garden, which we advise any of our readers to see who may have time when visiting Paris this season. This young tree was photographed while in fruit, a somewhat difficult condition to show in an engraving. As will be noticed, the tree is much stouter and better furnished below than is usually the case. In these trees every branch and branchlet is under the easy control of the trainer.

#### FEEDING VINES AND OTHER FRUIT TREES.

I HAVE often thought, and constant experience has only confirmed the opinion, that for producing fine examples of fruit we should not depend too much on feeding the plants with liquid and other manures after the fruit has set and begun to swell; the real work is done before that period. What we want in a fruit before we can feed advantageously is a capacity to swell; a framework, in short, capable

of filling. It is certain, at all events, that if you get a strong Vine rod or a robust Pine-apple plant, and both well ripened, you are sure of large fruit, whether you feed or not, though, no doubt, feeding will help them on. A poor weak plant, with proportionately weak buds, can, at the best, only produce small fruit, and no amount of feeding will ever make it large. I notice always that when Vines produce small flowers they produce proportionately small berries—much bulk is not in them. This is also distinctly noticeable in Peaches, Melons, and particularly in Strawberries. I have always been able to foretell quite rarely the probable swelling powers of our forced Strawberries from the size and character of the flowers. If the flowers are poor, so also will the fruit be. The plan with them is to lay the foundation of good flowers by securing strong plants with fine foliage and large buds, and the same applies to Vines and other subjects. I dare say there are plenty who realise this as well as myself, but, at the same time, I am well aware that much stress is laid upon feeding the plant after the fruit begins to swell, and not a few have forbidden feeding before that period. I dare say it is possible to overdo a plant at certain times, and we know that certain plants have a tendency to run to leaf when stimulated by certain manures, but this I attribute more to the manner of feeding than to feeding itself, which, if practised in moderation and according to the needs of the plant and the season of the year, cannot have other than a beneficial result.

J. S. W.

#### MELON CULTURE IN BEDDING PLANT FRAMES.

To no better purpose can frames liberated from bedding plants be put than that of growing Melons—a fruit which in the hot summer and autumn is much prized by most people, and is sure to be doubly acceptable this season, when so few Peaches and Nectarines have been saved from the frost. One or two lights of Cucumbers would be enough for most families, as they will afford a fruit a day if kept properly thinned out and well managed; but with Melons it is not so easy to keep up a succession, for the most a plant will do, unless it has an unusual amount of room, is to bear five or six fruits, and it takes three months to get these, even under the best of treatment, from the time of sowing the seed. So valuable, however, are they, and productive of so much pleasure when grown and managed by oneself, that they are fully deserving of all the care and attention they require, which is not great beyond the first labour of preparing the bed and planting them out. The chief thing to insure success is to start them with a little bottom-heat, which may be done by collecting any fermenting material together, and giving it a sweat previous to using it. This will not only make the warmth it affords more regular and enduring, but will let out the noxious gases, which, if allowed to escape into the frame, are sure to injure, if they do not prove fatal to the plants within. Where they can be obtained, stable manure and leaves are the best ingredients to make the bed with; but failing these, or not being able to procure them in sufficient quantity, the mowings from the lawn, Nettles, rough Grass or herbage from the roadside, hedge trimmings, or anything of that kind may be used separately or in addition. When gatherings such as these are pressed into the service, the best way is to use them outside instead of inside the frame, as then they can be added from time to time as they come to hand, and a gentle steady heat kept up as long as it may be thought desirable. To do this, however, it is necessary to support the frame on a few old faggots or bushes, so as to raise it a foot or so clear from the ground, when the heat from the fermenting materials around will have free circulation under, and thus afford the necessary warmth to the roots above.

A frame made up in this manner has many advantages, as it is of a more permanent character when used for forcing purposes, as the interior need not be interfered with when changing a crop, except just stirring up the soil for fresh planting. After the Melons, therefore, it will be ready for striking late cuttings in the autumn, or for growing winter Lettuces, Violets, or such like purposes. The object I now have in view, however, is not to treat of these, but to point out more particularly how to adapt it to the growth of Melons; and, premising what I have mentioned in regard to making up the frame is carried out, the next thing is to prepare for getting out the plants. This should be done by throwing some litter over the faggots or whatever may be used to form the foundation, and on this should be spread 6 in. or so of half-rotten leaves. A bushel or two of soil in the middle of each light, placed so as to form a slight mound, completes the work for the time; and if the frame be kept closed for a day or two, to draw in the sun and warm up the earth, all will be ready for planting. This should be done in the centre of the mounds, and these should be made firm by pressing them down with the foot at the same time; for, although Cucumbers delight in loose open soil, that for Melons should be the reverse, or they go too much to leaf and are not near so fruitful. The best material to grow them

in is fresh-cut loam, rather inclined to be stiff than otherwise; but so accommodating are Melons, if afforded the requisite heat and moisture, that they will do in almost anything, from common garden earth to leaf-mould, or the latter and clay mixed. Indeed, nothing more suitable than this need be wished for, especially at the final earthing up, which should be carried out as soon as their roots begin to protrude through the hillocks, that they may go on without check. The soil thus put in ought likewise to be well beaten down, and I find it a great help to lightly mulch the surface by scattering over it  $\frac{1}{2}$  in. or so of half rotten leaves or old tan, Cocoa-nut fibre, or anything of that kind, which allows the water to pass through readily, and prevents a too rapid evaporation, thus keeping the roots much more uniform as to moisture than they otherwise would be.

In the training and general treatment of Melons in frames, the first thing is to stop the leading shoot, which forces the plant to throw out laterals, one of each of which should be led towards the four corners of the light, and stopped when it reaches within 1 ft. of the limit in that direction. This second stopping induces side shoots, and on these it is that the fruit makes its appearance. In order to throw the whole strength of the plant into these, a further stopping is necessary, and this should be done at the first or second joint beyond, which will then leave plenty of room in the frame for the full development of the whole of the foliage. This is a very important matter in Melon growing, as every one of the main leaves is of consequence, and should be left perfectly clear, and not overshadowed by others, or it is impossible for them to carry out their functions and finish off a crop in the way they otherwise would do. As regards air, the chief thing to be attended to is to ventilate early in the morning, so as to let out the condensed vapour and allow the foliage time to dry before the sun shines hotly on it; and if this be done it will assume a thick leathery texture that will enable it to stand without shade, and render it less liable to the attacks of red spider, an insect to which Melons are particularly subject. To keep this in check, and aid the swelling of the fruit after it is fairly set, a good syringing should be given every afternoon about three o'clock, and the lights shut close down immediately after, by doing which the temperature will be considerably raised, and a thoroughly moist, genial atmosphere secured. There is one thing, however, to be observed in syringing, and that is not to wet the collars of the plants more than can be helped, or it is apt to cause canker or decay in the stem; and when this is observed making its appearance, the best remedy is a handful of lime dust laid on the affected part. This, from being a rapid absorbent will soon dry and stop the progress of the disease, as will also finely powdered charcoal, or the two mixed. To get Melons to set, they must be fertilised with pollen from the male flowers; and it is essential that as many as are required for a crop should be fertilised about the same time, or within a day or two of each other, otherwise the first takes the lead, and the chances are that the later ones do not swell off at all, or, if they do, they are only of small size and inferior. Once they are set, they must not be stinted for water till they are fully grown, when, to improve their flavour and ripen them properly, they should be allowed to become gradually dry, but not to such a degree as to cause them to flag. It is a glut after being kept without that causes them to burst, and this, occurring as it does just before they are fit to cut, is very vexatious. Besides red spider, green fly is sometimes troublesome; but a whiff of Tobacco smoke will soon settle matters with them if applied during a still day and when the foliage is dry, as it should be to be safe.

S. D.

### THE VALUE OF NORTH ASPECTS.

The best form for a walled garden is an oblong parallelogram, with the longest sides facing south and north; by this arrangement a good extent of south wall is secured, and the northern side is almost as valuable as the more sunny aspects. Plums and Cherries of all kinds will yield as good a result on a north wall, except it may be perhaps in the extreme north, as on an eastern or western exposure. Pears, except the early kinds, are not antitab; but Gooseberries and Currants come in well for late use, and should be utilized to fill up all vacant places between other trees on the walls; and, where a succession of vegetables and salads is indispensable, the most inexperienced cultivator is not long in discovering the value of a cool north border for some of the summer crops. From the middle of May to the end of July, Lettices, Endive, Radishes, and small salading will be more crisp and succulent from a north border than elsewhere, unless the land be exceptionally deep and rich, and water be plentifully supplied. Under any circumstances it is well to grow a part of the crop in a cool north position. Then again it gives a sense of security, if a sudden drought should set in early in August, if we have a good break of Camelliflowers coming on in a cool, moist position, where they will be less likely to bolt, or to burst into a

premature inflorescence the moment they have attained their full growth. Spinach, too, is a more reliable crop in a cool, shady situation; and it is always advisable to have a stock of green Mint, Chervil, Fennel, Sage, or any other herb for which there is a demand, in a cool place for summer use. A good bed of the Elton Pine Strawberry on a north border will prolong the fruit season, and be appreciated, more especially where the Alpine varieties are not grown for autumn use. And another and a most valuable use to which a north border may be put, is to form it, or a part of it, into a nursery bed for the spring bedding plants when they are moved from the flower garden to make room for the summer bedding plants. This is just the place for Dahises, Polyanthus, &c., that have done duty elsewhere in a more conspicuous position, to recruit health and strength for another campaign.—“Field.”

### CONCERNING TWO SPECIES OF APPLE.

ALLOW me to bring before your botanical as well as horticultural readers two species of Apple that I think should be better known, for the purpose of eliciting such information as may exist concerning them.

**Oregon Crab Apple** (*Pyrus rivularis*—Doug.)—It seems to be figured with the incorrect name of *Pyrus coronaria* in the report of the Department of Agriculture, 1870, p. 414. Dr. Vasey, in his report on the Forest Trees of the United States, in the report for 1875, describes it as a “small tree, ranging from California northward into Alaska. The fruit is of the size of a Cherry, of an agreeable flavour, and used, particularly in Alaska, by the natives of the country for food.” In Washington Territory, according to a pamphlet by Mrs. Stuart (1875), “the Crab Apple in many localities forms orchards on the prairies. Its presence is an indication of good soil. The wood is hard and tough, and the fruit well-flavoured.” Has this tree been fruited or planted on this side of the Rocky Mountains? Has the closeness of its relationship to other species of the Apple been tested by budding or grafting one upon the other? Has it more hardiness than other species in endurance of cold, &c.? Does it promise, by such a process of amelioration as the Siberian Crab is now going through, to become a valuable fruit? Leaving these questions to be answered, I would next ask for information concerning the

**Ohia**.—Lindley, in his Vegetable Kingdom, mentions an indigenous and solitary species of Apple as found in the Sandwich Islands. James, in his history of the Sandwich Islands, mentions among the indigenous and plentiful fruits “the Ohia, juicy and red, but of poor flavour.” Whitey, in his Hawaiian Guide Book (Honolulu, 1875), describes the largest Apple orchard in the world: “The wilderness of Koolan, Maui, contains a forest of Ohias (native wild Apple trees) countless in number, stretching from the sea far up the mountain-sides. The trees vary from 40 ft. to 50 ft. in height, and in the harvest season, from July to September, are covered with fruit, some white, but mostly red. We passed through the forest when the trees were loaded with ripe and ripening Apples. What a sight! For miles around us, up the mountain and towards the seashore, was one vast grove of Ohias, literally red with ripe fruit, their branches bending to the ground with the bounteous harvest. Birds of gorgeous colours of mingled red, blue, green, yellow, and black were feasting in countless numbers, and making the forest ring with happy choruses. The crop of these orchards which Nature has planted so generously in this wild and solitary waste would fill a fleet of one hundred steamers of the size of the *Misaki*, for the orchard stretches from five to ten miles wide by twenty miles long, and many of the larger trees bear at least fifty barrels (bushels?) apiece. The fruit furnishes the traveller an excellent repast, appeasing both thirst and hunger. So far as is now known, no commercial use can be made of the Ohia, as when ripe it cannot be kept more than four days.” Who can tell us something of this Apple? I have not been able to ascertain its botanical name, nor learned whether it be a true Apple. Have any of our Southern Californian horticulturists experimented with it? It is possible that for the extreme Southern States here is something worth a trial.—“Gardeners’ Monthly.”

**Manure Water in Vineries**.—Some time ago I recommended manure water to be put in the evaporating troughs in Vineries in order to prevent the increase of insects, and from experience I am convinced that nothing will keep down red spider and other insects in Vineries so well as filling the troughs or damping the paths occasionally with manure water made from pig manure. By this means we always manage to keep our Vine leaves perfectly green and healthy until the end of the season, and I am of opinion that where there are many air roots on the Vines they derive much nourishment from the richness of the atmosphere.—CHRISTIAN.

## THE KITCHEN GARDEN.

### IMPROVED SORRELS.

In large Continental towns Sorrel may be had all the year round, and there is not a garden large or small throughout France and the Continent generally in which a small border of it may not be seen, thus showing Sorrel to be in daily consumption as long as the weather allows it to be, and it is considered to be both most wholesome and useful in many ways; yet in England it is hardly even known as an esculent. Some twelve kinds are cultivated in Continental gardens, but I will only describe the leading sorts.

**Common Sorrel** (*Rumex Acetosus*).—Native of England and other northern countries; flowers dioecious; leaves of medium size, dark green; stalks rather long, very acid, not early, running readily to seed.

**Bellefeuille Sorrel**.—A great improvement on the preceding; leaves 10 in. long, and from 5 in. to 6 in. broad, pale green; leaf-stalks small reddish. This kind is earlier, less acid, and slower in running to seed than the common variety. It is the sort generally grown for the Paris markets and in every good garden.

**Lettuce-leaved Sorrel**.—This has lately gained a good reputation, which it deserves. It has broad, nearly round leaves, of great substance, and possesses all the good qualities of the Bellefeuille Sorrel. The improvements wanted in Sorrels are ample leaves with little stalk.

**Maiden Sorrel** (*Oseille vierge* of the French), known as *Rumex montana*, is also noteworthy. Its leaves are oblong, pale green, 8 in. long and 4 in. broad, very mild, but not early. In this variety the male and female flowers are borne on different plants, and the latter are carefully avoided in order to prevent fertilisation, as the seedlings soon fill up a garden, and become troublesome from the quantity of seed produced and scattered all over the ground; besides, it is readily propagated by roots.

**Patience Dock** (*Rumex Patientia*; also known as *Garden Patience*, *Herb Patience*, *Paris Cabbage*, *Immortal Spinach*), is a native of South Europe. It is perfectly hardy; its root is very long and yellow, leaves not very numerous, lanceolate, from 1 ft. 8 in. to 2 ft. long, and from 2 in. to 4 in. broad, dark green, somewhat wrinkled, and not acid. It is the earliest of all the Sorrels, and, if slightly protected, will afford, early in spring, a most useful vegetable for mixing with forced Sorrel or Spinach. Every stem running to flower should be carefully cut down, otherwise they will grow 6 ft. high, and produce an immense quantity of seed, from which seedlings will spring up sufficient to stock a whole garden.

Sorrel is easily cultivated; it will grow in any soil and in any situation, but good deep garden ground and a north aspect are to be preferred. It should be sown in the open ground in April and May,  $\frac{1}{2}$  in. deep, not too thickly, on a border preferred. Water, if necessary, and gather the leaves as soon as they are large enough to be fit for use. The following autumn or spring take up the best large-leaved seedlings, and plant them in a border 1 ft. apart; if well manured every year they will last from three to five years, though many re-plant them every season. Ashes make one of the best of stimulants for Sorrel, and they keep snails and slugs from eating the leaves. The Paris market gardeners sow it in beds in rows 1 ft. apart, and plant Lettuces amongst it, the latter being removed before the Sorrel requires the whole ground. Watering is not neglected when wanted. It is advisable the first season to cut the leaves 1 in. or 2 in. above the ground, but afterwards they are pulled from the roots. The general way of propagating Sorrel is to divide the crowns, selecting the best and strongest, and planting them like seedlings. This, in fact, is the only safe way of perpetuating a good variety. Sorrel is one of those plants which it is difficult to kill; roots of it may be even left on the ground or in a corner without protection for several months without injury, and if planted after that, they will grow as well as fresh roots. Growers who have to supply the markets with Sorrel begin forcing it in December. Having prepared a hotbed, they take up the old plants, pack the crowns close to each other, and put the lights on. In a short time the leaves appear, and gathering is continued until the beds are exhausted. This kind of forcing is continued until the out-door crop is ready. The *Patience Dock*, growing, as it does, to a larger size, requires to be

planted from 15 in. to 18 in. apart. All stems running to flower must be carefully cut back in order to avoid the seed spreading all over the garden; besides, cutting back gives a stronger growth to the plants, and greater size to the leaves.

Preserved Sorrel, when the crop is plentiful, may often be had during the autumn. The leaves are freely cut, boiled, put in bottles or any other receptacle, and covered with a layer of grease or butter to exclude the air. When well cooked and managed in this way it affords a good substitute for fresh leaves when the latter are not to be had. Sorrel is used for soups, for mixing with Spinach, and in many other forms. The celebrated French soups à l'oseille and Fricandeau à l'oseille are good examples of the way in which it is used. Sorrel leaves are very useful for cleaning copper plates, to which they give immediate brilliancy. Oxalic acid, so universally used for removing grease spots, is also made from it. It is a common practice in France during the summer time for workmen to suck slowly leaves of Sorrel, to prevent or moderate thirst.

D. GUIHENEUX.

### LARGE ASPARAGUS.

As regards varieties of Asparagus, we have grown *Comnover's Colossal* for several years, and it certainly produces heads of a size fit for use earlier than we used to get them years ago; but whether this is to be attributed to the variety or to improved culture, it would be difficult to determine without seeing all the separate sorts grown side by side under exactly similar circumstances. We have some beds that were planted last season with one-year-old plants, the growth of which is quite equal to what our three-year-old beds used to be. I find that the stems are already close upon 5 ft. high; and from some beds that are three years from seed we have this season cut the finest Asparagus which I ever saw. The season has thus far been remarkably favourable one for encouraging rapid growth, and I am convinced that nothing but that will ensure the tender, melting stalks for which Asparagus is so highly prized. If starved in a low temperature the shoots will be hard and stringy, whether green or blanched; but if grown without a check under favourable conditions, I have always found that the larger the stalks the more melting and delicious they were, even if entirely blanched. I may remark that amongst the *Comnover's Colossal* there is a large percentage of plants producing heads that are quite white, and which continue so until they have attained considerable height, a proof that if there be not sufficient distinction to enable separate sorts of Asparagus to be permanently classified, there are, at least, considerable variations in their growth and appearance. The offering of such liberal prizes as those announced in *THE GARDEN*, and the calling attention to the evils of thick planting, will give a stimulus to Asparagus culture in this country. We cannot all have good soils in which to grow it; but all of us can adopt the thin-planting method, which will be a point gained, as the greatest enemy of any plant is one of its own kind in too close proximity, both requiring the same kind of food. Therefore, space must be given to the Asparagus if it is to attain the maximum development of which it is capable. We shall probably find when these prizes are competed for that cultivators have not been idle, and that results surpassing all previous efforts will be obtained.

J. GROOM.

### SOWING LATE BROCCOLI.

No doubt something depends upon sowing at the right time; but far more, I think, depends upon growing the right kinds, and, as far as possible, securing the stocks true to name. For some years past I have grown pretty well every kind of Broccoli that had any reputation for lateness combined with quality. Some of the late kinds have a tendency to grow too large for ordinary table use. This, however, may to a great extent be met by cutting them when in a small state. The best three late kinds I have yet had are *Sutton's Perfection*, *Daniels' King*, and *Gattell's Eclipse*. The latter is, perhaps, a few days later than the others; but either of them may be made to meet the spring Cauliflowers. *Daniels' King* is, I think, the best late Broccoli I have yet seen for use through May and early June. It has a dwarf, sturdy habit, and is capable of standing a considerable degree of cold. The heart is pure white, which quality it retains a long time, in consequence of the way in which the leaves are folded over it. *Sutton's Perfection* is not so good a Broccoli, producing very close firm heads. For use in March and April, *Veitch's Spring White* and *Perkins' Leamington* are excellent; the latter is very hardy, producing close white heads completely protected and ensheathed with foliage, which last feature

is very distinct in this kind. I have sown Broccoli for late use at various times from March to June, but I think from the last week in April to the first week in May is the best time. I never could find any advantage in sowing later, and to sow earlier often leads to the plants being starved and stunted in the seed or nursery beds. Plant out finally in the most open and exposed position, to ensure firm, well-ripened stems, to stand the winter. E. HOBDAV.

#### NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

**Schoolmaster Potato.**—As much has been said of late respecting the merits of various sorts of Potato, I wish to say a few words in favour of Schoolmaster. Last season I grew about forty bags of it, and from that quantity I have not had two bushels of diseased tubers. I consider it to be one of the very best Potatoes in cultivation, and, in proof of its keeping qualities, I send you a few tubers taken from clamps, in which they have been ever since the early part of October. They are, as will be seen, not only sound, but as good when cooked as they were at Christmas. To all who have not grown this Potato I would say, Try it; as I feel sure that it cannot fail to give satisfaction. It is very free from disease, a good cropper, and produces very few small tubers.—GEORGE GREEN, *Enville*.

**Winter Onions.**—It is one of the peculiar features of the market trade that it is difficult to fairly estimate from year to year what quantities of different vegetables may be in request by the consuming public. Winter Onions this year afford a capital illustration of the uncertainty attendant upon the profitable disposal of some crops. Last spring these sold well, so well that they proved to be one of the most serviceable crops of the year, and, as a result, large breadths of ground were sown in the autumn, and in all cases the seed growth was good and the crop thick and abundant. Now winter Onions are a drug; they do not pay to buy and market; they are getting too large; and, in fact, are spoiling. It is doubtful whether they can be converted into pickles, as the Spanish is generally esteemed the best for that purpose, and it is now in spring. Winter Onions need to be kept very clean during the growing season, and therefore necessitate a considerable outlay in labour. The small hand hoes are invariably used for this purpose; and although an active labourer can get over a large space of ground in a few days, yet, if the weather be moist, the work must be oft repeated, or else the weeds will get the mastery and spoil the crop. The small demand for winter Onions in the London markets may be, to some extent, owing to the prevalent mild season which has rendered all kinds of winter vegetables unprofitably abundant. Something is doubtless further due to the general depression of trade, and something may be owing to change of taste amongst the poor, who are the largest consumers of these savoury vegetables.—A. D.

**Culture of Couve Tronchuda Cabbage.**—I have grown this Cabbage in Lancashire and also in Cheshire. It likes a deep, rich soil, liberally manured (it can hardly be too much so), and if sown in autumn should be treated like Cauliflower, *i.e.*, be pricked out in a vacated Cucumber frame, preserved from frost, and gradually hardened for planting out (2½ in. by 18 in., or 2½ in. by 24 in.) during March and April. Its quick growth during spring and early summer, with plenty of rain or water (which it likes), makes it tender and delicious. When full grown try the stalks, cut where tender, and trim away all the green part of the leaves, leaving their stalks skeleton-like around the small loose heart which it makes. The sprouts during the hot, dry months are not worth much, so clear the ground if wanted for a more profitable crop. The spring-sown I have always found more prone to run to seed; true, that during the autumn rains they make better sprouts, but there are then Walcheren and other Broccoli of more value. Perhaps that it has not taken with the English public arises from the fact that seed merchants and garden books recommend spring sowing. Frequently those left in the seed bed survive the winter (after thinning), and if pricked out in March come in excellently to follow those reared in a frame. The mistake in England has been the putting it forward as Asparagus or Seakale. It is essentially an Algarve Cabbage, and is the most delicious of all Cabbages if cooked as such, *viz.*, boiled with a piece of ham. The best crop of it which I ever grew was on new land with the seed turned in between the two spades' depths.—E. PORTER, *Thimbleby, near Hornacastle*.

**Seeds and Seed Beds.**—All kinds of seeds have vegetated remarkably well this season, proving that a moderately dry surface is congenial to the proper development of young plants. When there is moisture below the seed, the root strikes downward in search of food, and consequently the growth upwards is satisfactory; but when the soil is saturated and chilled by continuous heavy rains, the roots do not penetrate the cold, saturated mass, and, as a necessary consequence, the growth above ground is checked in proportion.—J. G. H.

#### PLATE CXXXIX.

##### ROMNEYA COULTERI.

This has been rightly described as the queen of all the Popy-worts—"a swan white flower some 6 in. in diameter, and with a veritable mound of beautiful golden stamens in the centre." Though from a comparatively warm part of California, it will probably prove hardy or nearly so in at least the south of England and in Ireland. Dr. Moore, who has bloomed the plant beautifully at Glasnevin, and from whom the flowers from which our plate was prepared were obtained, thus speaks of it:—"This noble Papaveraceous plant seems to be quite hardy in the warmer parts of Ireland. Just three years ago this month a small plant of it was turned out of a pot in which it was growing, and planted in a border in front of one of the conservatories in the Botanic Garden here. It grew rapidly and flowered sparingly the first year. Not expecting it to survive the winter, it was left uncovered, with the exception of a thin bast mat spread over a couple of sticks, which stood higher than the plant during frost. The following season it grew vigorously until it reached a height of 4 ft. or more, and flowered profusely in August and September. Receiving similar winter treatment, it survived unscathed, and grew on, as usual, but making shorter and more hardy growths, and flowering more abundantly; but the season was so



Fruit of *Romneya Coulteri*.

wet that no seed was ripened. This year it has assumed a hard, shrubby appearance, covered from the ground to the apex with short woody branches, which are all likely to produce flowers. Unlike other Papaveraceous plants, this has the appearance of being a perennial shrub. At any rate, in now beginning its fourth year's growth, it gives no indication of want of vigour. In this damp climate I fear, however, that it will not perfect seeds. We have helped it by dusting its own pollen on the stigmas, which became swollen, but no perfect seed was produced. It is very difficult to propagate from cuttings, and the raising of plants from seeds is uncertain. Some will germinate in a few weeks after they are sown, while the majority will remain dormant in the mould a whole year, and only germinate during the second year. Hitherto it has refused to hybridise with any Papaveraceous plant of different genera with which it has been tried, which is what we might expect to be the case, there being so very few instances of hybrids between different genera. If such a thing could be got as a hybrid between the *Romneya* and *Papaver orientale*, what a magnificent plant it would be; but we have tried in vain to effect this." Mr. Thompson, of Ipswich, says:—"My experience of it leads to the conclusion that, except in favoured localities in the south, it is but half hardy in England. It may, however, be easily wintered in a frame, and it pots up from the borders very well. It evidently loves a moist soil, but will grow fairly well in ordinary



A CALIFORNIAN POPPYWORT. (ROMNEYA COULTERI.)



garden mould. It is not so free a bloomer as could be wished, at least in this latitude. I have never had more than a few flowers fully developed on each stem, but whether that is owing to deficient moisture, or heat, or both, is uncertain, but probably the latter. It must be propagated by seeds or cuttings. It does not divide, so far as my experience has gone." In California it is stated to grow by the sides of streams and to be very floriferous, comparatively small plants of it bearing from forty to fifty flowers at a time. They are more persistent, too, than those of many plants of the same Order.

## THE INDOOR GARDEN.

### DENDROBIUM BRYMERIANUM.

Of this singular Orchid, to which we have already alluded (see p. 407), we now give an illustration. From whence it was introduced is not definitely known, but the stock of it has been placed in the hands of Messrs. Veitch, in whose nursery at



Chelsea it is now flowering. Its chief peculiarity is the beard-like fringe which, as will be seen, surrounds the lip. The sepals and petals are of a waxy character and of a glossy lemon colour, the lip being of somewhat darker hue than the rest of the flower. The plant itself is a free grower, and is one which will doubtless soon find its way into all good collections of Orchids. S.

### "DECORATIVE" PELARGONIUMS.

THIS term is applied to a section of free-flowering Pelargoniums that are invaluable for market and general decorative purposes. They are generally of a close, short-jointed habit, which is invariably productive of successional trusses of flowers. They belong to a section that is becoming so popular among plant cultivators that the florists, who have bred mainly for colour and form in the flowers, are found asserting that the latter are gradually becoming less in demand—a result which might have been anticipated, for while many of the highly-bred varieties are somewhat difficult to grow, the decorative section is easily, if only intelligently, managed, and does remarkably well in a cold greenhouse. Of the few varieties I am this season cultivating, the earliest to bloom is the old Crimson King. Though I had to depend entirely on sun-heat, yet this variety came into bloom a long time since. In a warm greenhouse it might be had in bloom all the winter, if only a proper succession of plants be provided. Next in order of merit I put Triomphe de St. Mandé. What a superb variety it is! A robust grower, having a short-jointed habit, and bearing bold trusses of deep rose-red flowers. This should be grown by every one, and if I had to cultivate but one Pelargonium for the decoration of my greenhouse it would be Triomphe de St. Mandé. A few other fine and useful varieties will be found in Digby Grand, a charmingly fringed-petalled variety, colour white, with a dark blotch on the upper petals; Duchess of Bedford, white, with bright carmine spots, very free and pretty; Empress, white, pencilled with violet-rose on the margins, and handsomely fringed; Madame Charles Keteleer, white centre, maroon spot on the top petals, the lower petals edged with rose; a somewhat delicate grower, but exceedingly pretty; Mons. Bouchardat, deep crimson, very fine;

Rubens, bright salmon-red, very showy; and William Ball, bright carmine, dark blotch and spots, very free.

It is not difficult to get a supply of flowering plants from early spring till the autumn. As soon as the earliest plants are out of flower they should be dried off a little to harden the wood, and when this is done cuttings can be made. It is a good plan to put the strongest singly into very small pots, and the others into stores. Well-drained pots and a light sandy soil are indispensable, and when the cuttings are put in, an ordinary frame will suffice to keep them in. I place my cuttings in the coolest part of the greenhouse, and throw a newspaper over them when the sun is hot and drying. The soil should be so moist when used as that it will be cool and pleasant and yet not stick to the fingers, and when of this character water will not be required for a few days. As soon as the cuttings are rooted they require to be potted off singly into small pots, and when they begin to grow the leading shoot should be pinched out to secure a good bottom. They will require one or two shifts till they get into  $\frac{1}{2}$ -in. pots, in which they will flower. The plants do best when they are grown on in a cool frame during the summer, but many with but a greenhouse, and nothing more, have to grow them on in that all the summer, but by giving the plants careful attention they are kept clean, healthy, and do not lose their leaves. They must not be allowed to want for water. A succession of plants is a most desirable arrangement, and so cuttings put in in August and Sept. make good plants to bloom in the summer and autumn following. Then, by keeping some plants pinched back, the blooming time can be extended. I find it a good plan to keep some of the plants over for the second year. These are re-potted in August, and again early in October, finally getting them into 8 $\frac{1}{2}$ -in. pots, and in these they produce rare heads of bloom in April and May. One of these plants is before me as I write (grown, be it remembered, in a house in which there is no artificial heat). It has three main shoots, from which other shoots branch, and they are literally covered with large bold trusses of richly-coloured flowers. D.

### NOTES AND QUESTIONS ON THE INDOOR GARDEN.

**Colourless Maréchal Niel Roses.**—I have no reason to complain of lack of colour in this grand yellow *Rosea* grown here under glass in a cool house. My plants are on their own roots, and are growing in a soil bed in the centre of a span-roofed house. One plant is trained to the wall at the end of the house, and the other and largest plant is carried up a support and thence along wirework near the roof. Perhaps the colour is richest where the soil is neither too rich nor too moist, as is the case with mine; or it may be that soils have much to do with the production of colour. In any great Rose show where Maréchal Niel is largely exhibited it will be seen that flowers from different parts, although equal in size, differ considerably in colour.—A. DEAN.

**Chorozeza Hinchmanni.**—This is one of the prettiest and most useful of the Chorozezas. In habit it is dwarf and compact; it grows freely, and, under good culture, never fails to produce a profusion of bright scarlet flowers which somewhat resemble in appearance those of the well-known *Euphorbia splendens*. I lately saw a quantity of small plants of it, in Messrs. Cutbush & Son's nursery at Highgate, loaded with blossoms.—S.

**White Vase Flowers.**—To any one wanting good white flowers for vases, &c., I would recommend the common white Dead Nettle of the hedges (*Lamium album*) with the leaves or bracts cut out. The flowers are of a good white, stand up well, and last long in water.—H. N. ELLAOMARE.

**Selaginella Martenii crispata.**—When seen overlapping the edges of pans or pots, the feather-like leaves of this *Selaginella* have a graceful and pleasing appearance. When well grown the plants assume a drooping habit, and when placed in a moist warm corner of a Fern house, they are by no means unattractive.—S.

**Clerodendron Balfourii on Walls.**—On the back wall of a Pine-stove we have a large plant of this, which, being planted out, cannot be rested by removal to cooler quarters, or the roots subjected to the orthodox supply of moisture; nevertheless, it is every year covered, and, in fact, quite hidden, by such masses of beautiful flowers as make the best of plants of it in pots look poor in comparison. Its foliage is most abundant and fine, proving that the so-called season of rest is not conducive in this case to health and vigour, and, in many instances the resting and drying processes end in bringing out a rest from which there is no awakening.—J. GROOM, *Henham*.

**Luculia gratiissima on Walls.**—Perhaps the most successful way of growing this plant that we have seen is that illustrated at Orchardley Park, Somerset, where it is grown against a wall in a conservatory. It covers a large portion of a wall 16 ft. high, and bore last winter 300 trusses at one time. In spring it is pruned in and dressed like a Vine. In the same garden there is an immense specimen of the Maréchal Niel Rose on the gardener's house. This is freely trained, so that its thousand buds and 200 or so of fully-expanded blooms grow freely forth and droop gracefully from the wall. The naked descending stem is protected from the sun in summer, and a deep coping on the house no doubt helps the plant.—V.

## GARDEN BOTANY.

(Continued from p. 467.)

VARIATION IN THE LEAVES OF THE SAME BRANCH.—Some aquatic plants have heteromorphic leaves, the submerged ones being finely dissected, and the floating ones with a continuous blade. Many of the varieties of the Water Buttercup (*Ranunculus aquatilis*) have two kinds of leaves, and the North American *Cabomba aquatica* (fig. 158) likewise. Heteromor-



Fig. 158.—Branch of *Cabomba aquatica*, with heteromorphic leaves; the finely-dissected leaves are naturally submerged in water, and the entire petiolate ones are flat on its surface, or are raised above it.

phic leaves are found on the same branches of some trees and shrubs. *Laurus Sassafras* (fig. 159), a North American tree, has lobed and entire leaves intermixed.

VARIATION IN THE LEAVES OF FLOWERING AND BARREN BRANCHES.—We have a familiar example of this in the Ivy, the barren branches bearing angularly lobed leaves, and the flowering ones roundish, almost entire leaves. *Ficus stipulata* is also remarkable in this way; the barren form is a climber,



Fig. 159.—Branch of *Laurus sassafras*, with heteromorphic leaves.

having leaves closely appressed to trees or rocks, whilst the fertile or flowering form is of erect habit with spreading leaves of a different shape. Several tropical families, as the Marcgraviaceae and Aroideae, have this character developed to an extraordinary extent.

APPENDAGES AND CURIOUS MODIFICATIONS OF LEAVES.—It is amongst the so-called carnivorous or insectiferous plants that we find some of the most singular productions in the vegetable kingdom. These are in the form of appendages to the leaves, or transformations of the leaves themselves. In the genus *Nepenthes* (fig. 160) the midribs of some of the leaves are con-

tinued beyond the blades, and bear erect, ewer-like vessels with lids. *Cephalotus follicularis* (fig. 161), an Australian plant, has some of the leaves converted into pitchers, and the point of attachment of the latter is near the top, not at the bottom, as in *Nepenthes*. The North American *Sarraceniaceae* have some or all of the leaves tubular and terminating in a hood or cap, as in *Darlingtonia californica* (fig. 162). In *Chives* (fig. 163) the leaves are tubular, but closed at the top. *Venus's Fly-trap*



Fig. 160.—Plant of *Nepenthes distillatoria* (Pitcher plant), with pitchers at the tips of the leaves. Much reduced.

(*Dionaea muscipula*) has some of the leaves furnished with a curious mechanism, and there are many other plants similarly provided, but we cannot spare the space to enter into details respecting their structure. Before leaving the subject, however, we may mention that our indigenous plants include the counterparts of these exotic Pitcher plants, in the Bladderworts, *Utricularia vulgaris*, &c. It is also worthy of note that the plants furnished with pitcher-like appendages or leaves belong to widely different families, and are represented by

diverse forms in the most distant parts of the world. The leaves of the Sundews (fig. 164) are provided with superficial, motile, glandular hairs, which exude an adhesive fluid, and are thus able to entrap insects as well as the Pitcher plants.

REMARKABLE MODIFICATIONS OF THE PETIOLE.—In a very large majority of cases the petiole, when present, offers few characters for comparison; but there are some very singular modifications of it. Many of the Umbelliferae have a broad sheathing petiole, as in *Heracleum* (fig. 165). The blade of the leaf is seldom or never developed, as in most of the Australian Acacias, and the petiole is more or less flattened and elongated. Without any clue to their real nature, these flattened petioles would be regarded as sessile leaves, but young seedlings and vigorous shoots of adult plants of some species occasionally



Fig. 161.—*Cephalotus follicularis* (Australian Pitcher plant), in which some of the leaves are transformed into pitchers. Natural size.

bear the true pinnate blade at the tip of the petiole. *Acacia Melanoxylon*, an Australian species, frequently develops the blade, as does also *A. heterophylla* (fig. 166), a native of Mauritius. Petioles destitute of a blade are termed phyllodes, and they perform the function of perfect leaves. Among British plants having phyllodes we may name *Lathyrus Nissolia* (Grass Vetch), in which they are long, narrow, and flexible. Some botanists regard the Spearwort (*Ranunculus Lingua*) as phyllodineous. *Lathyrus platyphyllus* (fig. 167) has a remarkably dilated petiole, two small flat leaflets, the other three being reduced to thread-like tendrils.

STIPULES.—Leaves are stipulate or exstipulate. At the base of the leaves of many plants there are two small scale-like organs or outgrowths, one on each side, though they frequently fall off long before the leaves. These organs are the stipules,

and they are present in the Oak, Beech, Elm, &c.; but they are inconspicuous, and usually fall soon after the leaves are



Fig. 162.—*Darlingtonia californica*; leaves tubular and hooded. Reduced.

Fig. 163.—*Allium Schoenoprasum*, with cylindrical hollow (hastular) leaves. Reduced.

unfolded. Nevertheless, the presence or absence of stipules is a character of importance not to be omitted from a general



Fig. 164.—Leaf of Sundew, enlarged to show the stalked motile glands.

description of a plant. Moreover, either the position, form, or



Fig. 165.—*Heracleum pubescens*, with broad sheathing petiole.

size, &c., is characteristic of certain orders or genera. In the genera *Rosa* and *Trifolium* (Clover—fig. 168) the stipules ad-

here to the petiole, and are what is termed adnate; stipules



Fig. 166.—Branch of *Acacia heterophylla*, bearing bipinnate leaves and phyllodes (flattened petioles)



Fig. 167.—*Lathyrus platyphyllus*, with a broadly-winged petiole, and the terminal leaflets reduced to tendrils.



Fig. 168.—*Trifolium pratense*, with adnate stipules. which sheathe the stem are characteristic of the Knot-weeds

(*Polygonum*—fig. 169). The Hop (*Humulus lupulus*—fig. 170) has opposite leaves with stipules between the petioles (interpetiolar), a character it possesses in common with the whole of



Fig. 169.—*Polygonum orientale*, with sheathing stipules.

the large family to which the genus *Ixora* belongs. The Magnolias are remarkable in having large convolute stipules, which



Fig. 170.—Interpetiolar stipules of Hop.

fall off as the leaves unfold; and the Tulip tree (*Liriodendron tulipiferum* (fig. 171), a member of the same family, has them



Fig. 171.—Large stipules of Tulip tree.

very large and conspicuous on the young shoots. Usually the stipules are entire, but in *Polygonum* (fig. 169) they are fringed.



Fig. 172.—*Houttuynia cordata*, with axillary stipules.

The stipules of the Pansy are nearly as large as the leaves, and pinnatifid or pinnatifid. Commonly the insertion (attachment) of the stipules is extra-axillary, but in *Houttuynia*

cordata (fig. 172) they are axillary, that is, they proceed from the axils of the leaves. *Ornithopus scorpioides* (fig. 173) has large, stem-clasping stipules; and *Lathyrus Aphaca*, a plant



Fig. 173.—Stem-clasping stipules of *Ornithopus scorpioides*.

occasionally met with in Corn-fields (fig. 174), is remarkable, inasmuch as the leaves are reduced to tendrils and replaced by



Fig. 174.—Branch of *Lathyrus Aphaca*, in which the leaves are reduced to tendrils, and the stipules foliaceous and largely developed.



Fig. 175.—*Milium multiflorum*, showing part of leaf and the ligule at the base.

foliaceous stipules. The ligule of Grasses (fig. 175) is an out-growth of the leaf of a somewhat similar nature to stipules.

W. B. HEMSLEY.

## GARDENING FOR THE WEEK.

### Flower Garden.

**Auriculas.**—The season for these has been long this year; my earliest pipe were open about the third week in March, and there has been a succession until the middle of May. By a little management the season might be prolonged, and many of the trusses could be open by the first week in March; nor would it require anything like a forcing temperature to do this. The trusses of many plants are formed early in November. This is what florists sometimes call "truss bare." If these plants are removed into a warm greenhouse and placed on a shelf near the glass, they will be in flower early in March (I am writing now of what can be done in the neighbourhood of London), and at that time the flowers remain in beauty for a long time; others will come on rapidly from the frames out-of-doors, and by altering the positions of the frames, some of them to face the south and others the north, a considerable difference may be made in that way. The latest sorts should be reserved for the latest positions. All the plants are now in frames behind a north wall, and the lights are removed on all occasions, even at night, when rain is not apprehended. It is now the best time to re-pot, but there is considerable difficulty to find time to do it, as we are in the middle of the bedding out, and Grapes require thinning, &c. When the press of work is over we will then set about re-potting Auriculas; those who can find time to re-pot their plants should see to it at once. The pots ought not to exceed 5 in. in diameter, 3-in. and 4-in. pots being sufficient for many of the plants. Put plenty of drainage in the bottom, and over that some very fibrous turf, from which the particles of mould have been removed. The compost which I use is composed of turfy loam four parts, one part of leaf-mould and one part of sand, with a little pounded charcoal added; press the mould firmly round the roots, from which the greater portion of the old soil has been removed, and the tap root should be shortened. When the plants are re-potted, they should again be placed back in the frame, and the lights be kept rather close over them until they have made fresh roots.

**Carnations and Picoetes** are making very rapid growth, and the more attention they receive at this time the greater satisfaction will they give to their owner at blooming time. The soil used for potting has been unusually full of the roots and seeds of weeds; these have given us much trouble, as it is necessary to remove them in a small state. Decayed leaves from the base of the plants have also been removed, as they are a harbour for garden pests if allowed to remain. The stems elongate rapidly, and they are tied to sticks for security against high winds. It is now time to disbud the plants; when the stem has grown about 12 in. high, or before this, either the centre bud should be removed or the side buds. If the side buds are removed one flower only will be produced; if the side buds are saved each plant will develop three or four flowers, and these will be about a week later than if the centre flower only is allowed to remain. Green fly is a troublesome pest to Carnation growers. I destroy it by dusting Tobacco powder on the affected parts through a Pepper-box. Soft soapy water is also a deadly poison to it.

**Gladioli.**—The last of these have now been planted out. The orms do not appear to have been so well ripened last year as usual, the result of a wet season and rather lower average temperature than usual. I found the roots much shrunk and very light. The weather, so far, has been greatly in favour of those planted out early; gential showers and warm weather are causing a vigorous development. Run the canes through the spaces between the rows as soon as all the plants are through the ground. It is very likely that there will be blanks in the rows, and, even if these are not numerous, they spoil the effect of the beds. A good plan is to pot a number of roots at the same time as the beds are planted; these can be used to fill up the blanks. Instructions were given in a recent number as to sowing seeds; the plants will now be above ground, and they must be well supplied with water, admitting plenty of air, and, if the weather be fine, removing the lights altogether.

**Hollyhocks.**—It has now become extremely difficult to keep up a collection of these, the plants being in many cases quite decimated by the disease. In many places, where the Hollyhock formed one of the chief features, its culture has, perhaps, been discontinued. The result of the fungoid growth has been to destroy the fleshy substance of the leaves, and the desiccated venation rustles in the wind, a hideous spectacle. The most radical cure, if, indeed, there be any other cure at all, is to dig up every plant and burn it root and branch. Those who have a healthy stock of plants should be thankful, and should take great care that the nidus of the disease does not reach their plants. The spring propagated plants may now be planted out; they will flower in September and form excellent back rows to Dahlias, and will flower at the same time. The Hollyhock delights in a very rich deep soil, and I like to put mixture of fine loam and rotten manure round the roots of the plants. Tie the main stems to the sticks at once, and remove all side shoots with the fingers, in order to have a handsome single spike with large flowers. In planting, attention must be given to a judicious arrangement of colours. If the weather sets in dry the plants must be watered and mulched, to retain moisture.

**Tulips.**—These are already in full flower, and the weather has been so favourable for their perfect development that we have not found so much benefit from the glass lights as we did last year; in lieu thereof, some canvas screens, used to shelter the bedding plants from frost, came in useful to ward off the effects of the sun; and when the weather suddenly changed, with a prospect of rain, the canvas was speedily removed, and the glass lights that were close at hand were placed over the skeleton frames instead.

We have tied up the flowering growths of Delphiniums, Phloxes, Pyrethrums, and all such hardy tall-growing subjects to suitable sticks; the ground between the rows has been hoed over to destroy weeds. There has been plenty of rain, and it has not been necessary, as yet, to water at the roots, but if dry weather set in we will do so, and mulch to retain the moisture.

**Pinks** in beds have made excellent growth so far, and give every promise of a fine bloom; the flower-stems will be tied to sticks, removing at the same time the side buds.

**Pansies** in beds are in full flower, but, to keep up a succession of fine blooms, it is necessary to pick all the flowers off a certain portion. Surface-dress the beds and peg the shoots close to the ground. In ten days the bed (if it had previously shown signs of exhaustion) will be a mass of vigorous growth and full-sized blooms.—J. DOUGLAS.

It may be taken for granted that *Calceolarias*, *Zonal Pelargoniums*, *Verbenas*, and similar plants have been already planted out; the putting out of more tender varieties may therefore now be proceeded with, such as *Lantanas* and *Heliotropes*, together with the various kinds of fine-foliaged or sub-tropical plants, and the placing out of doers of such plants when of considerable dimensions must be at once followed by careful staking and tying, and dwarf or trailing species should be rendered secure by being pegged down. Copious waterings must also be given, should the dry weather set in, and it is important that this should be done as late in the evening as is practicable, or when evaporation is supposed to be at its minimum. If it be administered in the morning or during the day, a large portion of the moisture supplied must necessarily be lost, as far as the benefit of the plants is concerned. A few plants of each variety of which the various dimensions must be retained in pots, for a time at least, as accidents sometimes occur, and a reserve force of this kind is often found to be useful. Some of the various kinds of variegated *Pelargoniums*, and other plants which are not of rapid growth, should about this time be planted in the reserve garden, with the view of affording an early supply

of cuttings, thus obviating the necessity of taking them from the flower beds before they can well be spared for that purpose. Let the confusion, which is, to some extent, inseparable from the process of planting out, be set straight as soon as possible. Dahlias should now be planted. Those who get a portion of ground apart for them should on this grow the best-prepared plants, which will be those that have been struck from cuttings, these being less liable to get crowded with shoots, and, consequently, produce finer flowers than plants obtained by dividing the old roots. Where fine flowers are required, the plants should stand 6 ft. apart every way. The ground can scarcely be made too rich. They should be well watered at the time of planting out, and at once secured by good stakes; but the stems should not be tied too tightly, so that their subsequent expansion may be allowed for. Round the stems, for 1 ft., cover the surface 1 in. thick with sharp sand, so as to make it less agreeable for the slugs to travel over. A little Wheat-chaff or hard straw chopped up 3 in. long, does much to impede their movements, for they object to travel over anything that sticks to them, and this is the case with these substances even when wet. The best of all for the above purpose, where they can be obtained, are the short clippings of bristles from brush-makers. Wet or dry, these are equally effective, and are too sharp for slugs to attempt to cross. Lime and soot dusted round the plants will stop the movements of slugs whilst dry; but, with moisture, it soon gets crusted, after which they will pass over it, and repeated applications do harm to the plants. The same material can with advantage be used round any other plants collected by slugs. Iris, *Leucis*, *Colocasia*, and similar tender plants, may now be planted out. Those who may be making a first attempt at carpet bedding should bear in mind that the effect produced by this style of flower gardening is, in a great measure, dependent upon the different subjects employed being planted very close, so as at once to all but cover the surface, an even dense clothing to the ground being essential to give character to the arrangement. It will thus be obvious that a greater space should not be devoted to this kind of bedding than can be furnished with. Many of the hardy herbaceous plants which usually occupy the margins of clumps and belts of shrubs and ornamental trees, will now be in bloom, and may require to have their shoots and flowering-stems regulated and tied up. These matters should not be neglected during the busy season of planting out, as such flowering plants tend very considerably to supply any want of bloom which may exist during the interim between the two periods of spring and summer bedding.

#### Hardy Fruit.

**Gooseberries.**—If means were taken in the winter of putting lime on the soil round the stems of the Gooseberry bushes, as a preventive against caterpillars, little injury from these may be looked for; but in the case of any bushes that were not effected last year without this precaution being taken, their re-appearance may now be expected. When any can be found they should be destroyed at once, or they will spread and quickly denude the trees of their leaves, spoiling the present crop, and doing serious mischief by weakening the bushes for another season. A dusting of dry powdered lime sprinkled over the affected trees will, if fresh and caustic, destroy many, and cause the rest to fall off on the ground, where they must be killed, or they will again crawl upon the trees. This should be done when there is no appearance of caterpillars; for, if wet, the lime will be washed off before it has had any effect. The most certain method for destroying these caterpillars is by using a mixture of white Hellebore (finely ground) and whitening, in proportions of 1 lb. of the former to 4 lb. or 5 lb. of the latter, mixing the whole well up and applying it with an ordinary tin flour dredger, first wetting the leaves thoroughly with the syringe; the powder thus sticks to the foliage, and the caterpillars, feeding, as they do, on the edges of the leaves, swallow the compound, and it quickly kills them. In five or six days not a grub will be found alive, when the trees can be well syringed, in order to remove the powder from the fruit and leaves. The only objection to the use of this mixture is that, the Hellebore being poisonous, care must be taken that it is all washed off before the fruit is used.

#### Indoor Plant Department.

**Temperature for Orchids.**—Now, when the days are approaching their maximum of length, in the houses in which the different temperatures required for Orchids are kept up the heat should be raised to its highest point for the season. I do not mean to say that it is advisable to raise the temperature by fire-heat either day or night nearly to the point it will reach when the weather becomes so hot, as we generally get it through June, July, and August, as the application of artificial heat to anything like such an extent would be highly injurious; in fact, in the cultivation of these plants we do not generally take into account sufficiently the fluctuations in the temperature of the air outside and the necessity for regulating the fire-heat with them; not that it would answer to let the temperature of Orchid houses fall to any gloomy, cold days that we frequently get even in the middle of summer, and still cooler nights which we experience through the same season proportionately to the same extent as the depression that takes place outside in such weather, but that, when this is the case, the internal heat should run considerably lower than it would be even possible to keep it when the external temperature is very high. The attempt which is often made, especially by young growers of these plants, to keep up a uniform day and night temperature through the growing season is productive of the worst results by the weakened, elongated growth that takes place under such conditions.

**Hottest Section of Orchids.**—In the warmest house, wherein are grown *Saccolabnum*, and such of the *Vandas*, *Aerides*, *Phalenopsis*, and

others that need the most heat, in bright sunny weather the day temperature will reach 80° or often 90° with little or no fire-heat, and in the night it will frequently be 70°; but this figure is quite high enough for the night. In dull weather 75°, with a close atmosphere in the daytime, is sufficient, and when the thermometer has to be kept up to this by fire-heat, its growing influence upon the plants will be quite as great as if higher through the sun's power. At the same time, if the weather is cold and cloudy, though fire-heat should be used during the day to admit of some air being given without reducing the temperature lower than the point above indicated.

**Intermediate Orchids.**—For such Orchids as need an intermediate temperature 60° in the night, when fire-heat has to be used to keep the thermometer up to this, is sufficient, although during the next ten or twelve weeks it will often run higher without any fire at all. From 65° to 70° in the day—when, through the weather being cool, firing has to be resorted to to keep it to this—will generally be found sufficient; but here again there should be enough heat in the pipes to allow of air being given in the middle of the day. On hot days 10° higher than the above will do no harm.

**Cool Orchid House.**—From 45° to a few degrees over 50° in the night is enough, but it should even when the weather is cold not be let now for some time to go lower than this, as allowing any plants in this house to receive too great a deal of root moisture, under which condition a low temperature will often produce an unhealthy state. When the weather is comes hot the natural result is that the temperature cannot be kept so low as this; 55° is low enough in the day, and when necessary heat should be turned on to keep it to this, or up to 60°. When the weather is hot it will often range 15° or even 20°, more especially in span-roofed houses fully under the influence of the sun, or in lean-to structures facing the south; under such conditions more light, through thinner shading, will counteract any evils resulting from too much warmth.

**Orchid Insects.**—Where these exist they will now increase apace. Where scale infests any, particularly such as are in a high temperature, the infested plants should be repeatedly gone over, isolating them from the stock free from this pest so far as not allowing any plants that have scale on them to touch others that are clean. A little attention in this matter will save a great deal of labour and facilitate the attempt which should be made to rid the plants of these destructive insects, that are both so injurious and difficult to destroy, as the plants will not well bear the application of any dressing that will kill the insects. Spoging with cold water and a brush carefully applied is the best remedy, being particular not to injure the leaves of such plants as *Vandas* and *Aerides*, where the white scale so persistently gets down between the base and the stem, almost out of reach of the hand. For yellow thrip, persistent spoging and syringing overhead from the plants sufficiently hardy and sturdy to admit of water being applied in this way without injury to the foliage, as I have before urged, is the best remedy. If green fly gets amongst Orchids to any extent it often becomes very troublesome, getting on to the tender advancing flower-spikes, and if allowed to remain for even a few days will frequently destroy their vitality. In an Orchid house where any considerable number of plants are grown there is always a number that do not well bear fumigating, consequently it is better, if possible, to avoid it. Where aphides make their appearance on either young leaves or flowering stems, I have found the best remedy is to dip the affected parts in weak Tobacco water, that is, such as is only just sufficiently strong to kill the insects, and which can only be determined by trying it, as the different kinds of Tobacco, or the material used instead, are so variable in strength as to render it impossible to give any exact directions for the preparation of the liquid. I always used to keep a pailful in hand for the purpose ready made, and by at once dipping any that were affected, or spoging them with the liquid, I found little difficulty in destroying the insects, are sure to be present where the full-grown insects exist. In using Tobacco water for this purpose there is one thing imperative, to see that there is no oily matter floating on the liquid, for if such exist, in dipping or spoging the plants it will adhere to the flower-spikes and young leaves, and do considerable mischief; the oily scum I speak of is generally produced when the liquid is made by either boiling or pouring boiling water upon the Tobacco or Tobacco cloth (the former is preferable) and the insects or their eggs, as the latter, although too small to be discernible, are sure to be present where the full-grown insects exist. In using Tobacco water for this purpose there is one thing imperative, to see that there is no oily matter floating on the liquid, for if such exist, in dipping or spoging the plants it will adhere to the flower-spikes and young leaves, and do considerable mischief; the oily scum I speak of is generally produced when the liquid is made by either boiling or pouring boiling water upon the Tobacco or Tobacco cloth (the former is preferable) and the insects or their eggs, as the latter, although too small to be discernible, are sure to be present where the full-grown insects exist. In using Tobacco water for this purpose there is one thing imperative, to see that there is no oily matter floating on the liquid, for if such exist, in dipping or spoging the plants it will adhere to the flower-spikes and young leaves, and do considerable mischief; the oily scum I speak of is generally produced when the liquid is made by either boiling or pouring boiling water upon the Tobacco or Tobacco cloth (the former is preferable) and the insects or their eggs, as the latter, although too small to be discernible, are sure to be present where the full-grown insects exist. In using Tobacco water for this purpose there is one thing imperative, to see that there is no oily matter floating on the liquid, for if such exist, in dipping or spoging the plants it will adhere to the flower-spikes and young leaves, and do considerable mischief; the oily scum I speak of is generally produced when the liquid is made by either boiling or pouring boiling water upon the Tobacco or Tobacco cloth (the former is preferable) and the insects or their eggs, as the latter, although too small to be discernible, are sure to be present where the full-grown insects exist.

**Moisture.**—Increased humidity will likewise now be required of the atmosphere. Where troughs for holding water exist on the pipes, this is easily supplied when the water within the pipes is warm, but the worst fault connected with this kind of arrangement is that the most moisture is generated in the coolest weather through more fire-heat being used, and at which time a less humid condition of the atmosphere is necessary; this no doubt admits of regulation through filling more or less of the troughs, but, unless efficient attention be paid to it, under any system of distributing moisture in the atmosphere it is faulty. Whether the necessary humidity is supplied in this way, or by throwing water about the paths, on and under the stages, enough must be kept up to prevent the air of the houses

getting too dry, especially during the hours that external air is admitted; at the same time any excess of atmospheric moisture must be avoided; better even to err slightly in the opposite direction, as if under conditions a little too dry growth will be slower, but this is preferable to the exhausting tendency which an over-humid atmosphere has. The description of houses in which the plants are grown should always be taken into account in calculating the amount of water which Orchids respectively, according to the species and varieties, will bear both at the root and in the air of the house; as the lighter the structure and nearer to the roof the plants are kept the greater quantity of both will they do with.

**Conservatories.**—Seed-vessels of *Rhododendrons*, *Azaleas*, and other plants should be pinched off, so as to throw increased vigour into the young growth. *Clematis* and *Passifloras*, *Ambergrapes*, *Mandarin* oranges, and similar plants now making growth freely, must not be allowed to receive any check from cold draughts or from scanty supplies of water; and the young wood should be judiciously thinned at an early stage, rather than severely pruned when further advanced. Tie in the young shoots gracefully and loosely, yet neatly, and never permit them to twine round each other. All free-growing plants must receive liberal waterings, no matter whether they are in pots or in borders; but at the same time let saturation in all cases be avoided. Remove such plants as have done little or nothing, and those with drooping or withering branches to the green houses.

Plants that are stationary, such as climbers and subjects planted out, unless they are in flower, are greatly benefited by daily syringings, and if green fly, red spider, or other insects present themselves, a little Tobacco water, or water in which flowers of sulphur have been mixed, may be efficaciously employed. Washing with a sponge or soft rag and water, in which some soft soap has been dissolved, is the most effectual remedy for scale.

**Greenhouse Plants.**—Pot singly some of the best *Lobelias* into 4-in. pots for the decoration of the conservatory. *Celosias*, *Comprepnas*, *globose*, and the *marantaceæ salicifolius* should be shifted into larger pots than those they now occupy, as they increase in size; keep them in a moderately warm temperature and near the glass. *Tulips*, *Hyacinths*, *Crocuses*, *Lily of the Valley*, *Astilbe japonica*, and other plants that were forced into flower early in the season should now be consigned to some shady border. Apply a mulching of loam and decayed manure in equal proportions to *Lilies* in pots, and, with the exception of such as are required for early flowering, keep them either out-of-doors or in cool frames. Keep early spring-struck cuttings near the glass in warm houses, shifting them when necessary. Keep *Coleuses* near the light in an intermediate temperature, and re-pot and pinch in their shoots as may seem necessary. Seedlings and offsets of *Cyperus alternifolius* make fine table ornaments; good loam and leaf-mould, moderate heat, and plenty of water suit them well, and 4-in. pots are quite large enough for them. Place old plants of *Campanula pyramidalis* out-of-doors, and keep seedlings of the same in a fair growing condition under glass. Keep up a succession of *Mignonette* in pots; a situation at the base of a wall shielded from the wind, and a culture in the open air, will be established in pots perfectly; but in the case of seed pots, and for some time after the young plants have made their appearance, they should be kept under glass. Retain some specimens of *Humea elegans* for conservatory decoration. *Hydrangeas* for early blooming require a little extra heat, and such shoots as have no flower-truss on them should be cut off and used for cuttings. Shift *Statice* as they require it. Introduce some plants of *Valloia purpurea* into heat in order to induce early flowering. Plants of *Sarcocolla* *Gibbesii* and *Lantheum minimum* should be cut back and placed in a warm moist temperature. *Solanums*, *Ferriandras*, *Abutilons*, and other sub-tropical plants, from which the spring stock of cuttings has been procured, may now be placed in sheltered positions out-of-doors.

#### Indoor Fruit Department.

**Vines.**—Inarching one variety of Vine on another may be successfully done now. Green wood unites to green wood much more easily and quickly than that which is hard and brown. Young canes raised from eyes this spring should be used, and the growth should be from 3 ft. to 6 ft. or more in length, whilst the stock should consist of one of the side shoots which has been pinched at five or six joints from the main stem. A leading shoot, which has been allowed to grow from near the bottom, should be equally cut off, and the advantage of having a fruiting Vine established as near the base as possible, 12 in. being a very good distance. As the stock is generally much further from the ground than this, the pot containing the plant should be raised on a temporary wood stand to the required height. The process of inarching is very simple, and may be rapidly accomplished. A thin slice, about 2 in. in length, has to be taken off the two parts to be united with a sharp knife; when this has been done the two cuts must be laid closely and neatly against each other, and the wound must be so fastened together that the two parts may keep them firm. In about a fortnight the union will be so far accomplished as to warrant the ligatures being loosened, and in another fortnight the matting may be removed altogether. If the union be not perfect by this time, the *Raffia* Grass should be left on until it is. The Vine in the pot must throughout be kept well watered, and, when the union is complete, the small cane in the pot should be cut away close to the bottom of the part connected. The part above this, if not very long, may be left on until the Vines are pruned and dressed in autumn or winter. The kind of stock is a matter of importance, as all are not equally suitable—certain varieties improve on other roots, while with others the reverse is the case. The Black Hamburgh is a suitable stock for many kinds, Muscat of Alexandria is another which seldom fails; indeed, those which produce good fruit generally make

good stocks. Muscat Hamburgh does well on the Black Hamburgh, whilst Royal Muscadine is a poor stock for most Vines; Black Prince and Burchard's Prince are no better; *Barbarosa* (*Gros Guillaume*) produces more bunches on the Black Alicante than on its own roots. Inarching is not always necessary to increase the fertility of this Grape; in many places it does well on its own roots. Inarching is not always done with a view to improvement; it is often performed to hasten the fruiting of new varieties, and there can be no question about the utility of the operation for this purpose.

**Pines.**—The greater part of the Queens started into fruit in February will be ripe or ripening now; little or no water should be given at the root after the fruit begins to get yellow. As soon as the fruit is cut the ball must have a thorough watering to prevent the suckers from suffering. If space for successional plants be scarce, the Queen stocks may be packed closely together, after the fruit is cut, in some spare corner to mature the suckers; successional plants which may be becoming crowded may then be thinned out to a distance which will admit of their free development.

#### Kitchen Garden.

**Cabbages**, **Cauliflower**, and **Broccoli** are, in some gardens, to suffer seriously from the ravages of the root grub. In old gardens the plants are generally the most affected, and to such an extent in some places does this occur that the summer crops of these vegetables are almost destroyed. Besides the whole or partial loss of the crop, this is very annoying to those who take a pride in seeing in their kitchen gardens that unbroken uniformity in the different vegetable growth that gives evidence of good management; yet, in soil which most infested with these pests a little extra labour at the time of planting will secure these vegetables, in a great measure, from destruction. At this season it is well to provide a bushel or two of dry powdered lime, to which an equal quantity of soot should be added; stir the two well together, and keep the mixture anywhere where it will be dry; this quantity will suffice for a good-sized garden. When the different crops for summer and winter use are being put out use the planting-trowel instead of the dibber, make the holes large enough, and, as the plants are dropped into them, half fill them with such earth, then, if the weather and state of the soil are such as to require it, give them a good soaking with water, after which put to each plant, all round the stem, a half-handful of the lime and soot, then draw in the remainder of the soil. This simple process will take a little more time than planting without the use of the mixture; but those who use it will be spared the annoyance through the hot months of July and August of seeing their plants turn that peculiar blue tint in the leaves and flag in the sun which is a sure sign that the roots are gone, and that all affected in this way may be consigned to the refuse heap. Where water is given at the time of planting it is necessary to apply it as shown directed before the lime and soot, as, if the latter be put to the plants first it will be washed away from the stems and only have a partial chance of being effectual. The rains we have had lately will now make everything grow apace, and this will be found a busy time; yet the attention devoted to the flower garden should by no means be allowed to interfere with the equally important kitchen garden.

**Planting Celery.**—Early-sown Celery should now be put out; if the trenches have been prepared beforehand, as advised some time back, run the hoe over the surface to destroy any weeds that may be vegetating. Give the plants a good soaking with water before moving them, and if they have been treated as directed, by being put out in a nursery bed 3 in. or 4 in. apart, they will now be in fine condition; remove them with as many roots as possible, and as much soil as will adhere to them. In moving Celery plants, there should never be occasion for the now almost obsolete practice of cutting off or shortening a considerable portion of the leaves at planting time; on the contrary, Celery, more than most crops, should never, throughout the whole course of its cultivation, from the time the plants appear above ground, until they are fit for use, receive a check more than is inseparable from transplanting them, even when that operation is performed with care. If the trenches have been prepared for double or treble rows, put the plants in 1 ft. apart, each way if for single rows, 9 in. between each plant will be sufficient for ordinary purposes, in making the holes, use a planting trowel, and see that they are large enough to admit the roots without crushing them together; give each row a good watering as soon as planted. Celery costs more in manure and attention to grow it well than most vegetables, and it is worth while to treat it in a way calculated to produce it in good condition.

**Leeks.**—When indifferently grown, these are little better, for the purposes for which they are required, than Onions. To obtain the peculiar mild flavour which Leeks possess when large and freely grown, the plants must not be allowed to become stunted by being too close in the seed-bed; to prevent this, thin them out, so as to leave them 6 in. apart.

**Thinning Onions.**—Spring-sown Onions should be thinned before they get too large. Take advantage of the soil being moist after rain to do this. If it be hard and dry, the limited quantity grown by many may be watered, so that the removal of any need not injure those that remain, which often happens when the ground is hard. As to the distance the plants are left apart in thinning, account may be taken of the kinds grown. Large kinds, such as *Roccos* or *uncham* Park, require double the room necessary for small varieties, like *Danvers* or *James's Long Keeping*. If it is desired to grow well-developed bulbs of the large growing kinds, these should be thinned, so as to leave them 8 in. or 9 in. apart in the row; the smaller-growing, later-keeping sorts will not require more than half that room. Where some are required for pickling, a

portion of the smallest-growing kinds may be left not more than 1 in. apart; or, unless they have come up very thickly, without thinning at all.

#### Extracts from my Diary.

**May 27.**—Sowing Carters' Giant White Cos, Ivery's Nonsuch, All the Year Round, and Tom Thumb Lettuces. Planting out first batch of Asters. Planting out two rows of Celery. Earthing up Potatoes and Broad Beans. Mulching Raspberries with half-rotten stable manure. Mowing and digging up ground for Cabbages, Savoys, and other winter Greens. Making up fresh beds for Cucumbers. Giving Plum trees on walls a good washing with Quassia chip water to keep off green fly. Tying up Lettuces to blanch.

**May 28.**—Sowing Bromham Hall and Golden Perfection Melons; also Telegraph Cucumbers. Potting on Balsams and Chrysanthemums. Looking over Rose walls, nailing in all the shoots that require it, and giving them a good washing to kill green fly. Clearing out another Potato frame and getting it ready for Melons. Renovating frame linings. Thinning Apricots, Peaches, and Nectarines, where not already done by frost. Earthing up Cauliflower plants.

**May 29.**—Sowing Veitch's Autumn Self-protecting Broccoli, to come in for lifting and laying in cold frames for winter use. Getting all bedding plants planted out as fast as the weather will permit. Looking over Vinerias, and stopping the laterals, tying up the leaders, and thinning the grapes where required. Digging out more Celery trenches and getting the manure into them. Sticking and earthing Peas.

**May 30.**—Sowing Green-curbed and Broad-leaved Endive; also Mustard and Cress. Potting off Solanums, Celosias, and Lemon-scented Verbenas. Pricking out Celery and Cauliflower plants. Looking over British Queen and President Strawberries in the open ground, and picking off all the late and weak blossoms, so as to make sure of some fine fruit, and getting them netted. Sticking Scarlet Runner Beans. Cleaning out all catch pools, and seeing that all drains are free, so as to be ready for heavy storms, should they occur.

**May 31.**—Sowing Canadian Wonder French Beans, or Radishes. Potting on suckers of Pandanus Veitchi. Tying in all leading shoots in Peach houses. Hoeing amongst Gooseberries and Currants, and amongst all growing crops. Dusting Turnips early in the morning with lime and soot to keep off the fly. Looking over Peaches, Nectarines, and Apricots, nailing in the leading shoots, and washing them well to kill green fly.

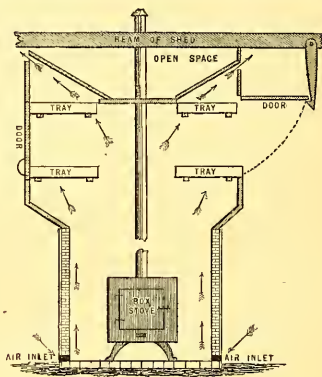
**June 1.**—Putting in cuttings of double Wallflowers and Alyssum. Planting Snow's Winter White and Watercress Broccoli. Looking over Cucumbers and Melons, stopping them, and earthing them up where required. Mowing and cleaning up the pleasure grounds, and rolling down firmly all gravel and Grass that require it. Weeding and cleaning up herbaceous borders. Watering Pines all through; also Carrots, Potatoes, and Celery in frames.—W. G. P., *Dorset*.

**Hedgehogs in Gardens.**—These are invaluable friends to the gardener, as they destroy snails, slugs, woodlice, maybugs, and all sorts of creeping things; in fact, they live exclusively upon them. I have had hedgehogs in my garden for several years without any harm being imputed, even erroneously, to them. From a single pair they increased so much that on one summer evening I found seven full-grown ones together; but now they are very seldom seen, and I suppose that, having exhausted their food, they have migrated to other quarters. The fact is, slugs and snails have now almost disappeared from the place, while formerly I was much plagued with them. They do not touch any plant, not even Strawberries. I have given some to friends to put in kitchens infested with cockroaches, and they soon kept them down beautifully. All they required was a wooden box in a dark corner to sleep in during the day, and a little pail of milk to supplement their feast of cockroaches. They kept running about all night, to the intense disgust of the cats. They soon got sufficiently tame to allow of their being handled without concealing, but they always remained very shy, and not particularly intelligent creatures. To destroy their fleas, you cannot wash them with carbolic soap like the dogs, as they have a perfect horror of water; but smear a large white towel with green soap, put it on the bottom and the sides of a small deep basket, then set the hedgehog upon it and blow some good Persian or insecticide powder well between his spines; the fleas will immediately jump away and stick to the soft soap. Put some Walnut leaves amongst the hay in their nest and you will prevent a return of the nuisance. But after all you might as well spare yourself the trouble, as the immense hedgehogian flea seems quite a different species from the human and canine one. As to egg-sucking in their wild state I have neither presumption nor proof it, but my gamekeeper says they will destroy very young rabbits when still in their breeding holes.—JEAN VAN VOLXEM, in "Gardeners' Chronicle."

**The Rose Season.**—In our Rosery here (May 13) the young growths are about from 2 in. to 3 in. long. The trees were mulched last October with good rotten cow manure, which is already telling its own tale. The foliage is large and dark, and scarcely a green fly is to be seen. I sowed with a mixture of soft soap and sulphur—1 lb. of each to 40 gallons of water—merely as a preventive to insect pests. Making their food distasteful is one of the best ways with which I am acquainted of keeping down insects.—R. GILBERT, *Burghley*.

#### FRUIT AND VEGETABLE DRYERS.

The simplest method of drying both fruit and vegetables by artificial heat is to place them in a stove oven with the door left open; sometimes a rack is arranged over the kitchen stove to hold the articles; both these will answer for small quantities, and are useful auxiliaries in drying by the sun, but require frequent attention, to prevent the fruit from being cooked as well as dried. All the patented dryers are constructed upon the principle of passing a continuous current of heated air over the substances to be dried, and the means of effecting this present a great variety. During the late war we visited an immense establishment for drying vegetables for the army. In this room were arranged with racks for holding a series of shallow trays—merely a wooden frame with coarse cotton cloth tacked on for a bottom. Near the floor was a series of pipes through which steam circulated, to supply the heat, and openings were made to let in cold air below the pipes, and above were others to let out the air after it had passed over the trays. The dryers offered for sale have a stove for wood or coal, to heat the air, trays to hold the fruit or other matters, and ventilators above. These being the requirements, it will not need a great amount of inventive skill for any one who wishes to dry fruit or vegetables to construct something which will answer the purpose. Many years ago, having suddenly to preserve a large amount of sweet Corn by drying, where there was no dryer obtainable, we converted a room into a dryer. An ordinary cylinder stove was set near the door, and the pipe run across the room, about 2 ft. above the floor, to the chimney. Trays were made by tacking some discarded tin roofing to strips, and some tressels were knocked



together to hold them directly over the pipe. The door, being taken off and replaced by a temporary shorter one, allowed cold air to enter near the floor, and a window at the opposite end of the room was let down at the top, to furnish an outlet. The arrangement, even during a long storm, worked in a most satisfactory manner. An illustration more to the point is furnished by Mr. F. Malcolm, of Ontario, who, at a very little expense, extemporised a fruit dryer in his wood shed, which has worked so satisfactorily for two years, and is so simple and cheap, that he wishes others to have the benefit of it. The annexed sketch gives a cross section of it, apparently with the front removed. Mr. Malcolm does not give any dimensions, except for the trays, but that is a matter that will vary with circumstances. All he wishes to show is the principle upon which it is built. The enclosure is made of tongued and grooved boards, and protected from fire by lining exposed parts with brick and tin. A box stove is used for the heater, the pipe from which rises horizontally back to the rear of the dryer, turns upon itself, and then upward to the outside of the dryer and of the shed. This doubling the pipe gives increased heating surface and saves fuel. Eight trays are used; these are 2 ft. 4 in. wide and 3 ft. long; these go in pairs, and are laid, consequently the dryer is 6 ft. long on the inside. These trays slide upon cleats attached to the ends of the dryer, which are not shown in the diagram, nor is a central support which is provided for holding the ends of each pair. Though Mr. Malcolm does not say so, we infer by the arrows showing the direction of the air current that the bottoms of the trays are of elevated slats; at all events, that would be found a great advantage. There is at each side a door running the whole length, to allow the trays to

be put in and taken out; this door turns up, and is held in its place by a hook, as shown at the right hand side of the diagram. An opening at each side near the floor admits the cold air, and outlets are provided above the doors for the exit of the air. The lower openings should be provided with covers or shutters, by which the flow of air may be regulated. In the front of the dryer is a door through which the fire is fed and managed. As to the capacity of such a drier, Mr. Malcolm says: "There are eight trays, and it requires about seven bushels of Apples to fill them; in twenty-four hours the Apples may all be put into two trays, leaving the other six to be filled; by working in this way, a family may peel and core about five bushels every evening. With a moderate fire the Apples will be dry in forty-eight hours. In this and other dryers a high temperature is not of so much importance as a free circulation of air, hence the ventilator, or exit, should be sufficiently large. As soon as air is heated, its capacity for moisture is increased; this passing over the fruit quickly takes up moisture from it, and passes on to the outlet to allow a fresh and, so to speak, thirsty portion of air to come and take up its share of moisture. Besides more certain drying, without chance to spoil, a dryer turns out a much handsomer product than can be made in the open air, as light is excluded, and the fruit remains much lighter coloured. Knowing the principle involved in the construction, and by the aid of such hints as are given by Mr. Malcolm, no one should find any difficulty in constructing a fruit drier. It is not necessary to build it in a shed, as one may be put up by itself with a roof over it, which should project all around sufficiently to allow of operating in wet weather. Indeed, it is much safer to have it quite detached from the dwelling, as woodwork, exposed, as this would be, to a high temperature for many days and weeks, becomes so thoroughly dry, that it will be very inflammable; care is required in this respect, whatever wooden dryer may be used. If small articles, like berries or green corn are to be dried, the bottoms of the trays may be of some loose fabric, or preferably of wire cloth made of wire thoroughly tinned.—"American Agriculturist."

#### THE SEASON AND THE CROPS IN NORTH MIDDLESEX.

It is a good many years since I experienced such a spring as the present. Alike remarkable in different ways, it has in a more than usual manner exemplified the futility of venturing any predictions connected with anything influenced by the weather in our variable climate. Those who were all-depending at what they supposed would result in the certain destruction of the greater portion of the fruit crops by the severe frosts that occurred over a considerable part of the country whilst the trees were in flower, will have learnt one more lesson—that it is not any certain amount of cold, even varied in its effects by the conditions of the atmosphere as to moisture, that will destroy the vitality of the flowers; but that the ability of the bloom to withstand a low temperature is very much greater in some seasons than in others—directly attributable to the wood and bloom-buds being thoroughly matured the autumn previous; and this not alone dependent upon the autumn weather, but quite as much attributable to the summer weather that preceded it. In the south of the kingdom last summer we had considerably more moisture than usual, and consequently escaped the stagnation occasioned by drought in the middle of the season that occurs when the soil gets excessively dry about midsummer, followed by rains a little later on, which cause a strong second growth in the trees that does not admit of time for the incipient flowers getting so thoroughly matured as they were last autumn. From observation, now extending over a good many years in different soils and localities both near the coast and further inland, I have long held that the conditions above alluded to have a great deal to do with the ability possessed by the flowers of fruit trees when they open in spring to resist a low temperature. There is also another matter of which even those who have given it close attention, and favoured by the best opportunities of studying vegetable life, possess only a very limited knowledge, that is, the circulation of the sap, the more or less active condition of which exerts such a powerful influence in plants to withstand adverse conditions of temperature. The almost unprecedented dry state of the soil in this part of the country through the latter part of winter and up to the time of the severe spring frosts could not fail to render the flow of sap usual in the trees at the time considerably less than ordinary; and as the sap in a healthy plant is diffused through every part, even to the organs of the flowers, proportionate in quantity to its existence in the whole, it follows that the sap vessels this spring, at the time the frost occurred, contained much less watery element than usual. To these combined causes, I think, alone can the escape of the bloom be attributed; for whilst Peaches, Nectarines, and the later flowers of Apricots on open walls, with no more covering than usual, and in some

cases no protection whatever, were in full flower, we had on three nights from 13° to 14° of frost, and on another night, after a heavy driving shower of snow and sleet, with the trees all wet, we had 9°, accompanied by a cutting east wind, and yet in one place I have seen a couple of Peach trees on an east wall, fully exposed to the frost and wind, without any covering, and they have set plenty of fruit; but exceptional instances like this, in seasons such as the present, although they may and do lead some growers to ignore the use of covering at all, yet such conclusions are generally based on evidence not extending over a field sufficiently wide to be trustworthy; and my decided conviction is that in nine springs out of ten those who use such coverings as will ward off the greatest degree of cold, taking care that the trees are never covered when they ought not to be, and always covered when they require it, will come off the best with their Peaches on open walls. Probably the most remarkable thing in the fruit prospects is the way in which Apricots generally have withstood the frost, not only in the fruit that was already set and grown as large as big Peas, but also in the later flowers that were expanded when the low temperature occurred, there being several degrees more frost than usually has the effect of destroying all—both the fruit that is formed and the later bloom. Pears that flowered earliest are a thin crop; the later blooming varieties being full enough. Plums are set in large quantities; Cherries equally promising; Currants the same. Gooseberries have suffered severely, and are very thin in most places. Apples smothered with bloom, which has opened and fallen more quickly than I ever recollect seeing it. Strawberries and Raspberries most promising. The hound vegetation collectively has made within the last three weeks is such a few people can remember seeing. Deciduous trees of most kinds are crowded with bloom—Oaks, Elms, and Horse Chestnuts, especially the latter, which fell almost as soon as it opened. Lilacs, Laburnums, Thorns, and other shrubs are full of flower; but in many cases, such as the Thorns, the leaf growth is so great as to half hide the bloom. Even Hollies, such as were not almost smothered with berries last year, are flowering freely. Vegetable crops of all kinds have an equally promising appearance, and grow as if by magic. Gardeners (we cultivators of the soil in any shape are a grumbling set) have to resort to the last pog on which to hang a complaint, that is, that the weather is too favourable to the growth of weeds; and amongst the market fruit growers that fruit will be so abundant as not to be worth gathering. The country collectively could not possibly look better or more promising. Grain of all kinds, both autumn-sown Wheat and Beans, as well as spring Corn, have a uniform vigour and colour about them such as is seldom seen on land of all descriptions, both heavy and light. The hay crop is likely to be the heaviest that has been for some years. T. BAINES.

#### OTIORHYNCHUS SULCATUS AND ROSES.

The Otiorhynchus is a nocturnal feeder, and not very particular in its choice of food. It feeds during this season of the year almost entirely on young buds which are just pushing into growth, and it eats the bark all round such buds, thus destroying not only the buds, but all dormant eyes at the base, and, consequently, all hopes of further growth. In seasons like the present, when the weather is mild and showery, and trees are pushing with vigour and in health, the mischief done by the Otiorhynchus is comparatively small, except in cases of single specimens of Roses, &c., which come more particularly under the observer's eye; but in seasons like last spring, when the weather is dry, the wind in the east, the trees pushing with feebleness and in a somewhat sickly state, the Otiorhynchus is in its glory—it seems to them more fully to enjoy the young bark and buds, and as the growth is delayed by the weather, it has more time for its work of destruction. In such seasons I have seen whole squares in a nursery destroyed or seriously damaged of many shrubs and trees, such as Roses, Thorns, Purple Beech (grafts), Hollies, Cupressus, Lawsoniana, Plums, &c. On making inquiry as to what has done the mischief, I have frequently been told it was the east wind, frost, &c. The sufferer evidently not knowing his foe, probably owing to its nocturnal habits. The larva of the Otiorhynchus is a small white grub, very much resembling a meat maggot, and it will be found chiefly feeding on the roots of the common Yew. It is also fond of Polyanthus roots, and one of its favourite pastimes is to gnaw the bark in a ring round the stem of a Rhododendron just at what sailors call the wind and water line, causing the death of the plant. I am, of course, well aware that many other plants are subject to its attacks besides those I have mentioned. Every year we have a fine crop of beetles emerging from our newly-potted Peaches and Nectarines in the Orchard house, and we are obliged to go at night with a candle and catch them, or they would eat the leaves of the plants in such a way as to seriously damage them. Now, as to the best way of dealing with them. Firstly, having learned to recognise the grub, never

omit an opportunity of destroying them when lifting Rhododendrons, Yews, &c.; look out for them in re-potting Peaches, &c. The perfect insect is a more difficult matter to deal with, as it is nocturnal, and by no means asleep. On approaching the tree on which it is feeding, if one should bring the candle too near or in any way shake the tree, down it drops to all appearance dead, and to find it on the soil is nearly like "looking for a needle in a truss of hay," as its colour so much resembles the soil. Our *modus operandi* is this:—Three persons go armed with a candle and lantern and a large apron. One wears the apron in which is placed a stone to form a convenient hollow, the second carries the candle at such a distance as to show a sufficient light for the work, and the third man bends the tree quietly over the apron, and then gives it one or two sharp taps. The beetles fall into the apron at once, and, being only crawlers, they are, by occasionally shaking the apron, kept at the bottom until the work is complete. In this manner we catch pints, and sometimes quarts, of beetles in the course of one evening, say two or three hours. I have, in my garden, proved the utility of this plan; some of my Roses, which were near some Yew trees, were almost destroyed last season, and with the aid of a friend and an apron we caught forty or fifty from seven Rose trees. Of course the Roses were untied from their stakes during the day to be ready, and we were careful to avoid touching one tree whilst operating on the next.—ALFRED H. PEARSON, *Chilwell Nurseries*, in "Nottinghamshire Guardian." [The genus *Otiorynchus* consists of many species, and the whole of them should be suspected as great enemies to plant growers from the well-known propensities of several of them. They should therefore be carefully collected and destroyed.—W.]

**Slugs in Gardens.**—In searching for slugs in my garden an evening or two ago, I found a species which, I believe, is not a vegetable feeder. It has a yellowish body, shaded off to dirty brown on the back. It is 2 in. or more long when extended, and is not so shiny as the common slug. Finally, on its tail grows a horny substance like a small shell. I was about to destroy a number of this kind of slug, when I saw protruding from the mouth of one a small red earth worm, half swallowed; whereupon, thinking they were friends instead of foes, I put the whole number back on the borders. Can any of your readers tell us anything more about this slug? Since writing to you on this subject (see p. 404) I have had ocular demonstration of the use of a hedgehog in a garden. Mine got shut up one night and lost his usual chance of food, and next day I found him very hungry. On releasing him, and putting him near his customary hiding-place, he began to search for food, although it was still broad daylight, so I picked up some slugs which the wet had enticed out, and dropped them very quietly just in front of him. He devoured them greedily, and a large snail (previously crushed) shared the same fate. Besides what I gave him, he constantly snapped up something on the borders—vermin, no doubt—for he did not touch leaves or any vegetable substance. As this creature commences to feed at dusk, he must in the course of the summer nights destroy a considerable quantity of vermin.—W. J. T., *Brixton*.

**Poison for Red Spider.**—I find from experiments which I have made that sulphuretted hydrogen gas is an easy and effectual means of destroying red spider without injury to the most delicate plants. All other insects are destroyed at the same time, and I think mildew is arrested, but on that point I am not sure. My plan is to take a water-tight vessel, such as a keg, that will hold the plant and leave room on the bottom for a teacup. After placing the infested plant in the keg, I put by the side of it the teacup, about half full of diluted sulphuric acid—about one part of acid to five or six of water. I then wind the end of a fine copper wire 2 ft. or 3 ft. long around a piece of sulphuret of iron as large as a lady's thimble, so as to hold it securely, and, using the wire as a handle, let it down into the cup, and cover all up tightly with a bundle of papers pressed down by a bit of board. After ten or fifteen minutes the cover is raised a little, and the iron sulphuret drawn out by means of the wire. The plant is allowed to remain about half an hour longer. A little strong ammonia will neutralise the odour of the gas, which, however, if the operation be skilfully performed, does not escape in sufficient quantity to make it worth while to do this. The remedy is so obvious to anyone familiar with the properties of the gas, that I think it must have been tried before, but I have never heard that it was.—"Country Gentleman."

**Cucumber Disease.**—I would recommend Mr. Rose (see p. 481) to try *Salus*. It did not quite cure, but checked the Cucumber disease with us last year. I am sorry, however, to add that the disease has re-appeared this year, though fresh seeds, new paint, fresh soil, and every possible preventive seemed tried: Our case, however, was not common gumming, but blotched patches on the leaves and fruits. *Salus* cured the Melons of the same disease completely, and I have seen nothing of it since.—D. T. F.

**Cucumber Peel and Black Beetles.**—I have tried the experiment of placing Cucumber peel in the way of black beetles, and I find that the smell of the Cucumber peel allures them, and that after eating it they die almost directly, some close to the peel, and others as they are moving away from it retire to their holes.—J. S.

## TREES AND SHRUBS.

### THE BARK AND TIMBER TRADE.

THE bark-stripping season was brought to a close generally in this neighbourhood the latter end of last week. We commenced stripping here on the 23rd ult., just four days earlier than last year. The weather has been throughout the season most favourable for bark peeling, being mild and very moist, with southerly winds prevailing, and almost the total absence of frosty nights, which tend to check the flow of sap freely, so unlike the weather last year, when frosty nights and north-east winds were the rule and not the exception; indeed, they continued during nearly the whole time of stripping, and rendered the bark difficult to peel. This season, however, the sap has "run" exceptionally well, and the bark, in consequence, peeled off with the greatest facility. The bark trade throughout the country is very dull; the supply seems to be greater than the demand. From trustworthy quotations received from many parts I conclude that the price is from 15s. to £1 10s. per ton lower than last year. We have recently sold this year's stripping for £4 10s. of 21 cwt. to the ton, put on waggons in the wood at purchasers' risk, in case of stained or damaged bark. As compared with last season's price (which was £6), it is £1 10s. lower. The Government sale of bark in the New Forest took place about a fortnight ago, the average price being 17s. 6d. less than last year. At Stamford, on the 16th inst., Messrs. Richardson & Son offered about 480 tons of new bark for sale, but on account of the low prices bid only six lots out of seventeen were sold, the prices of the lots sold ranging from £3 to £4 per ton of 20 cwt. in the wood; one man allowed for loading on waggons, except the highest price lot (£4), which was for delivery in truck at the railway station. At Newport and other parts of Shropshire I learn that the price is from £5 to £5 10s. of 22 cwt. to the ton, delivered in the tanyard, or at the nearest railway station. In Kent, Sussex, and other southern counties, the price is about £4 15s. of 20 cwt. in the wood, or from £5 to £5 5s. delivered. The price of new hatched bark per load of 50 cwt. in and about London is about £16, delivered in bags at the tanyard. Notwithstanding the low prices, purchasers who buy with all risks are, I fear, likely to be heavy losers in consequence of so much rain; the bark cannot fail to be more or less stained and damaged already, and if this still showery weather continues another week or longer it will cause irreparable and disastrous results to the bark harvest hereabouts. I have not heard of a single load of bark having been delivered in a tanyard about here this season. The showery weather has continued intermittently from the commencement of peeling up till this date, May 21, that it has been utterly impossible to get any bark harvested dry. The timber trade is dull on the whole. Elm is very low in price; the market is almost glutted. This has been caused mainly through the immense number of fine old Elm trees blown down in October last. Oak, excepting first quality and of large dimensions, is not a brisk trade. Ash is still in demand at good prices; clean copse-grown Ash is eagerly bought. Beech is in fairly good demand at last year's prices. Sycamore realises high prices when clean and not less than 2½ ft. in diameter of butt, but small-sized trees are of little value. Lime sells at a high figure when clean grown and of good growth. Larch is always in demand at fair prices. Scotch Spruce, and Silver Fir trade is ruled in a great measure by local demand. In this locality we have a steady sale for them; the timber is converted into sleepers and fencing for railways, and also into staves for soap-boxes in the Bristol soap manufactories. Pitwood prices are low and in little demand, as the pits have been almost blocked up by windfall trees and limbs since the October hurricane. The underwood and fagot trade is not brisk, the prices generally being lower than those of last year. GEORGE BERRY.

*Longleat.*

**Erratic Habit of the Horse Chestnut.**—This tree seems to me to be always halting between two opinions, never exactly sure whether to adopt a creeping or an erect habit of growth. Has any of your readers noticed its habit in this respect? Sometimes a branch will grow straight down like a Weeping Ash, and its neighbour will grow as straight up. Not far from where I write there is a tree about sixty or seventy years of age, the bottom half of which grows down nearly as "weepingly" as a Weeping Ash, while the top, from about midway up, assumes a distinctly erect habit; the one almost looks to be grafted on the other. Some of the branches turn down as soon as they leave the trunk, and grow straight down until they reach the ground, while the top branches spread widely out without the least tendency to droop. Many other trees show the same erratic tendency.—J. S. W.

## PROPAGATING.

**ACHIMENES.**—The tubers of these may be potted and started into growth in the middle of April; the most suitable place for them is a shelf near the light in an intermediate house till they get about 3 in. high, when the tops may be taken off and every little piece will make a plant, if cut as in fig. 1. A good compost for them is a mixture of peat, sand, and a small portion of loam, and the pots must be well drained; the soil should



Fig. 1.

be put in lightly, with a little sand on the top. Give a watering with a fine rosed-pot and insert the cuttings; then sprinkle with water to settle the soil, and put them into the cutting box on a warm bottom, where they will emit roots in about ten days. They may then be gradually inured to the light and got ready for potting off. They make several tubers every year, as shown in fig. 2. Each tuber will make a good plant,



Fig. 2.



Fig. 3.

or it may be divided as seen in fig. 3. If a fine specimen be wanted, several tubers may be placed in one pot or pan. They ought at all times to be near the light, and should have plenty of room between them to keep them from getting too weak.

H. H.

**Shading for Greenhouses.**—We are this season using a shading material which I have not seen mentioned among the receipts given by your correspondents. It is very easily obtained and applied, and is more efficacious than anything we have hitherto tried. The receipt is simply flour mixed with cold water or buttermilk to the consistency of paint, the best way of applying it being by means of a white-wash brush at the end of a stake or lath. This shading has the advantage of obstructing the light less than Brunswick green, which is too dense for anything but Ferns, and also of withstanding the weather extremely well, as has been proved during the last fortnight, when we have had heavy storms of rain at frequent intervals, which to all appearance have not affected it in the least degree.—CHAS. E. PEARSON, *Chilwell, Notts.*

**Lily of the Valley in Market Gardens.**—I have just seen an unusually fine display of this favourite flower in full bloom in Mr. Moore's market garden here. He has six wide rows of it, each more than 600 ft. in length, and it was a rare treat to walk amongst them with a gentle wind scattering their sweet odours. They were planted about four years ago between rows of young Gooseberry bushes running north and south, and are rapidly filling up the spaces between them, the partial shade and protection afforded by the bushes seeming just to suit them. The gardens are in a valley, near the river Tyne; they are growing in common black soil, and require but little attention, and that they well repay. They are cut at this season, made into small bouquets, and sold wholesale in large quantities to dealers.—W. A. T., *Hewham-on-Tyne.*

**Saxifraga nepalensis.**—Of all hardy plants with which I am acquainted this is one of the best, and one, too, which is easily cultivated. A plant of it brought from Corsica in the summer of 1876 is now producing two spikes of flower in our rock garden, where it has been in bloom about three weeks, and in all probability it will keep in that condition for another six weeks. It is a plant which should be in every garden. We have also in flower another pretty *Saxifraga*, viz., *S. Lancastana*, a much dwarfer kind than *S. nepalensis*. That little gem, the *Edelweiss*, is likewise just coming into flower. Can any of your correspondents tell me the time and best means of propagating it? I have tried cuttings in autumn and other ways, but have failed.—H. BROWN, *Pusey House, Faringdon, Berks.* [It grew freely from seeds at Dangstein, sown in spring in pans, in a compost consisting of sandy peat, leaf-mould, and brick dust, and placed in a cool orchard house.]

## LILIUM BROWNI v. LILIUM JAPONICUM COLCHESTERI.

IN part iii. of Mr. Elwes' "Book on Lilies," under *L. Browni*, occur the following remarks:—"I cannot allow that what is figured in the 'Flore des Serres,' t. 2193.4, recently, as *L. japonicum* Colchesteri is distinct from *L. Browni*. Such slight variations as might be discovered in plants grown under very different conditions do not, in my opinion, justify their being treated as different plants, however desirable such a cause may seem to those whose only object is to swell their catalogues or bring out old plants under new names."

Such an insinuation, doubtless levelled at myself as the re-introducer of this fine kind (our *L. japonicum*), or at the late celebrated M. Van Houtte, who figured it, and, in friendly complement, gave it the differential name of *Colchesteri*, is unworthy of the author or of his book on Lilies. We have grown our plant, which is the one depicted in Bury's "Hexand," t. 2, as *L. japonicum*, and by Thunberg in his "Flora of Japan," p. 133, side by side with *L. Browni* for years past, and had we not been convinced of marked differences, we should not have ventured to introduce it as new in our catalogue. We have now growing for the first time twenty-five plants of this fine species side by side with 100 *L. Browni* under the same conditions and aspect, and are therefore in a position to point out their differences, some of which we now beg to enumerate.

*L. japonicum.*

BULB is white or whitish-yellow, never red or brown; broad at base; the scales, which are somewhat narrow and acute at tip, differ in length, the outer ones terminating at about two-thirds of the height of the inner scales.

*L. Browni.*

BULB, on exposure to light, assumes a red or reddish-brown tint; the scales are broad and all pass up, overlapping, and terminate together at the apex of the bulb, thus giving it a peculiar shape, which is well represented in *THE GARDEN*, 1877, p. 134, and there described as "oblate in form, the base being curiously constricted." This form is not found in our *L. japonicum*.

When about 1 in. out of the Ground.

*L. japonicum.*

BUD green; leaves, broad and blunt, are edged with a thin brown line, showing a darker tinted venation; shape of apex, round, flat, blunt.

*L. Browni.*

BUD reddish-brown when first above ground, with no green; when about 1½ in. high a little green shows under the red bracts; shape, acute-pointed.

When about 3 in. to 4 in. high.

*L. japonicum.*

STEM green, thickly irrorated with brown, or green, with brown rings just below the insertions of the leaves; leaves 1½ in. to 2 in. long, of a bluish-green colour, edged with a thin brown line, having a lighter-coloured central midrib on upper surface, erect, bluntly obovate, wide spreading, unfolded to the base of the stem.

*L. Browni.*

STEM and bracts dark brownish-red, the upper 1½ in. of bud showing only a green tint, tipped at the point more or less with brown both on upper and under surface of leaf; bracts pressed close to stem; no leaves unfolded; bud closed up.

When 8 in. to 10 in. high.

*L. japonicum.*

STEM, a blue green, more or less irrorated with brown, getting darker near the base when it leaves the soil; the insertion of the leaf is marked with a brown line or patch; leaves alternate, continued down the stem to a distance from the soil of 2 in.; semi-erect or horizontal, not arched, not curving downwards at tip, broad in the middle, where they are four times wider than at the insertion, diminishing gradually thence to apex and base, about 3½ in. long, of a softer feel to touch; bracts have died off and fallen.

*L. Browni.*

STEM rich dark brown, with brown bracts adherent and fresh, the lower 6 in. unfurnished with leaves; leaves about 4½ in. long, harsher to the touch; lanceolate-pointed, green with broader brown edging, more or less erect, curving in an arc, with the tips invariably pointed downwards. At its broadest part, which is nearer the apex than the bud, it is only twice as broad as at the insertion.

Apex of Bud at Summit of Stem, 8 in. high.

FORMED of four leaves, open, divergent, with their tips directed outwards, as in *L. longiflorum*.

FORMED of four or six leaves tightly closed together like that of *L. auratum*.

Prevailing Tint of Plant.

*L. japonicum.*

Bluish-green.

*L. Browni.*

Dark brown with green leaves.

My gardener, who knows the plants well, says he could tell each kind in the dark by the feel. As the growth progresses, I will, if allowed, specify certain differences in your columns. The reputation of the late M. Van Houtte stands too high to need from me a single line in his defence. The fact that he considered our species distinct from *L. Browni*, figured it and introduced it as such in his catalogue, ought to have sufficed, the more so now he has gone, to have protected him from any unworthy insinuation.

ALEXANDER WALLACE.

## ANSWERS TO CORRESPONDENTS.

**Green Fly on Roses.**—What are the best means of destroying the small green fly which infests Roses? I tried strong Tobacco water last year and constant brushing off with a white feather, and could not get rid of countless numbers of these pests.—H. S. G. [Tobacco water diluted with soap-suds, or soft-soap, made into a strong lather and applied on alternate evenings for a fortnight, is a certain remedy.—W. H.]

**Green Fly on Orange Trees.**—In reply to "S. H." (see p. 414), allow me to say that, where practicable, fumigation with Tobacco paper is always the best way of getting rid of green fly. Fumigate two or three nights successively, and use with the paper a good proportion of dry Moss to prevent any ill effects from an over-dose of Tobacco-smoke. This is a much better plan than attempting to do it in one evening with Tobacco-paper only.—W. W. H.

**Conifers in Shade and Drip.**—What Conifers will thrive best under the shade and drip of trees, and afford good shelter for game?—C. M. [Nothing will succeed so well as answer the purpose better than the Silver Fir, Yew, and Hemlock Spruce.—G. B.]

**Snowflakes.**—Allow me to tell "E. F." that my Snowflakes have blossomed in profusion, though they flagged much in the sun, as they were not planted in a sufficiently wet place. I have always seen them with much leafage, which adds to their beauty.—M. CONYBEAR, *St. Leonard's Grange, Ingelton.*

**Syringing Vines.**—COUGH VINES to be syringed with water from now until the fruit begins to change colour? or had the house better be kept quite dry, and merely the Vine roots outside moistened by watering the border? The bunches are just showing. No heat is used, except a fire at night to prevent damage from frost. My Vines suffered badly from mildew two years ago, which killed every berry, and last year the crop was small.—J. H. W. [No; Vines should not be syringed when once the buds are expanded, but the atmosphere should be kept moist by frequently damping the floors and walls; a dry, arid atmosphere is the last thing that should be thought of in Vine culture. When the Grapes begin to colour, reduce the atmospheric moisture and ventilate more freely. To prevent mildew see that the border has a liberal supply of water.—W.]

**Hair-worms.**—What is the name of the enclosed worm? It was picked up with others of the same species immediately after a heavy thunderstorm on Saturday last. It was alive on Saturday evening, and moved about freely.—H. [The worm sent appears to be a species of *Goviolus*, and probably *G. aquaticus*, not uncommon in the bottom of damp ditches and similar situations. It much resembles a living, rather stout, dark brown-coloured horse hair, and often winds itself up into what appears a complicated loose knot.—W. W. S.]

**Malformed Rhododendron.**—Is the accompanying a common form for a Rhododendron flower (?) to assume? I have a bush a little under shade completely covered with such flowers, no others being on it.—W. H. M. [It is not uncommon for a young shoot to push from the centre of a partially-formed flower. It often occurs in the Rose. In the specimen sent, however, we observe no traces of a flower. What we see are many red bracts or floral leaves attached to the young shoots. A bush well furnished with such appendages must have a handsome appearance.]

**Names of Plants.**—*G. J.*—The leaf resembles somewhat that of the Giant Echium, plants which otherwise resemble the description. It will probably do best in a warm greenhouse. If it flowers we shall be glad to see a bloom. You might be able to identify it from the leaf alone at *Kew. W. C.*—*Asphodelus ramosus* is the name of the plant of which you send the flower. We seldom attempt to name plants from the leaf alone. *J. M.*—No, 3 is *Lonicera tartarica*, from Siberia. The other two had lost their numbers, or rather the writing on the tissue paper was totally illegible. One was certainly *Spiraea levis*, from Siberia, and the other (yellow flowers) most probably a species of *Hibbertia*, from Australia. *Belvis.*—*Cardamine sessilifolia*. It has no claim whatever to a place in the indigenous flora of Great Britain or Ireland. The seeds have probably been introduced with foreign Rye Grass or farm seeds of some sort. *J. F.*—The Orchid is *Brassia Lawrenceana longiseta*, and the Begonia is *B. nitida*.

**Top-dressing Strawberries with Soot.**—"H. B. J." asks if this may be done with safety when the plants are in flower. Yes; with care. But the less soot allowed on the flowers the better, for three reasons. First, a strong dose might injure them; secondly, some of it might remain to spoil the fruit; and, finally, the flowers cannot possibly be benefited by soot. The soil, the plants, the leaves, and crowns may be enriched, stimulated, cleansed by soot dressings; and these might be applied with advantage up to the flowering period. But they are better applied several weeks or a month before it, and the last dressing should be washed off and in by a heavy artificial watering, unless such deluging rains as we have had this season should succeed the dressings. Soot is one of the best of manures for Strawberry plants, but the faintest trace of it on leaf, stem, or soil is ruin indeed to the fruit. Hence dress well, and wash down before mulching. The recent floods and dressings have developed a magnificent show of Strawberries here.—D. T. FISK, *Hardwick House, Bury St. Edmunds.*

**Oiers.**—What are the best sorts of Willows with which to plant an Osier bed, irrigated with sewage? and what is the best time and mode of planting?—F. M. [The best sorts of Willows to plant

under the circumstances are the slow-growing, hard varieties, and of those only certain sorts will withstand the effects of sewage without deterioration. With due attention, however, as regards the selection of cuttings, good crops may certainly be obtained from the following varieties, viz., *Merrin's Yellow Hard Osier*, *Long-skin Osier*, *Black German* and *Pomeranian Willow*; others might be named, but none are better for the purpose than these, unless some speciality be required. The best time to plant is from the middle of November to the end of March. The ground must be well pulverised and cleaned before planting, and the drainage should be good. Cuttings should be used, but the distance apart can only be stated when it is known which sort is to be planted; the larger the Willow, of course the more room it will require. A common distance apart is 18 in. each way.—W. SCALING, *Basford.*]

## Questions.

**Sweet-scented Flowers.**—Would some correspondent of THE GARDEN inform me what is the best succession of sweet-smelling flowers for a conservatory or cool greenhouse for the whole year?—AMATEUR.

**Rose Roots and Lead.**—I have a *Maréchal Niel* Rose in my conservatory which has been planted about two years. It at first grew at a very rapid rate, but during the last twelve months it has been unhealthy, and I cannot find out for what reason. This year it has borne a few flowers, but scarcely any leaves, and when it has turned yellow almost immediately. The shoots also that it makes turn brown and drop off. It is planted against the wall in a half-stone box, and, to prevent the damp penetrating the wall, twelve months ago we had a sheet of lead put between the wall and the earth in which the Rose is planted. Can the lead have affected the Rose?—B. S.

**Blighted Roses.**—Can you suggest a ready method of restoring blighted standard Rose trees to health? I have some half dozen; half of which are doing well, and the other half are very indifferent. I have fumigated them and watered them well, but it is of no avail; in fact, one of the trees seems to be quite dead.—E. J. G.

**Propagating Stove.**—Will some of your correspondents kindly inform me what is the best and cheapest way of putting up a small propagating house? what sort of stove to heat it? and how the pipes should be placed?—J. P.

**Asphalting—How is this Best Done?**—I want it for a walk in a house, and as one end of the house is some 12 ft. higher than the other, the walk in question is very steep. Would it not be advisable to mix with the asphalt a few small gravel stones to make it less slippery? I have had the path gravelled, but do not like it, as it gets carried by the feet into the other houses adjoining, and also gets very green, so that every two or three months it requires a fresh sprinkling. There are, I believe, several kinds of asphalt, but I would like one that could be washed down and made to look clean. Could the asphalt be done by common labourers? and how much would it cost per yard?—H.

**Green-growing Gardenias.**—I have two or three Gardenia plants flowering in 7-in. and 8-in. pots, and have failed to flower them. They are in good health, growing satisfactorily, and have set an abundance of flower-buds; but, instead of opening, as they ought to do, a portion of them drop off, whilst others unfold imperfectly and so slowly that the petals appear like deformed leaves, and are nearly as green. I grow them in a moderate stove temperature during winter and until the buds are fully formed, afterwards I place them in the conservatory; in fact, I have tried them in different houses and temperatures, but all have failed. I may add that they receive manure water as often as we deem proper throughout the growing period. What treatment should I follow with a better hope of getting the buds to open?—S. K.

**Insects Attacking Timber Trees.**—There are two insects, or rather their larvæ, that do much damage to two kinds of forest trees. The caterpillars of the first, said to be a species of *Tortrix*, live upon the pith of the young shoots of different kinds of Conifers, generally choosing the leading shoots, and causing them to die. The other, which attacks the leaves of evergreen Oaks, is the larva of some small insect, which, like the *Celery Fly*, feeds between the upper and under surfaces of the leaf, leaving a dead blotch on the foliage of the size of a fourpenny-piece. Is there any practical method of dealing with these pests? Thousands of the Pine-tree pest have been destroyed by hand-picking, but it is a tedious operation, and can only be done when the trees are in a young state.—J. M.

**Rubus delicosus.**—This was not introduced by Mr. Isaac Anderson-Henry, as stated recently in THE GARDEN (see p. 434), but by me. Mr. Anderson-Henry simply bought seeds or plants of it of me; I forget which.—W. THOMSON, *Ipswich.*

## SOCIETIES AND EXHIBITIONS:

## ROYAL HORTICULTURAL SOCIETY.

MAY 21.

THE chief features of this meeting were groups of plants shown by Mr. John Wills, South Kensington, and by Messrs. Rollisson & Sons, Tooting.

**First-Class Certificates.**—These were awarded to the following new and rare plants:—

**Hemanthus Kalbreyeri** (Veitch & Sons).—A useful ornamental species from the West Coast of Africa and previously described in THE GARDEN.

**Adiantum neo-guineense** (B. S. Williams).—A beautiful Fern of the *A. tenerum* class, with large branching fronds and light pinnae.

**Ptychosperma rupicola** (B. S. Williams).—A graceful Palm, with feather-shaped fronds, which, in a young state, are of a rich bronze colour.

**Cycas media** (B. S. Williams).—A species of medium growth, having dark green leaves of a highly ornamental character.

**Alsophila plumosa** (B. S. Williams).—A small Tree Fern, with light and elegant fronds and finely-cut pinnae.

**Sadleria cyathoides** (B. S. Williams).—One of the most handsome of Tree Ferns, of moderate stature, and having long, graceful fronds resembling those of a Blechnum.

**Gloxinia Mons. Duval** (Society's Garden).—A rich crimson velvety flower of good substance.

**Gloxinia Boule de Feu** (Society's Garden).—A free-growing kind, producing snow-white flowers of good form.

**Pelargonium Mons. V. Lemoine** (Society's Garden).—A free-growing, Ivy-leaved kind, having glossy green foliage and bearing large, double, lilac-coloured flowers.

**Begonia President Burelle** (Laing & Co.).—An attractive variety, bearing brilliant double scarlet blossoms, each as large as those of a Carnation.

**Lilium tenuifolium** (G. F. Wilson).—A small crimson-flowered kind with recurved petals, and, as exhibited, very beautiful.

Mr. H. J. Buchan, Wilton House, Southampton, sent a flowering plant of the rare *Cymbidium tigrinum*, furnished with spikes of singular brown-petaled flowers having a white waxy lip spotted with dark crimson.

**Miscellaneous Subjects.**—In Messrs. Rollissons' group were well-grown examples of the beautiful *Acrophyllum venosum*, bearing large spikes of blossom, the yellow-flowered *Alyssum Weirbeckii*, the beautiful white-flowered *Saxifraga densa*, and the neat purple *Erinus alpinus*. With these also came good examples of Palms, Cycads, and other fine-leaved plants; likewise excellent examples of *Sarcocolla purpurea*, bearing very large, deeply-coloured nodding blossoms. This exhibition was edged with small plants, amongst which was *Nertera depressa* covered with berries. Mr. Wills' group contained seedling *Gloxinias* of an attractive character, *Cattleyas*, the beautiful *Odontoglossum cirrhosum*, and *O. vexillarium*; also *Lady's Slippers* and other *Orchids*. These were plunged in a carpet of Club Mosses, Grasses, and Maiden-hair Ferns, and were backed up with groups of *Spiraeas*, *Fuchsias*, *Arum Lilies*, &c., the whole being overhung with the graceful leaves of *Cocos Weddelliana* and other choice Palms. Several large specimen *Azaleas* were also conspicuous on account of their brightly coloured flowers. Mr. Aldous, South Kensington, showed a group of decorative plants, consisting of *Ericas*, *Pelargoniums*, *Lilium eximium*, and the beautiful *Saxifraga pyramidalis*, intermixed with Palms, Ferns, *Caladiums*, and similar plants. Messrs. Veitch & Sons contrived a collection of *Madeoivalias*, all of which were of an attractive character, and some especially interesting from a botanical point of view. The same firm also sent a plant of *Tillandsia zebrina* major from South America. It is a vigorous growing kind, with broad, zebra-like leaves, and bears brilliant scarlet sword-like spathes of blossom from 2 ft. to 3 ft. long; associated with this were also healthy plants of *Todea plumosa*, *Hemantthus*, and a large variegated-leaved *Crinum*, named *C. Verschoffianum*, from the South Sea Islands. This is a plant of a very ornamental character. From Mr. Douglas, Loxford Hall, came several pretty hybrid *Aquilegias*. Mr. B. S. Williams furnished a group of new plants, in which were noticeable several *Caladiums* of an attractive character, the white-flowered *Anthurium Dechardi* and *A. Patini* well furnished with white waxy spathes; also several new Palms and Cycads. Mr. Knight, Battle, showed a double-flowered striped *Pelargonium*, a sport from *Venusius*. Mr. H. Cannell, The Nurseries, Swanley, sent out flowers

of seedling *Mimulus*, which were much admired on account of their large size and brilliant and varied colours. They served to show that if such attractive flowers can be obtained from seed, propagation in any other way is unnecessary. Mr. Cannell also showed out blooms of *Zonal Pelargoniums* of a choice description, being large, well formed, and brilliant in colour. The best scarlets were *Tom Bowling* and *Nianza*, and the best white, *Jean d'Arc*. Dr. Denny, a purplish-crimson kind, was much admired for its brightness, and a kind named *Czarina*, with large white flowers tinted with salmon was very effective, as was also a rich salmon-coloured flower named *Lady E. Campbell*. Several new kinds were also shown by the same exhibitor, one of which was white, striped with green, and tinted with pink. Messrs. Laing & Co., Stanstead Park Nurseries, Forest Hill, sent some handsome tuberous-rooted *Begonias*, amongst which a kind named *B. Lelia* was much admired on account of its large, waxy, bright crimson blossoms; a kind named *Carnicolor* was also remarkable for its dwarf habit, and its large, light, salmon-coloured flowers. Messrs. Barr & Sugden exhibited an extensive group of cut *Erics*, *Pæonies*, *Ixias*, and *Pyrethrum's*. The *Erics* consisted chiefly of well-known attractive kinds of the German section, many of which bore large and highly-coloured blossoms, but the majority of the buds were unexpanded. *I. eibirica grandiflora precox* was in good condition, as were also *I. neglecta*, *Sultan*, *æqualens*, and *Lady Jane*. Among the *Pæonies*, the rich magenta *P. anemoneflora fl.-pl.* was very attractive. The *Ixias* consisted chiefly of a rosy-crimson kind, evidently excellent for decorative purposes. Mr. J. Wheble, Reading, sent out blooms of a Ghent *Azalea*, of a bright orange colour and of good form and substance. They were stated to have been cut from a plant purchased from the Chelsea Nurseries fifty years ago. Messrs. Little & Ballantyne, Carlisle, showed a plant of *Lychnis dioica* bearing double rose-coloured blossoms. A collection of species of *Pelargoniums* of an interesting character was sent from the Society's gardens at Chiswick. It consisted of *Ivy-leaved*, *scented-leaved*, and other kinds, well worth more extensive culture than they receive. From the same source also came a group of plants of *Harrison's Musk*, which fully illustrated its value as a pot plant; for window decoration it is invaluable. Associated with these were examples of the dwarf variegated *Bamboo* (*Bambusa Fortunei variegata*), a plant not nearly so generally cultivated as it ought to be, for either as a decorative plant or for furnishing material for cutting it is of great value, and it is easily grown. This group was set off to advantage by means of Palms and Indian *Azaleas*. A good collection of *Gloxinias* also came from the Society's gardens. Amongst them the best were *John Gray*, deep purple; *Domenico Scassi*, a bold, bright blue flower with pure white throat; also *Boule de Feu* and *Mont Blanc*. Several speckled kinds of an attractive character were also contained in this collection, adjoining which there were double-flowered *Ivy-leaved Pelargoniums* and examples of the drooping sulphur-coloured *Primula sikkimensis*.

**Fruit.**—Mr. W. Divers, Weirton House, Maidstone, showed several dishes of Apples in good condition for the time of year. They consisted of *Golden Knob*, *Winter Greening*, *Gooseberry Pippin*, *Beauty of Kent*, and others. Mr. C. Howe, Benham Park, Newberry, Berks, sent good examples of green and scarlet-fleshed Melons.

## ROYAL BOTANIC SOCIETY.

MAY 22.

THIS show was in all respects an excellent one. Its most attractive features were the banks of *Roses* (which are always good in May), the stove and greenhouse plants, the choice collections of *Rhododendrons* and Japanese *Acers*, and the new and rare plants. Interesting, too, were the Palms and Ferns arranged in the recesses, but we missed the large *Azaleas* so brilliant at May shows in former years.

**Stove and Greenhouse Plants.**—These were well shown both by nurserymen and amateurs, and occupied the most prominent positions in the show. The best collection in the nurserymen's class came from Messrs. Jackson & Son, Kingston, who showed well-flowered specimens of *Apheloxia macrantha purpurea*, the blossoms of which are a great improvement on those of the original form; *Stachys profusa*, covered with bright purple blossoms, and worth notice on account of the plant being of a less formal character than that of many exhibition plants. Associated with these were the *Flamingo Plant* (*Anthurium Scherzerianum*), furnished with upwards of thirty large, bright scarlet spathes; and a very large specimen of the beautiful *Erica grandiflora rubra*, remarkable on account of its graceful character and profusion of crimson-white-tipped blossoms. In a collection from Mr. Williams, Holloway, was a remarkably fine plant of *Dendrobium nobile*; it was quite 3 ft. high, and as much through, and literally covered with blossoms. A large specimen of *Clerodendron*

Balfour was in equally good condition, and a well-grown plant of *Genetyllis Hookeri* was laden with bright crimson, drooping blossoms. Mr. Williams also showed an elegant *Tetratheca verticillata*, laden with purple, bell-like flowers. The groups of plants shown in the principal amateurs' classes were far in advance of those exhibited by nurserymen, and two collections of equal merit, arranged on a bank near the entrance, formed one of the grandest features of the show. Among them was noticeable a remarkable specimen of a finely-coloured variety of *Bougainvillea glabra*, the bright purple flowers of which could be seen from every part of the tent. Conspicuous, too, was a plant of *Azalea magnifica*, the finest of the kind we have ever seen, literally a mountain of snow-white blossoms; whilst *Erica ventricosa grandiflora* and *E. v. magnifica* were probably never to better advantage. A grand plant of *Anthurium Scherzerianum*, furnished with unusually large spathe, imparted colour to the group and formed a striking contrast to the white *Dracophyllum gracile*; and the beautiful, bell-shaped drooping blossoms of *Erica odora rosea*, one of the most valuable of the Heath, but unfortunately one of the most difficult to grow.

**Roses.**—These were not so numerous as at former May shows, a circumstance probably owing to the unfavourable weather which we have experienced of late being detrimental to the opening of the flowers. The best collection came from Mr. Charles Turner, Slough, whose plants were perfection, both as regards growth and bloom, and the admiration of every one. The foliage was large, abundant, and of a fine healthy green, and the flowers were throughout large, fresh, and bright. A plant of *Madame de St. Joseph* bore quite 150 blossoms, and formed a striking contrast to a large pyramid of the brilliant crimson-flowered *Duke of Edinburgh*, and a remarkably large conical specimen of the deep rose-coloured *Charles Lawson*, with which it was associated. *La France* was probably never seen in better condition than it was on this occasion, either as regards flowers or foliage, and *Madame Valliant* was all that could be desired. Messrs. Paul & Son, the Old Nurseries, Chessent, had a well-grown specimen of *Miss Ingram*, plentifully furnished with well-formed, whitish, pink-flushed blossoms, and associated with it were the brilliant crimson-flowered *Madame Victor Verdier*, the cream-coloured *Celine Forestier*, and a good specimen of *Madame de St. Joseph*. In the class for *Roses* grown in 8-in. pots, Mr. Turner had excellent dwarf plants, well furnished with foliage, each bearing on an average a dozen finely-formed blossoms and buds. Conspicuous among them were the brilliant *Madame Victor Verdier*, the white *Madame Lecharme*, the beautiful pink *Miss Haseard*, one of Mr. Turner's own seedlings, *Star of Waltham*, and *Sir Garnet Woseley*. Messrs. Paul & Son had also a good collection, in which were well-flowered plants of the rich rose-coloured *Magna Charta* and the pink *Abel Grand*; *Francis Michelon* was furnished with large, well-formed blossoms of a rich rose-magenta colour, and *Madame de Montchevean* and the velvety-crimson *Duke of Cornwall* were also in excellent condition.

**Orchids.**—These were fairly well represented. The best group, which came from Mr. Denning, gardener to Lord Londesborough, Norbiton, Surrey, contained a magnificent plant of *Laelia purpurata*, bearing upwards of twenty showy white purple-lipped blossoms; *Odontoglossum cirrhosum*, beautifully in flower; a fine specimen of *Dendrobium thysiflorum*; *Odontoglossum vexillarium* and *O. latopurpureum*, the latter bearing very large flowers having rich chocolate and golden-coloured petals and a white fringed lip. Mr. B. S. Williams, Holloway, had finely-flowered specimens of *Odontoglossum vexillarium*, *O. Alexandræ*, and *Madevalia Harryana*. Mr. James Child, gardener, Grand Hall, Ewell, had a magnificent *Oncidium ampliatum majus*, bearing eight or nine strong spikes of large golden blossoms; also an excellent plant of *Aerides* (Fielding), loaded with drooping racemes of bright pink blossoms. Mr. Heims, gardener to F. A. Philbrick, Esq., Regent's Park, had a remarkably fine example of *Dendrobium Bensonia*, also the beautiful *Vanda oerulescens* Boxall, a good plant of the pretty rosy-flowered *Scaccolabium ampullaceum*, and the curious *Oncidium Kramerii*.

**Azaleas.**—These, though comparatively small in size, were shown in good condition. Mr. Turner's collection contained a fine example of the semi-double pink, white-edged *Souvenir de Prince Albert*, one of the choicest of *Azaleas*, the white *Madame de Cannart*, and *Hanale*, a fine exhibition variety, and the brilliant crimson-purple-flushed *Duchesse A. de Nassau*. Mr. Ratty, gardener to R. Thornton, Esq., Sydenham, had a good collection, in which were noticeable the large orange-scarlet-flowered *Azalea grandis*, the white and salmon-striped *Charles Enke*, and a brilliant crimson-flowered kind named *Grand Crimson*.

**Pelargoniums.**—These formed an attractive feature, though the plants were not quite so full of blossom as we have seen them. The best in the open class came from Mr. James, gardener to W. F. Watson, Esq.; the blooms in this collection were large and well coloured, and

the plants dwarf and well furnished with foliage. The most attractive kinds were *Mary Hoyle*, *Prince Leopold*, *Snowflake*, and *Sultana*. In the nurserymen's class Mr. Turner, Slough, had excellent examples of *Claribel*, a kind with well formed flowers of snowy whiteness, the upper petals being slightly marked with rosy-purple. *Isabella* and *Tronbadour*, a beautiful pink-flowered kind, with white centre, the upper petals being conspicuously marked with dark crimson, *Pompey*, and *Archduchess* were also attractive varieties. Mr. James sent a collection of *Fancy Pelargoniums*.

**Fine-foliaged Plants and Ferns.**—These were well shown by both amateurs and nurserymen. Mr. Williams, Holloway, had fine specimens of *Cycas revoluta*, *Cocos Weddelliana*, *Dasytrich acrostichum*, and *Pandanus Veitchii*; also remarkable examples of the Australian Bird's-nest Fern (*Asplenium Nidus*), *Davallia Mooreana*, *Gleichenia Spluncea*, and the beautiful drooping *Tree Fern*, *Cyathes Barkeri*. Mr. Tudgey, gardener to J. F. Williams, Esq., Hawick Grange, Worcester, showed excellent plants of *Geonoma gracilis* and the massive-leaved *Pritchardia pacifica*; the same exhibitor had also fine specimens of *Cibotium regale*, *Cyathes medallaris*, and well-grown plants of *Adiantum tenerum*. Mr. Rann, gardener to J. Warren, Esq., Hand Cross Park, Crawley, had in his collection gigantic and graceful specimens of *Cycas circinalis*, *C. revoluta*, and *Croton interruptum*.

**Cape Heaths.**—These were not so plentiful as we have seen them at May shows, and the plants were also smaller in size than usual. In the best group, sent by Messrs. Jackson & Sons, were neat plants of *Erica ventricosa coccinea minor* and *E. persipica nana*, completely covered with waxy blossoms. In a collection from Mr. Peed, Norwood, were profusely-flowered examples of *Erica florida* and *E. ventricosa grandiflora*. Mr. Tudgey had remarkably fine specimens of *E. tricolor Wilsoni* and *E. ventricosa coccinea minor*.

**New Plants.**—Of these Messrs. Veitch & Sons contributed a collection, in which were *Gloxinias* of the finest description, *Amaryllis media*, a bright crimson hybrid, well worth attention; several new *Palms*, *Aquilegias*, good examples of *Homanthus Kalmeyerii*, *Colens George Bunyard*, a beautiful *Torenia Fourrieri*, and a beautiful coloured greenhouse *Rhododendron* named *Princess of Germany*. Conspicuous among the *Gloxinias* were *Coupe d'Hebe* and *Boxelans*, both upright-flowered kinds, of a brilliant crimson colour, edged with white. Messrs. B. S. Williams showed an attractive group of plants, in which were various *Dracaenas*, including the new *D. Goldiana*, some new *Caladiums*, *Ferns*, and *Sarracenias*, the whole being backed up by new and rare *Palms*, *Cycads*, *Ferns*, *Aralias*, and *Crotons*.

Botanical certificates were awarded as follows:—To Messrs. Veitch & Sons, Chelsea, for *Adiantum cyclosorum*, *Cinnam Verschaffeltianum*, *Platycentrum Hillii*, *Areca gracilis* and *A. grandiflora*, *Ptychosperma rupicola*. To Mr. Williams, for *Alsephila plumosa*, *A. cyathoides*, *Anthurium Deuchardi*, *Croton Prince of Wales*, and *C. Queen Victoria*.

Floral Certificates were awarded to Messrs. Veitch & Sons for *Amaryllis media*, *Colens George Bunyard*, *Rhododendron Crown Princess of Germany*, *Gloxinia Rebecca*. To Messrs. Laing & Co., Forest Hill, for *Begonia President Burrelle*, *B. Lelia*. To Mr. Fisher, Balham, for *Gloxinia Maggie Wright* and *G. Countess Amelia*.

**Miscellaneous Subjects.**—Messrs. Veitch and Sons showed a fine group of *Rhododendrons*, backed up by and intermixed with bronze and green-leaved Japanese *Aceras*, which were much admired. Messrs. Osborn & Sons, of Fulham, contributed an attractive group of miscellaneous plants, amongst which were well-grown *Palms*, *Pandanus*, *Crotons*, and *Dracaenas*; and Messrs. Cutbush & Sons sent a good display of *Rhododendrons* and *Glox*. *Azalea* backed up by *Dracaenas* and *Palms*. From Messrs. Laing & Co. came a collection of fine foliaged plants, edged with tuberous-rooted *Begonias*, amongst which was noticeable a seedling bearing remarkably large scarlet blossoms, and a cinnamon-coloured kind, named *F. M. dos Santos Viana*, a variety likely to prove the forerunner of kinds with new colours; also the double *Gloire de Nancy* and *President Burrelle*. Messrs. Rollison & Son, Tooting, sent a collection of plants, in which were good samples of *Lady's Slippers*, *Crotons*, *Caladiums*, and hard-wooded plants. Mr. Ware, of Tottenham, sent well-flowered samples of the *Pink called Newmarket* and other valuable kinds.

**Calcocalarias.**—These were shown in fine condition by Mr. James, Teloworth. The plants were admirably grown, and the flowers, which consisted chiefly of self colours, were unusually bright. Mr. James' strain was obtained in the first place by crossing the herbaceous with the shrubby kinds, and the result had been a race the most admired of any in cultivation. Mr. Ripley, gardener to R. Hudson, Esq., Clapham Common, had also finely-grown plants well furnished with variously-coloured flowers.

A list of the prizes awarded on the occasion will be found in our advertising columns.

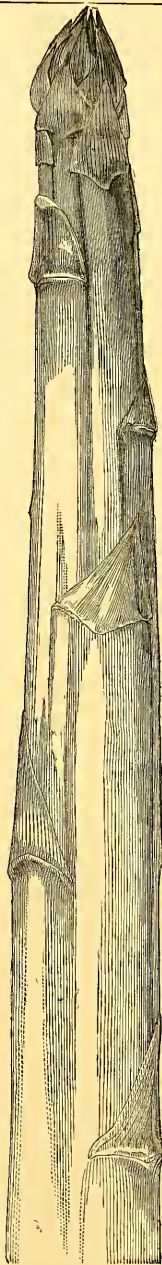
"This is an art  
Which does mend Nature: change it rather: but  
THE ART ITSELF IS NATURE."—Shakespeare.

### FINE ASPARAGUS AT GUNTON PARK.

I HAVE sent you fifty heads of Asparagus grown on the French system, as described in the "Parks and Gardens of Paris." The fifty heads weigh about 7 lb. When I came to Gunton, in 1867, I found the Asparagus beds all on the old system, 4 ft. wide, and the produce of the poorest description. Notwithstanding heavy manuring and salting, it improved but very little. The soil is a sandy loam, resting on wet sand, and the drainage sluggish, owing to the gardens being flat and low. In 1869, having read the chapter on Asparagus culture, I concluded that the plan was the right one, and at once planted seven rows, 102 ft. long. When three years old, the beds had done so well that I began cutting freely, and the following winter I lifted the whole of the old beds, and forced the plants, and since that time we have grown no Asparagus, except in what I may call the new style. Four years ago I made another plantation, 114 ft. by 30 ft., and now we always have an abundance of excellent Asparagus. I, like Mr. Fish, thought when we had the old beds that our soil was not suitable for Asparagus culture; and even now I believe that there are soils much better adapted for the purpose. But what to me proves so conclusively that the French method is the best is the fact that my present beds were raised from seeds saved from the old plants. In saving the seed, I always, however, selected it from the plants that threw up the strongest stems; and before planting I allowed the young plants to grow a few inches, in order that I might select those with the fewest and strongest shoots, as I always find that a plant which, in its young state, throws up a quantity of small young shoots, maintains that habit in succeeding years. A plant of the above description will increase in size rapidly, but will continue to throw up a cloud of small spray, and never by any chance a vigorous shoot. I sowed last year a packet of Conover's Colossal, and have this season planted out two rows, each 102 ft. long and 3 ft. apart in the rows, in order that I may be eligible for your prizes. In my other beds the plants stand  $2\frac{1}{2}$  ft. apart in the rows, which are 4 ft. asunder. I have always thought them rather too close, as at the end of the summer they become a complete thicket. I found amongst Conover's Colossal just the same peculiarity as regards growth which I have described in reference to plants raised from seed saved here. Some of the one year's seedlings of that kind produced some six or seven small shoots, while others had two or three sturdy ones characteristic of the plant. I always maintain that to this matter of selection too much attention cannot be given, if fine Asparagus be the object in view. It may be thought that I allow the Asparagus to get too far through the ground before it is cut, but we like a little more green than the French, as a rule, allow. W. ALLAN.

*Gunton Park, Norwich.*

[With the above interesting communication came fifty heads of the best Asparagus which we have yet seen grown in England. This Asparagus was blanched for a considerable distance up the stem, but not quite so much as the French samples, there being, on an average, about 1 in. more green. There was, however, such a great length of blanched stem, that the Gunton Park samples may serve to throw considerable light on the question of blanched *v.* green Asparagus. The portions cooked were about 7 in. long, and each was edible to its base. For  $1\frac{1}{2}$  in. of the lower part of the 7 in., where the outer skin was tough, the interior was quite tender and perceptibly of a more delicate flavour than that of the upper part. The flavour of the whole was excellent, and the samples well served to show how delicate large and well-grown blanched Asparagus is when cooked fresh. The heads were not so large as the enormous "giant" specimens seen in Covent Garden; but these large heads are often hollow, and not unfrequently



Specimen of Asparagus  
grown at Gunton  
Park (actual size).

"monsters," owing to two stems growing together. Mr. Allan's observation about the different growths of the seedlings is a very interesting one. We would recommend his trying the early and late varieties, so much in favour with the Argenteuil growers, and testing their relative value in England. As regards the blanching, it may be noted that it is only a question of degree between the French and English growers. All good Asparagus that we have seen in either the Paris or London markets is blanched, the best English market-growers' produce being simply blanched 1 in. shorter than that of the French. We believe that there is good reason for this blanching, and that it is not, as many suppose, a mere matter of fashion. It may be remarked that in all well-grown Asparagus, as soon as a shoot gets into the free air, the scales begin to unfold and the head to open out, which, of course, must be avoided, even if flavour be not considered. For our own part, we are convinced that specimens such as those from Gunton Park, with a small portion of the top green, and with 4 in. or 5 in. below that white and perfectly tender, are the most delicate in flavour of all. No distinction can be drawn between these and specimens from the best French growers, in which the head is not allowed to show more than 1 in. above ground before gathering, and which have also from 4 in. to 6 in. of tender blanched shoot below the pinkish or green apex. It may be noted here that Dutch Asparagus is often blanched to a much greater degree than the French.—Ed.]

The following are notes from various correspondents concerning the seven years' prizes recently offered for improved Asparagus culture:—

That many of our notions about Asparagus culture are out of date I have long been convinced, and I am of opinion that all our efforts as respects improvement must lie in the direction so clearly marked out in THE GARDEN, and which should, with thinking men, require no arguments to prove or enforce. If any are dubious about this matter, let them plant half-a-dozen plants 4 ft. apart each way, and watch the result. It is some years now since my eyes were opened to the importance of this by watching the growth of a single Asparagus plant that had sprung up from a chance seed in a shrubbery. Asparagus is a moisture-loving plant, but the site must be well drained; and I am told, although I have not seen it, that it grows wild in the Lincolnshire fens. I should much like to see the Argenteuil system tried on some of the sewage farms where the soil is of a sandy character. Some of the drier parts of the fens would make an excellent trial ground on a large scale in connection with other crops of early vegetables that might be cleared off and marketed before the time the Asparagus growth filled all the space

which would be in July. The plough should then be introduced to stir the surface freely, and be followed by frequent soakings of sewage. To have fine produce the stems must be strong and tall, to nurse and develop the future crowns; and therefore I think it is during the growing period, after the cutting is finished, that liquid manure, or even water itself, would do so much good. But in a thickly-planted bed, no matter how deep or rich the soil may be, there is not room for the growth to expand sufficiently to develop a thicket of sturdy and vigorous crowns.

E. HOBDAV.

*Ramsey Abbey, Hants.*

— In certain soils the Argenteuil system is open to objection, it being inapplicable to districts where clay, heavy marl, or other compact soils prevail; and such soils extend far and wide over England. Asparagus growers in such localities have found by long experience that, in order to obtain a successful result, it is necessary to prepare special composts, and to raise beds above the general level of the ground, so as to keep the roots from penetrating into the cold subsoil, and to secure the increased warmth such elevated beds afford. Asparagus roots will travel 3 ft. beneath the soil, and, reaching clay, they soon decay or fail to act beneficially. The best examples of Asparagus I meet with amongst cottagers and amateurs, where no special care is taken in the preparation of beds, is invariably in districts like Lincolnshire where the soil is light and deep, much of it gravelly sand or light loam resting on gravel. After trying the several plans of surface cultivation, the raised flat-topped beds, and the simple ridge raised from a 3-ft. base, and planted with one row of plants, I have proved that for the soil I have to manage (a modified clay) the last named is far the best plan. It occurs to me also that as your prizes are offered for the largest heads of Asparagus, and not for the amount of produce over a given surface of land, they will reach those who can afford the most space and manure, or will be confined to localities enjoying natural advantages. Could you not restrict the extent of ground, or the number of plants, and make a distinction between Asparagus grown in favourable and unfavourable localities? The economical production of every vegetable should always be made a consideration.

*Belvoir Castle Gardens, Grantham.*

W. INGRAM.

[What is here proposed is desirable, but cannot be carried out. We must do what is best in the interest of all. Suitable soils occur in many localities in every county. Few would expect to produce the best result on unsuitable soils. We have seen good results from the adoption of the thin-planting way on the stiffest and deepest clays in England, though we should not advise anyone to compete for prizes under such circumstances.—Ed.]

— A rich, deep, friable, sandy loam is doubtless the best soil in which to plant Asparagus, and when this is in a high state of culture manure, at the time of planting, is unnecessary. I look upon surface-manuring with far more favour than the more general method of working in so much raw manure at the time of planting, an idea which has done much to deter the public from attempting Asparagus culture so fully as its merits deserve, except in the gardens of the rich. Any ordinary soil, with but little care as regards culture, will produce good Asparagus. Doubtless soils and situation, &c., have much to do with its perfect success; still, our system of cultivation is much at fault.

GEO. WESTLAND.

*Witley Court, Stourport.*

— With the view of improving Asparagus culture in this country, I am of opinion that planting should not be done till May at the earliest. March is decidedly too early in this country, and April, too, in many places. Great blanks would be certain to occur in the beds; and, as by the Argenteuil system very wide planting is recommended, the loss of ground would be great. Certainly, if no preparation of the ground be required at the beginning, it would be a great saving of time and money compared with the old plan, as deep tilth and plenty of manure have always been considered indispensable from the beginning.

J. SIMPSON.

*Wortley Hall, near Sheffield.*

— The cultivation of Asparagus is a subject to which considerable attention has been devoted in various parts of the

kingdom, but, so far as I am aware, always upon the thickly-planted system, whether grown in beds or in lines. The results in the majority of instances are, therefore, the reverse of satisfactory, considering the great expense incurred in the shape of labour and manure in making a plantation. I have already planted some on the principle advocated in THE GARDEN, that is, single plants or stools amongst lines of Gooseberry bushes. I added no manure, but I intend giving heavy top-dressings. My reason for doing so was to let the sun and air in about the plants, to see if I could get them to stand the winter better, as we suffer badly here from their rotting off at the collar during that period. I have tried many plans to prevent this; wide planting in unprepared ground is the last, and I hope it may prove successful.

M. D.

— With regard to the cultivation of Asparagus, I have no the least doubt that the system which you wish to introduce is the best for obtaining large specimens; but I fear it would not answer in the case of market gardeners who have to pay high rents for their land. I consider that my success is partly owing to thin planting compared with that of my neighbours. Last week I paid a visit to a neighbour here who had planted some fresh beds, and who had got three rows in 2 ft. of space, which, of course, is too much crowded. It may answer his purpose for a time, but the beds will soon wear out. I shall plant a few single rows in two different gardens and soils in the manner which you suggest. In America they often grow Asparagus in single rows, but of course land there is much cheaper than here. I have always thought that our plan of growing Asparagus was both troublesome and expensive, and to avoid the facing or earthing up the sides every year I planted two beds about 18 in. below the surface, so that now I have nothing to do but just fork them. I get as many heads in number, but they are not nearly so large, although they have just the same manure as the others. There is also another objection, and that is the cutting, which is a very back-aching job, as both hands must be down on the ground at once. I have not the least doubt that very large Asparagus will be the result of the prizes offered.

A. J. HARWOOD.

*St. Peter's Street, Colchester.*

— I have grown Asparagus on the Argenteuil system for several years, and although I grow it on both systems—that is, in beds and single lines—I consider that that cut from the latter is the strongest and best. I always plant one-year-old seedlings, never older. I leave 4 ft. between the rows and 2 ft. plant from plant, but I think that 3 ft. between them would be better, a distance that I am now trying. As our soil is stony and naturally poor, we trench the ground, incorporating with it at the same time some manure or good loam; we plant in April. As to after treatment, when the plants are established, we apply manure over the roots in autumn and a dressing of salt in spring, when the plants are in active growth, and in dry seasons we give them occasional waterings with liquid manure from a farmyard tank; last, but not least, we have to take great care to support them against wind-waving and breakage, which we do by running a line attached to stakes at proper distances up one side and down the other. This keeps the stems secure.

D. LUMSDEN.

*Blowholm Hall, Sleaford.*

— I like your proposition with regard to the improvement of the culture of Asparagus; there is great room for it, as the majority of gardeners are content to follow in the footsteps of their forefathers, and adhere to the old bed-and-alley system. I have long been of opinion that that system is not calculated to realise the most profitable results, but my aspirations have not gone beyond single rows 3 ft. apart and the plants 18 in. asunder, a plan under which a marked improvement on the old bed system is observable in the size and quality of the heads. It appears to me that the Argenteuil system which you insist upon differs from this only in the greater distance between both plants and rows. As I have not access to any description of the Argenteuil system, I presume the manure is applied annually by way of surface-dressing, and is not pricked in, but allowed to decay, so that eventually it will form a superstratum of decayed manurial matter of a considerable depth, through which the young heads appear in due season. Results which are, however, perfectly easy to attain in some localities cannot

be obtained in others, with double the labour and expense, owing principally to sub-soil and situation.

JOHN COX.

*Bedleaf.*

— Your proposals respecting the culture of Asparagus, of which I much approve, touch one of those cultural points in which I feel myself very deficient, having never got out of the rut of the old thick-set bed system, which gives quantity, but not quality. The only suggestions I have to make to your printed remarks are, that you might mention the depth of the trenches, and also whether or not there is any variety more suitable than another for this mode of culture. I happen to have two rows of one year's seedlings of Connover's Colossal, and those I have planted out in shallow trenches 3 ft. by 4 ft., as you suggest. I have no experience of this variety, and would rather it had been the Giant or Battersea. Your offer of prizes will do much good towards the improvement of Asparagus culture—more so, perhaps, amongst private growers than in market gardens around London and the Vale of Evesham, where it is grown pretty well.

W. MILLER.

*Combe Abbey, near Coventry.*

— Your plan of making the growth of Asparagus more popular is a very good one, and likely to answer the purpose intended; in truth, there is a great deal of ignorance displayed in the cultivation of that vegetable. It is a very common thing, particularly in private gardens, to pile up a great ridge of earth and plant three rows of two-year-old roots on the top of it, thinking that that is the right mode of culture, forgetting that in a few years they will have to pile up more and more, because all those plants which form a number of crowns keep getting to the surface. I believe that growing Asparagus in single roots, about 3 ft. by 4 ft., is the best for many reasons, and one is that it will apparently last for many years if well attended to. I do not agree with some that it is a waste of manure to give it a good supply at the time of starting, and I also think the ground can be too good. The seed should certainly, however, be sown on a piece of the best land, as the stronger the young one-year-old plants are the better. They should not be more than from 4 in. to 6 in. from plant to plant. By this means one gets good strong plants, which will have a good start.

FRANCIS N. DANCER.

*Little Sutton.*

— The prizes offered for Asparagus grown on the Argenteuil system will give a great lift for the better cultivation of that delicious vegetable. At present the greatest bulk of it is grown in beds where the roots are huddled together, and where it is not possible for them to spread so as to produce large heads. I particularly observed a single plant of Connover's Colossal that I planted in the garden here, and which, by keeping it well staked from the time it was a year old till four years, produced very large heads, like the best French-grown Asparagus. The soil was rather stiff, and no extra depth was given it, but well-rotted manure was put on the plant every winter. Since my experience with this plant, I planted in 1876 some in rows 4 ft. apart, and 2 ft. between each plant, and I expect to cut good heads in 1879. I am not an advocate for cutting blanched Asparagus with only the tips green, but it is the fashionable way of eating it at present.

W. TILLERY.

*Welbeck.*

— I have for many years been of opinion that people poison their Asparagus with manure, and many people will not grow it on account of the supposed expense attending its production. I quite agree with the distances apart, plant from plant and row from row, given in THE GARDEN, and think it high time that cultivators and others did away with the fallacy that Asparagus requires any more attention than a plot of Cabbages or Broccoli. Periodical saltings and annual diggings of deep trenches between the beds do no good. The principal thing to be observed in growing Asparagus on the Argenteuil system is the preparation of the ground. Asparagus being a permanent crop, the ground should be dug or trenched at least 2 ft. deep, and never moved with the spade when in a wet or unfriable condition. Of course, in alluvial or sandy light soils the trenching just spoken of may be dispensed with, but depend upon it in about three parts of the soils of Great

Britain a preliminary trenching will ensure success. I have tried Connover's Colossal and find it only the ordinary form of Asparagus when treated under the usual conditions. I have no doubt that larger kinds than any yet grown may be produced, by means of selection, in localities where the plant grows best. I have noticed that Asparagus grown on the oolite in Northamptonshire is very green, and that the tops not over large, but delicious in flavour. Some years ago, when living at Burton-on-Trent, some Asparagus sowed itself adjoining the kitchen garden in a piece of waste ground of a gravelly alluvial character, and this came much larger and finer than the same kind under cultivation buried 6 in. deep in strong pig manure. Ever since then (twenty years ago) I have seen the disadvantage of using so much manure. I do not agree with disturbing the surface of Asparagus beds any more than is sufficient to ensure the destruction of weeds. All clayey soils should be trenched, preparatory to planting, but this may not be always necessary in the case of light ones.

W. ELLIOTT.

*Stapleford Hall, Notts.*

— There are few places inland that can compare with the soil at Argenteuil; besides, the land about Argenteuil is full of Paris night soil before the Asparagus is planted. The same system is practised by Dutch bulb growers. They work into the ground green cow manure to an extent unknown for any crop in England, and first take Potatoes off it. Moreover, there is no soil that I know of in the three kingdoms so light and easy to work as that of Argenteuil. Asparagus is a gross and deep feeder, and can scarcely be too strongly manured. It also likes black, rotten, sea sand. One of the Messrs. Dicksons, of Chester, grows it of very superior quality; but it is grown on one of the reclaimed farms from the estuary of the Dee in salt sand. It also succeeds, under similar circumstances, in the Lothians; and, indeed, any sea-coast place should produce good Asparagus. I cannot help, while upon this subject, expressing great regret that a vegetable so very wholesome and easily obtained should be so completely ignored in cottagers' gardens. A good bed will continue to bear fairly well for fifty years with a little help. If we consider the quantity generally got from even a small amount of ground, say during some six weeks of the year, no other crop of any sort can compare with it. Surely cottagers now-a-days want something else besides Cabbages and Potatoes?

J. FLEMING.

*Cliveden.*

[We may be mistaken, but we believe there are many places in every part of England where soils exist quite as well suited to the culture of Asparagus as those of Argenteuil. We also know, from careful examination of the mode of planting at Argenteuil, that there is nothing whatever in common between it and the Dutch mode of planting bulb; the fact is, that many of the best growers use no manure at planting time. The bulb ground is, on the other hand, lightly enriched. In this connection we may refer the reader to the preceding statements of Mr. Tillery and Mr. Elliot, that chance Asparagus, in waste or unprepared places, did much better than that sown in carefully prepared beds.—Ed.]

— I have read Mr. J. Groom's sensible and practical article on the growth of this, the greatest dainty which our garden furnishes us with. I give also my experience, although only an amateur. For some years I have only cultivated Connover's Colossal, and am convinced that the great increase of size without decrease of flavour is only owing to the better variety, for I believe our fathers took equal pains in making their beds, perhaps more than we do. I plant in this way: Dig a 4-ft. trench 1 ft. in depth; in that place 6 in. depth of broken bottles, shards, brickbats, flints, stones of any kind; then 6 in. of thoroughly good rotted manure, then 2 in. of coarse sea sand, then 4 in. of good earth, next the plants of two year's growth, to be followed by 3 in. of the best mould to be procured; finally, another layer of sea sand, or, if not easily to be procured, a good dressing of salt in any other form, the brine from the pork silt being very good. As to distance, have no more than two lines in a bed 4 ft. wide, so that in no case a plant has less than 18 in. in every direction, nor is the practice to be commended of making the young bed

a nursery for other edibles, impoverishing the soil and destroying the hopes formed of success.

Oregon.

EUGENE E. P. LEGGE, M.A.

[Your system is far from being a good or simple one; it is much too close. It would be worth while to take the broken bottles and bricks, &c., out of the way of the roots. It is not too late yet to try a few yearling plants without any of the attentions described, and you will soon be able to compare results.—Ed.]

**French Asparagus.**—With reference to the common error repeated in a recent issue of "Truth," that "only 1 in. of each piece of the French Asparagus can be eaten," it is necessary to repeat that long experience shows that when French Asparagus is good, fresh, and properly cooked, from 3 in. to 5 in. of the shoot are perfectly edible—and even a greater length than that. Unfortunately, most of the so-called French Asparagus is both stale and tough, from the fact that it is gathered long before it reaches the consumer in London. It does not come solely from Argenteuil, near Paris, where it is so well grown, but also from greater distances. We have lately been trying some samples from Toulouse and Madrid, from both of which great quantities lately came to the London markets. Although good in appearance, their flavour was far from pleasant or natural. Asparagus very quickly spoils when exposed to the air, and one may judge what it must be after being collected in the Madrid market, sent all the way to London, transferred from the wholesale to the retail dealer there, and finally having several days or a week's airing in a greengrocer's window. We do not see why we should eat stale and straggly, if large, Asparagus from Madrid if we can have it both large and fresh in this country. This can be done, we know, and we have offered the prizes for the encouragement of the simplest and best mode of culture. Up to the present time Asparagus has suffered in English gardens through seven to twelve plants being usually placed where one ought to be, and from the needless and costly practice of taking nearly as much trouble in making an Asparagus bed as in the foundations of a house. As to the question of Green v. White Asparagus, that is quite apart from the mode of culture. Those who do not like it blanched have merely to cease blanching it. Our own idea is that Asparagus for eating at table (not that used in cookery) is in its most perfect state when blanched, as at Argenteuil, and also to a slightly less extent in the market gardens round London. The shoots are gathered when about an inch of the top peeps above the little mounds of earth covering each root. In this way the upper portion of each shoot is of a pinkish colour, and the flavour, when fresh, most delicate. This is not our opinion only, but that of good judges who have tried it in all forus in France as well as in England.

**Prizes for Asparagus.**—The Hon. and Rev. J. T. Boscawen has added £5 to Mr. W. Robinson's first year's prizes for Asparagus. The first competition will be held for these prizes at the Bath and West of England Society's Show in 1881. Prizes will be offered for market-garden-grown Asparagus, as distinct from that grown in private gardens.

**Early Flowering of Tritoma Uvaria.**—Whether owing to the open character of the winter or to some other cause I cannot say, but it is certain that this plant near here is displaying remarkable flowering properties. A large bed of it has had some flowers showing all the winter; just now fine spikes are coming up thickly, and in a day or two numbers will be as brilliant as can be desired. There will thus be a glorious sequence of bloom until the winter again sets in. It is a curious fact that, in spite of the many grand properties of this hardy plant, it should hang on the grower's hands like a drug. Yet what a noble decorative plant would it not make for the wild garden, woods, borders, and shrubberies, and for all sorts of situations in which a little colour would be acceptable to light up the surroundings! In such places masses of it would constitute brilliant objects.—A. D.

**Plants in Flower at Heatherbank.**—Among the hardy plants now in flower in Mr. Wilson's collection at Heatherbank, Weybridge, are *Pulmonaria virginica*—the flower-stems 3 ft. high, and the leaves as large as those of a Cabbage, a degree of vigour which we had not before seen attained by this beautiful and long-escarce old plant; *Cypripedium spectabile*—noble tufts in the open border, the handsome flowers well relieved by such masses of "fine foliage" as are not often shown by indoor Orchids; the Pyrenean Rose—charming in flower or bud; *Linnæa trilobis*, in low, spreading tufts, and of a colour that might suit the new "aesthetic" school, and withal not a sad colour; a Solomon's Seal (*Polygonatum latifolium*), with waxy bells in little groups; *Tritoma grandis*—a superb plant nearly always in flower; the Edelweiss in borders; *Dianthus*

*alpinus* in sandy borders; *Myosotis alpestris*—very much larger than it is seen in the north; *Ranonia pyrenaica* in a slightly raised border; *Linnaea borealis* running about quite freely on rockwork; *Omphalodes Lucilia* and *Meconopsis scolastica* in pots. A great number of rare Alpine flowers are growing in perfect health in this garden, showing that the common idea as to their requiring cool, elevated, or northern regions to thrive in is erroneous. With intelligent cultivation, they are as easily grown in Surrey as in Yorkshire. Of course, the soil is "made," and the rock garden not formed on the principle that Alpine plants live on dry air, dust, and brick rubbish—the three elements used in the formation of the ordinary "rockwork."

**Rose-coloured Hardy Water Lily.**—The rose-coloured variety of the common white Water Lily is now in flower (probably for the first time in this country) at Kew, in the pool devoted to hardy aquatic plants in the herbaceous ground. The flowers are as large as those of its lovely white congener, and are of a beautiful deep rose colour. The plants are comparatively small, being in 16-in. pots, and but 1 ft. below the surface. Doubtless, when under more liberal treatment, they will attain the size and luxuriance as exemplified in the type. The variety originated in Sweden some years ago, and now grows wild in some of the lakes and rivers there. We heartily welcome this new addition to hardy aquatics, and hope that ere long it may grace our lakes and rivers in the same profusion as we often see our native Water Lily.—A.

**Plants in Bloom at Norwich.**—The following plants are just now very attractive in my garden, and I comment them to those who do not grow them, feeling sure they will be prized by all who procure them. The first, *Libertia ixoides*, has brownish, yellow-striped foliage and most gracefully-disposed pure white flowers in very large numbers; this is one of the choicest of herbaceous plants. *Hyaacinthus amethystinus flore-albo* is exactly like the species, but has flowers of the purest white. *Habranthus pratensis fulgens*, a most brilliant *Amaryllidaceus* plant, is so unlike most hardy border flowers, as to astonish those who never saw it before. *Gladiolus Histrio flore-albo* is a plant which remains long in bloom. *Campanula Allioni*, one of the dwarfest of the genus, has large flowers half the size of a Canterbury Bell and of the same shape, borne 1 in. above the surface of the border.—J. G. N.

**Lathyrus Drummondii.**—This, though somewhat rare, is a very pretty member of a well-known family. It was put into commerce a few years ago under the above name. I have it growing in an 8-in. pot, trained over a few pieces of spray, and in full bloom. The racemes of blossoms carry from six to nine flowers of a carmine-red colour, and of medium size. The plant is hardy and deciduous, rooting in the winter, and pushing up early in spring from the crown. The form of growth is like that of *Lathyrus latifolius*, but less robust, and the racemes of bloom are produced at every joint. As grown with me, it indicates that, trained over a wire, it might be made into a very handsome greenhouse exhibition plant, and it is certain that a good specimen of it would be regarded as a novel and beautiful object.—A. D.

**Armeria juncea and A. setacea.**—Cultivators have been so long accustomed to the old-fashioned Sea Pink (*Armeria maritima*) and its varieties, that a really good new species is truly welcome. *A. juncea* and *A. setacea* are very similar to each other in general appearance, the former being a little the taller of the two. Both are neat, pretty little Alpines, which were found at a considerable elevation in the south of France in arid, stony places. They form miniature pin-cushion-like tufts  $\frac{1}{2}$  in. to 1 in. high, and 2 in. to 4 in. or more across. The tufts consist of deep green or greyish-green, bristle-like, slightly recurved leaves. The flowers on different plants vary in colour from rose to pink, and in a few instances to almost white, and they have quite a satiny appearance. They are borne in dense clusters on slender wiry stems 2 in. to 4 in. high. They flower so freely, that as many as from twelve to eighteen heads of blossom may be counted on plants not more than 1 in. in diameter. They both grow freely in deep well-drained sandy or stony loam, fully exposed to the sun.—R. P., York.

**Tovaria oleracea.**—This by far the most handsome of all the *Tovarias* or *Smilacinas* yet introduced to cultivation, is now in flower in the herbaceous ground at Kew. It approaches in habit the well-known *T. racemosa*, being about 2 ft. in height, and the stems arch in the same graceful manner. The flowers are borne in broad racemes (about 4 in. across) at the apex of the stems, each individual being  $\frac{1}{2}$  in. across, and produced in large numbers. They are of a pure white colour, which contrasts agreeably with the purplish colour of the stem and flower-stalks. It lasts a long time in good condition. It is quite a recent introduction, having been sent to Kew from high elevations in temperate Sikkim; therefore it is quite hardy in this country.—A.

## THE FLOWER GARDEN.

### MUSA ENSETÉ IN BERKSHIRE.

THIS stately plant is proving as useful and becoming as popular in our gardens as those who knew it long ago supposed it would become. In sheltered nooks in the southern counties it makes a very fair growth in the summer. Last year we were struck with the health and vigour displayed by some plants of it at Park Place, Henley-on-Thames. Mr. Stanton, the gardener there, raised a batch from seed, and it is surprising what noble plants these became in the course of fifteen months from the time of sowing. They were sown in April and planted out early in June, and they became fine plants during the first summer and autumn. Placed indoors early in October, they remained throughout the winter in a warm greenhouse, and were again planted out in June last year, when they formed fine young leaves. The plant is as effective in a conservatory

with no less satisfaction than any other class of plants in cultivation. If we take into consideration their merits as ornamental plants, we find many of them to be simply unequalled, and that there is a charm about them entirely their own; what they lack in height is more than made up in beauty both of flower and foliage. What, for instance, can be more beautiful when well grown than *Gentiana verna*? Nothing that I know of except, perhaps, the *Alpine Forget-me-not* (*Myosotis alpestris*), a plant which grows wild on our Scottish mountains as well as in Switzerland. The individual flowers themselves in some species are not very grand, but, taking the plant as a whole, it becomes all that could be desired.

Alpines may be grown either in pots, in the common border, or on rockwork. Whichever way is chosen, there are three things which ought never to be overlooked, and these are, to see that they have perfect drainage, abundance of water during the growing season, and, most important of all, that the plants are frequently divided. I do not attach much importance to the



Musa Ensete in the open garden at Park Place, Henley-on-Thames.

or any large glass house in winter as it is out-of-doors in warm sheltered places in summer. Our engraving is from a photograph taken at Park Place last year.

### CULTIVATION OF ALPINE PLANTS.\*

THE cultivation of by far the greater majority of Alpine plants is of the simplest possible character; for them no costly erections are required either of glass or stone; on the contrary, every kind of coddling and pampering is death to them. The most that is required in this respect is a cold frame, in which a few of the tenderest kinds, chiefly Indian and North American species, may be sheltered during winter, more from rains than from cold. This frame, too, will serve the purpose admirably of raising seed and striking cuttings during spring and summer. Alpine plants, indeed, may be grown by all with less cost and

kind of soil used; for, except in the case of a few special kinds, as a rule they will thrive in almost any soil. It is a great mistake to suppose that because these plants grow naturally in upland meadows, or it may be on bare rocks, that they will succeed in no other way. The great mass of them will grow freely in any good garden soil, and thrive all the better if there be a little well-rotted manure added to it. All manure should, however, be particularly avoided in the case of a few delicate growing species, such as *Androsaces*, some species of *Primulas* and *Gentians*, &c.; indeed, kinds that are generally termed "miffy" will be found to grow best in pots—at least until sufficient stock is obtained to risk some of them out-of-doors on rockwork or in the front rows of herbaceous borders. Some kinds, particularly *Ericaceous* plants, such as *Andromedas*, *Menziesias*, *Vacciniums*, &c., prefer peaty soil. Growing them in pots is the most convenient way for those who have not much room to spare, and thus treated they are also handy for moving about or for filling up blanks at any time. It is astonishing how well they do crammed into

\* Read by Mr. Robert Lindsay, Royal Botanic Garden, Edinburgh, at a recent meeting of the Scottish Horticultural Association.

small pots; many of them will even keep in healthy condition for years in 3-in. ones. In this way one might grow nearly all the Alpines in cultivation in a very small space. The pots should be plunged to their rims either in sand, sifted ashes, or in ordinary soil; but sand is best, being cleanest. Let them also be well exposed to the sun, and throughout the summer give them a liberal allowance of water. If good specimens be wanted, all that is required is to shift them into larger pots, 6-in. ones being sufficient for most kinds. They should be examined annually, in order to see that the drainage is in good order, and such as require it should be re-potted. Any kinds that it may be desirable to increase should also be torn up into little pieces, each having a crown, and potted singly, an operation to which a great many of them will submit, and spring is the best time for doing it. In the case of kinds which will not divide, cuttings should be put in. With many Alpine plants this constant dividing is the grand secret by which they are kept in a good healthy condition, as when left alone for any length of time they get exhausted, and ultimately die altogether. In low latitudes Alpines seem to live too fast, and become sooner exhausted than they would do on their native hills. There they certainly succeed on the "let-alone" principle, but do they not die out even there? and are there not thousands of seedlings annually springing up to supply their places? In their Alpine home, under clear bright days and cool dewy evenings, they form, while growing, firm, well-ripened foliage, and are induced to flower and produce seed more abundantly than when grown at lower elevations, where their growth is not so well matured. Consequently, we must, especially if they be grown in beds or borders, re-lift occasionally and remove the exhausted parts, which are generally in the centre, keeping the young fresh pieces which are on the outside, and either splitting them up and forming separate plants of them, or squeezing them together again and re-planting them. When grown in small pots we imitate pretty nearly, in some respects, the conditions under which they live naturally; and thus treated they make the same stunted kind of growth that they do in their native habitats. On this account, therefore, the more delicate kinds, such as some of the Androsaces, Primulas, Gentians, and others will be found to succeed best in pots.

The soil best suited for the majority of Alpines when grown in pots should be good fibrous loam, with a little leaf-mould and some roughish sand added; some prefer putting pieces of limestone or sandstone round the collar of the plants, and also in the soil, but I do not think much good comes of such additions beyond that arising from keeping the soil open. A large number, indeed nearly all of them, will succeed in an ordinary border if well drained, but care must be taken to see that they are not encroached upon by stronger-growing herbaceous plants. They are, however, seen to best advantage on rockwork, especially those whose growth is trailing, arranged so that they can hang over the face of the rocks, on which they have a fine effect; but, so far as culture is concerned, it is not at all necessary to have rockwork. As regards the best kinds to grow, it is difficult to say without knowing the positions for which they are wanted, but as they do not take up much room, grow as many as you can get, and if you wish to select the very best, keep an eye on the kinds of which slugs are fondest. So fastidious are the tastes of these pests, that they seldom fail to pick out the choicest on which to feed, passing by with contempt anything coarse or weedy. Hand-picking either at night or early in the morning is the most effectual way of getting rid of them.

The propagation of Alpines, as I have already indicated, is by no means difficult. Most of the Saxifrages and Sedums, some of the Primulas, Aubrietias, and Campanulas, and a great many more should be looked upon as compound plants, which merely require dividing; and, indeed, as I have stated, this is absolutely necessary, in order to keep them in good healthy condition. But there is another section of them which does not form more than single stems, such as Lithospermums, Saponarias, Ethionemas, Onosmas, &c., which may be propagated by means of cuttings. These do best taken off in spring, dibbled into a small frame in a sandy soil, and shaded from very bright sunshine. Thus treated, they will soon take root and form fine healthy plants to take the place of the older ones as they become worn out. No opportunity of collecting and

sowing seed of good kinds should be lost. Many failures in growing Alpines occur through not attending to this. For instance, it is not uncommon to hear people complain that they cannot grow such native plants as *Primula scotica* or *Myosotis alpestris* for any length of time, the reason being that they should be cultivated like biennials. Moreover, though seeds of such kinds be sown, they are very apt to be thrown away before they have time to germinate, *Primula scotica*, if sown in spring, often taking a whole year to come up. If the pots in which they are sown be kept over until the following spring, the young plants will come up so thickly that it is difficult to know what to do with them all. The same thing applies to *Myosotis alpestris*; although it usually does not take so long to come up, yet it should not be thrown away too soon. In both cases the seeds are very small, and in lifting out the seedlings that germinate first you disturb the surface so that the remaining seeds have a better chance of pushing through. After they are pricked out they will make fine flowering plants next spring and summer. The same remarks hold good as regards many more Alpine plants; numbers of the rarest kinds are pretty free seeders, if the plants be at all healthy. *Gentiana verna*, *gelida*, and others, *Dianthus alpinus*, *neglectus*, and other Alpine Pinks, many *Primulas*, *Androsaces*, *Soldanellas*, *Saxifrages*, *Sedums*, and others may be had in abundance from seed, and this is, on the whole, the best way of getting up a good stock of these plants. Besides, you have in this way the chance of getting hybrids, and of selecting forms better than the parent in one respect or another. As yet, but little has been done in the way of hybridising Alpine plants; but there can be little doubt that they are capable of being successfully crossed, all that is wanted being more workers in that direction. The field is a large one and almost new, but now that greater interest is beginning to be taken in their cultivation, we may soon expect to witness important results.

#### THE ROOT HISTORY OF LILIES.

As one of those who have thought, said, and, unfortunately, written not a little that now seems, in the clearer light that "Dunedin" has thrown on the subject, a good deal like nonsense, I wish publicly to express my thanks to this clever writer for his lucid explanations and convincing illustrations concerning the roots of Lilies. I would have done this sooner, but waited to test some of his statements by experiments. As far as these have advanced, they prove conclusively that "Dunedin" is right. The Old World Lilies have a birth and a death a year, and the natural term of the life of most Lily bulbs is two years. Seeing, in such cases, should be equivalent to believing; and "Dunedin's" spectacles have been most useful in enabling most of us to see further into Lily bulbs than we did before. Unlike Butler's semi-classical character, "who consents against his will and is of the same opinion still," I freely admit that "Dunedin" has converted me to his views, in so far as they relate to the root history of the Lily, though I by no means agree with his statements upon leaves contained in his last letter (see p. 451). Catching, as it were, the spirit of modern society, which abolishes childhood and youth and puts mere children into high hats and long dresses, "Dunedin" establishes the independence of germ bulbs at far too early a date. He seems also to unduly narrow the functions of roots, stems, and leaves—all the organs of Lily nutrition—to the flowers. "The functions of the leaves appear to be a combination of the lungs and stomach of animals; they not only modify the food brought to them from the roots, so as to fit it for increasing the size of the parent plant," but of the germ or seed-bulb. No; not the latter, according to "Dunedin." He goes on to say "that the leaves absorb nourishment from the atmosphere, by means of which the vegetative functions are carried on, all tending to the production of the flowers." This sentence is somewhat obscure, though it may be absolutely true, but not the whole truth. The development of the young germ is, however, as much, or more, entitled to be termed a vegetative function as the flowering of the old bulb. But "Dunedin" renders his meaning obvious enough in the next two sentences, and, indeed, throughout the paragraph. That meaning seems to be that the leaves of the Lily have no mission as to the germ bud. Is this really his

meaning? Here is what he says: "When the bloom is complete"—observe not a word about the ripening of the seed even—"When the bloom is complete, the leaves cease to perform their functions, and if not cut down at once they decay gradually, and remain for a long time as unsightly appendages. Nothing can restore them, nor can they in the slightest degree aid the new bulb; for that bulb, even when the parent bulb is in full bloom, is wholly independent of any assistance from outside its own immediate organisation." That is, from the old leaves or parent bulb, I presume. Now, as the seed-germ or succession Lily bulb when first liberated adheres firmly to the core or base of the old bulb, and draws double-refined nutriment from the juice of the tender new core on which it is seated, the question that "Dunedin" has failed to answer is—When does this vital connection between the new germ bud and the old Lily terminate? I submit that the following strong assertions do not answer the question satisfactorily. "To say that either directly or indirectly the succeeding year's flower-stems are affected by cutting down the leaves of the old plant while they are yet green is another mistake; for the roots of the new bulb have been drawing nourishment from the soil for a length of time before the parent bulb has actually begun to bloom." No doubt; but has it not also continued to absorb double-refined food from the core of the old bulb on which it is seated? "Dunedin" adds, "There is no doubt that under such circumstances the new bulb must perfect itself solely by means of its own roots, for all the sustenance that the old bulb could by any possibility afford has been exhausted in bringing to maturity and in perfecting its own bloom." To this it may be replied, that it is as impossible for us to measure the possibilities of Nature as to explain the mysteries of life, and that it is no less a quality of the latter than a function of the former "to incorporate with itself those nutritive particles of matter which it requires, and reproduce structure of its own species or type." Exactly so; and it is as much, or more, the proper legitimate functions of the leaves, stems, and roots to develop the succession bulb or bulbs of the Lily as to cause the older bulbs to bloom. The nutrition of either part of a plant may be mediate or immediate, direct or indirect. For example, food may reach the flowers directly from the roots or through the leaves; it may reach the germ or young bulb in a more roundabout way through the old bulb. Either way, the stem, leaves, and roots, which combine the functions of stomach, lungs, and arteries, are essential to the old bulb, and equally, or more so, to the development of the new one.

The germ bulb, in fact, seems partly parasitic. Cannibal-like, it appears largely to feed upon and finally, and to a great extent, to absorb the old one. Even its own independent roots hasten the doom of the old bulb by cleaving it or draining it dry of juices. It certainly adheres firmly to the core or base of the parent bulb until the latter is well nigh decomposed or absorbed. By this simple process two important purposes are gained. One is the clearing of the old bulb out of the way of the succeeding young one; the other the feeding of the new bulb by the old. A third object may also be gained by this destruction of the central core of the old bulb. The scales become sooner and more widely separated from each other, and, in the case of Lilies, not seldom retain sufficient vitality to form fresh bulletts at their base. Granting that the germ bulbs are thus supported from the old bulbs and their own independent roots, their rapid development is less to be wondered at. They feed at two tables—their own and that of the mother bulb. It is also to be observed that this latter table is sure to be well supplied. It is placed, as it were, in the centre of vitality and growing force on the base or axis of the bulb, where the ascending and descending currents of vitality, those sent up from below by the roots and those sent down from above by the leaves and stem, meet and overflow into the new bulb.

Another point of great importance has also to be noted here. It is more than probable that the major portion of the roots, proceeding from the base of the old bulb, are chiefly occupied after a certain time in feeding the succession or germ bud, rather than the flowering-stem or flowers. Most Lilies have two sets of roots, one proceeding from the base of the stem, the other from the base of the bulb. While the former proba-

bly chiefly feeds the stem and develops the flower, the latter, after a certain stage, doubtless mainly develops the germ or succession bulbs. Still, as the stem and the germ bulb proceed from the same axis, or bottom core of the bulb, it is alike possible and probable that the stem may not only draw strength from the bulb, but also return something to it or its successors. The ability of the stem to do the latter may possibly be measured by the number and size of its leaves, and as these vary much in the different species, it is more difficult than it seems at first sight to lay down or accept any general law respecting the effects of stem leaves on the future bulbs. Were all Lilies as fortunate as the common white or candidum, with its two sets of leaves, one for the development of the bulbs, the other chiefly or solely for the support of the flowers, no doubt "Dunedin's" views and advice in reference to the early cutting down of the stems after flowering might be safely adopted. But the majority of Lilies have no leaves, except on the stems; and as leaves perform the compound functions of stomach and lungs, it follows that to remove them a day too soon may either starve the Lilies, or poison them by impure sap—a fruitful source, probably, of a fatal disease among Lilies. While the leaf of a Lily remains green and has life in it, it ought to be most carefully preserved, for the strong probability is that this Lily leaf is of as much importance to the germ bud near the base of the stem as the Vine leaf to the succession bud in its axil. True, the latter is nearer to the bud, but as until the stem dies the movement of fluids is not arrested, and not even then in and through the roots, the distance between the feeding, converting, consolidating leaf and the germ bud is of little practical moment. At present, therefore, I am unable to accept "Dunedin's" views upon this subject, unless he can make it appear that it is impossible for the germ bulb to be fed through the parent bulb. Experience also teaches that those who grow the finest leaves, and keep them the longest green by liberal culture, also grow the largest Lily bulbs and the most flowers. *Gladiolus* bulbs increase and decay in a similar manner to Lily bulbs. What cultivator has not found to his cost that, by cutting spikes with leaves intact for exhibition or other purposes, the germ or succession bulbs have suffered so much that but few good spikes are produced next season from the plants thus denuded of their foliage? It is impossible to be too careful of the leaves of plants; they are stomach, lungs, and possibly much more; and nothing has yet been proved by "Dunedin" or others to show that Lily leaves are of less moment to Lily bulbs than Potato haulm to Potatoes. Most of us are under great obligations to "Dunedin." I frankly acknowledge one conversion, and am willing to be educated still further by such a clever teacher; but at present my faith is by no means shaken in the power of leaves; and, in regard to Lilies, the more and larger the leaves, and the longer they continue to perform their functions, the finer the flowers of the current year, and the finer also the bulbs for the next.

Since writing the above, I have read Mr. Groom's and "Dunedin's" latest remarks (see p. 489). It will be seen that in the main I agree with Mr. Groom in all that relates to the importance of leaves. Doubtless, too, we will all profit by "Dunedin's" promised further article with fuller illustrations. Perhaps he will excuse me for inviting his special attention to the feeding of the germ Lily bulb through the old bulb, and the time when such feeding terminates. D. T. FISH.

#### AQUILEGIAS FROM SEED.

MANY of your readers would be grateful for particular instructions, derived from successful experience, how to grow these beautiful flowers. *Aquilegia vulgaris* grows and seeds itself readily enough in any garden soil. A packet of mixed Columbine seed, from a good seedsman, if allowed to flower in a piece of spare ground, will afford perhaps one plant in fifty worthy of a place in a mixed herbaceous border, and include pleasing varieties of white, pink, and blue. The plants so selected are well worth the trouble of growing, though the best varieties are most impatient of division and never come true from seed. But your correspondents who tell us (and we are grateful for the information) how we ought to fill our mixed herbaceous

borders recommend us such kinds as *A. Skinneri*, *truncata*, *chrysantha*, *cerulea*, and *glandulosa*, of which we read captivating descriptions and are shown gorgeously coloured pictures at the seed shops, and are told that they will do in ordinary garden soil. I have tried them all, both plants and seeds, and have failed entirely, and have found no one amongst my gardening acquaintances who has done much better. The seeds either do not grow at all or come untrue to name, and the same may be said of the plants. The most beautiful *Columbine* I ever saw in flower was *A. glandulosa*, with which I believe the English market is chiefly supplied from Messrs. Grigor, of Forres, in whose nursery it grows almost wild. I suspect the south of England is too warm for it, as I never could get it to survive a summer. Inferior varieties are often sold for it, especially one with a white centre named at Kew, I think, *A. atrata*, but of no great merit. Others of the choice kinds, as I have read, do very well near Edinburgh, but I have never seen a really good collection of them anywhere in the south. I paid a visit to Kew to-day, where I am sure they would be well grown if the climate admitted of it; but I was particularly struck with the poorness of the collection; there is little else in the bed but varieties of *A. vulgaris*, and these not very good. None of the species I have mentioned above is represented by anything but a name and a blank space except *A. chrysantha*, which does not look very promising. *A. canadensis* also appears as a stunted abortion. The whole bed is a strong contrast to the next, containing the *Thalictrums*, which are models of health and vigour. In conclusion, I may say that I can find no nursery in the south of England where choice *Columbines* are reared; they are generally, I am told, supplied from the north of the island and sold off at once, most of them to perish with the heat of July and August.

Eton. C. W. DON.

### IRIS CRISTATA.

SURELY this charming little plant is not so well known as it ought to be, or it would be met with more frequently than it is? It is one of the best of the dwarf Irises, looking, at first sight, not unlike a lovely Orchid, and there are scores of Orchids not half so handsome. The delicate blue of the flower and its rich markings I shall not attempt to describe. It appears to have some affinity with the *Kämpferi* section of Irises, and is altogether a quaint, delicate plant, which grows from 4 in. to 6 in. high, with very broad leaves for the size of the plant. Its growth is peculiar; it throws out long, slender rhizomes, wholly above ground, which thicken and become fleshy towards the apex, from whence arise the leaves and flowers; here the rooting process again commences, and fresh rhizomes are thrown out, something after the way of the Strawberry; hence, though a very humble plant, it soon covers a considerable space. It is a fine plant for pots and pans. Select the strongest rhizomes with the broadest leaves, and lay them by in the autumn, in some cool shady place, without planting them for about a month; then pot and keep them in a cool pit. This starving, or lifting, process is essential to the free flowering of this beautiful plant, and I have heard that the same process tends to the freer flowering of that noble Iris, *I. susiana*. After all, the way in which to manage *I. cristata* successfully is to plant it among stones, with little or no soil. Thus situated, it seems at home, and the blooms last longer and keep in better condition than when growing on the ground.

Ormskirck.

THOS. WILLIAMS.

*Lobelia pumila* and *Viola Perfection*.—"W. W." (see p. 454) has seemingly missed the drift of my remarks in reference to these plants. The notes referred to (see p. 451) were intended to apply to cases where (as happens here) the *Lobelia pumila* is too much appreciated to substitute anything else. I can endorse all that "W. W." says in favour of *Viola Blue Bell*; it is grown by the thousand in this neighbourhood, and is almost a perpetual bloomer.—W. HURDIS, *Otterspool*.

*Iberis gibraltarica*.—My experience of this differs from that of "A. D.," recorded in your last number (see p. 490). Not only has a large plant lived through the winter, but three or four out of twenty cuttings have survived; indeed, they were all alive at the end of February, and have only dropped off since. *Iberis gibraltarica* is my favourite sort.—BROOKHURST.

## THE INDOOR GARDEN.

### COLOURLESS MARECHAL NIEL ROSES.

I OBSERVE an interesting note by Mr. A. Dean in last week's GARDEN on this subject. The *Marechal* does vary in colour more than any other Rose, and runs through all shades, from the deepest yellow or orange to pale lemon colour, ending at times almost in pure white. This wide range of colour in a single Rose I consider a great merit for decorative purposes. On a back wall in a shady conservatory the *Marechal* is often almost white, while close to the glass on the south side of the same house the flowers are of the deepest orange. The change of colour is almost as great in the open air. The gardens here are large, and we grow the *Marechal* everywhere, on walls of different heights and aspects and as standards in different places. Hardly two of our plants bear flowers of the same colour. On south and west walls it seems partially burnt out; on northern ones it never gets fully developed. Our deepest-coloured flowers have been cut from a plant on the end of a plant stove, the plant thus having an eastern aspect. Next in depth of colour to these are our late flowers on standards, all through July, August, and September. Writing these months suggests to me to add how immensely important it is to plant such a Rose as this all about our gardens. Our most useful *Marechal Niels* are those under glass that come in in April, and those standards in cold borders that continue the supply till the end of the autumn. The late standards generally have their early buds nipped off by the cold spring, and if not they should be removed. The plants have then time to show a fresh crop of buds and produce magnificent blooms late in the season. The *Marechal Niel* is without doubt the most useful of all Roses either for culture under glass or in the open air; and, notwithstanding my passionate love for the sweetest and most beautiful of all English Roses—*Devoniensis*—were I restricted to one Rose, that one would, without hesitation, be *Marechal Niel*. "B. S.'s" experience (see p. 506) is a common one with this Rose. Enormous growths one year, little or none the next, stunted growth succeeded by disease and death at times. The great point is to carry up some fresh shoots every year if possible. A good stock of plants should always be held in reserve. The *Marechal* roots almost as freely as a Willow, and does best on its own roots. I should not think the lead had anything to do with the plants going off.

D. T. FISH.

*Hardwick House, Bury St. Edmunds.*

—Mr. Dean (see p. 495) directs attention to the variations, as regards depth of colour, that occur in this Rose, and for which I am unable to assign any definite reasons. We have had blooms of a lovely deep golden colour grown, as described by "A. D.," in a cool house in full sunlight, while other plants under similar conditions have produced flowers of a pale lemon colour, although equal in size and character to those just adverted to. Perhaps some of our large growers could state positively whether or not variations in colour are wholly attributable to local circumstances, such as soil or culture, as it is by no means uncommon to hear it remarked that a better variety of this Rose is to be procured in one place than another. With plants raised from seed this is feasible enough, but I never heard of anything approaching a fixed character, or what are called "sports" in *Pelargoniums*, occurring in the Rose family.

J. GROOM.

### GREEN-FLOWERED GARDENIAS.

It is not very difficult to see how "S. K." (see p. 506) has failed with his *Gardenias*. The plants love heat, and never more so than when the flowers are expanding. The difference in size and sweetness between flowers opened in the temperature of a conservatory and those expanded in a plant stove, or, better still, a manure or tan pit, with a bottom and surface-heat from 70° to 80°, is something wonderful. *Gardenias* also enjoy a humid atmosphere bordering on saturation. To take them out of a stove temperature and place them in the conservatory when they show flower is to invite failure. When in full flower *Gardenias* will stand in the conservatory, though this injures them. If "S. K." will keep them in heat, without checking them in any way, the flowers will no doubt open and prove whiter than snow. Possibly, too, "S. K." gives manure and more water in excess. *Gardenias* enjoy a humid atmosphere and liberal supplies of water when in full growth in a high temperature; but over-watering in a conservatory would be likely to cause the buds to drop off or not to open. Over strong manure water might also prove as injurious as an excess of water, and manure water is better given after flowering than before. Just as they are making their growth and forming their embryo buds for another season is the time to stimulate the plants with manure water if they require it. After these processes are completed *Gardenias* may be rested for a month or two in a cold

frame, or even on a shady border out of doors. But from the moment they are started until the flowers are fully expanded a warm regimen is best for *Gardenias*; not but what they can be flowered in a lower temperature than that here recommended, but the finest flowers are produced by the treatment just proposed.

D. T. FISH.

Your correspondent should discontinue the manure water, keep them well syringed, and place them in a higher temperature while blooming.

PHILIP LADD.

### DOUBLE-FLOWERED RHODODENDRON.

THE accompanying is a representation (natural size) of the double-flowered *Rhododendron Dalhousie*, of which we gave a short account (see p. 407). It came from Mr. Hossack, Ragley, near Alcester, who gathered it from a truss, in which one flower was single and three



double. Accurate though the illustration is, we regret to say that it fails to show off the full beauty of the flower to advantage.

### TROPÆOLUM AZUREUM AND ITS CULTURE.

MR. HEMSLEY, in his summary of the genus *Tropæolum* (see p. 442), remarks under the head of tricolorum that there appears to be no reason why azureum should not be as easy to cultivate as that kind. There is, indeed, but one reason why it should not be, and that is the delicacy of constitution which it possesses as compared with that of the other kinds. Still, it may be grown well, and when properly treated it is one of the most lovely plants with which I am acquainted. It is one of those floral gems which defy description; the beautiful azure-blue flowers blend so harmoniously with the deeply-lobed, delicately-hued foliage, that once seen in perfection it is not easily forgotten. I would recommend all who have not hitherto grown it to try and master the details of its culture, which are, after all, not very difficult. The fact is, these tuberous-rooted *Tropæolums* have been somewhat overlooked of late. Even the comparatively easily managed tricolorum is far from being extensively grown. This is to be regretted, as they are a beautiful tribe of plants, and well worthy of having a little pains bestowed upon them. Having succeeded in managing them tolerably well, more especially azureum, a few details of my experience may perhaps not be unacceptable. Sound two-year-old tubers are necessary, and they should be potted in the following manner:—Fill an 8-in. pot about one-third full of drainage; on this place a layer of fibrous peat in tolerably large

pieces and some small pieces of charcoal, mixing the two well together; fill up the pot to within 1 in. of the rim with a mixture of fibrous peat, from which the dust has been sifted, and silver sand. Do not make the soil at all hard; on the contrary, merely press it down gently with the hand; then place the tuber therein, just covering it with soil. No ingredient of a close or rich nature must be used in the compost; even leaf-mould I have found too clogging; for this *Tropæolum*, although enjoying plenty of moisture when growing freely, is so impatient of stagnation at the root, that it is absolutely necessary to take every precaution against such an occurrence. It is in this respect that many fail, for if through defective drainage or too close a compost the root be checked or slightly injured, the foliage turns to a sickly hue; the growth of the plant is stopped, and the points of the shoots go in a measure blind. When this once occurs a complete recovery is almost hopeless; the glory of the plant is gone. If the above directions with respect to soil and compost be attended to, there will, with ordinary care in watering, be but little danger of such mishaps. When potted, they should be watered and plunged up to the rim in a north frame, for herein lays one of the chief elements of success, viz., they should never be watered again until they have made shoots some 6 in. in length. If the pots are so placed that they dry out frequently, the bulbs seldom start with any degree of freedom—at least, such is my experience. They must in starting grow away quickly, and this will only be induced by a vigorous root action, to which alternations of drought and moisture appear to be fatal. This *Tropæolum*, like some other bulbs, would seem only to root freely in its early stage of growth, when the soil can be maintained in an unvarying state of moisture—neither wet nor dry. The bulbs should be potted not later than August 1; by the middle of September they will have made quite 1 ft. of growth. A trellis must be affixed to the pot to which they are to be trained, as they will soon branch out from the main stem. During the winter they will have to be kept in a cool, light, dry, airy house, attending to the training, and keeping a sharp look out for fly. By the end of February they will be thoroughly established, and may then have a little weak soot or guano water administered to them occasionally. In March the trellis will be covered and they will commence flowering, when hot sunshine and cutting draughts must be avoided. A well-grown specimen is really very beautiful. I have had them with upwards of 200 expanded blossoms on. It is remarkable how very little known this plant appears to be now-a-days, and very few imagine, on seeing it for the first time, that it belongs to the *Tropæolum* family. I first met with it in flower in Germany, from whence I brought it. These bulbs produced flowers of a beautiful bright blue, but I raised a batch of seedlings from them, and they varied very much, some of them coming quite pale. This pale variety has a much more robust habit, as the bulbs now in cultivation are seedlings raised in Europe, at any rate the greater portion would be so; it is therefore probable that the worst variety now predominates. The true dark kind has in most places probably died out, and seed has been saved from the pale one only.

There is a variety of tricolorum called grandiflorum, which differs only from the type by being altogether larger both in leaf and flower. The flowers differ but little from Jarratti, but with respect to the bulb there is a striking contrast. The bulb of Jarratti, or what I have grown as such, is long-finger shape, so to say, and the stem running underground produces a number of bulbs. I was much surprised, on taking some up that had been planted two or three years, to find quite a handful of tubers in place of the one planted, some of them being quite 3 in. in length, and assuming quite fantastic shapes. Now, grandiflorum has a roundish bulb which has no tendency to increase in this manner. This I have proved by planting the same bulbs year after year; they will increase to the size of a hen's egg, but although I have layered the stem and planted deeply, they have never produced a single bulb. This has often puzzled me, as Jarratti and tricolorum are generally described as one species, and yet the entire dissimilarity of bulb would indicate that they must be quite distinct. Perhaps some of your correspondents may be able to throw some light upon the subject. *Brachyceras* is a very pretty free-growing species, but is, I think, rather difficult to get true. All these kinds

may be planted out, and will thrive admirably in a compost of turfy peat and a little fibrous loam, and they afford a charming contrast when in flower. It would be interesting to know how many kinds are in cultivation, and to have some particulars respecting them. Those of your readers who may have had any experience therein would confer a favour by furnishing a few details. It is time that this elegant genus was looked up a little. I hope to see the day when they will regain their old place in public esteem.

J. CORNHILL.

*Byglect.*

#### FORCED PERSIAN LILACS.

The Persian Lilac, although, as its name implies, a native of Persia, is, nevertheless, a hardy shrub in this country; but it is, at the same time, admirably suited for forcing. Being easily started into active growth, it can consequently be had in flower at any desired season, as it requires but a short period of forcing to bring it into full bloom; and as the flower-buds are formed during the previous season, such plants as are well furnished with them can be readily selected from the shrubberies or the nursery grounds about the end of October. These may be potted and successfully forced into bloom at any time during the winter. It is, however, better to subject plants intended for forcing to a system of preparation, and this is very easily accomplished by selecting a number of suckers with clean stems, which are generally easily obtained from the shrubberies. These should each be furnished with a few young fibres, and the stems should be cut to the length of 9 in. or 12 in., and should be planted in lines in any convenient situation and encouraged to form heads. This they seldom fail to do by the end of the second summer, and the desired portion of them may be taken up with good balls and potted during the month of October, when they will be ready to place in the forcing-house at any time during the following winter. When such plants have ceased flowering they should be placed in any sheltered situation until the middle of April, when the shoots should be all cut close back and the plants again turned out of their pots and planted in the open air. Plants which have not been forced should at this period have the same treatment, as it is necessary that they should be cut back and transplanted every season, in order to prevent their becoming too large. When the planting out has been completed it may, should the weather be dry, be necessary to give the plants a good watering. They will generally produce a multitude of young shoots, which should be slightly thinned out, and most of the shoots left will be found in the autumn to be furnished with a terminal undeveloped flower-bud, and the most promising plants may be selected and again potted for forcing. By this treatment the plants may be kept in good health and forced year after year, but it is better to have plenty of them and to avoid forcing the same plant two seasons in succession. Such plants, in pots some 9 in. or 10 in. in diameter, will generally furnish from fifty to 100 spikes of bloom, which are useful in a cut state, while the plants themselves are exceedingly graceful objects for decorative purposes. Many other species of hardy deciduous flowering shrubs may be prepared in a similar manner, and may with facility be forced into bloom during winter or early spring, such as the Scotch Laburnum, Ribes aureum and sanguineum, the Guelder Rose, various species of Spiræa, Weigela, and Deutzia, and the very pretty double Japan Cherry (*Cerasus japonica* multiplex), with its numerous, snow-white, rosette-like blooms. These are easily forced into flower, and to these may be added plants of suitable dimensions, and well furnished with bloom-buds of such species as the Azalea, Kalmia, and Rhododendron.

P. G.

#### SWEET-SCENTED FLOWERS FOR A COOL CONSERVATORY.

ALLOW me to submit the following list to your correspondent (see p. 506). They all emit an agreeable fragrance, either from flowers or foliage, and in some instances both are powerfully scented; as, for instance, Dicentra, Myrtle, and Geraniums. If a good border of turfy soil could be made many of the plants would do better planted out than in pots. This would include all climbers and such plants as *Luculia gratissima*; Roses, such as *Maréchal Niel* and *Lamarkæ*.

*Heliotropes*, when planted out under glass, attain a large size, and are nearly always in flower if in a light position. *Mignonette* planted in a similar position with the seeds picked off is virtually a shrub. *Magnolia fuscata* should be planted against a wall or pillar, as should also the *Jasmines*. Hardy shrubs, such as *Lilacs*, double *Thorns*, *Syringas*, Belgian and Japanese *Azaleas*, should be potted in autumn and planted out again when the blooming is over. If they could be forced gently, an early bloom will be obtained that would be appreciated. Bulbs, of course, such as *Hyacinths* and *Narcissus*, will be had early in the season, with *Lily of the Valley*, *Tuberose*, and *Lilies* of various kinds following on in succession; but one might write a treatise on this subject and yet not exhaust it. I am assuming that the frost will be kept out, as although a house altogether unheated might be made interesting with hardy plants, or those requiring a slight protection only, yet the enjoyment is much enhanced if the structure be heated so as to keep out frost. *Adenandra fragrans*, *Aloyasia citriodora*, *Azaleas* (Japanese and Ghent), *Boronia megastigma*, *Carnations* (Tree and Glove), *Citrus* (all the Orange family are suitable), *Cytisus Everetti*, *Cheiranthus odoratissimus* (night-scented Stock), *Diosma ericoides* and others, *Doryphora Saesafra*, *Daphnes* (all the family), *Eupatorium odoratum*, and *Eucalyptus globulus* will all be found suitable. The foliage of the *Eucalyptus* yields an agreeable perfume, and when the plants become too large they can easily be pulled up and young ones planted, as it is one of the easiest of plants to raise from seed. *French Lavender*, *Geraniums* (all the old scented-leaved kinds, such as *Lady Plymouth*, *Prince of Orange*, *Radula major* and minor, *citriodora*, &c.), *Humea elegans*, *Heliotropes*, *Hyacinths* (including the *Musk Hyacinth*), *Jasminum grandiflorum* and others\*, *Lonicera fragrans*\*, *Violets* (in pots, specially prepared and potted early), *Lilium auratum*, *giganteum*, and others, *Lily of the Valley*, *Pinks* (including the old white and *Anne Boleyn*), *Lilacs*, *Thorns* (including *Paul's new double scarlet*), *Magnolia fuscata*, *Luculia gratissima*, *Mandevilla suaveolens*\*, *Myrtles*, *Pergularia odoratissima*\*, *Pittosporum Tobira*\*, *Prostanthera violacea*, *Rhynchospermum jasminoides*\*, *Mignonette*, *Rhododendrons* (Himalayan species and hybrids, notably *Edgworthii*), *Roses* (especially *Teas*; lists for culture under glass have often been given in THE GARDEN, and need not be added here), *Musk (Harrison's)*, and *Petunias* (single and double). Those marked thus \* are climbers.

E. HOBBAY.

The leaves of some plants are even more sweetly scented than their flowers, and during the early months of the year the greenhouse should contain plants of such sweet-scented species as the *Myrtle*, *Sweet Briar*, *Aloyasia citriodora*, *Lavendula dentata*; together with several species of the *Pelargonium* from the Cape—such as *crispum*, *odoratissimum*, *tomentosum*, *quercifolium*, *Prince of Orange*, &c.; with the *Neapolitan* and *Lee's Victoria Regina Violet*, winter-flowering or tree *Carnations*, *Mignonette*, *Chimonanthes fragrans*, *Hyacinths*, and *Narcissus*; forced *Lilacs* and *Lily of the Valley*; to be followed by the *Musk-scented Mimulus*, forced *Roses* of the *Hybrid Perpetual* and *Tea-scented* varieties; forced *Pinks*, *Cyclamens*, *Daphnes*, *Magnolias*, *Citrus obtusifolia*, *Jasminum odoratum*, *gracile*, &c. *Diosma ericoides*, *Humea elegans*, single and double-flowering *Petunias*, autumn sown *East Lothian* and *Ten-week Stocks*, *Tuberose*, and a few *Gardenias*, and a plant of *Stephanotis floribunda* might occupy the warmest part of the structure.

*Culturd.*

P. GREVE.

*Lantana* s. *Verbenas*.—*Lantana* and *Verbenas* belong to the same family and come from the same regions; both chiefly from Brazil. Those who are tired of attempting to keep plants of *Verbenas* in satisfactory health through winter should make trial of the *Lantana*. They are not attacked by the insects or mildew that assail their cousins, and they endure the heat and dryness of a sitting-room better, or will keep well in a cellar that does not cool below 40°. The flowers are as bright as and as varied; fine shades of yellow and orange making up well for lack of blue or purple. The bloom is more copious, too, especially on two-year-old plants; and continues longer and steadier. The plants are always neat; no dry, dead, unsightly remains appear, but drop out of sight. The natural habit of growth is ascending and straggling, but they can be kept in any desired form by timely occasional pinching. They may be pegged down, stemmed, round-topped against a wall, or as a green floral pillar, or a lance-stemmed, round-topped miniature tree of bloom. They like full sun and rich soil. Some that were trained here against a white wall facing south-east have been gloriously beautiful, and constantly so until late in Sept., when necessity obliges their close shortening in and potting for indoor preservation from frost. Cuttings are easily rooted in August or Sept., easily kept in a window, and they will begin to flower early in spring.—“*New York Tribune*.”

*Dracæna Incida*.—This is an extremely handsome variety, with foliage of a bright green colour, the older leaves attractively margined with carmine, and the younger leaves rich rose-carmine; the brightness of the colouring enders the plant exceedingly effective.—S.

PROPAGATING.

**CALADIUMS.**—These should be re-potted and started into growth in March, in a stove heat of 75°. After having been at rest during the winter months, all small bulbs that are on the outside of the large one may be cut off and put into pans filled with sandy peat. When large enough, cut off the stem from the bulb (see fig. 1), put it into a single pot, and support it with a stick; drop a little fine charcoal-dust on the bulb where it has been cut (see fig. 2), and cover it over. It will soon push numerous young plants from the eyes; these may be cut

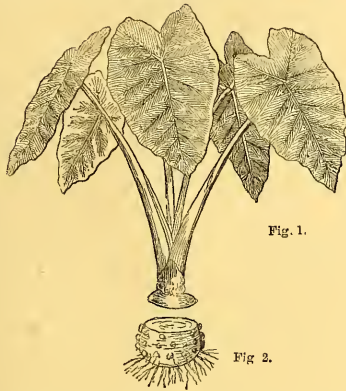


Fig. 1.

Fig. 2.

out and put either into small pots singly or into pans collectively. The tops must be put in the cutting-box for a few days till they are rooted. H. H.

HOW TO GRAFT LARIX KÄMPFERI.

At p. 484 Mr. S. B. Parsons, of Flushing, U.S., informs us of his unsuccessful attempts to propagate this Conifer. As possessor of such fine plants as he describes, he has at command all that is essential to the successful grafting of this plant. It is too late now, but next year, about the beginning of February, or—let me see, spring is later in New York State than here—say end of February, let him dig up a few roots of his large plants, select and cut them in thickness to correspond with either one-year-old or two-year-old scions, and from 4 in. to 6 in. long; cleft-graft them, taking care that the cambium layers of both stock and scion are in contact, and wax over in the way that ordinary root-grafted Apples are done in the United States; pot singly in such soil as he finds to suit the plants, keeping the waxed part above the soil; then place them in a moderately moist case with a temperature of about 65° Fahr. Union of scion and stock will soon take place. From the buds will come forth leaves, leaves so tenderly delicate that the least degree too much moisture or too little will make them rotten or irremediably wilted, the labour being expended for nothing. I can recommend no better plan, pen and ink never yet successfully detailed the “why and wherefore” of the successful graft-propagator, but Mr. Parsons may rest assured that I do not give advice at random, having within easy reach living evidences of personal success in the propagation of *Larix Kämpferi* in this way. It is also, but with difficulty, propagated by means of layering; but, considering the severity of the winters in the Northern States, and the consequent freezing of the soil to a great depth, propagation by this means, of such plants as require to be what is technically known as “down” for two or more years, would be all but impossible, and therefore not profitable. GEO. SYME.

*Lilium pyrenaicum*—This has been the first Lily to flower in my garden this year.—J. E. D., *Epson*.

THE FRUIT GARDEN.

FRUIT GROWING IN SUSSEX.

OUR readers will admit that freely as the columns of THE GARDEN have ever been open to ventilate the nationally important subject of fruit production, yet throughout the discussion we have uniformly endeavoured to impress the fact that very large additions to the fruit-growing power of the country are under preparation in various parts of the kingdom. Not only have we alluded to this extended area for market purposes, but also pointed out that the importation of foreign fruit will continue augmenting until the wholesale price is brought so low as visibly to bring the industry down to be barely remunerative. Worcestershire, Herefordshire, Shropshire, Kent, Somerset, and Hants are all in the field with greatly enlarging fruit acreages. In all the midland counties fruit growing is on the increase, and even far north, up to Scotland, fruit trees have been planted to an extent, limited only by the power of nurserymen to satisfy the wants of those desirous of competing in this new industry. For some years past the sale of fruit trees has been enormous, one firm estimating that 250,000 Apple and Pear trees have been each year absorbed by private gardens of the entire kingdom. The “Sussex Weekly News” calls attention to the plantations of Pear trees, over 60 acres in extent, at Slinfold, in that county. We have been cognizant of these orchards from their first projection, but the owner and planter (Major Walter) has from time to time stayed reference to them, preferring first to remove any seeming doubts as to their prosperity ere speaking of them. With Major Walter pomology has been a twenty years’ pursuit, and he is not a likely man to have settled down in Sussex and to have borne his trees cut and kitten fashion from Cheshire without a beforehand conviction that all was right as to soil and climate; neither has he embarked in fruit tree culture relying on any wild figures as results of existing orchards, however speciously inviting.

The “Southern Weekly News” thus refers to the Slinfold Gardens:—Great interest has been awakened among our Sussex horticulturists by an attempt on a huge scale at Pear-tree growing at Slinfold, near Horsham, and although the enterprise has so far been quietly and unostentatiously prosecuted, yet the work is being watched with interest by pomologists. Notoriety has recently been given these extensive plantations through an article in the “Dumfries Standard,” which runs thus:—“A dear old friend has purchased a charming property in the Weald of Sussex, and turned 60 acres of it into a Pear orchard, in which he has already planted many thousands of Pear trees of the very finest sorts, collected from the best parts of England and the most famous orchards in France, Belgium, and Italy. Some of the trees are as much as twenty years old, raised by the proprietor at his former beautiful place in Cheshire, some from Normandy, and some from the far south of France, and yet but few have been lost. Anything more lovely than the orchard is now, it would be difficult even to imagine. The property is on a somewhat highly-elevated undulating plain, of a clayey-loam soil, deep and rich; when wet as adhesive as mortar, when dry it pulverises and assumes the appearance of delicate yellow ochre dust. Fancy yourself standing on the highest point of ground, where by-and-by a residence will be built, and looking over 60 acres of trees in full blossom, white as sheeted snow, spreading a perfume sweet as the odours that may have floated over the garden of Eden, and then you will be able to estimate the loveliness of the future home of my friend Major Walter. The view is very extensive. Looking to the south, you have the whole of the Southdowns in view, stretching from Chichester almost to Beachy Head; and to the north the lovely Surrey and Kentish range of hills, from Guildford to Sevenoaks, commanding a prospect of nearly thirty miles all round, whilst the central landscape is watered by the Arun, which, winding past the old castle of Amberley and the grand feudal pile of Arundel, enters the sea at Littlehampton. Nithsdale even is not more beautiful.”—It may seem odd that a Scotch writer should first publicly draw attention to this Sussex fruit forest of which the county will doubtless be proud, even though until now its existence has been kept in the dark. The owner, however, is well known in the horticultural world as a Napoleon of Pear-tree culture, and as having been engaged some twenty years at his former home in Cheshire in bringing forward a vast number of these trees now flourishing at Slinfold. Thousands of them varied from twenty to five years old when their removal into Sussex was commenced, now four years ago. That the undertaking is a success no practical fruit grower now doubts. These stand

the trees, and during the last fortnight they have certainly presented a very lovely appearance. When first embarked in, their removal was looked upon by many as Quixotic. As a rule, Sussex men do not entirely believe in matters in which they have had no hand, and, apart from riskiness, much doubt was cast on the suitability of the soil. Many parts of Sussex produce beautiful fruit; we are the nearest to the Channel Islands; in fact, we believe that it vies with the hitherto most favoured districts of England, and may yet prove the garden for the finest fruit products. It is satisfactory to know that this project, fraught with such interest to the county, rests with a skilled and determined hand. A large amount of capital and labour have been expended on these orchards at Slinfold; all the land has been thoroughly trenched, and every means taken that skill can devise to command success. If, therefore, the climate and soil be suited, we may rest satisfied this will be attained; indeed, the undertaking is no longer doubtful."

#### NOTES AND QUESTIONS ON THE FRUIT GARDEN.

**Late Keeping Apples.**—Mr. Groom's note (see p. 438) respecting the useful keeping properties of the Norfolk Beesing Apple, which I can confirm from long experience, reminds me that all who must provide Apples all the year round should grow a tree or two of the French Crab, an Apple that keeps sound and good, not for one year only, but two. We generally keep a few over as a curiosity, and though this Apple is not first rate at any age, it is acceptable when no other can be had, and it may also be added that the longer it is kept the sweeter it becomes, which is not very high praise after all. Beesings keep well till Beesings and early Codlins come in, so that Apples all the year is more a matter of consumption and mass to start with than of impossibilities of keeping.—D. T. PISH.

**Market Strawberries.**—One of the finest plots of Strawberries which I have ever seen belongs to an ex-policeman. It is about a quarter of an acre in extent, and consists entirely of that fine market kind Sir Joseph Paxton, which evidently does remarkably well in the rather stiff loam in which it is growing. The plants are respectively three years and two years planted, and are now in full vigour; the bloom has been magnificent and fruit is setting in abundance. Last year this man had from the same bed fruit so fine and so early, that he was able to command 3s. per lb. for the first gatherings. Of course this price was not long continued, but he got all through a good figure, and made a large profit out of the sale. The secret lies in having a good sort, good deep soil, and in good cultivation. There is no rough digging between the rows, which is a barbarous practice, but a top-dressing of short manure is given in the autumn and lightly forked in, keeping the hoe well employed, and then, just as the fruit is beginning to set, littering down well with clean long stable straw—the shakings out of London manure; this keeps the weeds down and the soil cool for the summer. The fine rains and absence of late frosts have rendered the present season, so far, one of the finest on record for Strawberries, and should hot, dry weather ensue, it can hardly now affect the crop, which should be a heavy one.—A. D.

**The Golden Drop Gooseberry.**—In looking over our bush fruits I find that Gooseberries are a thin crop, the severe frosts having caught them just at the most critical time, viz., when the buds were just expanding, and consequently fully exposed to the severity of the weather. After the fruit is set the berries drop down under the foliage, and considerable shelter is thus afforded them. But the above well-known early dessert kind has quite three times as many berries on it as any other variety which we grow. The habit of growth in this kind is more erect than that of the general run of Gooseberry bushes, and therefore not so well adapted for sheltering the fruit in its early stages of growth, but the fruit buds are formed so abundantly on the old wood that, as soon as the leaves commence to expand, they form a compact mass, and afford considerable shelter to the lower fruit buds. As the Gooseberry is a most important crop, some correspondents in different localities may perhaps oblige us with a note on any kind that has proved the most successful this season as a guide for future plantings. This sort may probably find more favour with amateurs and private growers than with market gardeners, as it does not fill the measure so quickly as many kinds; but for hotting green or for culinary purposes we find it most valuable, and, as a rule, it bears so abundantly, that after several thinnings for these purposes a good crop is left to ripen on the bushes. When fully ripe it is much appreciated for dessert, being of good flavour and of a most beautiful golden colour, reminding one at once of its appropriate name the Golden Drop.—JAMES GROOM, *Henham*.

#### PLATE CXXX.

#### ZONAL PELARGONIUMS.

Drawn by MRS. DUFFIELD.

DURING these last few years very considerable improvement has taken place amongst the various races of decorative plants, and in no instance has this been more rapid or apparent than in the case of the family of plants now under notice. The modern Zonal Pelargoniums are, with good reason, supposed to be the result of blending together two or more closely allied species, most probably *P. zonale* and *P. inquinans*, both of which were introduced into this country from the Cape of Good Hope during the early part of the last century or about the year 1710; but for many years afterwards it does not appear that any successful attempts were made to improve them. Within the last twenty-five years, however, they have occupied much attention, and, in order to show how successful the efforts made to secure improvement have been, it is only necessary to glance at the accompanying coloured plate, and to contrast the blooms there represented with the narrow-petalled and windmill-like appearance of the flowers of *P. zonale*, and the coarse habit of growth and paucity of bloom which distinguishes *P. inquinans*. The modern varieties are, on the other hand, characterised by a dwarf and compact habit, foliage of medium size, and great profusion of bloom. The trusses are generally large, set on stout stalks, and lifted well up above the foliage; the individual blooms, too, are large and of the most perfect form, and, as regards colour, that ranges from the purest white to the brightest scarlet and rich purple. There is even on one hand to be found something like an approximation to blue, and on the other an unmistakable approach to yellow. There are oculated varieties, *i.e.*, whites having dark petals with white eyes, and others with white or light-coloured petals and dark eyes; kinds with striped flowers and sorts with double flowers in great variety, from well-formed rosette-like blooms, to semi-double flowered kinds of very large size. The foliage, too, in many cases is highly ornamental. There are golden as well as silver-margined kinds, sorts with tricoloured leaves; and bronze zonals of great beauty. It may, indeed, be said that there are few families of flowering plants so valuable in a decorative point of view as these Pelargoniums are. They materially assist in the decoration of the flower garden during summer and of the greenhouse and conservatory throughout the year; as, under proper management, they are found to be exceedingly valuable as winter-flowering plants. They are of easy culture, and will succeed in almost any description of soil; and the various kinds generally blend or cross readily with each other, hence the numerous sorts or varieties to be found amongst them. The vast improvement, however, which has of late years been effected amongst these plants is by no means to be ascribed to chance or hap-hazard fertilisation, but is, on the contrary, the natural result of the most judicious selection and careful manipulation. All attempts, however, to obtain hybrids between these Pelargoniums and such allied genera as the Geranium and the Erodium, have, I believe, hitherto failed, as have the efforts to induce them to cross with the large-flowered or show Pelargoniums, as they are termed. They blend readily, however, with some of the varieties of Pelargonium lateripes or the Ivy-leaved kinds, and the results of these unions are known as the hybrid Ivy-leaved varieties, many of which are found to be exceedingly ornamental and useful decorative plants. P. GRIEVE.

[The blooms from which our plate was prepared were supplied from the Royal Horticultural Society's Gardens, at Chiswick.]

**The Chameleon Wallflower.**—This plant is the *Cheiranthus*, *Cheiri* var. *Chameleon*, figured long ago in the "Botanical Register." It is very aptly named, as its flowers are continually changing their colour; on first expanding they are of a bright yellow, then gradually become bright purple, and this peculiarity, together with its habit, suggests to me the probability of its being a hybrid between the yellow Scandinavian Alpine Wallflower (*C. alpinus*) or *C. scoparinus* of Tenerife and one of the purple Madeira species—either *C. mutabilis* or *C. arbusculus*. I think it would be interesting if it could be proved; and perhaps Mr. Allen, who has paid much attention to the genus *Cheiranthus*, or some other skilled hybridist, will assist in ventilating this inquiry.—A. W.



A BUNCH OF ZONAL PELARCONIUMS.



## GARDENING FOR THE WEEK.

## Indoor Plant Department.

**Propagating Roses.**—These are not only now propagated much quicker than they at one time were, but also grown on with less delay than they used to be. A favourite method with new and scarce kinds is by root-grafting in the winter, which consists in grafting small scions of the kind to be increased with one or two eyes each upon root-stocks no larger than can be conveniently placed in a quite small pot, and pushed down sufficiently so that after the grafts have taken they will ultimately root from above the juncture where grafted, and in this way get established on their own roots, as they get older if destined for pot culture, or when turned out in the open air if to be so grown. By growing them on under glass with some heat during the spring they attain a considerable size in a very short time, and can, by judicious treatment, be established out-of-doors the summer following; but, if removed from under glass, and planted out without having undergone a little preparatory process by hardening, I have not found them make much progress the same summer; whereas plants that have been grafted at the time and in the way here spoken of have now for a few weeks been kept in cold frames and gradually inured to the air, they may be at once planted out where they are to remain. They should have the soil thoroughly well prepared by moderately deep digging and well enriched with manure, and where of a light sandy nature the addition of sufficient heavy loam, where procurable, and if not a good dressing of marl or clay, which if laid on the surface and exposed to the weather for a few weeks at this season will get so pulverised as to contribute very much to the requirements of the plants. The Tea roses will grow in a lighter nature of soil than most of the other kinds, but the Hybrid Perpetuals, strong-growing Noisettes, and Bourbons will even on their own roots do much better in soil that is either naturally of a strong holding description, or made so by additions of such material as the above. Young Roses that have been so increased I have found with me do better by deferring the planting out till the present time than by turning out sooner, as the check from being grown indoors to full exposure before the weather gets warm has a tendency to stop the progress of shoot development; although there is no doubt that the roots will make considerable advance even if little top-growth takes place, and by this means the plants will be in a position to attain much greater size and strength next year than if kept in pots until the autumn.

**Winter-grafted Roses that are Intended for Pot Culture.**—Such stock as the foregoing, that are to be grown on into pot specimens, should at once be planted as soon as the soil is sufficiently open to occupy are full of roots, as nothing is so much calculated to check healthy development and bring on a stunted condition as insufficient root-room whilst the plants are young. For these, even more than for such as are planted out, it is essential that the soil be made sufficiently heavy, when not naturally so, by the addition of pulverised clay, through exposure to the air, and rotten manure. Ram the material into the pots quite firm, in the way usual in potting operations earlier in the season. One of the chief elements of the success which many of the London market growers achieve, especially with the more tender Tea kinds, is the extremely hard potting they adopt; in fact, the soil is rammed into the pots to an extent that would scarcely be credited by those who have not seen the work done or examined the plants afterwards. The ball of earth is made so close that, even with the sand that is incorporated with it, it might be supposed that the water necessary for the plants would hardly percolate through it; yet such is not the case, and the amount of roots that favourite kinds like Niphetos and Devonians make in soil so closely compressed over that which takes place under light potting is a sufficient proof as to the soundness of the practice, and it may be observed, other cultural details being sufficiently attended to, that the amount of shoot growth and ability to produce flowers will always be proportionate to the quantity of roots which the plants possess.

**Pot Roses Out-of-doors.**—Continue to see regularly to the requirements of the winter-forced pot Roses now out-of-doors by keeping them clear from insects and attention as to water. The latter has been hitherto easily accomplished this season through the more than usual amount of rain we have had, yet not so the destruction of insects, especially aphides, which abound in most places to an extent almost unprecedented.

**Inside Climbing Roses.**—I may again urge the necessity for a free and daily use of either the syringe or garden engine to Roses grown as climbers on pillars, rafters, or the roofs of greenhouses or conservatories, without which it is utterly impossible to preserve them through the summer in a fit condition fair to look upon, or prevent their communicating the pests of red spider and aphides, which they are certain to become a prey to every plant in the house grown under or near them. Not only is this thorough and regular drenching with water essential for the reasons mentioned, but also to enable them to make growth that will produce successful flowers through the summer and autumn.

**Propagating Roses from Cuttings.**—There is no time of the year when Roses cannot be propagated by cuttings, provided shoots in suitable condition can be obtained; and where, as may be said to be almost general, these flowers are held in estimation, it is well to err on the safe side by having enough for pot culture, for should not all the stock be wanted for such purposes, they can be equally well employed for planting out-of-doors. Plants that have been forced through the spring will have produced a quantity of shoots that may either be subject to more air in cold pits, or under temporary lights, or for a few days in the open

air, not having been too long in the latter position, so as to have rendered the wood too hard—will be in a state to afford an abundance of cuttings. For this purpose choose such as are of medium strength, neither too gross nor too weak. Let each cutting consist of two, three, or four joints, inserting them six or eight together in 6-in. pots filled with moderately sandy soil and a little sand on the surface. Give them a good watering immediately, and plunge in coal-ashes in a close frame without artificial heat, but kept shut up altogether for three weeks, shading with mats, so as to keep down the temperature when the sun is on the glass. In this way the cuttings made of say half or three-fourths ripened wood will form a callus at the bottom. As soon as this exists they may be at once plunged in a gentle hothead, where they will root directly, after which time they may gradually be inured to more air and transferred singly to small pots. They will make good little established plants before winter, very much preferable for either out or indoor culture to those struck later in the season.

**Outdoor Roses.**—Those possessing even small collections of outdoor Roses, if they have this year followed the advice repeatedly given through the spring, of taking means to destroy aphides and the Rose maggot, will reap the benefit of the comparatively little labour required by a good display of early flowers, whereas in the absence of such attention, despite the unusual growth which they will have, the evergreen class has made up the whole of the growth, both leaves, shoots, and flowers, is so smothered with these insects as to prevent the possibility of well-developed bloom. This more especially has occurred on walls where insects abound to an extent such as seldom happens, which is, no doubt, attributable to the very mild winter, which left unscathed a greater than usual number of the breeding stock of these pests. Where Roses have been thus neglected, unless immediate means are taken to destroy the aphides now existing, and also the broods of those that will come successively into life, it is futile to expect a satisfactory autumn bloom. In the cultivation of Roses more than most plants, those who give the requisite attention to even a moderate number realise very much more pleasure from the results of their labour than where a greater quantity are grown, yet do not receive sufficient attention at the critical time when the young growth is beset by these pests which are inseparable from the cultivation of Roses.—T. BAINES.

**Plant Houses.**—In the warmer houses air must be admitted early and the houses shut up soon in the afternoon, shading being employed in all cases on bright days. A moist atmosphere and plenty of water at the root, a moderately high temperature and shade are at present necessary for the production of well-developed young leaves and wood; pinching shoots in order to induce a stubby growth, and tying in climbing plants should also be practised. Seedlings and cuttings require potting now and again, an operation to which attention must be paid. Shading must now be given to greenhouses or conservatories, otherwise the plants will quickly shed their petals, and their colours will lose their brightness. All cool houses must be well ventilated, and even at night the ashes may be left a little open.

**Camellias** that flowered early during the winter, and were immediately afterwards put in a little warmth to make growth, will have set, and the buds developed to a considerable size; they must not be kept in heat too long, or they will open their flowers before the time required. If the earliest plants be urged on too forward at this time, it is impossible to retard them afterwards; through inattention in this matter I have frequently seen Camellia flowers opening by the end of August and through September that were not wanted before Christmas. Plants that are sufficiently forward should be at once moved into a cool house, where they will receive plenty of air and be shaded from the sun; see that they do not want for water, as if ever the soil gets quite dry after the buds attain a good size, they will most likely drop, although this may not occur till a long time afterwards, and may not be attributed to the real cause by those not intimately acquainted with the habit of the plants. Any plants that have been hitherto later in blooming than desired should be kept longer in warmth, for it is in the earlier stages of bud-development that the time of their flowering can be regulated, any attempt at forcing them into bloom by the application of heat through the autumn and winter generally resulting in the loss of the buds. Those that did not flower till late in the spring will now be making active growth; they will be benefited by the application to the roots once a week of a mild infusion of soot-water, say as much soot as can be held in the hand to two gallons of water; this will assist the plants in making growth, will give the foliage a healthy, dark, glossy green colour, and will also help to banish any worms that may have got into the pots. Those plants that make their growth late require more shading than the earlier ones.

**Azaleas.**—Of these the latest flowered should now be encouraged to make growth by keeping the house or pit moist with less air than the generality of greenhouse plants require. All except the small-leaved varieties need little or no shade, save in the very hottest weather, and that for a few hours in the middle of the day. Where Azaleas are much shaded whilst making their growth, the leaves always become weak and so far devoid of substance that they fall off in large quantities in the autumn, which has a correspondingly weakening effect upon the roots. Where a house or pit can at this time of the year be devoted to them and such plants as Camellias that are making their growth, there is little difficulty in giving them the treatment they require; but where they have to be grown in a mixed greenhouse with the usual occupants, there is no alternative but to make a compromise between the several requirements of the various plants; in this case they should be placed at one end of the house where the shading can be regulated as necessary, and the syringe

freely used without wetting those subjects that do not need it, admitting the air that is wanted at the opposite end to where they are arranged.

**Pelargoniums and Fuchsias.**—Those large-flowered Pelargoniums, that were some time ago recommended to have the points of their shoots pinched out so as to induce their flowering after the earlier bloomers were over, should now have weak mature water given them twice a week; if neglected in this respect the lower leaves will assume a sickly yellow condition, and the flowering be proportionately deficient. Fuchsias struck from cuttings in the spring and required to bloom late in the summer should again have the points of their shoots pinched out, and any flower-buds they may have formed pricked off; neither must they have their roots confined in too small pots, as this, more than any other cause, will stop their growth and induce them to form flowers sooner than they are required. The earlier plants that are now blooming should have all dead-pods picked off as soon as the flowers have dropped, as the production of seeds is now exhausting to Fuchsias than flower-bearing. Give them liquid manure every other time they are watered, but it must be in a highly-diluted state, as if given them so strong as many plants will bear it causes the flower-buds to drop off. A free use of the syringe two or three times a week will keep red spider in check.

#### Indoor Fruit Department.

**Vines.**—All young Vines in pots should now be growing freely, and manure water may be given them with advantage at every alternate watering. Red spider is the only pest which is liable to damage them after this time, but frequent and copious syringings will keep the foliage perfectly clean. Those Vines that are intended for planting out when ripe should be stopped as soon as they are 4 ft. or 5 ft. high, as the lower buds will ripen and develop better on a cane of this length than on one a few feet longer. It is of benefit to derive from a cutting a great length of cane for planting, as the top, which is generally the best part of it, is ultimately cut off. Fruiting canes may be allowed to grow until they are 6 ft. and 7 ft. long before they are stopped. The growth which breaks away from the top bud after being stopped should be permitted to make a couple of joints above what will be the principal cane. When free-growing Vines of this kind are kept closely pinched at the end, the buds further down frequently burst and grow, and this interferes with the production of good wood. Never grow any kind of young Vines too closely packed together, or in any position where they are deprived of light, or where the sun's rays cannot get at every leaf. A house with a great deal of fire is unnecessary. The more hardy Vines are grown, especially those for early forcing, the less difficulty will there be found in obtaining the best results. Where mildew has been troublesome an abundance of fresh, dry, warm air, which can now be freely admitted to Vines on suitable days, will check its further progress. To eradicate it thoroughly, damp the affected parts and dust them with sulphur while wet, and this is the best time for doing so.

**Pines**—Where suckers on Queens and other varieties are likely to be very small, when taken off in July, all the leaves should be cut back to within 2 in. or 3 in. of the stock, as soon as the fruit is cut, which enables the suckers to obtain all possible benefit from the pot. This course has also the advantage of letting more light and air about the suckers, and making them more symmetrical in form than could possibly be the case when they are crowded round with leaves. Water sparingly after the leaves are cut, but do not allow the atmosphere to become too dry.

**Peaches.**—Early Peaches are now ripening fast under the present warm and favourable weather, and an abundance of air must be given to flavour and colour the fruit. The trees should still be syringed carefully twice a day, to keep the foliage in good health, and as a preventive of red spider; at the same time, no water from the syringe should lodge in the hollow of the fruit around the stalk, as it will cause decay, and the fruit to drop off prematurely. On no account allow the trees to suffer for want of water at the root; this should be attended to continuously until the wood is ripened, especially in light porous soils. The young wood should now be allowed to grow to the full extent to be benefited by sun-light. When the space between the wires and the glass is filled up with young growth, the under foliage gets too much shaded; it also obstructs a free circulation of air over the fruit. When the latter has been gathered, the trees may be still further thinned of this year's bearing wood, to allow room for laying in the current year's shoots. Attention should be paid to the gathering of the ripening fruit; the experienced eye will readily detect such as are ready to pick.

#### Flower Garden.

The principal operation connected with this department, viz., that of planting the various beds, borders, baskets, and vases with their summer occupants, will now be most easily finished; and it is more than ever necessary that order and neatness should be scrupulously maintained. Lawns at this season are often much disfigured by Daisies, and during dry weather, when Grass does not grow very rapidly, the Daisy rake will be found useful. Plantains and other broad-leaved weeds should now be eradicated, if possible, and this may be done by cutting their heads off with a sharp knife, just under the surface of the soil, when they may be drawn out, and the space they occupied will soon be taken possession of by the finer Grasses of which the lawn should consist. Fox gloves may also be cut. It is seldom that it is so late in this season that any weeds of the present time, as the slightest frost occurring soon after the operation has been performed will inflict so much injury upon them as to make them look unsightly for some time afterwards. Bulbs of Hyacinths and Tulips

may now be taken up and stored away. Peg down the shoots and regulate the development of such plants as Verbenas and Potunias, in order to get the surface of the beds covered as speedily as possible, when less water will be necessary than at present. Regulate also the growth of climbing Roses, Honeysuckles, the new and beautiful Clematises, all of which are worthy of a place in every flower garden. Where a stock of the various kinds of spring bedding plants was not divided or otherwise increased when taken from the beds, that may be done now, or as soon after as possible. Such kinds as the following may be divided if desirable to obtain an almost unlimited extent, viz. *Viola cornuta* and *lutea*, *Aubrieta deltoidea*, *deltoidea variegata*, *Cambellii*, *groca*, &c.; *Mysotis distiflora*, *Omphalodes verna*, *Phlox verna*, *Gentians*, *Hepaticas*, *hardy Primroses*, *Oxlips*, &c. The two last named will now be out of flower; but the best varieties should have been marked, and should now be increased accordingly. All these, together with the various double and single Wallflowers, should have what little attention they may require in the reserve garden, which is also the proper place to test, during the first season, the numerous novelties in the way of bedding plants which are annually introduced, and which are generally sent out in the form of very small plants in May. As soon as they are received they should be re-potted, and have every necessary attention; and, where they have been well treated, such plants will now be sufficiently established to be planted out in this department, in order that they may furnish cuttings at an early period as possible, and also afford opportunities of forming correct opinions as to their merits and adaptability to the purposes for which they are recommended. Wherever rural leaders may exist upon young trees, more particularly upon those belonging to the Coniferae family, the strongest and best should be selected, and all other branches carefully removed. An undue tendency to lateral extension is frequently exhibited by young trees of this description, and this should also be checked by stopping, or slightly cutting back all strong side-growing branches, with the view of directing the energies of the tree to the production of upward growth. Pot off seedlings of perennials raised in pots as soon as they are fit, using for the purpose a sandy compost, and put three seedlings into what are known as thumb-pots, placing them round the edges. In the case of strong-growing kinds, however, one seedling in a pot will be quite sufficient. Seedlings of the common perennials should, however, be pricked out into the open border, selecting a shady spot or one over which a shading may be easily placed, until they have become established. Continue to propagate, by means of cuttings, such plants as it is not practicable to divide. Keep a sharp look-out for the seeds of early-blooming plants, and gather them as soon as ready. In the hardy Fernery many specimens will soon be in their greatest beauty, and should, therefore, have their share of attention. The fresh green fronds of various species, and especially of *Adiantum* sp. and *Smilax*, both of which should be carefully searched for and destroyed, and *Adiantum* specimens of *Osmunda regalis* should have an abundant supply of water.

#### Hardy Fruit.

Apricots are often much infested with a small caterpillar that eats the leaves, and this, if allowed to go unchecked, does serious harm, rolling itself up much in the same way as the Rose maggot; it is, however, easily detected. The grub should be gone over as soon as it makes its appearance, and the invader crushed with the finger and thumb. If the fruit has not been sufficiently thinned, at once remove more, not allowing a greater quantity to remain than the trees can support and mature thoroughly, otherwise the produce will be small and comparatively flavourless. See that no trace of aphides has been left on Peaches and Nectarines, or they will still spread, and inflict serious damage. As regards thinning, the remarks made respecting Apricots apply to these trees also. Let the strength of each individual tree be taken into consideration, such as are strong and vigorous being naturally able to support greater weight of fruit than others in a weaker condition, although the latter generally set the greatest quantity. Over-cropping not only gives inferior produce, but permanently injures the trees if continued for a few years, so as often to necessitate their removal. In many cases the situation is blamed for this state of things, whereas, if they were sufficiently supplied with water and not over-cropped they would live and fruit up to a vigorous old age. Watch closely for mildew; if it makes its appearance on the leaves or points of the shoots it will quickly attack the fruit. As soon as a trace of it is found the affected parts must be dusted freely with sulphur; the old-fashioned sulphur-puff is the best and most simple instrument to use for this purpose. If the weather comes dry and the border in which these trees are grown is cropped with anything else, such, for instance, as Strawberries or summer vegetables, it should not be forgotten that the latter materially assist in extracting the moisture from the soil, and necessitate the application of more water, which must be given without stint. Before it is applied in quantity the surface should be stirred with a spade to a depth of 2 in. to admit of its getting down to the roots. In dry situations, where water has to be given, it is often necessary to repeat this loosening process, as the soil gets baked on the surface and causes the water to run off. Do not allow the leaves to overhang the fruit, which should be fully exposed to the sun; but, in this operation, do not go too far, as the extent to which the leaves of Peaches and Nectarines are often destroyed, where excessive disbudding is practised, renders it utterly impossible that the trees should possess their wonted vigour. It is a good idea to cut out the shoots so that all allowed to remain will have a full share of air and light to strengthen and mature the young wood for next year's fruiting; but all beyond this is injurious, as every leaf removed proportionately curtails the formation and power of the roots.

**Cherries and Plums on Walls.**—These are also very subject to caterpillars, and when they appear in numbers they do much harm, not only disfiguring the leaves, but absolutely injuring the trees. There are no means of destroying them, except by going over such as are affected and crushing them. This should always be done as soon as they are discovered, as the longer they are allowed to remain, the more difficulty there is in their destruction. Cherries are also subject at this time of the year to the attacks of black fly on the young shoots. If this pest be taken in time, before they have become dispersed over the trees, and while confined to a few of the shoots, they may easily be destroyed by dipping those that are affected in Tobacco water. For this aphid it must be strong, as it is much more difficult to kill than the green species.

#### Kitchen Garden.

At this season in many places the kitchen garden is subordinate to the ornamental department, but neglect now, either in keeping down weeds or in performing the necessary operations of sowing and planting successional crops, will certainly entail disappointment in time to come; therefore, make every possible effort to keep pace with the season.

**Tomatoes** should now be planted; they may with advantage be grown wherever there is a small portion of wall at liberty, as is often the case between fruit trees; a south wall is the best, but they will frequently succeed on a western or eastern aspect. On the two latter I should recommend the greater part of the shoots being continually pinched in close, so as to bring them into bearing early. In all cases it is better to confine Tomatoes to a much less number of shoots than is often done, thereby enabling more plants to be grown on a given space. The thinner the shoots are kept the earlier they produce fruit. In warm districts Tomatoes will frequently succeed on a sheltered border fully exposed to the sun. Plant them out singly, using two or three sticks to each plant for support, to which they must be kept regularly tied as the growth advances; otherwise, from their fragile nature, they get broken by the wind. Where they are so grown, the ground is better for being poor, as their natural habit of making too much growth is still further increased where the soil is rich. The plants should stand 3 ft. apart each way, so as to avoid their shading each other.

**Sowing Lettuce.**—Make successional sowings of Lettuce, and at this season it is a good practice to drive shallow drills 12 in. or 15 in. apart, and to sow the seeds in the bottom; if the plants can thus be well soaked with water when they require it; advancing crops will be benefited by the application of manure water. Early crops of the Cos varieties should, as they approach maturity, be tied up with bast, which is of much assistance even in kinds that are the most disposed to burn in their leaves and blanch naturally, and, moreover, it improves the quality. Amateurs who have not had much experience in Lettuce growing are apt to tie the ligatures too tight, which bruises the leaves and causes them to rot. All that is required is to draw the leaves together with the hand and tie them snugly to the centre of the head. Keep the plants between advancing crops frequently stirred with the hoe; and where the soil is of a heavy, retentive nature, and was at all wet when dug, its condition will be greatly improved by forking it over to the depth of 6 in. or 8 in., care being taken not to disturb the roots of the growing crops. Ground so treated becomes pulverised by the action of sun and air, and is in a better condition for the roots to penetrate later on as the different crops advance in growth. Small Salads should be sown every ten days, or, at all events, every fortnight; otherwise, the supply will be interrupted. When the weather is hot and dry, let such plants, and especially Radishes, be watered, or they will be tough and stringy. A small sowing of Walcheren Cauliflower should now be made.

**Planting Brussels Sprouts.**—These should now be planted; and in order to obtain a full crop, the plants ought to be got in when they are large enough to bear the weight of produce which will thus be double what it would be if the plants were being confined to the seed-bed. Brussels Sprouts do not require so much room as winter Broccoli; but they must by no means be planted too closely, or they never attain the vigorous hardy condition which alone enables them to stand a severe winter. The nature and condition of the soil in which they are grown has much to do with the space they should occupy. In good, well-manured land they should be put in 2 ft. 3 in. apart each way; in shallow poor soil, they may be placed 6 in. closer, both in and between the rows. Move them, so far as possible, with their roots entire; and, if the weather be dry, give them a good watering.

#### Extracts from my Diary.

**June 3.**—Sowing Canadian Wonder French Beans. Potting off seedling Petunias. Planting out two rows of Carters' dwarf crimson Celery, and one of Spanish Cardoon. Trimming out Pea sticks. Gathering the following twelve sorts of Peas for exhibition:—Ringleader, Emerald Gem, Maclean's Blue Peter, Maclean's Little Gem, Suttons' Bijou, Carters' White Gem, Carters' First Crop, Dr. Hogg Unicorn, Extra Early Premium Gem, Carters' first crop Blue, and William I., and after a fair trial have come to the conclusion that William I. and Unique are the best flavoured and most useful for an early crop.

**June 4.**—Sowing Calceolarias, Cinerarias, and Primulas. Potting on Begonias and Fuchsias. Pricking off Cauliflower plants. Tying out Tricolor Pelargoniums for exhibition. Turning over gravel walks to give them a fresh appearance. Cutting turf for layering Strawberries. Looking over the Cucumbers and Melons, stopping them, and fertilising them where required. Giving all inside Vine borders where the Grapes

are swelling a good soaking of guano water. Cutting dead branches out of Apricot trees, and spreading out those left to give them a better appearance.

**June 5.**—Sowing Carters' Giant White Cos and All the Year Round Lettuce; also early white Naples Onions for drawing young. Planting Brussels Sprouts, Savoy, and Cauliflower plants. Looking over Peach and Nectarine trees, picking off curled-leaved, and washing the trees with the garden engine. Clearing off Spinach and getting the ground dug up and manured for wicker greens. Weeding and hoeing amongst all growing crops.

**June 6.**—Sowing Chervil, Radishes, and Mustard and Cress. Potting off Tomatoes struck from cuttings. Thinning out and transplanting Parsley; also Spinach and Turnips. Commencing layering Vicomtesse d'Harcourt de l'Herbe Strawberry on pieces of turf 4 in. square. Looking over Vineries, stopping the laterals, and thinning the berries where required. Getting the netting put over late Strawberries. Looking over Apricot trees for snails and grubs. Gathering Gooseberries for bottling.

**June 7.**—Sowing Turnips and Spinach. Planting out Sweet Basil on a south border. Thinning out late-sown Beet and Salsify. Commencing clipping Box edgings. Putting Camellias and other greenhouse plants out under north walls. Nailing in the leading shoots of Plum and Cherry trees, and washing them well with Quassia water to kill green fly. Earthing up late-planted Potatoes.

**June 8.**—Potting off Melons. Tying down the leaders of cordon Apple trees. Getting out trenches for the late crops of Peas; also trenches for Celery, and getting the manure into them. Commencing planting out tender carpet bedding plants. Weeding the Asparagus beds and getting them a good soaking with manure water. Sticking Peas and getting them earthed up. Mowing. Rolling the gravel and all Grass that require it, and giving the pleasure grounds a general clear up. Cleaning up kitchen garden and getting in fuel. Fruit in use for dessert: Pines, Grapes, and Strawberries.—W. G. P., Dorset.

#### IXIAS, SPARAXIS, AND SIMILAR PLANTS.

MAY I ask you to give me the names of the three Ixias which I have sent?—M. F. [Naming Ixias is a somewhat difficult matter, inasmuch as they are mostly garden varieties, and, not being entirely hardy, one has not the opportunity of studying them with the same minuteness as plants which are perfectly hardy and constantly, when in season, under one's eye. What you have sent seem to be (1) I. Buccephalus, (2) I. antiaia major, (3) I. Nord. Ixias, Sparaxis, Tritonias, and Babianas may be grown in this country with considerable success. My first attempt was made by forming a bed close to an old shed. During the winter I protected it with shutters, and I was wonderfully successful. In January, 1877, I planted some bulbs which were left over from the autumn, and they flowered well, but too late, the sun's rays soon driving them out of bloom. I left them in the ground, protecting them this winter with Dutch reed mats (see GARDEN, p. 311). The mats, resting on old railway sleepers, were rolled over the bed during the night and taken off in the daytime. I have had a fine display of bloom; many of the Ixias are 2 ft. high, the Sparaxis about 15 in., and the Babianas I have never seen so fine. My success, however, has mainly been on one-half of the beds, which run up to a drain; on the more distant half the plants are neither so strong nor so floriferous. My advice, therefore, to those who wish to cultivate these plants is first of all to look to the drainage. If the ground be naturally well drained, all well and good; simply raise the beds and take care that there is a good depth of soil; but where the land is not well drained and the substrata naturally porous, then drain thoroughly. The plants evidently like plenty of moisture, but it must pass freely away. Established masses will give finer flowers than freshly planted roots, unless the latter be planted early, which is equal to being established. The foliage comes up in the autumn, and it should be encouraged by allowing the rain to get at the soil, but when severe weather sets in protection should be given; but air must never be excluded, except when the frost is severe. Not only the bulbs I have named, but a great many beautiful Cape and Mexican bulbs could be grown successfully under the same treatment, and I would recommend that the beds be always well raised above the ground level. When the bulbs are left undisturbed, a season of rest should be secured, if possible, by excluding rain till the foliage has begun to grow. I may add that I frequently see stray Ixias flowering beautifully and the plants vigorous in my grounds, where they happen to get into a bit of soil in which they seem at home.

P. BARR.

Portraits of Eminent Horticulturists.—I have read several suggestions respecting portraits of Mr. Marnock and others, and also lives of such men. I should think that a book containing good likenesses and lives of such men as Sir Joseph Paxton, James Veitch, Thomas Rivers, John Keynes, &c., would meet with great favour amongst every one at all interested in horticulture.—E. B.

## GARDEN BOTANY.

(Continued from p. 499.)

ARRANGEMENT OF THE LEAVES.—The position of the leaves of a plant, whether cauline or radical, is in itself a character of no importance in systematic botany, but with the arrangement of the leaves on the stem it is otherwise. Unless disturbed by arrest of growth, the interference of insects, or some accidental cause, the arrangement of the leaves of one and the same species is invariably the same, and frequently the same arrangement obtains throughout a large family. Any point of a stem from which a leaf proceeds is termed a node, and the space between two nodes an internode. Internodes may be long or short; sometimes there is practically no

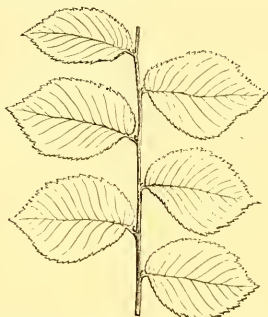


Fig. 176.—Alternate leaves of Elm, with a two-ranked or distichous arrangement.

development of the internodes, and the leaves are crowded together, as in Agave, &c. The number of leaves from the same node may be one, as in the Elm (fig. 176), Oak, Beech, &c.; or two, as in Symphoricarpos (fig. 177), Ixora, Rondeletia, Gardenia, &c.; or several, as in Hippuris (fig. 178), Asperula, Galium, &c. When only one leaf is given off from each node, the arrangement is termed alternate; when there are two from each node or horizontal plane, opposite; and when



Fig. 177.—*Symphoricarpos racemosus*; leaves opposite and decussate.



Fig. 178.—Verticillate leaves of *Hippuris vulgaris*.

there are three or more, verticillate. With regard to alternate leaves, there is a secondary arrangement requiring our attention. At first sight we fail to discern in most instances any fixed order in their arrangement beyond the fact of their being alternate; but if we take branches of, say, *Arbutus*, *Raspberry*, and *Elm*, and try to find, starting from any given leaf, two leaves in a straight line one above the other, we discover that the number of leaves between any two in a straight line is always the same in the same species, though different in each of the plants named. In the *Elm* (figs. 176 and 182) the leaves are disposed in two lines along the branches; consequently, if we number the nodes, as in fig. 182, we perceive that the third and fifth nodes are in a line with the first, and the fourth and sixth in a line with the second. Starting again from the

first node, we have to make only one revolution of the branch before we arrive at another node in a line with the first. This kind of arrangement is called distichous, and may be expressed by  $\frac{1}{2}$ , the numerator indicating the number of times around the branch, and the denominator the number of internodes separating leaves in the same line. This law is practically constant, though liable, as everything else in Nature, to occasional



Fig. 179.—Branch of *Alnus glauca*, in which the arrangement of the alternate leaves is  $\frac{1}{5}$ .

accidental derangements. Tracing the arrangement of the Alder (*Alnus glauca*—figs. 179 and 183) in the same manner, we see that the fourth node is in the same vertical plane as the first, the second, the fifth, and so on. Furthermore, the leaves in the same line are separated by three internodes and, proceeding in a spiral direction, by one revolution of the branch, therefore it may be expressed thus,  $\frac{1}{5}$ . In the Peach (fig. 181) and in the Bird Cherry (fig. 184) the degree of separation is five internodes, with two turns round the branch, or  $\frac{2}{5}$ . The leaves of the Strawberry Tree (*Arbutus unedo*) present a still greater divergence, there being eight internodes, forming a spire of



Fig. 180.—Branch of *Prunus Padus*, showing the two-fifth arrangement of the alternate leaves.

three turns, between two in the same line; and in *Sempervivum tabulare* the arrangement is  $\frac{3}{21}$ . The direction of the curve of the spire is invariable on the same branch, but it is not always the same on a secondary branch as it is on the primary branch from which it proceeds. In the Bird Cherry (fig. 184) the spire turns the same way both on the stem and branches, whilst in the Liquidambar (fig. 185) it turns in a contrary direction. Some-

times the degree of divergence decreases or increases on the same axis. Opposite leaves are usually decussate, each succeeding pair crossing the other at right angles, as in fig. 177, that

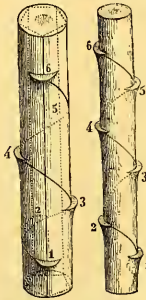


Fig. 181.—Diagram illustrating the arrangement of the leaves of the Peach tree.

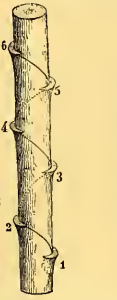


Fig. 182.—Diagram showing the arrangement of the leaves of the Elm.



Fig. 183.—Diagram showing the arrangement of the leaves of Alnus glauca.

is, in four rows, or they are in two rows, distichous.

**DIRECTION OF THE SURFACE OF LEAVES.**—The surface of true



Fig. 184.—Prunus Padus, in which the leaf-spiral of the branches run in the same direction as those of the stem.

leaves is usually spread out more or less horizontally, one side facing the earth and the other the sky; but where the leaves



Fig. 185.—Liquidambar styraciflua, in which the leaf-spiral of the branches turn in a direction contrary to those of the stem.

are reduced to flattened petioles (phylloides), as in most of the Australian Acacias, the surface is vertical. Sometimes true leaves, like those of the Australian Gum trees, have their sur-

face spread vertically, in consequence of a half twist of the petiole. In the same manner the leaves on the horizontal branches of many species of Abies and Picea, which normally would be vertical, become horizontal. The position of the surface of the leaves of some plants is subject to changes due to periodical movements of the leaves themselves or the branches.

W. B. HEMSLEY.

VEGETATION OF SMYRNA AND EPHEBUS.

I LANDED at Smyrna early on the morning of the 27th of April, and proceeded at once by rail to Ayasslook for Ephesus, passing through open undulating plains crossed by isolated ranges of low mountains. The country bordering the railway gives evidence of extreme fertility, though now neglected, the Vine running wild in the broken hedge-rows indicating old culture, overrun by the rich indigenous flora. Amongst the plants noticed by the railway side were one or two very handsome Salvia, Specularia speculum in great profusion, several Echinus, a pink Tragopogon, Asphodelus ramosus, Ornithogalum narbonense, Arum Dracunculus, Tamarisk, Iris pseudo-Acornus, a large handsome Malope, a tall upright purple Linaria, many leguminous plants, and a scarlet Adonis. The vegetation about the ruins of Ephesus was rank in the extreme, in many places almost impeding the passage of the pedestrian, the tall Ferula communis forming conspicuous features in the desolate scene. Asphodelus luteus occurred abundantly on the hillsides, and Cheilanthes odora, Asplenium acutum, and Campanula Erinus on the rocks and ruins.

On the following day I proceeded to Bonjah, a pleasant village situated on the hilly table land four miles out of Smyrna. Here I found Tulipa undulatifolia, which also grows abundantly on the Smyrna racecourse. Bonjah and the surrounding table land of hippurite limestone is the seat of the culture of the seedless Sultana Raisins (Zekirizicidice—Turkish), of which about 10,000 tons are annually produced. The cultivation is somewhat similar to that of the Patras Currant, but the Vines, instead of being trained as a single leader, form a low branching stump from 1 ft. to 2½ ft. high, from which the annual fruit-bearing shoots radiate; no training is required, except an occasional prop under the heavier branches. The harvest commences about the middle of July and occupies about a month, the fruit from the laterals succeeding that on the main shoots. The bunches on being gathered are dipped in a solution of wood-ashes to which a little oil has been added; this is said to expedite the drying, which occupies from five to seven days. As a crop, Sultanas are eminently speculative, the produce of from 7 cwt. to 30 cwt. per acre fluctuating with the season and locality and the price with the crop, and after two or three productive years the value falls below a remunerative rate. They are more costly to cultivate than Currants, and cannot compete with them at equivalent values for general consumption. The demand is therefore limited at remunerative rates. Most of the Vineyards are in the hands of small proprietors; some are absolute freeholds, and others are held under various forms of tenure. They are not found remunerative when carried on by paid labour, and for the most part merely serve as a sort of small savings bank for the spare labour of the working people. Smyrna is also the central emporium of a variety of drugs, both collected wild and cultivated in Asia Minor. Of opium, cultivated in the central districts, from 5000 to 8000 cases of 150 lb. weight each, to the value of about £1,000,000, annually reach Smyrna, and are exported to England, the West Indies, and America. Liquorice, the root of Glycyrrhiza glabra, is also collected from the wild plant growing by moist watercourses a few days' journey east of Smyrna.

Scammony, obtained from the root of the pretty Convolvulus Scammonia, is extensively collected in the neighbourhood of Bonjah and Smyrna. Gangs of peasants are sent out with a good supply of mussel shells, the roots bared and cut, a mussel shell inserted under the incision, and the exuded juice collected from day to day. From the Velonia Oak (Quercus Egilops), and one or two other species, the cups are collected and exported for tanning and dyeing, and the Acorns employed for feeding pigs.

G. MAW, in "Transactions of the Bot. Soc. of Edinburgh."

**Lencojum verum.**—My experience of imported bulbs of the spring Snowflake is that for the first year or two they make little show, but after that time, when established in sandy loam and peat in a somewhat shady border, they flower very freely and regularly. Probably the vitality of the bulbs is impaired by the drying process to which all bulbs are subjected in going through a market, but which has a beneficial effect on some species. I cannot understand the complaint about L. aestivum not flowering freely. It is an excellent plant for the wild garden, and increases as rapidly as the common Daffodil under the same circumstances.—SALMONISSE.

## THE LIBRARY.

## HANDBOOK OF TRAVEL TALK.\*

MR. MURRAY has lately issued a new and carefully revised edition of this handy and excellent book. It is a collection of questions and phrases in four languages—English, German, French, and Italian. The phrases, &c., are such as are really useful and need, and they have been written by professors, viz., German by Professor Buehheim; French by Professor Talandieri, of Sandhurst; and Italian by Signor Genurini. Among the vocabularies is the following one concerning terms used in the garden. (*N.I.*, after certain Italian words, denotes their usage in North Italy, in distinction from Naples. The plural termination of German nouns is, as a rule, given in parenthesis ( ); where no termination is given, the plural is mostly the same as the singular.)

## Vocabulary.

ENGLISH.	GERMAN.	FRENCH.	ITALIAN.
Acanthus	Bärenklau, <i>f.</i>	Acanthe, <i>f.</i>	Acanto
Alder	Eich, <i>f.</i>	Châta, <i>m.</i>	Giunco
Almond	Die Erle (n)	Aune, <i>m.</i>	Ontano. Alno.
—tree	Die Mandel (n)	Amande, <i>f.</i>	La Mandorla
—tree	Der Mandelbaum	Amandier, <i>m.</i>	Il Mandorlo
Anemone	Die Anemone, <i>f.</i>	Anémone, <i>f.</i>	L' Anémone
Annuals	das Windröschen Einjährige (Blumen)	Plantes annuelles, <i>f.</i>	Piante annuali
Apple, —tree	Apfel, <i>m.</i>	Pomme, <i>f.</i> —Pommes, <i>m.</i>	La Mela, il Melomier, <i>m.</i>
Apricot	Aprikose, <i>f.</i>	Abricot, <i>m.</i>	L' Albicocca, l' Albicocco
Artichoke	Die Artischocke	Artichaut, <i>m.</i>	Il Carciofo
Ash	Esche, <i>f.</i>	Frêne, <i>m.</i>	Il Frassino
Asparagus	Spargel, <i>m.</i>	Asperge, <i>f.</i>	Gli Sparagi
Aspen	Espè, <i>f.</i>	Tremble, <i>m.</i>	L' Alberella—trémula
Aster (China)	Aster, <i>f.</i>	Reine Marguerite, <i>f.</i>	Margherita
Balsam	Balsamie, <i>f.</i>	Balsamina, <i>f.</i>	La balsamina
Bean	Bohne, <i>f.</i>	Fève, <i>f.</i>	Le Fave—i fagioli
—, French	Grüne Bohnen—Schneidebohnen	Haricot, <i>m.</i>	I fagiolini verdi
Scarlet Runner	Bunte Bohnen—Feuerbohnen	Haricot d'Es-pagne	I fagioli di Spagna
Bed	Die Beet	Parterre ou lit, <i>m.</i>	Un'aiuola
Beech (Fagus)	Buche, <i>f.</i>	Hêtre, <i>m.</i>	Faggio
Betroot	Rothe Rübe	Betterave, <i>f.</i>	La Barbabietola
Bell-flower	Die Glockenblume	Clochette, <i>f.</i>	La campanella
Birch (Betula alba)	Birke, <i>f.</i>	Blechn, <i>m.</i>	La Betula
Blossom	Blüthe, <i>f.</i>	Floraison, <i>f.</i>	Fiore d' albero, fioritura
Bog-earth	Die Torferde	Terre de bruyère, <i>f.</i>	Melma
Box	Buchsbaum	Buis, <i>m.</i>	Bosso
Branch	Der Zweig, Ast (Aeste)	Branche, <i>f.</i>	Ramo
Broom	Der Ginster	Genêt, <i>m.</i>	Ginestra
Brussels Sprouts	Kohlsprousen, <i>pl.</i>	Choux de Bruxelles, <i>m.</i>	Broccoli
Bulbs — Bulb roots	Blumenzwiebel, <i>f.</i>	Plantes bulbeuses, <i>f.</i>	Bulbi
Bunch of Grapes	Die Weintraube	Grappe de raisin, <i>f.</i>	Grappolo d'uva
Bush	Strauch, <i>m.</i>	Buisson, <i>m.</i>	Cespuglio
Cabbage	Kohl, <i>m.</i>	Chou, <i>m.</i>	Il Cávolo — <i>le verze</i> (N.I.)
Camellia	Camellia	La Camélia	La camelia
Campanula	Glockenblume	Campanule, <i>f.</i>	La campanella
Candytuft	Iberia	Thlaspi, <i>m.</i>	L' Espéride—viola (Ibèride)
Caper (Capparis spinosa)	Kaper, <i>f.</i>	Caprier, <i>m.</i>	Il capperò
Carnation	Garteneulke, <i>f.</i>	Gillet carné, <i>m.</i>	Garofano
Carrot	Die gelbe Rübe—Möhre	Carotte, <i>f.</i>	La Carota
Cauliflower	Der Blumenkohl	Choufleur, <i>m.</i>	Il Cávolo fiore
Cedar	Die Ceder	Cèdre, <i>m.</i>	Il Cedro
Celery	Der Sellerie	Cèleri, <i>m.</i>	Sèdano
Cherry	Die Kirsche	Cerise, <i>f.</i>	La Chriegia
Chestnut	Castanien	Châtaigne, <i>f.</i>	Una castagna
—tree	Der Castanienbaum	Châtaignier, <i>m.</i>	Il castagno

\* "A Handbook of Travel Talk": Being a Collection of Questions, Phrases, and Vocabularies, in English, German, French, and Italian; intended to serve as an interpreter to English travellers abroad, or foreigners visiting England. London: John Murray, 1877.

ENGLISH.	GERMAN.	FRENCH.	ITALIAN.
Chicory (Endive)	Endivie, <i>f.</i>	Chicorée, <i>f.</i>	Cicoria—indivia
Cockscomb	Hahnenkamm, <i>m.</i>	Crêtes de coq, <i>f.</i>	Creste
Columbine	Akelei, <i>f.</i>	Colombine, <i>f.</i>	Aquilegia
Convulvulus	Winde, <i>f.</i>	Convulvulus, <i>m.</i>	Convulvolo
Cowslip	Schüsselblume, <i>f.</i>	Primevère, <i>f.</i>	(à il Tansovobasso grandes fleurs)
Creepers—Climber	Schlingpflanzen, <i>pl.</i>	Plantes grim-pantes, <i>f.</i>	Piante inerpicanti
Crocus	Crocus, <i>m.</i>	Crocus, <i>m.</i>	Zafferano
Crop	Die Ernte	Récolte, <i>f.</i>	Racolta, messe
Chrysanthemum	Chrysanthemum	Chrysanthème, <i>m.</i>	Crisantemo
Conservatory	Gewächshaus, <i>n.</i>	Serre-chaude, <i>f.</i>	La Serra
Currant	Johannisbeere, <i>n.</i>	Grosseille, <i>f.</i>	Il Ribes
Cypress	Die Cyresse	Cyprès, <i>m.</i>	Cipresso
Dahlia	Georgine, <i>f.</i>	Dahlia, <i>m.</i>	Il dalia
Daisy	Die Gänseblume	Pâquerette, <i>f.</i>	La Margherita
Dwarf	Niedrige Pflanzen	Nain, <i>m.</i>	Piante basse
Early	Früh	Hâtif—ive	Primiticcio—primaticcia
Elderberry	Holunderbeere, <i>f.</i>	Baie de sureau, <i>f.</i>	Il Sambuco
Elm	Flieber, <i>m.</i>	Orme, <i>m.</i>	L' Olmo
Endive	Endivie, <i>f.</i>	Chicorée, <i>f.</i>	L' Indivia
Evergreen	Das Immergrün	Arbre vert, <i>m.</i>	Sempervere
Everlasting	Strohblume, Immortelle, <i>f.</i>	Immortelle, <i>f.</i>	Sempreviva
Faded	Verwelkt	Flétri, <i>e.</i>	Appassito, i, a, e
Ferns	Farnkräuter, <i>pl.</i>	Fougères, <i>f.</i>	La Felce
Fig	Feige, <i>f.</i>	Figue, <i>f.</i>	Il Fico
Filbert	Lamberts nüsse, <i>pl.</i>	Aveline, <i>f.</i>	Avellana
Fir, Spruce (Abies excelsa)	Tanne, <i>f.</i>	Faux Sapin, <i>m.</i>	L' abete spurio
—, Silver (Pinus Silverterre, <i>pl.</i> )	Silberfichte, <i>f.</i>	Sapin, <i>m.</i>	L' abete
—, Scotch (Pinus sylvestris)	Scotch Kiefer, <i>f.</i>	Pin sylvestre d' Ecosse	Il Pino silvestro
—, (Pinus Cenn. Zirbelkiefer, <i>f.</i> )	Zirbelkiefer, <i>f.</i>	—cembro (Zirbelkiefer)	Pino silvatico
Flax	Flachs, <i>m.</i>	Lin	Lino
Flowers, double	Blumen, gefüllte	Fleurs doubles	A fior doppio
—, single	Blumen, einfache	Fleurs simples	—semplice
Foliage	Das Laub	Feuille, <i>m.</i>	Fogliana
Force, to	Treiben	Forcer	Forzare
Forget-me-not	Vergissmännchen, <i>pl.</i>	Myosotis ou nemophile, <i>m.</i>	Non ti scordi di me
Fox-glove	Der Fingerhut	Digitale, <i>f.</i>	Digitale
Frame (glass)	Der Rahmen (über Mistbeeten)	Châssis, <i>m.</i>	Invietriata
Frost	Der Frost	Gelée, <i>f.</i>	Gelo
Fruit—Fruit tree	Frucht, <i>f.</i>	Obst, <i>m.</i>	Frutto—L' albero
Fruit-stone	Baum, <i>m.</i>	Fruiter	Fruttifero
Furze	Der Kern	Noyau, <i>m.</i>	Il nocciolo
Garden	Ginster, <i>m.</i>	Genêt épineux	L' erica
—, kitchen	Garten, <i>m.</i>	Jardin	Il giardino
Garlic	Gemüsegarten	—potager	L' orto
Genian	Knoblauch, <i>m.</i>	ail, <i>m.</i>	L' aglio
Gladiolus	Enzian, <i>m.</i>	Geniaine, <i>f.</i>	La genziana
Gooseberry	Gladiolen, <i>pl.</i>	Glaiuel, <i>m.</i>	Gladiolo, ghiag-giulo, hride
Grape	(Stiegwurz)	Grosseille à ma-lureau, <i>f.</i>	Uva spina
Grape	Die Traube	Raisin, <i>m.</i>	L' Uva
Growth	Wachsen. Ziehen	Croître—cultiver	Creocere
Hardy Plants	Das Wachstum	Cultiver — faire	Coltivare
Hazel-nut	befördern	venir	
Heart's-ease	Wachstum, <i>n.</i>	Croissance, <i>f.</i>	Pienezza
Heath	A u s d a u e r n d e	Plantes vivaces, <i>f.</i>	Piante robuste
Hedge	Pflanzen	—de pleine terre	
Heliotrope	Das Stiefmütterchen	Noisette, <i>f.</i>	Nocciola
Holly	Heidekraut, <i>m.</i>	Pensée, <i>f.</i>	Viola del pensiero
Hollyhock	Erika	Scopa	
Honeysuckle	Hecke, <i>f.</i>	Haie, <i>f.</i>	Siepe
Hornbeam (Car-pinus betulus)	Heliotrop, <i>m.</i>	Héliotrop, <i>m.</i>	L' Eliotropio
Horse Chestnut	Holly	Houx, <i>m.</i>	Agrifoglio
	Hagebuche	Chèvrefeuille, <i>f.</i>	Aloca
	Wildkastanie, <i>f.</i>	Marron d'Inde	Castagna d' India.
		(fruit). Mar-roumier d' Inde	Il Castagno d' India
		(tree)	
Hothouse	Treibhaus, <i>n.</i>	Serre-chaude, <i>f.</i>	Serra
Hyacinth	Hyacinthe, <i>f.</i>	Jacinthe, <i>f.</i>	Giacinto

ENGLISH.	GERMAN.	FRENCH.	ITALIAN.	ENGLISH.	GERMAN.	FRENCH.	ITALIAN.
Ivy	Efeu	Lierre	L'edera	Plums — Green	Pflaumen—Reine-	Prunes, f.—Reine	La susina, il susino
Juniper	Wachholder, m.	Genévrier, m.	Ginepro	(Gages — Plum tree)	Clauden—Pflaumenbaum	Claude — Prunier	La prugna—il prugno
Lady's-slipper	Die Calceolaria (Marienschuh)	Sabat de la Vierge	Zoccolo di Venere, Calceolaria	Pod	Die Hülse, Schote	Cosse, f.	Bacello, guscio
Larch (P. larix)	Lerche, Lerchenbaum, m.	Mélèze, m.	Lärice	Pomegranate	Granatapfel, m.	Grenadé, f.	La melagrana il melagrano
Larkspur	Rittersporn, m.	Piada d'alonette,	Fior cappuccio	Poplar (Populus nigra)	Die Schwarzpappe	Peuplier noir, m.	Il Pioppo
Late Lawn	Spät Rasen, m.	Tardif—ive Pelouse, f.	Tardiva—tardiva Praticello	—, Lombardy (P. fastigiata)	Italianische Pappe	d'Italie	italiano
Laurel	Lorbeer, m.	Laurier, m.	Làuro, allora	Poppy	Mohn, m.	Pavot, m.	Papàvero
Leaf	Blatt, n.	Feuille, f.	Foglia	Poppy, wild	Klatschrose, f.	Coquelicot, m.	Papàvero selvatico
Leek	Der Lauch	Poireau	Il porro	Pot—to pot	Wilder Mohn	Pot—empoter	Un vaso, metter in vasi
Lemon	Die Citrone	Citron	Il limone	Potato	Kartoffel, f.	Pomme de terre, patate	Una patata — la patata
Lettuces—eos, &c.	Der Kopfsalat	La tte h, Latue	Romaine, La Lettuga	Prick out, to	Auswählen (Ausstechen)	Repiquer	Spörgere — epuntare
Lilac	Spanischer Flieder, Holunder; Syringe, f.	Lilas, m.	Il Lilà	Primrose	Die Primel	Primevère, f.	La rosa primaticcia
Lily	Die Lilie	Lac, m.	Lis, m.	Pumpkin	Kürbis, m.	Citrouille, f.	La zucca — le zucche
Lily of the Valley	Maib lümchen, Maiglöckchen	Muguet, Lis de la vallée, m.	Il Giglio Mgnetto	Quince	Die Quitte	Coing, m.	La Cotogna
Lime (Tilia euro-pea)	Linde, f.	Tilleul, m.	Il Tiglio	Radish	Das Radieschen	Radies, m.	Il Ranzano
Lupin	Lupine, f.	Lupin, m.	Lupino	Radish (Horse)	Der Meerrettig	Raffort, m.	Il Ranzano
Mallow	Die Malve	Malva, f.	Malva	Rocket	Die Rauke	Julienne, roquette, f.	Il Ruchetto
Maple	Ahorn, m.	Erable, m.	L'Acero	Rose	Die Rose	Rose, f.	La rosa
Marigold	Die Ringelblume	Souci, m.	L'Ornancio	Rosemary	Der Rosmarin	Ronarin, m.	Rosmarin
Marvel of Peru	Wunderblume	Belle de nuit, f.	Gelsomino di Notte	Root	Eine Wurzel	Racine, f.	Una radice
Medlar	Die Mispel	Nêfle, f.	La Nespola	Rye	Roggen, m.	Seigle, m.	Segala
Melon	Die Melone	Melon, m.	Mellone	Raspberry	Himbeeren, pl.	Framboise, f.	Il Lampono
Mignonette	Die Reseda	Réséda	Reséda—amorino	Sage	Salbei	Sauge, f.	Salvia
Monkshead	Eisenhutchen, n.	Acrot, m.	Acrotito	Scarious	Schabies, f.	Scabiense, f.	Scabiosa
Moss, to	Möhren	Fancher	Falcione	Scarlet Runners	Bunte or Feuerbohnen, f.	Haricots d'Espagne, f.	Fagioli di Spagna
Mulberry	Die Maulbeere	Mûre, f.	Delle more	Seeds	Samen, Körner	Graines, f.	Grani, semi
Mushrooms	Pilze, Schwämme, Champignons	Champignons, m.	I Funghi	Shrubs	Gesträuche	Arbustes, arbrisseaux	Arboscelli
Musk plant	Moschuspflanze	Musc, m.	Il Musco—muschio	Single	Einfach	Simple	Semplice
Mustard	Senf, m.	Moutarde, f.	Sénape	Snadragon	Löwenmaul, n.	Mulier, m., guenle de lonp, f.	Bocca di leone
Myrtle	Die Myrthe	Myrte	Il mirto	Snowdrop	Schneeglöckchen	Pero-neige, f.	Il Galanto—Bucave
Narcissus	Die Narzisse	Narcisse	Narciso	Sorrel	Sauerampfer, m.	Oseille, f.	L'Acetosella
Nasturtium	Nasturtium, dieische Kresse, f.	Capucine, f.	Nasturtio	Sowing	Die Aussaat	Semis, m., semilles	Les La Semina
Nectarine	Nectarine (glatte Pflärsch)	Brugnon, m.	La Noce pesca	Sow, to	Säen	Semer	Seminare
Nightshade	Nachtschatten, f.	Morelle, f.	Morella	Spinach	Spinat, m.	Epinards, m.	GH Spinaci
Nosegay	Blumenstraus, m.	Bouquet, m.	Mazzetto di fiori	Stalk—stem	Stengel, Stiel, m.	Tige, f.	Gambo, stelo
Oak (Quercus)	Eiche, f.	Chêne, m.	La Quercia	Stock	Levkoje, f.	Griolée, f.	Garofano
—, Evergreen (Hlex)	Die grüne Eiche	Yeuze, f.	Elce	Strawberry	Erdbeeren, pl.	Fraise, f.	La Fragola—fravola
Oats	Hafer, m.	Avoine, f.	Avena	Striped Sunflower	Gestreifte Sonnenblume	Panaché, f. Sojeil—tournesol, Girasole	Vergato, listato Girasole
Olander	Die Lorbeerose	Olfandre	Il leandro	Sweet William	Die Bartnelke, Klosternelke	Guillet de poète, m., jalonsie, f.	Garofanello selvatico
Open air, in	Im Freien	Plein air, en	All' aera aperta	Sycamore (Acer pseudo-platanus)	Sycamore, f. (Bergahorn, m.)	Sycamore, f.	Sicómoro
Onion	Zwiebel, f.	Oignon, m.	Cipolla	Tulip	Der Klee	Trèfle, m.	Trifoglio
Orange	Apfelsine, Orange, Pomeranze, f.	Orange, f.	La Malarancia	Tubrose	Die Tubrose	Tubrose, f.	Il tuberoso
Orchids	Orchideen	*Orchidées, f., pl. terre	Le Orchidee Di fuori	Tulip	Tulpe, f.	Tulipe, f.	Il Tulipano
Out of door	Im Freien	Dehors—en pleine terre	Di fuori	Turnip	Weisse Röhre, f.	Nave, m., rave, f.	Il Navone
Pan (carten)	Unterstadt, m.	Terrine, f.	Terrina	Vegetable	Gemüse	Légume, m., plante légumineuse	Il legume
Pansy	Stiefmütterchen	Pensee, f.	Viola del pensiero	Verbena	Verbena	Verveine, f.	La cedrina—verbena
Parsley	Petersilie, f.	Persil, m.	Il Prezzemolo	Vine	Der Weinstock	Vigne, f.	Una Vite
Parsnip	Die Pastinake	Panais, m.	La Pastinaca	Violet	Das Veilchen	Viollette, f.	La Violetta
Peach — Peach tree	Pflärsch, f. Pflärschbaum, m.	Pêche, f.—Pêcher	La Pesca — il Pesco	Wallflower	Der Goldlack	Griolée, f.	Garofanetti gialli
Pear—Pear tree	Birne, f. Birnbaum, m.	Poire, f.—Poirier	La Pera, il Pero	Walnuts	Die Wallüsse	Noix, f.	Una Noce
Peas	Grüne Erbsen	Petits pois, m.	I Piselli	Walnut tree (Juglans regia)	Der Wallnussbaum	Noyer, m.	Il Noce
—, Sweet (Schoten)	Wohliche Schoten	Pois de senteur, Wickon	Piselli dolci	Water, to	Begießen	Arrosar	Inaffiare
Perennials	Stauden; dauernde Pflanzen	Plantes vivaces, f.	Piante robuste	Watering-pot	Gießkanne, f.	Arrosiro, m.	Inaffiativo
Periwinkle	Das Wintergrün	Pervenche, f.	Pervinca	Wheat	Weizen, m.	Blé, m., froment, m.	Biada, fromento grano
Peottee	Getüfte (Pflötte)	Ëillet jaspé, m.	Garofano doppio	Willow (Salix alba)	(Weeping) Trauer, or Hänge-weide	Sauie-pleuren	Silice piangente
Pine (tree)	Fichte, f.	Pin, m.	Il Pino	Yew (Taxus bacata)	Der Eibenbaum; If, m.	Taxus	Tasso
Pink, feathered	Federnelke, f.	Ëillet mignardise	Il Garofano				
Plane	Die Platane	Platane, f.	Il Piätano				
Plantation	Pflanzung, lage, f.	Plantation, f.	La piantagione				
Pleasure-ground	Anlagen, pl.	Jardin Anglais, m.	Giardino inglese				

\* Orchidées, famille de plantes. Orchis, plante herbacée.

In the year 1878-77 about 110 acres of new land in Bengal were planted with Red Bark trees.

## TREES AND SHRUBS.

## COLOSSAL FIG TREES.

THE genus *Ficus* is essentially a tropical type. Few of the species are native even of sub-tropical regions, and *F. carica*, the common Fig, is the hardiest of them all. A large proportion of the species—and they number several hundreds—are arboreous, and many of them attain truly gigantic dimensions. They are spread all over the Tropics, but they are especially numerous in India and the Malayan Archipelago, where they constitute one of the most conspicuous features of the arborescent vegetation. In variety of habit, amazing vigour, and rapidity of growth, as well as in size, this genus is unsurpassed. Devoid of showy flowers themselves, Fig trees in

cially in the half desert parts, where it is almost the only umbrageous species. The fruit is edible, though inferior to that of *Ficus carica*.

**The Banyan (*Ficus bengalensis*).**—Assuredly the Banyan tree ranks among the wonders of the vegetable world. Every traveller in India is struck by the peculiar and prominent feature it forms in the landscape in many parts, from Bengal to the foot and on the lower slopes of the towering Himalayan mountains. Brandis states that the Banyan sends down aerial roots from the branches to a greater extent than any other Fig. These roots, which he calls "rootdrops," penetrate the ground and afterwards grow into trunks, which serve as a support for the horizontal branches and as feeders, and thus gradually increase the diameter of the crown. In Bengal there are many specimens with the crown 200 ft. to 300 ft., or even more, in diameter. Colonel Sykes mentions one at Mhow with sixty-eight stems descending from the branches, and capable of



The Sycamore (*Ficus Sycamorus*).

tropical countries support a host of brilliant parasites and epiphytes, such as Orchids, Bromeliads, Loranthus, &c. Some of them, too, are epiphytal or terrestrial themselves, as best suits their purpose, whilst others quickly spread over a large area of ground by means of descending rooting branches. The following are some of the more noteworthy species:—

**The Sycamore (*Ficus Sycamorus*, or *Sycamorus antiquorum*).**—The Sycamore, or Sycamore, as it is sometimes spelled, of the ancients, inhabits the countries bordering the Red Sea, and is equally noteworthy for growing in a sterile soil, where trees are scarce, and for its very large size. Bruce mentions some very ancient and large trees he met with between the Red Sea and the mountains of Abyssinia. It abounds also in some parts of Egypt, and Syria, and Arabia. Hasselquist states that the Sycamore is a "huge tree, the trunk often being 50 ft. thick." The same writer declares that the ancient Egyptians made coffins of the wood of this tree, wherein to lay their embalmed dead, and coffins of it 2000 years old were found. For its shade, this tree is invaluable in the countries named, espe-

affording shade under a vertical sun to 20,000 men. Colonel Drury relates that there was formerly a tree of this kind near Fort St. David, which was computed to cover nearly 1700 square yards. The height of the Banyan tree is from 70 ft. to 100 ft., and the main trunk does not usually grow to a large size, as it is supplemented by so many auxiliaries. In its cooler habitats in Northern India it forms fewer rootdrops, however, and the main trunk is commonly 25 ft. to 30 ft. in girth. Frequently the seeds are dropped by birds in the forks of other trees, and especially in the axils of the leaves of the Palmyra (*Borassus flabelliformis*), where they germinate and send down numerous interlacing roots, embracing and finally choking the unfortunate nurse tree.

**Australian Abbey Tree (*Ficus colosea*).**—This tree inhabits the banks of rivers in Queensland, Australia, and attains more than 100 ft. in height. But it is not remarkable so much for its height as for its widely-spreading branches and the enormous abutments of its trunk, by reason of which the colonists have given it the name of "Abbey Tree." It has ample woolly leaves, which afford a grateful shade in a country where shade-giving trees are not numerous. True,

in Queensland already the Gum trees are to a great extent replaced by trees of a more tropical Asiatic character.

**Indian Caoutchouc Tree** (*Ficus elastica*).—This Fig tree is probably familiar to more persons in Europe than the one which furnishes the fruit of our tables, as it flourishes indoors both in town and country. Its hardness, indifference to the fumes of gas, to dust, to uncertain watering, and, indeed, to neglect in general, entitle it to our highest respect. Few persons who have had it for years in their rooms would imagine that it formed one of the giants of the forest, that it towers above the surrounding trees, or that its trunk sometimes attains the astonishing size of 75 ft. in circumference. Yet Griffith describes such a specimen, the spread of whose branches covered an area of 610 square ft. It is a native of the country skirting the foot of the Himalaya, and, like many others of its genus, adapts itself to circumstances in the struggle for existence, being often epiphytal in the early stage, and subsequently establishing itself in the earth, to the destruction of the tree that nursed it.

**The Peepul** (*Ficus religiosa*).—Buddhists and Hindoos alike venerate this handsome umbrageous tree, and it is said to be peculiarly sacred to the former. In foliage it is not unlike a Poplar with ovate or heart-shaped, long-pointed leaves, borne on long, slender stalks, so that the slightest breeze causes them to move with a rustling noise. It grows 80 ft. or 90 ft. high, and has a short, fluted, and buttressed trunk of most irregular shape, and commonly 25 ft. to 30 ft. in girth. This tree is commonly distributed, particularly in moist localities, throughout India, and is generally planted near pagodas, houses, and other buildings. The natives are all of them most unwilling to cut it down, but, as the wood is perfectly useless, it is undesirable. The seeds of the Peepul, like those of the Banyan and other Figs, are conveyed by birds, and often germinate on other trees or in crevices of buildings, occasioning much damage if not removed in time. In the Himalaya Mountains planted trees are found up to an elevation of 5000 ft., and it is also common in some parts of China. The Chinese use the skeleton leaves for painting, examples of which may be seen in the museum at Kew.

W. B. HEMSLEY.

#### EARLY OPENING OF KEW GARDENS.

A SINGULAR document is being circulated among the members of the House of Commons *apropos* of Sir Trevor Lawrence's motion for the early opening of Kew Gardens. The following are a few extracts from it:—

Having an extensive acquaintance with botanic gardens in various parts of Europe, and being personally acquainted with many directors of such institutions, we may claim to express an opinion on the subject; and we are the more anxious to do so that, having known the Royal Gardens at Kew for the last thirty-five years, and having seen them gradually rise from a condition of inferiority to their present uncontested pre-eminence, we now apprehend that such a measure would infallibly lower their scientific importance and diminish their value to the nation. \* \* \* \* We have more than once had the opportunity of discussing the matter with the Director, Sir Joseph Hooker, as well as with the other officers of the Kew establishment, and, while feeling sure that we are not biased by personal friendship, we have no hesitation in asserting, on grounds of public interest, that it would be impossible to maintain the institution at its existing level if the object proposed by the present agitation should be effected. \* \* \* \* We appeal with confidence to the experience of all who are acquainted with the management of large gardens in saying that the perfection of keep and finished beauty which are unattainable in any country but our own cannot be maintained without an amount of supervised labour which it would be hopeless to attempt to perform in grounds frequented throughout the day by the public. Equally incompatible with the presence of crowds of visitors is the work of the scientific staff, consisting, as it does, in the examination and re-arrangement of the collections, and the revision of the tens of thousands of labels attached to the plants. All this work is now carried on daily from early morning till noon; and it requires not only activity but excellent organisation to complete it within the time available. From the hour at which the general public is admitted serious work becomes impossible. Between the absolute necessity for keeping a watch on the proceedings of the miscellaneous assemblage that resorts to the gardens and the interruptions inevitable from the mere presence and frequent inquiries of visitors, it is not found possible to pursue any but necessary mechanical work arranged beforehand. If the same interruptions are to continue throughout nearly all the working hours, the scientific work of the gardens, in addition to that mentioned above, must also speedily fall into arrear, and the decline of Kew as a scientific, no less than as a first-class horticultural institution,

will at once commence. This may, perhaps, hardly fall within the anticipations of those who are exciting the present agitation, or may be even a matter of indifference to them; but the loss and the discredit will fall on the nation if, having possessed such an unique establishment, it should forfeit its advantages by yielding to a local and temporary outcry. It must not be forgotten that at the present time all persons of respectable character anxious to obtain access to the gardens for scientific or other special purposes readily obtain admission during the forenoon, and it is actually resorted to in this way by artists, as well as by gardeners, horticulturists, and botanists. The proposed admission of the public during the morning hours would greatly interfere with persons of this class, who certainly have more claim to consideration than those who merely seek recreation or a convenient place where to send their nursery maids and children. It would be especially hard upon the two men to whom the nation owes the present condition of the gardens at Kew if the labour and skill that have resulted in making these the most beautiful and attractive of all botanic gardens, as well as the first in a purely scientific sense, were to be the cause of their ruin. If science alone had been recognised, if the gardens had been laid out in ugly square beds divided by straight gravel walks, to which, as in many foreign gardens, the public had been restricted, they would not have supplied a delightful resort to our crowded population, and science would not have been called on to surrender them to mere pleasure-seekers.

There are statements in the above strange document, signed by John Ball, M.A., F.R.S. & L.S., and Robert Hogg, LL.D., F.L.S., which will be most surprising to those who know the gardens and their management best. As usual in documents of this character, it is assumed that only the public are shut out, whereas we have shown that horticulturists have been deliberately shut out, and their recent admission, through some side gate after certain declarations on their part, has been only quite lately conceded, though long called for.

— Having heard much of the terrible results that would ensue were Kew Gardens to be opened to the British public in the morning, I determined to see for myself the present state of things inside the gates between 10 a.m. and 1 p.m. I accordingly disguised myself as a German botanist, stuffed my pockets full of dried herbs, put on a pair of blue spectacles and a stoop, and having obtained a special order from Sir Joseph Hooker, went down on one of the beautiful mornings we had last week nominally to take notes of the "blending of the pistils in the indehiscent varieties of monothalamic fruits." Having carefully brushed my hat the wrong way, and blacklead-pencilled my nails on the journey down, I was received with great deference by two assistant gardeners and directed to the monothalamic fruit house. On my way, I walked all over the open part of the gardens, and the result was that I came across in all forty-one individuals—of whom thirteen were gardeners, or labourers, merely weeding or bedding out, or something of that sort. Of the rest, no less than nine were favoured young ladies—perhaps relations of the director and his staff—who were most comfortably ensconced on snug seats, reading novels from Mudie's, and who, of course, would be very indignant at being interrupted by the public. The number mentioned also included five aged gentlemen, who may have been eminent botanists, but who were most certainly fast asleep in garden chairs; eleven other gentlemen not aged and not asleep, but all apparently engaged in testing the effect of cigar smoke on open-air evergreens; and three foreign savans, sitting in solemn silence round a small shrub, and examining its buds in turn with a magnifying glass. I did not trouble to look into the hot-houses and other buildings, since the rapacious public does not even dare to ask for these to be thrown open all day for its selfish satisfaction. But I had seen quite enough, sir, to feel assured that the unreasonable wish of the four million inhabitants of this great city would never be granted. And should think not, indeed! What, sir! are nine young ladies, accustomed to read their novels in sweet quiet, only pleasantly disturbed by the occasional advent of some of the fumigating young men, to be ruthlessly driven from their seats? Are five aged gentlemen used to bask in the morning sun and sleep, unannoyed by noisy multitudes, to be deprived of their open-air nap? Are thirteen gardeners, who now work in solitude, to be subject to the searching eye of the thousands who help to pay for them? And are the three foreign savans who honour Kew with their presence to be subjected to the noise of a British crowd? Of course, sir, the answer, which I will not delay till next week, is "Never! Never!!! Never!!!" And really, after seeing what I have told you, I am amazed that the public has had the impudence to dare to suggest an arrangement which would result in such wide-spread inconvenience and annoyance.—"Funny Folks."

— The reasons for keeping Kew closed to the public all the morning are more 'Kew-rious than cogent. The assumption that

fect privacy is necessary to enable certain old dry-as-dust professors to watch the Grass grow, or to study the habits of polyandrous Polyanthuses, is simply absurd. If these old boys must botanise alone, let them be locked up in the glass-house with their specimens, and the public forbidden to even stop to stare at them as they pursue their particular task. But to say that thousands of visitors, eager for the fresh air, and pretty sights of the gardens, would interfere with the progress of botany as a science, by quietly walking about in the gravel paths and gazing at the beauties of the scene, is ridiculous. No, no; we must have those gardens opened, Doctor, by Hook-er or by Crook! You really must see what you can do in the matter, Dr. Hooker. We used to take your part in the days Ayrtoun came down on you and your scientific colleagues so heavily, and really you ought to return the compliment by taking our advice in the present instance. You have, believe us, a splendid chance of playing a brilliant stroke if you will only manage your "Kew" property. So go in, Doctor, for a regular "open game!"—"Figaro,"

### ANSWERS TO CORRESPONDENTS.

**Rose Roots and Lead.**—I do not think that the lead can have injured the plant of *Maréchal Niel* (see p. 506). I should rather be inclined to look for the cause in the want of sufficient depth of good soil. I have never found plants of *Rose* to do well for more than two or three years under glass. I generally take them up after that time and plant fresh ones.—R. N. G. BARNS.

**Malformed Fuchsias.**—Herewith I send you a curious deformity in a *Fuchsia*. What could have been the cause?—G. [It is difficult to say; malformations frequently occur in *Fuchsias* bloom.]

**Blighted Roses.**—I know of no remedy for *Rose* trees which are so blighted as "E. J. G." describes (see p. 508). The better plan is to attack blight as soon as it makes its appearance; a few washings with soft soap and water, followed by syringing with plain water, will generally remove the spidings; but the great thing is to encourage vigorous growth from the first, as *Roses* that are growing well seldom suffer much from blight.—R. N. G. BARNS.

**New Zealand Spinach.**—Where can seed of this be got?—J. B. [From any seedsman.]

**Camellias and Azaleas from Seed.**—Will some of your contributors be good enough to inform me if *Camellias* and *Azaleas* can be raised in a greenhouse from seed? If so, what can the seed be obtained? and in what small quantities and price?—A. S. W. [Camellias and Azaleas may both be raised in a greenhouse from seed, but the result would be very disappointing. Four or five years would elapse before the seedlings bloomed, and ninety-nine plants in one hundred would produce flowers not worthy of notice. Seeds of both could be obtained from most Continental seedsman, possibly from Messrs. Vilmorin, Andrieux, & Co., Paris.]

**Insects on Chestnuts.**—W. S. C.—The minute, red-brown objects so closely congregated together in the crevices of the bark of the Chestnut tree are Acari or mites. If you examine them with a pocket lens you will find that they have eight legs and a well-marked proboscis; and if you well rub some of them from the bark on to some white paper you will find that they make free use of their legs and crawl about with ease. They might be easily killed by washing the bark with gas water, but I do not suppose that they are very injurious, if confined to the bark. Are they found on the leaves as well as on the young succulent wood?—W. W. S.

**Insects Attacking Timber Trees.**—I know of no remedy against the attacks of the insects mentioned (see p. 508) which could on a large scale be brought to bear efficiently and prevent further mischief. Picking might be resorted to in the case of young trees, but this would do but little good if larger and unpicked trees were near. The subject has had the attention of many intelligent men both in this country and abroad. I have suffered much myself from the larvae in question. I have tried various remedies, but none but picking, with attention, has come to my knowledge.—W. W. S.

**Names of Plants.**—G. T.—1. Apparently *Begonia Prestoniensis*. 2. *B. nitida* coccoloba. 3. *B. Weltoniensis*. 4. *G. B.*—*Aucus gracillima*, a Swan River shrub.—A. G.—Potato blight, apparently injured by frost.—W. W.—Apply to any of the great London plant nurseries. We cannot recommend any particular house, or give prices.—K.—*Papaver orientale* and *Hydrangea quercifolia* very ornamental as sent. It is quite hardy, but we have not seen it flower so well out-of-doors as your specimens.

**Edible Cucurbits.**—I read in the "Bon Jardinier" for 1876 that *Cucumis arada* and *Benincasa cerifera* are delicate eating. Can any of your readers tell me if they are really wholesome and good, and if they are the same as those mentioned under the above names in Messrs. Henderson's catalogue?—A. SCHRIBER, Co. Clare, Ireland. [Seeds of these Cucurbits can be had from any good seedsman. *Benincasa cerifera*, though largely used in India for carries, is hardly known in Europe as a vegetable. The fruit is intermediate between a Marrow and a Cucumber; it is used as the latter when half grown, but the flesh and taste are not so pungent, and therefore preferable. When young the fruit is green and tender, but when fully grown the rind becomes hard and covered with a waxy exudation. It can be kept from two to three months in a cellar. I have seen it grown in

hot climates, but none thought of it as a vegetable on account of its strong musk scent. *Cucumis arada* produces fruits covered with hard spines, very much like the rough prickly fruit of the Horse Chestnut. They have a long stalk, are produced abundantly, and are used, when half grown, like Cucumbers. Both require the same treatment as that usually given to Cucumbers.—D. GUILENEUF.

**Horse-hoof Parings as Manure.**—In *The Gardener* of last week (see p. 464) are some remarks upon "Buffalo Horn Manure," and at p. 434, Vol. VIII., is a very able chapter on "Bones as a Manure," wherein sulphuric acid is recommended for dissolving them. I have about a bushel of horse-hoof parings from a blacksmith, but am at a loss how properly to apply them to pot plants; they vary in size from  $\frac{1}{2}$  oz. to 3 oz. and less. Are they to be dissolved, or crushed, and how? I find they are powerful stimulants when put up very fine, but that process, with a knife, is very slow and troublesome; they will not grind in an ordinary Coffee mill.—IGNORAMUS. [There is no chemical method of effecting what you require. It would take many weeks to dissolve horn shavings with sulphuric acid even of the strongest kind. A better plan would be to dissolve the shavings by continued boiling in water. When the greater portion of the horn has dissolved, add more hot water, and then allow it to cool. The mass will gelatinise on cooling and may be cut into strips, or by adding about 150 times its volume of hot water a solution will be obtained, with which the roots of the plants may be watered. In this condition it will decompose, and give off its ammonia very rapidly, and therefore should be applied to plants in smaller quantities and more frequently than the undissolved horn, which is slow to produce effect, and equally slow in exhaling itself.—F. W.]

**Soil for Lilies.**—What is the best soil in which to grow *Lilium auratum*? also the size of pots in which to grow it 7 ft. and 8 ft. high? and will the same soil suit all other Lilies, including *Aram Lilies*? I cannot get my plants of *L. auratum* to grow very high. I see in a recent number of *THE GARDEN* that a firm grower of Lilies of the Valley in Cocoa-nut fibre refuse, and that when about to flower they pot them up. Do they pot them in the same material? [No.] Is it a good plan to plunge the pots of Lilies outside all winter? I have done so.—H. S., *Argyleshire*. [The best soil in which to grow *Lilium auratum* is one-half good turfy loam, one-quarter peat, and one-quarter leaf-mould, all well mixed and sharpened with silver sand. With regard to other Lilies, the Thunbergianum group require only one-quarter loam, the Martagon group all loam, speciesum group one-third loam, and *Aram Lilies* the same. As to size, the pots should be as broad at bottom as possible, and 12 in. pots are none too small for Lily culture; there must be good drainage, and above that it is well to place a tuft of Sphagnum, Cocoa-nut fibre, and other fibrous refuse to aid drainage. As to plunging pots of Lilies out all winter, it depends much on the situation. They must have a moderate amount of wet, but anything like saturation from heavy rainfalls will be most injurious. They had better be kept in a shed or out-house, and watered once a week. When *L. auratum* is growing freely it is a good plan to mulch with weak liquid manure twice a week.—W.]

**Coloured Primroses in Woods.**—I was glad to see the remarks of "A. D." (see p. 437) about Primroses in woods. It is somewhat of a relief to me, after being taken to task on the subject by "A. P." Certainly, as "A. D." suggests, such flowers would never be safe from collectors and depredators, and, much as it may be desired, it would take a century to naturalise the coloured Primrose to be anything equal in quantity to the native one. We occasionally meet with a coloured Primrose as a natural sport, and such plants are always brought home, root and all, in triumph; and as to turning it out in thousands, as Mr. Cornhill suggests, that would certainly be the way to cool the ardour and satisfy collectors. I should much wish to hear of some one making the experiment with, say, 100, and plant them in some wild place, say half-a-mile or a mile from a house, and give an account of them at the end of two years.—THOS. WILLIAMS, *Ormskirke*.

**Walling in Firm Tree Roots.**—Allow me to confirm "J. S.'s" statement (see p. 490) respecting the beneficial results arising from this practice. Figs on open walls here do well. In one instance a good-sized bearing young tree had its roots nearly all cut off, and the remainder bricked in to within 1 ft. of the wall, as the root-run was required for an entrance to some deeply-sunk pits. This tree was left only as an experiment, but by keeping it well watered, it not only lived, but is the most prolific, according to size, of any tree here; the growth which it makes is short, hard, and stubby, and it produces fruit as abundantly as those in pots usually do.—J. GROOM, *Henham*.

**The Public Park** at Portsmouth, called the Victoria Park, was opened by the Mayor on Her Majesty's birthday.

## SOCIETIES AND EXHIBITIONS:

## CRYSTAL PALACE.

MAY 24 AND 25.

This exhibition was in all respects a good one, the exhibits consisting chiefly of those produced at the Royal Botanic Society's Show two days previously. The Roses from Mr. Turner and Messrs. Paul & Sons, together with the collections of stove and greenhouse plants from Messrs. Tudgey & Chapman, the fine-foliated plants from Mr. Rann, of Crawley, and the Azaleas, formed its chief features. A collection of Orchids from Mr. Williams, of Holloway, were much admired. It contained a variety of *Cypripedium barbatum* bearing fifty flowers, and the long-tailed *C. caudatum* was in excellent condition. The same exhibitor also sent a miscellaneous group of new plants, in which were noticeable *Microlepis anthriscifolia*, a dwarf hybrid *Maranta Massangeana*, the brilliant crimson-white-edged *Amaryllis* Mrs. Rawson, the new *Dracæna Bausei* and *Goldieana*, and *Croton Queen Victoria*; altogether an effective group. Mr. Wills showed a well-arranged collection of plants, in which were fine examples of new *Dracænas*, rare specimens of *Yucca filamentosa*, large bushes of *Phallis thalictrifolia*, choice *Marantas*, and new *Gloxinias*. Mr. Hooper, of Bath, contributed out flowers of Pansies, which were much admired on account of their varied colours. Mr. Moorman, gardener to the Misses Christy, had very large blooms of *Maréchal Niel* Rose, out from a bush which has borne this year quite 500 blossoms. Mr. Parker, of Tooting, sent an attractive collection of hardy herbaceous plants, in which were examples of *Paeonies*, *Spiræas*, the beautiful *Saxifraga cœchleata* and *S. nepalensis*, *Scaberriflora*, *Globe Flowers*, and the mauve-tinted *Iberis Tenoreana*. Associated with these were also large spikes of the purple *Muscari comosum monstrosum celestinum*, the pink-fringed *Disanthus hybridus floribundus*, and the rose-coloured *Lychnis viscaria rubra* fl.-pl. Messrs. Osborn & Sons, Fulham, had a collection of ornamental plants, consisting of the bronze-leaved Palm (*Stevensonia grandiflora*), flowering plants of *Medinilla magnifica*, well-coloured examples of *Croton Wisemannii*, and the handsome *Adiantum gracillimum*. Messrs. F. & A. Smith, Dulwich, also sent a collection of plants, in which were several new show *Pelargoniums* of an attractive character. One of the best was *Queen of Hearts*, a free-growing kind, bearing large pink blossoms with a clearly-defined white centre, the upper petals being blotched with dark crimson; *Jewess* was the name of a bold dark crimson flower edged with light pink; and a good striped kind was named *Magnificent*. Messrs. Rollison & Sons, Tooting, showed a good collection of plants, in which were examples of new *Dracænas*, the beautiful *Saxifraga nepalensis*, the singular-looking *Brassia Lawrenceana longissima*, and several rare *Lady's-slippers*. Conspicuous in a large group of plants from Messrs. Carter & Co. were several beautiful *Coleuses*, including *Empress of India* and *Duchess of Edinburgh*, and well-grown plants of *Spherygyne latifolia* and the graceful *Casuarina sumatrana*. In a collection of stove plants from Mr. J. Spode, Rugeley, was noticeable a remarkably fine specimen of the well-known *Chorozeema Chandleri*; and from Mr. Peed, Norwood, came a well-flowered plant of the bright purple *Franciscæa calycina*. Messrs. Jackson & Sons, Kingston, showed a collection of Heaths. In a group of plants from Messrs. Laing, Forest Hill, were examples of *Anthurium crystallinum*, *Caladium La Perle*, several new and valuable seedling *Gloxinias* and tuberous-rooted *Begonias*; also some Palms, variegated Pines, and *Pandanias*. Messrs. Rollison had a collection of *Sedums*, *Sempervivums*, and *Echeverias*, which proved to be a source of interest.

## ROYAL HORTICULTURAL SOCIETY.

MAY 28.

In this great four days' show Mr. Turner's Roses formed the chief feature in the principal tent, and a collection of choice plants from Messrs. Veitch & Sons, occupying a central position, proved a source of great attraction. The weather on the first day was unfortunately very unfavorable, which to some extent marred an otherwise successful show. The banks of Orchids arranged in one of the long tents received, perhaps, the greatest share of attention after the Roses, and the fruit, which was very good for the season, was in itself no mean exhibition. Mr. Jones sent from the Royal Gardens, Frogmore, Apples consisting of thirty sorts, many of which appeared almost as plump and firm as when first gathered.

**New Plants.**—In competition for new plants sent out during the last three years, Mr. William Bull and Mr. B. S. Williams had good collections. The former exhibitor had a well-flowered plant of *Pavonia Wiotii*, a finely variegated plant of *Dieffenbachia maculosa*,

*Croton trilobum* Disraeli, *Anthurium Dechardi* (furnished with large white spathes), an excellent specimen of *Dracæna Goldieana*, and the beautiful crested *Lomaria discolor bipinnatifida*. Mr. Williams had a fine panful of the dwarf garden hybrid *Maranta Massangeana*, the graceful *Adiantum princeps*, and finely-coloured plants of *Croton Queen Victoria* and *C. Disraeli*. The best group of plants not yet in commerce came from Mr. W. Bull, Chelsea, and consisted of—

**Dieffenbachia Regina.**—A dwarf-habited plant, the leaves of which are oblong in shape, of a creamy colour, shaded with pale green, and blotched and edged with dark bronzy-green.

**Anthurium insignis.**—A graceful-growing plant, with bright copper-coloured, trilobed leaves, which change to green.

**Davallia fijensis.**—A dwarf species, with finely-cut pinnæ; excellent for culture in pans.

**Croton formosum.**—A compact-growing plant with long, narrow, lance-shaped leaves, marked with rich orange-crimson, green, and lemon colour.

**Dieffenbachia Leopoldi.**—A North American species, apparently of rapid growth, having large, oval-shaped leaves of a velvety-green colour, the midrib being white.

**Philodendron Carderi.**—A strong-growing creeping plant, having large, velvety-green and bronze *Begonia*-like leaves.

**Zamia princeps.**—A graceful Palm, with Pea-green, wax-like foliage.

**Aralia concinna.**—A very ornamental variety, with deeply-cut leaves of a bronzy-green colour.

**Dipteris Horsfieldi.**—A curious Fern from Java. Well worth growing.

Mr. Williams's collection consisted of—

**Dracæna Mastersi.**—A graceful-leaved hybrid kind, of bushy growth, the leaves being of a rich glossy crimson and bronze colour.

**Dracæna speciosa.**—An attractive plant, having glossy, Pea-green leaves, edged and striped with Rose and cream colours.

**Wallichia zebrina.**—Previously alluded to in THE GARDEN.

**Asiophila Macleayi.**—A large-growing Fern, with elegant spreading fronds and finely-cut pinnæ. Well worth adding to good collections.

**Adiantum Williamsi.**—A neat-growing Fern of the omeatum class, having curiously-fringed pinnæ.

**Croton Williamsi.**—A kind from the South Sea Islands, of strong growth, and having leaves beautifully mottled with bronzy-green and fiery scarlet.

**Aralia spectabilis.**—A species closely resembling the one first alluded to, but dwarfer and more compact in growth.

Mr. Williams had also a large specimen of *Encephalartos latifrons*, *Aralia nobilis*, and a golden and green-leaved *Croton* named *Crown Prince*.

First-class Certificates were awarded as follows:—

**Show Pelargonium Fortitude (Turner).**—A free-growing variety with beautifully formed pink blossoms with white centre, the upper petals being blotched with maroon. One of the most showy kinds we have seen for a long time.

**Gloxinia Berkehirei (Fisher, Balham).**—A large drooping flower with creamy-white throat, and delicate violet-tinted petals.

**Dracæna Bijou (Bull).**—A very dwarf, compact-growing kind, with narrow grass-like leaves of a dark bronzy colour, margined with rose-crimson. An excellent sort for small vases.

**Clematis Duke of Connaught.**—A free-growing variety having large double satiny flowers of a rich mauve colour.

**Kentia rupicola (Bull).**—A graceful Palm, with large, feather-like leaves and smooth glossy brown stalks.

**Roses.**—A considerable portion of the large tent was occupied by Roses in pots from the leading growers. Mr. Turner had a grand collection, consisting of fresh, finely-bloomed plants, both in the shape of large and small specimens. Among the larger plants were noticeable *La France* (furnished with large, bold, bright pink blossoms), the beautiful cream-coloured *Madame Villmorez*, and the bright crimson *Paul Verdier*. With these were associated *Beauty of Waltham*, grand plants of the satiny-white *Miss Ingram*, and *François Treve*, a brilliant kind. Amongst the smaller plants we noted remarkably well-flowered examples of *Madame Lacharme*, *Comtesse de Serenyi*, the large pink-flowered *Palm Neron*, the brilliant crimson *J. S. Mill* (one of Mr. Turner's own seedlings), and the maroon *Louis*

Van Houtte. François Michelon was greatly admired, as was also Captain Christy, both being in unusually good condition. Mr. Turner had in all nearly 100 Roses in pots, and all marvels of good cultivation. Messrs. Paul & Sons, the Old Nurseries, Cheshunt, had good plants of Madame Victor Verdier, the flesh-coloured Tea Rose President, Celine Forestier, and the creamy-yellow Madame Margottin.

**Orchids.**—The best collection of these came from Mr. B. S. Williams, and consisted of remarkably well-bloomed plants of *Cypripedium caudatum* and *C. niveum*, *Odontoglossum vexillarium*, and a gorgeously-flowered *Cattleya Mendelli*. Messrs. Jackson & Sons had magnificent plants of *Dendrobium nobile cærulescens*, *Phalaenopsis amabilis*, *Odontoglossum Alexandræ*, and *Oncidium Marshallianum*. Mr. Child, gardener to Mrs. Torr, Ewell, Surrey, had finely-flowered plants of *Oncidium ampliatum majus* and the beautiful *Dendrobium Devonianum*. The best specimen plant in competition for Sir Trevor Lawrence's prize came from Mr. Perry, gardener to J. W. Miles, Esq., Shirehampton. It was a fine example of *Lælia purpurata*; it bore nine flower-spikes, each furnished with four or five gorgeous blossoms. Mr. Child had a plant of *Cypripedium Stonei* furnished with eighteen very large and attractive flowers. From King's Weston, Bristol, came a plant of *Dendrobium thyriflorum*, growing in a basket and bearing six massive, drooping spikes of blossoms. Mr. Douglas, Loxford Hall, Ilford, showed finely-flowered plants of *Dendrobium formosum giganteum*, *D. Dalhousianum*, the beautiful *Cypripedium spectabile*, and brilliantly flowered plants of *Masdevallia Harryana* and *M. Veitchi*. Mr. Ratland, gardener to the Duke of Richmond, had a plant of *Cattleya Mossii* bearing over thirty gorgeous blossoms; also an excellent example of *C. Skiuneri* and an *Odontoglossum Alexandræ* bearing five massive spikes of crisp, violet-tinted blossoms.

**Azaleas.**—These were not so plentiful as in former years, but what were shown were well grown and flowered, and imparted colour to the show. Mr. Ratty, gardener to R. Thornton, Esq., had a group containing good specimens of the large salmon-scarlet kind called *grandis*, the brilliant crimson *Roi de Hollande*, *Souvenir de Prince Albert*, and *Criterion*; also excellent standard plants of the bright rosy-scarlet *Callina* with beautiful imbricated blossoms. The same exhibitor had also a group in which were good specimens of *Grand Crimion*, one of the highest of *Azaleas*; the showy white and salmon-striped *Charlesinks*, and the brilliant orange *Chelston*. Mr. Turner, Slough, also furnished an attractive group of well-grown plants.

**Stove and Greenhouse Plants.**—These were shown in good condition, but, as a rule, too trimly trained. Mr. B. S. Williams, Holloway, had in his collection beautifully-flowered plants of *Erica ventricosa grandiflora*, a fine pyramidal specimen of the white *Azalea Magnificens*, and *Bongainvillea glabra*. Messrs. Jackson & Sons furnished a collection containing fine plants of *Hedera multiflorum*, the bright pink-flowered *Apheloxis sesamooides* Brucei, well-flowered *Heaths*, and fine examples of *Anthurium Schorzerianum*. Mr. Tudgy had splendid specimens of *Allamanda grandiflora*, *Stachys profusa*, and *Bongainvillea glabra*. Among *Heaths* were noticeable fine plants of *Erica obtata*, with very large flowers, and *E. ventricosa nana*, covered with lively pink waxy blossoms. *E. tricolor* Wilsoni, shown by Mr. Tudgy, was in every way perfect, the flowers of this variety being a great improvement on those of the type; and *E. coccinea* minor in several instances served to show it to be still one of the most attractive kinds for exhibition purposes.

**Pelargoniums.**—These made a good display. The best came from Mr. James and Mr. Turner. The former exhibitor had a kind named *Bluebell*, with blue and violet-crimson spotted blossoms, which was much admired; along with it were the bright scarlet *Duchess* of Cambridge and the light-coloured *Snowflake*. Mr. Turner had a variety named *Prince of Prussia*, with very large white flowers tinted with claret colour; also a pleasing kind named *Ruth*, and a rich maroon and crimson-striped variety named *Scottish Chieftain*, with a white centre. Among *Fancy's*, *delicatum* from Mr. Turner was much admired on account of its satiny, white flowers tinted with delicate purple; also *Nelly Fordham*, an elegant kind with white flowers diffused with pink.

**Fine-foliated Plants and Ferns.**—Mr. Bull had a collection of these amongst which were well-grown examples of the glaucous-leaved *Eucaphalarctos horridus rotunda*, the ornamental-leaved *Varia venusta*, a noble plant of *Coccol Weddelliana*, *Dracæna Goldiana*, and fine-leaved *Crotons*. Mr. Williams, Holloway, had a group consisting of well-grown healthy plants of *Cycas media*, the massive-leaved *Verschaffeltia splendida*, elegant lace-leaved *Cnapanias*, glossy-leaved *Dracænas*, and *Yuccas*. Mr. Tudgy, gardener to J. F. Williams, Esq., Henwick Grange, Worcester, had large specimens of the fan-leaved *Latania borbonica*, *Crotons*, and

*Dasylirops*. Mr. Ley, Croydon, had a collection of finely-grown *Palms*. Mr. Rann, The Gardens, Handcross Park, had unusually large specimens of *Stevensonia grandiflora*, *Areca sapida*, and *Lætanian borbonica*; also splendid specimens of *Cycas rotunda*, *C. circinalis*, *Dasylirops glaucum*, and finely-coloured plants of *Croton majesticum*, *C. variegatum*, and the drooping-leaved *C. Youngi*; also the finest seedling plant of *Cibotum princeps* we have yet seen. It was only three years old, and was furnished with massive fronds 14 ft. long. In a collection of fine-foliated plants from the Rev. Canon Bridges were good examples of *Alcaesia marorrhiza variegata*, *Dracæna australis*, and a beautifully-variegated plant of *Pandanus Veitchi*. Messrs. Hooper & Co. had also a collection, in which were well-coloured *Crotons*, *Pandanada*, a good plant of the graceful *Damonopsis trichous*, and the bronze and green *Lætanian rubra vera*. Mr. Williams had the best coloured plant of *Croton undulatum* we have yet seen; also a collection of Ferns which attracted much attention; they consisted of *Cyathea Dregei*, *C. medullaris*, a finely-grown plant of *Davallia Mooreana*, *Gleichenia rupestris*, and *G. Splenula*.

**Miscellaneous Groups of Plants.**—The centre of the large tent was occupied by a magnificent collection of Orchids and other choice subjects from Messrs. Veitch & Sons, associated with Ferns, *Palms*, and similar plants. Conspicuous among the Orchids were finely-bloomed plants of *Cattleya Mossii*, *C. Mendelli*, the bright yellow *Dendrobium suavisimum*, a coloured plate of which was given in THE GARDEN (see p. 166). *D. crystallinum*, suspended among the other plants, was very effective, as was also finely bloomed plants of the golden-flowered *Oncidium concolor*, the chocolate-coloured *O. crispum*, *Odontoglossum Alexandræ*, and *O. cirrhosum*. The new *Hæmanthus Kalbreyeri* formed quite an attractive feature in this group; as did also grand specimens of the *Flamingo* plant, and seedling *Gloxinias* were much admired; also various insectivorous plants under bell-glasses. The beautiful *Phyllanthus roseo pictum*, associated with trilobed *Crotons*, afforded fine colour in the way of foliage. This group also contained new *Begonias* of an attractive character, and beautifully bloomed plants of *Utricularia montana* placed on pedestals. Good examples of the new *Rhododendron Crown Princess* of Germany were well furnished with pleasing orange-coloured blossoms, whilst the curious flowers of *Vanda teres* were conspicuous behind the leaves of *Alcaesia Veitchi* and other plants with handsome foliage. Near this group was one from Mr. Wills, South Kensington, tastefully arranged and composed of miscellaneous flowering and fine foliated plants—averitable miniature forest of ornamental-leaved plants and flowers. It consisted of grand examples of the brilliant salmon coloured *Dracæna majestica*, the black-leaved *Artoocarpus Cannoni*, graceful specimens of *Coccol Weddelliana*, *Thrinax elegans*, *Pandanada*, and other fine-leaved plants, among these were arranged in groups brilliantly-flowered *Cactuses*, *Amaryllises*, *Begonias* of the *Rex* section, and dwarf bright-leaved *Crotons*. The front of the bank was furnished with beautifully flowered plants of *Dendrobium Bensoniæ*, *D. chrysotoxum*, *Odontoglossum*, *Cattleyas*, and choice *Gloxinias*. These were all plunged in a beautifully undulated bed of *Club Mosses*, *Ferns*, *Panicums*, *Panlinias*, and similar subjects. Mr. Aldous, South Kensington, had a good group of plants, consisting chiefly of such kinds as are grown for market purposes. These were edged with small plants of *Caladium argyrites*, *Begonias*, and *Adiantams*. A miscellaneous collection of plants from Chiswick was also shown, and included a quantity of well-grown *Gloxinias* of an attractive character. Mr. William Bull showed an extensive collection of new and rare plants, consisting of *Palms*, *Tree Ferns*, the fine-leaved *Carolinia recurvata variegata*, *Cycads*, and *Dracænas*; grouped among these were new and attractive show *Pelargoniums*, *Amaryllises*, *Hæmanthus cinnabarinus*, and fine pansy of *Bertolonia Van Houttei*. One side of the group was very attractive with masses of *Odontoglossum vexillarium*, *O. Alexandræ* (bearing massive flower-spikes), finely-coloured *Adiantum gracillimum*, and other choice Orchids, placed in a bed of the *Adiantum gracillimum*. From Mr. Williams came a collection containing *Tillandsias* and trumpet-leaved *Sarracénias*, associated with *Amaryllis* Mrs. Rawson, *Oskathe Oranges* full of fruit, the pretty-leaved *Bertolonia marocana*, and the new white *Hydrangea* *Thomas Hogg*. Messrs. W. Rollinson & Sons, Tooting, had an attractive group, in which were good plants of *Cattleya Mendelli*, *Lælia purpurata*, *Sarracénia purpurea* (finely in flower), the graceful *Grevillea filicifolia*, *Damonopsis ornata*, and *Filmy Ferns*; together with fine *Dracænas*, *Crotons*, and several valuable hardy plants. In a large collection from Messrs. Carter & Co. were baskets of choice *Colerases*, *Caladiums*, beautiful cut-leaved *Acers*, and the graceful *Casuarina sumatrana*; altogether a very attractive group. In a collection of plants from Messrs. Cutbush & Sons were good examples of the double white *Azalea* named *Reine de Portugal*, the scarlet *Gompholobium polymorphum splendens*, the pretty blue-flowered *Tetratheca verticillata*,

and the white *Dracophyllum gracile*, effectively interspersed with Ferns, Palms, Araucarias, and other fine-foliaged plants. Messrs. Osborn & Sons had an attractive collection of plants, in which were well-grown examples of *Croton Veismanni*, the dark-fronded *Alsophila Miguelti*, *Stevensonia grandiflora*, finely-coloured plants of *Yucca aloifolia*, and the large green and cream-coloured *Dracaena Regina*.

**Miscellaneous Subjects**—In competition for Mr. Bull's silver cups, Mr. Williams had good examples of *Croton splendidum*, *C. chalcifer*, and *C. Bismarcki*, *Dracaena Robinsoniana*, and *Artocarpus Cannoni*. Mr. Penfold, gardener to Canon Bridge—Brahea filamentosa and the fine crimson-edged narrow-leaved *Dracaena vivicans*. Mr. Rann had *Acaolypha marginata*, finely coloured plants of the twisted-leaved *Croton chrysophyllum*, *Aralia filiofolia*, &c. Mr. Turner, Slough, sent baskets of plants of new Pelargoniums, among which were *Illuminator*, a very brilliant variety called *Forget-me-not*, *Martyr*, *Arthur*, and *Fortitude*, all well worth adding to the smallest collections. Messrs. Osborn & Sons sent out blooms of *Iris Victorine*, *I. sibirica*, and *I. germanica*, all in excellent condition; and Mr. Peacock, Sudbury House, Hammersmith, sent a collection of *Cacti*. Messrs. Barr & Suggden had an extensive and attractive collection of out-blooms of hardy flowers mixed with Ferns. They consisted of beautifully coloured *Iris*es, double-*Ornithogalum*, *Lilies*, and a large assortment of *Pyrethrums*, several beautiful *Alliums*, and a large selection of *Isias* and *Sparaxis*, several beautiful small Alpine plants and *Echeverias*, &c.; all of which combined to make the collection highly interesting. Messrs. F. & A. Smith, Dulwich, had a collection of show Pelargoniums intermixed with Ferns, *Yuccas*, *Caladiums*, and Palms. Messrs. Osborn & Sons sent an attractive collection of hardy Ferns, intermixed with well-flowered plants of *Saxifraga napaulensis*, the blue *Veronica rupestris*, *Scillas*, and other hardy plants. Mr. John Laing, Forest Hill, had a good display of flowering *Begonias*, choice Palms, and *Gloxinias*. A fine bank of *Rhododendrons* was furnished by Messrs. H. Lane & Co., Berkhamstead; the plants had been lifted and potted, the soil nearly approaching clay; yet both foliage and flowers were of the most healthy description, and attracted much attention. Messrs. Veitch sent a remarkably fine collection of *Isias*, *Sparaxis*, and *Tritionias*; the spikes, as well as the blossoms, were large and handsome, almost equal to those of Continental growth, and showed how well these highly attractive flowers may be grown to perfection even near London. Mr. Cannell, Swanley, sent out blooms of *Zonal Pelargoniums*, which made a fine display; they consisted of the best single and double kinds, the colours of which varied from the darkest crimson to the most delicate lilac, pink, and rose. Mr. George, Putney, also sent seedling flowers of Ivy-leaved and *Zonal Pelargoniums* of a meritorious character, many of the colours being new and striking. Mr. Ware, Tottenham, had cut blooms of *Pyrethrums*, fine in form and colour; and Mr. Waterer, Knap Hill, had a fine display of hardy *Azalea* blossoms. Mr. Hooper, Bath, showed choice *Pansies*. Mr. Gallup, Brighton, sent a good display of his new *Mignonette*, which was much admired, and the prizes offered for the best plants of it brought together a number of well-grown examples from other growers. Mr. G. F. Wilson, Heatherbank, sent cut spikes of *Lilium tenuiflorum*, *L. Martagon album*, *L. pulchellum*, *L. elegans*, and *L. Thunbergianum*, all of which were in good condition and were much admired. Mr. Fisher, Balham, sent seedling *Gloxinias* of an unusually pleasing character; the blooms, which were large and delicately coloured, were of good form, and all well worth growing. Messrs. Radcliffe & Co. sent glass window cases, filled with Ferns, Palms, and flowering plants, which attracted much notice, as did also the dinner-table decorations from Messrs. Mortlock, Oxford Street, who showed dessert tables arranged in the oldest style. A Warden Case, filled with much taste and skill, was shown by Messrs. Barr & Suggden.

**Fruit**.—This was fairly represented for the season. Grapes, both black and white, were on the whole good. Mr. Miles, Wycombe Abbey, had excellent examples of Black Hamburg and Forster's Seedling Grapes, Black Crossian Cherries, and Stirling Castle Peaches. Mr. Bannermann, gardener to Lord Bagot, had very fine Brown Turkey Figs, also the best two bunches of Black Hamburg Grapes. Excellent Grosse Mignonne Peaches were shown by Mr. Fry, gardener to S. Baker, Esq., Hayden Hall, Pinner, and Mr. Lovibond, Beckenham, Kent, had well-coloured, large examples of Elrue Nocturnes. Strawberries were well shown by Mr. A. Moss, Chadwell Heath, and Mr. Norman, Hatfield. Mr. Jones, Frogmore, sent fine examples of Smooth Cayenne Pines. Melons were shown in good numbers, the best coming from Mr. Chilton, The Gardens, Tetworth, Oxon. A collection of Strawberries in pots were sent from the Society's gardens at Chiswick, to show the best kinds for pot culture. The collection of Apples from Frogmore attracted much attention. Among the best kinds were noticeable well-coloured plump fruits of Scarlet Golden Pippin, Newtown Pippin, Wellington, and Five-crowned Jack.

**Vegetables**.—These were shown in good numbers. The best collection came from Mr. Miles, Wycombe Abbey, who had excellent Stamfordian Tomatoes, Little Gem Peas, and Asparagus. Mr. Iggaldon, gardener to R. Baker, Esq., and Mr. Pragnell had also excellent collections.

Mowing machines and other garden implements, from the best makers, were shown in large numbers.

**Mr. John Waterer's Rhododendron Exhibition**.—This, which is being held this year in Cadogan Square, Sloane Street, Chelsea, was opened to the public on Wednesday last, and a better display has probably never before been seen in London; the plants, consisting of many thousands, are arranged better than usual, and amongst them are some wonderfully fine specimens. The centre of the tent is occupied by standards, which contribute in no small degree to the effect of the exhibition, and the surrounding beds are so arranged that every variety can be seen to advantage. Amongst the most conspicuous new kinds was especially noticeable one named Countess Cadogan, a variety which has large conical trusses of lively crimson-scarlet blossoms; Princess of Wales, also an excellent kind, has white flowers bordered with deep rose. A variety named Kate Waterer is considered to be one of the best seedling Rhododendrons ever raised at Bagshot; it is vigorous in growth, and bears unusually large trusses of waxy rosy-pink flowers, one of the upper petals of which is delicately marked with yellow. Sir Robert Peel is conspicuous on account of its bright magenta blossoms, and a kind named Princess Mary of Cambridge has white flowers, delicately tinted with rose, in large pyramidal trusses. Mr. Herbert, of Maccross, is a valuable addition to the crimson-flowered kinds, the colour being remarkably bright, and the petals interestingly imbricated. Other good sorts are Mr. Charles Leaf, John Waterer, a well-known variety, and the vivid crimson Duchesse of Bedford. A kind named Lady Olivia Guinness must not be omitted, for it is one of the most distinct of new Rhododendrons; fine standard plants of it bear beautiful white blossoms, delicately spotted with rich crimson. Fred Waterer is considered to be one of the best self-coloured kinds in cultivation, its flowers being of the brightest crimson. Many other valuable new as well as old varieties are also shown, and there are hundreds more to come into bloom.

**Iberis superba**.—In the notice of our *Iberis* (see p. 485) you are under the impression that *I. superba* is like *I. Garreixiana*, and in order to show the difference we send by post flowers of *I. superba*, *I. coreofofolia*, *I. Garreixiana*, and *I. Tenoriana*, all taken from the same rockery, and it will be seen that *I. Garreixiana* is much inferior in quality to any of the others; indeed, though it grows very freely and stands well, it is such a shy bloomer that we never recommend it to any one as being worth growing. On two plants, each as large as that sent last week, there are only six heads of flower, two on one and four on the other. *I. Tenoriana* is very pretty, but only a biennial. Our experience of *I. gibraltaria* is similar to that of "*A. D.*" (see p. 490), as we have not found it hardy, and its flowers are much faded and not pure white, like those of *I. coreofofolia* and *superba*.—DICKSONS & CO., Edinburgh. [The plant that used to be grown at Kew as *I. Garreixiana* flowered in the most abundant manner. Messrs. Dickson's plant is a very good one, and is welcome in a genus already rich in good things. It would, perhaps, be best to give garden varieties in this and other hardy families English names, which would prevent some confusion between varieties and species resulting from the use of Latin names for the varieties.]

**Yellow and Blue Flowers**.—What is the meaning of a note (see p. 485) in which it is said that a yellow *Torenia*, about to flower with M. Lebeuf, will settle the question as to the presence of yellow and blue flowers in the same genus? Can anything be bluer than *Gentiana verna*? and is not *Gentiana lutea* in the same genus? Or if we are to read species for genus, then some of the *Pansies* are nearly true blue (*Gentiana* blue, if we may credit a recent plate in THE GARDEN), and yellows are common enough, while others are dusky crimson.—SALMONIERS.

As regards the yellow *Torenia* settling the question of yellow and blue flowers in the same genus, has not this already been settled in the *Gentiana* family, in which there is *Gentiana lutea*? And is not the truly yellow *Lobelia*, *L. lutea*, somewhat to the point?—I. WILLIAMS, Ormskirk. [The same occurs in various other families.]

**A Blue Bush in May**.—If the plant which I send be *Solanum crispum* it covers, at present, a space of 21 ft. wide and 12 ft. high on a wall in the Vale of Avoca; but for a blue-flowering bush at this time of the year (see p. 489) I prefer *Ceanothus Tomatoes*, which is covered with flowers and quite hardy in this part of Ireland.—F. O. Wexford. [The small specimen sent seems to belong to a smaller species, but you can easily determine this by comparison with the fine bush of *Solanum crispum* in flower at Glasnevin.]

## NOTES FROM KEW.

**Hardy Trees and Shrubs.**—On the wall of the Herbaceous Ground may be seen nicely in flower a near relation of the beautiful *Abelia floribunda*, a coloured plant of which was issued with THE GARDEN of May 18. *Abelia triflora*, the species in question, has flowers (pale yellow, tinged with pink) arranged in threes at the extremity of the branches. A figure of this North Indian shrub will be found in THE GARDEN, Vol. X, p. 58. *Asimina triloba*, a shrub from the United States, has dark brown flowers, and is chiefly remarkable as being a hardy, or nearly hardy, representative of an otherwise exclusively tropical Natural Order—an Order which includes such well-known tropical fruits as the Sour-op of the West Indies, the Sweet-sop of the Malayan Archipelago, the Cherimoyer of Peru, &c. *Caragana arborescens*, from Siberia, is a shrub or small tree, attractive on account of its light-green, pinnate leaves, and pleasing, yellow, axillary flowers. A weeping variety of this, *C. arborescens pendula*, when worked on tolerably high stems will find favour with many. *Cistus Clnsi* is one of the most charming of the South European Rock Roses; it makes a neat bush about 1½ ft. or 2 ft. in height, and has narrow leaves and a profusion of pleasing flowers, snowy white, with the exception of a tinge of yellow at the base of each petal, and measuring 1 in. or more across. *C. corbariensis*, like the last, a native of Spain, has flowers similar in colour, but larger; the leaves, too, are much larger than those of *C. Clnsi*. *Spiraea trilobata* is a beautiful dwarf bush from the Altai Mountains; the large, corymbose racemes of white flowers are very freely produced. *Pyrus arbutifolia* var. *pubens* is a pretty, North American, deciduous under-shrub with Hawthorn-like blossoms.

**Hardy Herbaceous Plants.**—*Castilleja indivia* is a recently introduced Rocky Mountain representative of the Eye-bright of the pastures and heaths of England; the flowers themselves are inconspicuous, but the large bracts subtending them are a most brilliant scarlet. Many extremely handsome species of this genus have not yet found their way to European gardens. *Sarothamnus scoparius prostratus*, a creeping variety of the common Broom, makes a very charming rock or border plant, and has flowers quite as large as those of the type; in a wild state it is only found in Cornwall. Another member of the British flora is the Vernal Gentian, *Gentiana verna*, a native of mountainous meadows in the north of England; few flowers surpass in colour the intensely brilliant blue of this lovely little Alpine. Like many other Gentians, it requires pieces of limestone among the soil in which it is planted; care should also be taken not to have it moved or disturbed in any way. Three of the most desirable Alliums at present in flower are *A. coruleum*, a fine species from Turkestan, with a cylindrical scape 1½ ft. high, crowned by a dense, globose head of bright blue flowers; *A. Clusianum*, which comes from Crete, and has numerous umbels of white, star-like flowers, borne on scapes 1 ft. high, springing from amidst the tufts of Grassy leaves; and *A. subhisutatum*, which hails from the Mediterranean region generally, and is somewhat similar in size and general appearance to the last-named. *Scilla amethystina* is an attractive plant with a scape 1 ft. high, surmounted by a raceme of pretty small blue flowers. *Ornithogalum glaucophyllum* is a most striking and distinct species with very glaucous leaves; the upper surface of the perianth segments is pure white, the under side being green bordered with white. *Centaurea montana*, a dwarf European Composite, has for a long period been an inmate of our English gardens; Gerarde cultivated it, and it is mentioned by him as the Great Curne-flower; the type has large blue flowers, but a variety with white ones is equally pretty. A charming annual, of neat habit and very floriferous properties, is *Lathænia glabrata*, a Californian Composite with golden-yellow flowers. *Pentstemon panicens*, with glossy leaves and bright scarlet flowers, is a very showy perennial of easy culture. *Polygonum alpinum* attains a height of about 2 ft., and its large panicles of white flowers, borne well above the narrow leaves, render it a valuable border plant. *Symphandra Warneri* is a member of the Bell-flower family, from Austria; it hardly reaches the height of 1 ft., and its drooping, pale blue flowers are very pretty. *Vinca herbacea* is also an Austrian plant with smaller and narrower leaves than most of the other species of the genus; as a basket plant this makes a pretty object, its long shoots forming a charming fringe of verdure. *Saxifraga lantoscana* has a small rosette of glaucous, tongue-shaped leaves, from the centre of which springs a shortly-stalked, densely flowered panicle of handsome white blossoms. *Geranium Wlassovianum*, from Siberia, grows 2 ft. high; it has palmately-cut leaves and delicate light blue flowers about ½ in. in diameter. *Erysimum australe* is a Mediterranean Crucifer with somewhat shrubby stems and bright golden-yellow flowers. *Anemone obtusiloba* is a white-flowered Himalayan species, the rarity of which makes up for its lack of show. *Cathoartia villosa*, one of Sir Joseph Hooker's Himalayan discoveries, is a very handsome Poppwort, with lobed leaves, which are clothed with soft yellow hairs and drooping,

golden-yellow flowers. *Erinus alpinus albus* is a white-flowered variety of a most charming Alpine; this, as well as the type, should be in every collection of choice Alpines.

**Greenhouse Plants.**—A very uncommon-looking and handsome plant is the Australian *Elaeocarpus cyanus*; although attaining a large size in its native country, it flowers well in a small state under cultivation, the ends of the shoots being crowded with axillary racemes of beautifully-fringed, whitish flowers, similar in size to those of *Soldanella alpina*. *Andromeda formosa* is a Himalayan shrub, with large, deep green, glossy leaves, and bell-shaped white flowers, where space can be afforded, this is a good plant for the cool conservatory. *Magnolia fuscata*, from China, is well worth growing for its sweetly-scented flowers. In the Glass House Greenhouses Macdonaldie, from Honduras, the largest of the night-flowering Cacti, and the scarlet-flowered *C. Mallesoni* (grafted on the same plant) are in bloom; the contrast between the large white flowers of the one and the brilliant scarlet ones of the other is very fine. *Callistemon salignus* var. *viridiflorus* is an Australian shrub with dense spikes of greenish flowers, the numerous long anthers of which form a brush-like mass. *Melalouca Wilsoni* has needle-like leaves arranged in four rows and clusters of rosy-purple flowers, which spring from the old wood. *Calythrix tetragona*, from Australia, has Gorse-like leaves and white, star-like flowers, clustered towards the extremities of the branches.

**Stove Plants.**—A very beautiful stove shrub is *Steriphosia paradoxum*, introduced to Europe from New Granada at the close of last century. The short, dense-flowered racemes are terminal; the calyx is a bright orange, and the petals a pale yellow, the stamens (3 in. or 4 in. in length) being of the same colour as the petals. A charming Brazilian *Acanthad* is *Arthrostylon formosum* with large, bright scarlet, long-stalked flowers. *Palisota Barteri* has almost sessile heads of brilliant coral-red fruits, and is very showy. *Janoullia parasitica* is a very desirable Peruvian evergreen, having large, handsome, wax-like, deep orange flowers, which last a long time in perfection. Three beautiful *Scotellarias*, worthy of a place in any stove, are *S. pulchella*, *S. Ventenatii*, and *S. Mociniana*; the first has blue flowers, the others scarlet; the last, however, is a larger grower than *S. Ventenatii*.—†

## HARDY WHITE FLOWERS AT BYFLEET IN BLOOM ON MAY 25, 1878.

<i>Andromeda Catesbei</i>	<i>Spimedium niveum</i>	<i>Potentilla rupestris</i>
<i>Anthericum Liliatum</i>	<i>Erinus alpinus albus</i>	<i>Rhododendron rupestre</i>
" <i>algericum</i>	<i>Fragaria lucida</i>	<i>Rhodotypos Kerrridae</i>
<i>Androsace coronopifolia</i>	<i>Helianthemum polifolium</i>	<i>Sedum saxifolium</i>
<i>Asperula odorata</i>	" <i>virginicum</i>	" <i>palustrum</i>
<i>Arnanaria balearica</i>	<i>Heuchera glabra</i>	<i>Spiraea prunifolia</i> , fl.-pl.
<i>Bellis perennis alba</i>	" <i>coriifolia</i>	" <i>grossularifolia</i>
<i>Cornus canadensis</i>	" <i>superba</i>	" <i>Skimmia japonica</i>
<i>Crataegus odalis</i>	" <i>semperflorens</i>	<i>Scwhenckii</i> , podolica
<i>Convallaria majalis</i>	<i>Iris florentina</i>	<i>Sparaxis alba</i>
<i>Cytisus flore-albo</i>	<i>Libertia formosa</i>	<i>Spergularia vegetalis</i>
<i>Campanula glomerata alba</i>	<i>Linum perenne album</i>	<i>Tradescantia virginica</i> a
<i>Centaurea montana alba</i>	<i>Leucanthemum alpinum</i>	" <i>alba</i>
<i>Cistus cypricus</i>	<i>Myosotis rupestris alba</i>	<i>Thalictrum tuberosum</i>
<i>Corydalis capnoides</i>	" <i>syriatica nana alba</i>	" <i>aquilegifolium</i>
<i>Dictamnus Fraxinella alba</i>	<i>Etiolites scutellus</i>	" <i>petaloideum</i>
<i>Dianthus neglectus</i>	<i>Ornithogalum umbellatum</i>	<i>Viola Mrs. Todd</i>
<i>Dryas spectabilis alba</i>	<i>Polygonatum multiflorum</i>	<i>Valeriana montana</i>
<i>Erica mediterranea alba</i>	<i>Pyrethrum Madame Bonchalel</i>	<i>Veronica phoenicum album</i>
<i>Erythra illicifolia</i>	<i>Pyrethrum Mont Blanc</i>	<i>Vaccinium vitis-Idæa</i>
<i>Erythra conodes</i>	" <i>Schischowii</i>	<i>Veronica frutescens glauca</i>
<i>Erythra hispanica alba</i>		<i>Weigela isoline</i>

and nearly seventy sorts of Saxifrages. JOSEPH STEVENS.

## OBITUARY.

We have to record the death of Mr. Jackson Gillbanks, of Whitefield House, Cumberland, which happened on the 19th ult., after an illness of several duration, caused, as he believed, by shock through slipping upon a piece of Orange peel in the streets of Carlisle last autumn. Mr. Gillbanks was educated for the Church, but studied for the Bar. He was very fond of natural history, especially that relating to plants, in which he took a great interest, and concerning which he was a frequent contributor to THE GARDEN.

We learn that H.R.H. the Prince of Wales has appointed Mr. John Wills, of South Kensington, to be one of the jurors of the Horticultural Section of the Paris Universal Exhibition.

**Hair-worms.**—At p. 503 Gouvoins was inadvertently printed for Gordius, the name of the hair-worm sent by Mr. Hobday.

"This is an art  
Which does mend Nature: change it rather: but  
THE ART ITSELF IS NATURE."—*Shakespeare.*

### NEW AND RARE IRISES.

THE following are now in flower in the Kew collection:—First on the list is the new *I. cashmeriana*, which was flowered last year for the first time by M. Leichtlin, of Baden-Baden, and named by Mr. Baker. It much resembles the common *I. florentina* in habit, but its flowers are larger and of a much lighter colour than those of that kind; and, besides, they are deliciously fragrant; it is a native of Cashmere, as its specific name implies. *I. albicans*, of Lange, is a pure white Spanish form of *I. florentina*, but as colour is but of varietal importance, Mr. Baker puts it as merely a variety of *I. florentina*. The beautiful North American *I. tenax*, as seen here true to name, is very unlike the kind generally sold under that name, and which frequently proves to be *I. sibirica* or some other narrow-leaved sort; it is one of the beardless section, dwarf in growth, and bearing tufts of narrow and very tenacious leaves about 1½ ft. long, tinged at the base with a reddish colour, which appears to be a distinctive character; its flowers, which are solitary at the apex of the slender stems, are of a bright lilac-purple, and measure about 2½ in. across. *I. tectorum* (syn.—*I. tomiolopha*) is a charming species, and is flowering very freely; it is a member of the crested group, of which we have but three hardy kinds; it is second to none in point of beauty, and should find a place in the most select collections; its blossoms are large and of a bright purple beautifully mottled with dark purple, and, unlike those of the majority of Irises, all the six divisions are on the same plane, which much enhances its beauty. It was introduced to cultivation from Japan a few years ago by Mr. Bull, of Chelsea. *I. (Xiphion) lusitanica* is a lovely Portuguese kind, bearing flowers in form resembling the common Spanish flag, but of a bright canary-yellow, lasting a long time in good condition. *I. orientalis*, although considered by Mr. Baker to be a variety of *I. sibirica*, is, nevertheless, from a floral point of view, a great improvement on that species. It agrees with it in foliage, but it has much larger and brighter-coloured flowers, and the reddish tinge of the young leaves and spathes—on account of which it has been named by some *I. sibirica* var. *sanguinea*—forms another mark of distinction. The Californian *I. longipetala* is a very ornamental Iris, with large flowers, the inner divisions of which are of a light purple and the outer white and delicately pencilled with purple, thus rendering it a very striking plant. *I. tridentata* is a little known species, remarkable as regards having the inner divisions of the flowers reduced to three teeth, hence its name. Besides these there are many others less rare, such as *I. pallida*, with its large mauve-coloured flowers; the bright-coloured old garden favourites, *I. Swerti*, *I. versicolor*, and its lighter-coloured variety *I. virginica*. The gigantic yellow and white *I. (gigantea) ochroleuca* deserves to be better known, and *I. spuria*, with its dark violet blossoms, is also a desirable kind. Lastly, the charming *I. Ævagata* (Kempferi) may now be seen at Kew in its normal form, and scarcely less beautiful than the many fine varieties which have sprung from it. A.

**Double White Rocket.**—This is just now a grand border flower throwing up noble spikes of bloom 6 in. in length, resembling a pinkish-white Brompton Stock. It makes a fine companion to the old Giant Scarlet Brompton, and if planted in twos or threes along with the Stock in borders the result would be a fine display. The double Rocket is a somewhat difficult plant with which to deal on some soils, whilst in other places it forms stools of great size, but as a rule it should be treated as a plant that requires more than ordinary attention for border growth. Here, because the damp seems to affect the leaves and crowns in the winter, it is necessary to lift the plants, separate the crowns, and plant them singly in a soil bed in a cool house. In the spring these root freely, and are turned out in the open ground

with good balls. Wherever it is difficult to keep the plants over the winter similar treatment should be resorted to. As soon as the flowers decay the stems should be cut away, and thus renewed growth is induced.—A. D.

### HELIANTHEMUMS, OR SUN ROSES.

THE remarks of "A." (see p. 484) in reference to these plants are very *apropos* at this season, when they are ablaze with colours of every hue. The common Rock Rose never varies in colour in a wild state, being invariably of a bright golden-yellow. Few British plants are more handsome than this, covering, as I have seen it, the almost bare rocks in some parts of the kingdom. In a wild state it is truly charming; it grows quite flat on the rocks or walls, but in cultivation it assumes a neat, bushy habit, with an almost endless variety of colour—in fact, every colour but blue; and instead of there being one double-flowered variety, there are several. I myself have three—white, orange, and purple. Why they are called Sun Roses I cannot tell; for, like the flower of the Grass, the sun no sooner rises with a burning heat but it withereth the fashion thereof; and whoever wishes to see these plants in full glory must visit them on a dull day. "A." seems enraptured with *Cistus formosus*. It is, as its name implies, very beautiful, but somewhat straggling, and wants well pinching in to make a good specimen. It is not to be compared with the neat *Chaste C. algarvensis*. *C. Tuberaria*, or the Plantain *Cistus*, is a very singular species. Perhaps the most charming of this very extensive family is the dwarf Gum *Cistus*, simply and truly described by the Messrs. Backhouse as "a gem," a lovely miniature shrub 1½ ft. to 2 ft. high, deep green in foliage, and with flowers as large and similar to those of the Gum *Cistus*. *C. crispus* is a fine rose-coloured species. A reserve of these fine plants should always be kept in pots, and a stony bank or rockery solely appropriated to the various beautiful species of them would be something worth remembering. THOS. WILLIAMS.

*Ormskirik.*

**Primula japonica for the Wild Garden.**—In your list of plants for the wild garden (see p. 488) you omit this. It is one of the best plants for the purpose, and sows itself freely. It has also the valuable quality of being rabbit proof. I have some plants growing at the edge of a wood, and although the Grass around is eaten quite short by rabbits, not a leaf of the Japanese Primrose is hurt. It is difficult to believe that four or five years ago the price of this Primrose was 30s. a plant. It has now become one of the commonest of herbaceous plants. The rich crimson of its flower-heads is most effective in the wild garden.—SALMONCES.

**Bouvardias as Flower Garden Plants.**—Planting out Bouvardias early in summer and taking them up in autumn for flowering in pots in winter is a practice with which most people are familiar, but the method of rendering these plants striking objects in the flower garden during summer is a matter to which little attention has hitherto been paid. Bouvardias may, however, by good management, be made to play an important part in flower garden arrangements. For this purpose old plants require only to be stored away in a cool house during winter, and be kept rather dry at the roots, as is done in the case of Fuchsias. In spring, when they start into growth, a little more water may be given them; and if planted out in beds of good soil in May or June, they will grow and flower profusely all the summer, and will make a much better display than can be made by Verbenas or other plants usually employed for bedding purposes, and they will, moreover, yield an abundance of bloom for cutting. If the surface of the soil be mulched with half-rotted manure or other material during hot weather a great advantage will be gained, and occasional soakings of manure water will improve both the appearance of the foliage and the size of the blossoms.—S.

**Gold-laced Polyanthus.**—My plants of named varieties of these are now in their summer quarters in the open ground, but the bed is so situated that the shade of some neighbouring trees falls across the plants about noon. The sun shines upon them only during the forenoon. In such a position the plants can scarcely fail to do well, provided they are in suitable soil. They are now pushing up their summer growth, and forming side shoots, which give increase of stock by and by. During the summer I top-dress with leaf-mould once or twice, and do not fail to keep the plants well supplied with water. In a few cases, happily very few, I am troubled with the ravages of a fat-looking black grub, which eats through the stems of the leaves just beneath the surface of the soil. They appear to possess a singular capacity for finding out the most valuable sorts, and it is annoying to have one's plants robbed of their leaves just when they are serving an important purpose in the economy of plant life. I think these grubs are the result of using some old cow manure I

employed as a top-dressing for the plants at flowering time. The manure had laid by for a long time, and I took the precaution of either baking it in an oven or sealing it with hot water before using, to destroy any eggs or insect life; above escaped this ordeal, and have lived to trouble me in the way above mentioned. Another time I shall have to be more careful in searching for any harmful subjects of this character. It is grand weather for all kinds of hardy Primulas in the open ground; they are making an enormous growth, and if all goes well, a good head of bloom should be enjoyed next spring. But many risks lie in the way of the unknown path to be trodden during the next ten months.—D.

**Saxifraga nepalensis.**—This is far from being a free bloomer. A year or two ago one of our great plant decorators desired to bespeak 200 plants of it when it flowered. "To get these," replied the grower, "I shall have to pot at least 1000, and perhaps not then get as many to bloom as are wanted." This is an awkward habit, as it leads to disappointment; but it is possible that the true requirements of the plant may not be understood, or else it needs a certain period to elapse before it becomes floriferous. I find its near ally, *Saxifraga pyramidalis*, to be also somewhat shy. I have had a dozen plants of it for two years, and have yet only got one to bloom. *S. nepalensis* in flower is a grand plant, its fine pyramid of bloom being sure to elicit the warmest admiration when first seen.—A. D.

**Adiantum Capillus-Veneris.**—This pretty hardy Fern grows here on the inside of the wall on either side of a cool house, and nearly close to the ground, where it is admired by all who see it. How the plants came to be first fixed there I am unable to say, but I conclude that my predecessor here must have grown plants of it, and that he must have placed them at times beneath the side stages, and that seeds thus became attached to the joints of the brickwork and grew there. That these now increase there can be no doubt, as numbers of minute plants are discernible on the surface of the brickwork. The fronds of Ferns so produced are really charming for bouquets and button-holes, and yet their cultivation is a matter of chance. If the walls of cool houses near the ground were jagged and roughed with mortar, and seeds of this pretty Fern sown upon such surfaces and kept moist, no doubt in time the walls would be covered with lovely green foliage that would be useful in many ways.—A. D.

**Rubus deliciosus.**—I observe in THE GARDEN (see p. 501) Mr. Thompson, of Ipswich, challenging the statement given in "Notes from Kew" (p. 434) that to me "was due the honour of having introduced this fine shrub to English gardens." He asserts that it "was not introduced by Mr. Isaac Anderson-Henry, but by me. Mr. Anderson-Henry simply bought seeds or plants of it of me; I forget which." I certainly neither bought seeds nor plants of it from Mr. Thompson, and I think I can satisfy your readers, as well as Mr. T. himself, of his error. On looking back into my Plant Book for 1866, I find I had, on September 29 of that year, sown seeds I had through a friend of *Rubus deliciosus*, from the Rocky Mountains, lat. 41°, the first of which was through on March 17 thereafter. Now, as Mr. Thompson is good enough annually to favour me with his seed catalogue, not a few of which I find I have preserved, I have glanced my eye over some of them, and find that in the appendix of his catalogue for 1872 he inserts, for the first time, under the heading "New Seeds of the Present Season," "*Rubus deliciosus*, interesting North American species." I had large bushes of it about 3 ft. high in 1873, as Dr. Hooker observes in his notice of it along with the figure which he gives of it in the "Botanical Magazine," t. 6062, of that year. Under these circumstances, I think Mr. Thompson ought first to have made sure of his facts before making the rash assertions which he has done in your columns.—I. ANDERSON-HENRY, *Hay Lodge, Trinity, Edinburgh.*

**Times at which Lilies Bloom.**—I find my own experience in regard to the cultivation of Lilies so very much at variance in several points with what is stated by several of your correspondents, that, without wishing in any way to controvert their theories or modes of treatment, I should like to state a few facts which I have noted as to *L. auratum* and *speciosum* in my greenhouse. "Dunedin" states, in reply to Mr. Harvey, that plants of *L. auratum* will under glass "themselves return to their natural time of flowering." What is their natural time of flowering? One I have blooms every year the first week in May; this year it was out on the 2nd of that month, and the five blooms which it produced lasted, as usual, three weeks. Other bulbs that have not been shifted for three years, in the same sized pots and in the same greenhouse, are all in different stages of growth. One will be open the first week of next month; another rather later, and others are not showing for bloom, though 5 ft. high; whilst imported bulbs of last autumn are only just pushing through the ground, or at most 6 in. high. In short, I have come to the conclusion that *L. auratum* does not observe times and

seasons like *L. speciosum*, which, with me, is as regular as clock-work. In the month of October last I took two bulbs of *L. rubrum* that had bloomed while the flower-stem had scarcely decayed, and potted them in 8-in. pots; also two bulbs of *L. album* and of *album novum*, keeping one pot of each that had bloomed on single stems unshifted. The result shows how much varieties of the same species (if they are but varieties) differ in habit. *L. rubrum* (despite "Dunedin's" theory that the old bulbs decay) has come up in the centre of each pot, a single stem, now over 6 ft. in height, and with from sixteen to eighteen blossom-buds on each. The plant of *L. album* in each case has thrown up two stems, which are from 4½ ft. 5 ft. in height. These unshifted have thrown up from four to five stems, and are dwarf with but few flower-buds. *L. giganteum* has bloomed well with me this year, six very perfect blossoms lasting over three weeks, the large stem and foliage remarkably perfect, as if formed of green glass. As the last bloom is dropping, I have carefully removed the earth round the stem, and find the bulb decayed, the stout stem resting on the stool from which the roots radiate, and on either side a shoot with two large leaves, each of which will form a bulb, and bloom (I presume) the second year. I shall in no way touch it, and see what the result will be.—AMATEUR.

### HERBACEOUS CALCEOLARIAS.

TIME was when large specimen Calceolarias were a leading feature at exhibitions, much as Roses in pots are now, but that on-growth has ceased, and now we see only small but remarkably well-grown and finely-flowered plants. These varieties of Calceolarias were named kinds and propagated by cuttings, and it was from cuttings such large examples were grown. But what has happened in the case of other plants—the *Cineraria*, for instance—has happened also with the Calceolaria; the types raised from seed are now so good generally that little or nothing is gained by naming any of them, and so it has come to pass that named Calceolarias, except of the shrubby and bedding kinds, have ceased to exist. An indifferent strain of seed of Calceolarias is now the exception and good strains the rule. A few days ago I had an opportunity of inspecting a spacious house of herbaceous Calceolarias at the London Road Nurseries of Messrs. Sutton & Sons, at Reading, and here I saw some approach to the fine specimens that used to turn up at the metropolitan and other shows a quarter of a century or so ago. The house was filled with Calceolarias, consisting of plants of varying sizes, but some of the specimens were particularly noticeable, being 3 ft. or so through, dwarf, compact, and vigorous in habit, and densely laden with flowers of excellent quality. Sticks had been used to keep the shoots well distributed, and these arranged from 1 ft. to 1½ ft. in height, the heads of bloom were level and well displayed. The bold deep green leaves hanging about the rims of the pots, showed that the plants had been grown as Calceolarias should be. The seed of these Calceolarias had been sown some at the beginning of June, and the remainder at the end of June, or early in July of last year. It was sown in the usual manner, but thinly, so that the plants might have room to grow into size; they were pricked off as required, and set singly into small pots as soon as possible, and grown on in cold frames. The next shift was into 5-in. pots, and at this stage some of the most forward and strongest plants had the centres taken out to induce the pushing forth of side shoots, as from these large plants had to be made. Some had an intermediate shift into 7-in. pots, and others were not moved till they were put into 9-in. and 10-in. pots in October. The plants hitherto kept in cold frames were continued there, but kept close for a short time to induce root growth, and then plenty of air was given them all through the autumn, even in rainy weather, the lights being well tilted up at their sides on the leeward side. I saw these plants at the end of October, and they then had six or seven shoots each, and they were in the most robust health. The treatment was the very opposite of "coddling"—that unfortunate process to which the Calceolaria is so much subjected during the winter months; and there is no doubt that a well-grown, robust Calceolaria, grown in a cold frame, is as nearly a hardy plant as can well be. In spacious, airy, cold frames, that could be artificially warmed during the winter, if needed, these plants were kept till they began to throw up their flower-stems and till near blooming point, when they were taken to the flowering house and kept well shaded and cool when requisite. A most important point in the case of the herbaceous Calceolaria is cleanliness. Constant fumigation and a free circulation of air are absolutely indispensable, as well as strict attention to watering. Many amateurs fail with the Calceolaria because they keep their plants in too close and dry an atmosphere, and are not sufficiently attended to in the matters of watering and cleanliness. These are first essentials to health, and in so far as they are looked after will be the measure of success reached by the cultivator. D.

## NOTES OF THE WEEK.

**Iris gigantea.**—This tall Iris is now in flower in the collection of the New Plant and Bulb Company at Colchester. It is really a tall and pale form of *Iris ochroleuca*, and therefore valuable for the wild garden, and for moist soil near water.

**Leucojum hyemale.**—I have grown this plant for some years. It is perfectly hardy, but in wet winters the bulb is apt to perish. It is therefore best to grow it planted out in a glazed pit. It never blooms till April or May. I have no doubt the name *hyemale* was given to it from the fact, like *Corbularia Bulboodium*, it throws up the leaves at the beginning of the winter. It is a most elegant and lovely little flower.—HARPUR CREWE, *Drayton-Beauchamp Rectory, Tring.*

**Aquilegia haylodgensis.**—This new hybrid Columbine, which is now in flower at Kew, is apparently identical with *A. cœrulea* hybrida, lately exhibited by Messrs. Veitch, and doubtless the same parents were employed in its production, viz., *A. chrysantha* and *cœrulea*, as it partakes of the colour of both these species. It is needless to add that it is a charming acquisition, and it is to be hoped that more will be done in this way by crossing kinds of weakly constitution with those that are more robust, such as *A. vulgaris*, *alpina*, *glandulosa*, &c.—W.

**Anthericum Liliastrum majus.**—Of this plant there is just now a fine display in the Wellington Nurseries, St. John's Wood. It is planted out in good soil and bears strong spikes of large, snow-white, sweet-scented blossoms, which, in a cut state, are highly esteemed. Planted in masses, together with *Irises*, *Ixias*, and similar plants, this *Anthericum* would, even near London, form one of the most important features in the herbaceous garden.

**Mrs. James Cutbush Tulip.**—Messrs. Van Eden inform us that the Tulip Mrs. James Cutbush, supposed by them to be a new form, has proved to be an old, rather scarce kind, the true name of which is *La Laitière*; consequently they are not entitled to give it a new one.

**Meconopsis aculeata.**—This truly majestic Poppy from the Himalaya Mountains has large blue flowers, which are borne in profusion on a long spike  $1\frac{1}{2}$  ft. to 2½ ft. in height. Unlike *Meconopsis nepalensis*, which is not much more than a biennial, this beautiful species is a true perennial. It is now in full flower on the rockwork in Messrs. Backhouse and Sons' nursery, York.—R. P.

**Cool Orchid House at Drumlarnag.**—There are at present more than 200 blooms of *Masdevallia Harryana* in this house, 97 of which are on one plant; and 20 spikes of *Odontoglossum vexillarium*, 13 of which are on one plant. This fine *Odontoglossum* is kept constantly in the cool Orchid house at Drumlarnag, and is found to thrive vigorously.—C.

**Hardy Plants in Bloom at Tring.**—*Libertia formosa* (alias *pulchella*), which I have hitherto failed to grow, is now in fine bloom with me. It has about twenty spikes of flowers. It has been out the whole winter. *Chrysobactron Hookeri* is also blooming well in the open border for the first time with me, and *Sarasa kamehatchica*, which last year had only one flower, has this year two, so that even if you live on chalk rock with a superstratum of sticky clay you need never despair.—H. HARPUR CREWE, *Drayton-Beauchamp Rectory, Tring.*

**Graceful Basket Plants.**—*Nierembergia*s are highly esteemed in London for furnishing small vases or window boxes, and deservedly so, for few plants are more graceful or better adapted for the purpose. *N. gracilis*, with small blue and white flowers and dwarf habit, and *N. frutescens*, possessing an upright habit, and bearing large white flowers with mauve-coloured eyes, are the chief kinds used, and it is satisfactory to find that by crossing these two kinds intermediate varieties have been raised, which possess a better habit of growth than that of the parents, and by again crossing these with *N. gracilis* the result is good habit, large flowers, and fine blue, white, and mauve colours. We saw lately a quantity of them in the Pine-apple Nursery.

**Hardy Flowers at Tottenham.**—In the rock garden in the Hale Farm Nurseries large clumps of an improved Sea Thrift (*Armeria cephalotes purpurea*), surrounded by dwarf white-flowered Saxifrages, and backed up by white and crimson Alpine Roses, are very effective. The beautiful *Veronica rupestris* is the best dwarf blue-flowered plant at this season, large banks of it here being now a sheet of blossom. A variety of the Rock Rose called *Fireball* is very showy, its flowers being large and of a brilliant flame colour. *Linum luteum* and the drooping *Cyclobothra* furnish abundance of yellow blossoms, and the handsome *Geum coccineum* fl.-pl. is a blaze of scarlet. In other parts of the ground *Iris susiana* bears large and

handsome blossoms; those of the Spanish section, together with the germanica and Siberian varieties, are just now in charming condition. The same remarks also apply to beds planted with the purple-flowered *Muscari conocephalum monstrosum*, amongst which we noticed some beautiful varieties. *Ixias* and *Spiraxias* in sheltered places are in full bloom, also the free-flowering *Brodiaea congesta alba* and the curious *Arum crinitum*. Seedling *Columbines* are remarkably showy, and amongst them are many new and valuable kinds.

**Double Amaryllis.**—A good double *Amaryllis* (*A. equestris* fl.-pl.) is now added to the collection of the New Plant and Bulb Company at Colchester. It is said to resemble a double Rose, and flowering specimens which we saw in a dried state seem to justify this description.

**Xerophyllum asphodeloides.**—This beautiful hardy North American plant is now finely in flower in the nurseries of Messrs. J. Backhouse at York. It has dense tufts of narrow, graceful leaves. The flowers, which are pure white, are borne in a kind of pyramidal panicle on leafy stems 13 in. to 24 in. in height. The whole plant resembles a miniature *Yucca*. It thrives well in deep, rich, sandy peat or leaf-mould in damp positions.—R. P.

**Saxifraga pyramidalis.**—Few people seem to be acquainted with this Saxifrage. There was none at South Kensington last week to be compared to it. My plants of it are upwards of 2 ft. in height, flowering from the rim of the pot, where the diameter is 13 in.—truly a snowy pyramid of bloom—and these are by no means large specimens. Anyone can grow it who has a window or a cold frame.—D., *Ashmore, Dorset.*

**Irises at Fulham.**—There is just now a fine display of the beautiful *Iris Victorine*, a coloured plant of which was given in THE GARDEN (see p. 80), in Messrs. Osborns' nursery at Fulham. Its blooms are larger than we ever remember to have seen them, and their colours are strikingly beautiful. Several other new and valuable *Irises* may also be found here, as well as a good display of the germanica section.

**Orchids in Flower at Clapton.**—One of the most gorgeous displays of Orchids which we have seen for a long time may now be found in Messrs. Low's nursery, Clapton. Hundreds of plants of the showy *Dendrobium swainsonianum* are furnished with gracefully drooping clusters of bright golden-crimson-blotched blossoms. *D. chryso-tectum* is producing blossoms in profusion, and hundreds of the miniature *Vanda corulescens* Boxall, also in flower, may be seen in the same collection. Of this there is a purple-lipped variety named *Lowi*, which is also in flower. Plants of *Dendrobium Bensonianum* are likewise finely in bloom, and amongst them are many highly-coloured and fine varieties.

**Plants in Bloom at Colchester.**—Our *Calochorti* are now coming into bloom; *C. luteus*, *C. elegans*, *C. albus* var. *paniculatus* and *C. Leichtlini* are already out, and, with *Anthericum Liliastrum*, *Camassia esculenta*, and that beautiful and delicate-tinted *Nemastylis geminiflora* brighten our beds. Among the *Lilies*, *Szovitzianum* is just coming into flower with very large and numerous canary-coloured bells, and *tenuifolium* has been out with us for some time, and now the beautiful *pulehellum* has opened. *Arethusa bulbosa*, *Cypripedium parviflorum* and its variety *passerinum*, and *C. pubescens* are fully out. Among the *Irises*, *tripetalata*, *longipetalata*, and a whole host of other beautiful forms are in full beauty. *Hyacinthus candicans* is remarkably strong in growth. *Romneya Coulteri*, a bush with us, now four years old, that grew 6 ft. high last year, promises this year to exceed even that size. For several years past I have not observed a greater promise of strong growth and fine bloom among the *Lilies* than I now see. *L. Hansonii* and *L. dalmaticum* promise to be very fine; on the last I counted over thirty blooms last year.—ALEX. WALLACE.

**Wistarias Run Wild.**—The fine old *Wistarias* in the Fulham Nurseries, to which allusion has been made before in THE GARDEN, are now in full bloom. Climbing unrestrainedly over brick walls, and even trees, their large trusses of blossoms are shown off to advantage. Growing in this way, they are far prettier than trimly trained, and the older they are the better they bloom.

**Choisya ternata a Hardy Wall Plant.**—This, by many, is considered to require protection in winter, but that is by no means necessary, at least near London, for plants of it put out against an open wall in the Wellington Nurseries some five or six years ago have, up to the present time, never failed to yield a profusion of white, sweet-scented blossoms, and that without the least protection. The plants in question have lately been removed, and they are now growing very rapidly against a wall at Pine-apple Place. No one need, therefore, be afraid to plant this *Choisya*, at least, in southern parts of the country; and where it succeeds well it will be surpassed by few other wall plants.

## NOTES FROM KEW.

**Hardy Herbaceous Plants.**—This week the British flora has representatives which vie in beauty with most of their exotic congeners, and are worthy of cultivation in choice collections. The first is the great Irish Butterwort (*Pinguicula grandiflora*), a coloured plate of a near relation of which (*P. vallisneriifolia*) was issued with THE GARDEN of April 13 last. The beautiful blue-purple flowers of this lovely plant are freely produced if the requisite moisture be allowed. *Erodium Manescavi* is a handsome Stork's-bill from the Pyrenees; it attains a height of 18 in., and has umbels of bright magenta flowers about 1½ in. in diameter. *Aquilegia chrysantha* is a splendid Columbine from New Mexico; its fragrant, very long-spurred, yellow flowers are extremely beautiful. Another kind, a European one (*A. pyrenaica*), is much less than the last, but the dark blue blossoms are large; this is, perhaps, the dwarfest of the cultivated Columbines. *Ausome pennsylvanica*, from the United States, is a rather tall grower, with five to seven-lobed leaves and white flowers. Two of the most lovely of the perennial Flaxes are *Linum narbonneense*, a European species, with large bright blue flowers, and the New Zealand *L. monogynum*, with pure white ones; both form very attractive objects in the herbaceous border. *Potentilla nevadensis*, a Spanish Cinque-foil of dwarf habit, bears a profusion of bright yellow flowers. *Onobrychis sativa* var. *montana* is a dwarf form of the common Sainfoin, which it resembles in other particulars; this pretty plant has been distributed as *Hedysarum montanum*. *Astragalus purpureus* is a handsome European Milk Vetch, with rosy-purple flowers, and grows about 18 in. high. The Mexican Tree Lupin is a noble shrub, with flowers which vary in colour from yellow to white with a tinge of rose. *Saxifraga cochlearis* is a Piedmontese species, with compact little rosettes of small leaves and panicles of charming flowers, white spotted with pink. *Patrinia scabiosetolia*, a dwarf member of the Valerian family, which was introduced from Daburia during the first quarter of the present century, has a compact head of yellow flowers. *Saxifraga Maweanae*, recently introduced from Morocco, is a dwarf plant with large white flowers; it is as yet rarely seen in collections, but is sure to become a general favourite with lovers of rock plants. *Senecio Doronicum*, 1½ ft. high, has large heads of bright yellow flowers; this is a very showy and desirable plant, most of the leaves being radical, and the flower-heads, about 2½ in. across, being well borne above the leaves. *Veronica pinguifolia*, from New Zealand, makes a dense, little, cushion-like bush, the white flowers almost hiding the small, rather fleshy leaves. One of the best of the Alliiums not previously noted is *Allium roseum bulbiferum*; its scape is about 1½ ft. high, and the flowers are of a light rose colour. A brilliant-flowered bulb is *Brodiaea coccinea*, discovered by Mr. Lobb in California; the drooping flowers are about 1½ in. long, the lobes of the limb being green, a band of yellow intervening between that and the blood-red of the tube. *Chrysoastron Hookeri*, from the rich plains of the Middle Island, New Zealand, has racemes of golden-yellow blossoms; when in flower it is said to cover the boggy spots in which it grows with a sheet of yellow. *Crinum exense* var. *riparium* is a stately semi-aquatic with broad green leaves and beautiful light rose-coloured flowers.

**Greenhouse Plants.**—A new species of *Aponogon*, *A. spathaceum*, though not so handsome as *A. distachyon*, is well worth growing; the Rush-like leaves are erect, not floating, as in *A. distachyon*, and the much shorter-forked inflorescence is tinged with rose. Another new plant, *Iris spectabilis*, from Hong-Kong, is a pleasing species, but not nearly so pretty as the Chinese *I. fibrinatis*. *Panacratium littorale* is a very elegant *Amaryllid*, with short, stout scapes bearing umbels of the purest white flowers, the segments of which are very narrow, and the corona almost perhaps than in any other species of the genus. *Eliense longipetala*, a relation of the last-named, is a noble plant, with erect leaves and pure white flowers; it was introduced from Lima in 1837. Dr. Lindley called this a splendid species, and stated that it would prove welcome to all cultivators of bulbous plants. *Albucca tenuifolia*, from the Cape of Good Hope, is one of the prettiest of the genus; it has little Grass-like leaves and bright yellow-tipped, green flowers. Where unlimited space can be allowed it, *Passiflora cinnabarina* makes a handsome climber for the cool conservatory. The most lovely of the Australian *Liliaceae* are the *Blandfordias*, and *B. flammea* var. *elegans* is now in flower; it has long, slender leaves and large scarlet and yellow bell-shaped flowers.

**Stove Plants.**—Two of the most striking stove plants at present in flower in the Kew collection are the *Bromeliads* *Bilbergia Portensae* and *Pitcairnia flavescens*. The first-named is a magnificent species with long leaves overlapping each other for half their length (which is above 3 ft.), and a gracefully drooping inflorescence; the large bracts are a brilliant crimson-scarlet in colour. *Pitcairnia flavescens*

has pale yellow flowers with orange-coloured anthers. *Utricularia montana*, a most curious epiphyte from the West Indian Islands, is as interesting as it is beautiful; in a wild state it grows on the wet Mosey trunks of trees on the mountains; the large, drooping flowers are white, with the exception of the yellow disk of the lower lip of the corolla. The *Amboyana Lily* (*Euryclides ambonensis*) is a handsome white-flowered stove bulb. A coloured figure of *E. australasica* was figured in THE GARDEN of November 17, 1877. *Justicia natans*, a tropical American aquatic with Willow-herb-like leaves and showy yellow flowers, is well worth a place in a warm tank.

**Orchids.**—Undoubtedly the prettiest of this week's Orchids is the lovely *Dendrobium suavisimum*, a coloured plate of which was given with THE GARDEN for Feb. 23 of this year; the large, glossy, wax-like, yellow flowers are borne in drooping racemes, the fringed lip being prominently marked with a crimson-black blotch. *Burlingtonia fragrans* is a charming little epiphyte from Brazil; the short, drooping spikes bear several flowers, which are white, except the yellow crest of the large lip; the backs of the sepals and petals are tinged with rose. *Aerides odoratum* and its var. *najus* are no less remarkable for the elegance of their spikes of flowers than for their fragrance; the type, introduced to Kew by Sir Joseph Banks in 1800, has delicate cream-coloured blossoms spotted and blotched with purple. *Epidendrum aromaticum* is a Guatemalan species, having whitish sepals and petals, which are similar in size and form; the lip is marked with very fine purplish lines. *Odontoglossum cristatum*, from Peru, has pendulous racemes; the greenish-yellow and brown sepals and petals are narrow, the column and a portion of the crests of the peculiar lip are white. *Mesospidium sanguineum*, from great elevations on the Peruvian Andes, is a little Orchid with much-branched panicles of rosy-red flowers.—†.

## EARLY OPENING OF KEW GARDENS.

AMONG the various doubtful statements published by the small party at Kew that desire to keep the garden closed till the afternoon, that published last week in THE GARDEN (p. 529) deserves exposure. "We appeal," we read in the memorial signed by Dr. Robert Hogg and J. Bull, F.R.S., "with confidence to the experience of all who are acquainted with the management of large gardens in saying that the perfection of keep and finished beauty, which are unattainable in any country but our own, cannot be maintained without an amount of supervised labour which it would be hopeless to attempt to perform in grounds frequented throughout the day by the public." It is surprising that gentlemen of such reputation, and who presumably know something of the gardens of Europe, should put their names to statements so far from being exact. The presence of the public from early morning till dusk does not in the least interfere with the keep or the high culture of public gardens; as, for example, the Park Monceau and Battersea Park.

**Tropæolum azureum and Jarratti.**—Mr. Cornhill's article on *Tropæolum azureum* (see p. 517) is especially interesting to me for having grown *T. Jarratti* (or what I take to be so) with some success for a small conservatory, which is entirely unheated, I had determined to try *T. azureum* also, until Mr. Hemley's remark on the greater difficulty of growing it discouraged me. I plant one tuber of *Jarratti* in each pot, and almost invariably find two of nearly equal size when I turn them out, but never more. The shape of these tubers is usually round, but sometimes a finger-shaped one occurs. As soon as they are potted I place them in a light window facing the south, where they remain for several months, until they have made considerable growth and show flower-buds. This year it occurred to me to have a small archway of Hazel twigs formed across one of the corners of the little conservatory, with a plant at each side, and since the middle of April the effect has been charming. At present it makes a frame for a large plant of *Hoteia japonica*, which contrasts well with the scarlet wreath of pendent blossoms above it. I failed in growing this *Tropæolum* so long as I tried it in a Vinery, which, nevertheless, is only heated by a stove in very severe winters to keep out frost. The window treatment, however, seems to succeed admirably in a room without a fire. Is *T. azureum* as hardy? If so, there ought to be no insurmountable difficulty in growing it. *Jarratti* seems to me to be impatient of any fire-heat. Would it be troubling Mr. Cornhill too much to ask also what kind of trellis he uses for training *azureum* upon? *Jarratti* has an unconquerable aversion to being trained round and round, as upon a balloon trellis, which is moreover, in my opinion, unnatural, and, therefore, not in good taste.—D., *Ashmore, Dorset.*

ART IN GARDENS.

I NOTICE in a horticultural contemporary a favourable review of "a privately printed essay on the æsthetics of garden art," entitled "Aesthetik der Gartenkunst," by Von Lothar Abel, a garden architect of note in Vienna, which "is essentially a defence of the architectural style of laying out a garden immediately around a castle or mansion, as opposed to the landscape style." The author regards gardening as an art which uses natural materials, but in which scenes other than those which occur in Nature are the most charming; whilst a landscape garden he looks upon as incongruous with a building or with inclosure walls and as being not "æsthetic" or "artistic" but "simply the reproduction of certain scenery." This landscape gardening is alleged to be a peculiarly English error. Would it were more so. The world's greatest thinker—an Englishman—in the words of the motto of THE GARDEN, wrote of gardening—

This is an art  
Which does mend Nature: change it rather: but  
The Art itself is Nature.

In the spirit of this last line, admitting that we may "mend Nature" by adding to the beauties of our native plants those of any other clime; admitting that boundary walls are apt to be unsightly and are unlike Nature's usual landscapes; admitting, too, that buildings of all kinds mar the beauty of views in a natural garden by detracting from its naturalness, I venture to maintain that, as the gardening "art itself is Nature," we are as much justified, as a matter of taste or—if we must use a long word—æsthetics, in following the thoughts of Nature in her landscapes as nearly as we can, as are the painter or the sculptor in not confining themselves entirely to the conventional, but striving after the nearest possible approach to that perfect portraiture to which they can no more attain than can we. We aim at this and at no more. We do not merely re-produce certain scenery any more than the dramatist or the novelist re-produces every-day life. We have to select the pleasing to epitomise. We do more, we add the impossible if only it be beautiful. Plants of another hemisphere are placed side by side with British species, on the sole justification of beauty, in defiance of Nature's laws of geographical distribution.

It is by no means necessary that a garden be enclosed by four unsightly walls, by less than that number, or by more. The rock walls, curtained with Ivy and Virginian Creeper, with Yuccas and rock shrubs in the foreground (engraved on p. 234), the Rose-covered palings of the Waltham Cross Nurseries (engraved on p. 357), a piece of water, which can be so readily made ornamental, a tangled thicket, a Haw-haw, or many a device can be used to avoid this unnatural and, I admit, unbeautiful incongruity, even in small gardens. The same is true to a great extent of buildings. Engravings in THE GARDEN have already shown how tool-sheds or summer-houses may, as Ivy-clad caves and grottos, harmonise with semi-wild surroundings, and how even the house itself, draped with Roses, Ivy, Wistaria, Virginian Creeper, or what not, may not be strikingly inharmonious. It may be illogical, but I have yet to learn that æsthetics, art, or other matters of feeling or imagination are governed by the rules of reasoning or formal logic; even if so, I cannot see the necessity, urged by some, of degrading our gardens, of torturing and clipping the works of Nature into geometrical outlines, straight lines and level surfaces, of treating them architecturally, so that

they may harmonise with an architecture the most destitute of principle and of beauty perhaps of any the world ever saw. But, after all, landscape gardeners recognise two facts; first, that much of the value of a garden depends on its beauty as seen from the house, from which the house itself does not detract; secondly, that a leading charm in landscape is repose, perhaps only another name for harmony, and that this is best secured by as far as possible shutting out the house, however draped, as also anything else obviously artificial, from as many as possible of the natural landscape vistas of the garden. "The highest art is the concealing art." To my mind there can be little or no repose to the eye in a mixture of sculpture, marble, carved stone, stucco, or brick and mortar, with Nature's wildings. Florists' flowers in a conservatory may look well in majolica or terra-cotta. Gilt chairs with blue silk curtains may look well in a drawing-room. To my mind and eye there would be no repose, no comfort, no art, no beauty, in either case.

G. S. BOULGER.

11, Burlington Road, Westbourne Park.

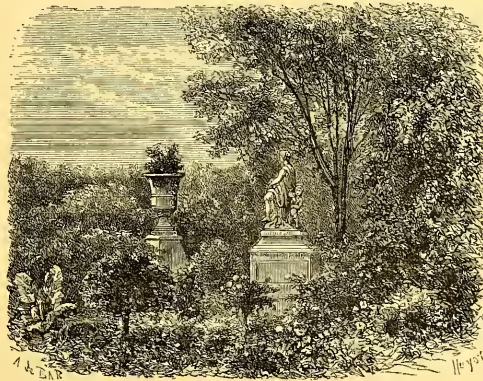
**New Zealand Flax Seed.**—My experience in reference to the growth of imported seeds of New Zealand Flax is entirely different from that of your correspondents "J. S." and Mr. Thompson. Three

years ago I received a packet of seeds by post from Wellington, New Zealand, of the Marsh Flax. I placed them in a shallow pan of black sandy soil; the soil scarcely covered the seeds; they were kept continually wet. A very large number grew and are now fine plants, about 3 ft. high. My success was so satisfactory, that I wrote requesting to have more seed sent me, and last autumn I received another packet by sample post (postal charge 4d.), containing Flax and other seeds. The Flax I now placed in a pot, not a shallow undrained pan. I have already grown a number, also a large number of what I believe to be a species of Veronica, also an innumerable number of plants of a fine long Grass, stated to be very ornamental, and such a quantity of Chianthus that I must either throw or give them away; I cannot use them. Only one packet of seeds failed, which, I am informed, belonged to a plant very much like the Flax;

but of this package not a seed grew. I am convinced that the proper treatment of Flax seeds is to grow them in a shallow pan, in little soil, keeping them constantly wet, and as soon as they germinate to pot them off. Slugs are very fond of them when young, and through slugs I have lost a large number. My object in having a quantity of Flax plants was to place them in my wild garden, in between rocks and in other places. I hope the fashion of bedding out and carpet bedding is on the wane; for years I have protested against it. The latter (carpet bedding) is a perfectly barbarous plan, which no man really liking plants, liking a garden, and with a correct taste, would ever adopt.—K. K., Taddyfords, Devon.

**In the Inner Garden of the Tuileries.**—The annexed illustration shows a glimpse of the effect of this garden in summer, when Cannas, Roses, Gladioli, and Dahlias adorn its Ivy-margined borders. With the Ivy, and the flowers, and "fine foliage," the formal effect of the straight borders is agreeably modified. There are many statues and some good shrubs, which are allowed room to grow without needless mutilation.

**Saxifraga Wallacei.**—In a note in reference to this plant in last week's issue it is stated that it is the finest Saxifrage known to the writer. I think this statement will tend to mislead if such fine species as *S. Maweani*, *pyramidalis lutescens*, and a few others be not excepted, although it is a very fine variety of the group to which it belongs, and it has also the peculiar habit of *S. Maweani*, &c., of developing buds in the axils of the leaves, and which afford a rapid means of propagation. The *Iberis superba* mentioned in the



In the Inner Garden of the Tuileries.

same paragraph is undoubtedly the finest of all the white Iberises. The heads of flower are as large as in *I. gibraltarica*, and it is also very floriferous, thriving either in the shade or in an exposed place. It is proved to be a fine form of *I. Garreziana*.—W.

#### SHRUBS AND FLOWERS FOR WOODLAND WALKS.

ALLOW me to add my mite to what has already been said on this subject. Many years ago I had the management of a large garden, and along with it the woods on the estate. The latter, as usual, comprised sites and soils of many kinds, steep—almost inaccessible—banks, swamps, level tracts partly covered with coarse herbage, as well as now and then tracts where the umbrageous foliage of the trees had destroyed almost all surface vegetation. Such woods are often traversed by footpaths, by the sides of which it is easy to plant a few choice shrubs or herbaceous plants, and I have more than once heard ladies of the highest rank and of acknowledged good taste admit that they enjoyed a walk through such paths more than one through what are called dressed grounds. To plants in such situations rabbits are, however, sometimes troublesome, and therefore they should consist as much as possible of varieties of which they are not fond. Plants newly planted, too, are often attacked where the same kinds that have become established are unmolested. Box is about as safe as anything; for, although it is said that rabbits will not destroy *Rhododendrons*, I have lost hundreds by means of them, and especially of the better kinds. *Berberis Aquifolium* of a dozen or more years' standing has also disappeared where these destructive pests are encouraged in numbers; and amongst deciduous shrubs or trees I know none except the common Elder that escapes their depredations; but even this may not be entirely exempt, for, emboldened by the knowledge of their not touching the common sort, I planted some yellow-berried ones and some of the variegated and cut-leaved varieties, all of which disappeared. Some years ago I was tempted to try some Bitter Willows that were advertised as rabbit proof, but I found, on trial, that these little four-footed depredators preferred them to the commoner kinds. There are, however, many places in which rabbits are not so numerous, and to which many fine shrubs and plants might be introduced with advantage. Even where the herbage had disappeared, in consequence of overtopping trees, I have found Snowdrops and Daffodils to do well, especially the former, and when opportunity offered I have more than once amused myself and others afterwards, I hope, by planting in a good-sized open place some fancy scroll-work with Snowdrops, which are well adapted for that purpose, and here and there a ring of them around a tree about 3 ft. from the collar has looked well and retained its form for several years. Daffodils look best in detached tufts; both produce a fine effect in early spring, and both will struggle with and hold their own amongst ordinary herbage. One of the prettiest displays I ever made with Snowdrops was on a site that was in summer, or rather in spring, covered with a mass of Pile-wort, which died down in autumn, and was bare and unsightly until the Snowdrops made their appearance above ground in December, or sometimes in November, in favourable seasons. Even these two plants alone give to uninviting places a lively appearance, and that at the dullest time of the year. Next to these are Primroses, and of these the greatest favourites with me were the single white and a single mauve-coloured kind. Both these Primroses are very hardy, and they are not at all particular as to soil or situation, provided it be not too dry. Polyanthes may also be introduced. One year I remember saving a quantity of seed from some strong-growing common kinds in the garden. This I sowed in the woods in various places, but as I left before it had time to make its appearance, I cannot say with what result. I have also done the same with Snowdrops, but the seed of these takes a long time to germinate. Monkshood does well in rather damp places, and I have also tried the more refined *Aconitum variegatum*, also the pretty *Dicentra spectabilis*, and, in fact, many other plants that would have been thrown away in other cases, so that no great expense need be incurred in this kind of cultivation, for I will not call it gardening; and to meet with a plant where it is not expected affords more pleasure than to see it in the dressed grounds, or in a beautifully cultivated border. Shrubs, too,

are important adjuncts; many a place has been made highly ornamental by introducing *Rhododendrons* on a large scale, as, for instance, at Cobham Hall, in Kent. These, when planted on suitable sites, seed and reproduce themselves in such numbers as to cover the whole ground, leaving only room for roads or drives. Other shrubs might also be tried, but I have never met with the Holly-leaved Berberry as much at home anywhere as the *Rhododendron* is at Cobham Hall; in fact, I am half inclined to think that B. Darwini will establish itself sooner and reproduce itself better than its elder companion. B. Darwini is, however, difficult to transplant, but it seeds abundantly, and might be sown in quantities where it was wanted to grow. My mode of sowing such seeds was merely to scatter them over the ground and let them take their chance; the wild herbage assisted the germination, especially that of *Rhododendrons*. Box also succeeds very well when transplanted, but I cannot say the same of Aucubas, as rabbits injure them severely. A RETIRED GARDENER.

#### HARDY FLOWERS AT THE REGENT'S PARK SHOW.

CONSIDERING the liberal prizes offered by the Royal Botanic Society at the last show (May 22) for old-fashioned hardy and Alpine plants, I was somewhat surprised to see such a scanty competition in these classes, and the old-fashioned flowers which were staged showed but a poor attempt to represent to the present generation an example of the grand old hardy plants our forefathers loved to cultivate, or even to carry out the object the Society had in view, which was, I presume, to encourage the culture of hardy plants and to rescue from entirely sinking into oblivion plants introduced previous to the present century. The judges wisely withheld the award of the first prize, as, by the appearance of some of the plants, it seemed as if the exhibitors had hurriedly put in pots the same morning the first and most common plants to which they came in their herbaceous borders. I think that an exhibitor of hardy plants ought not to stage for public inspection ungainly or unsuitable plants any more than an Orchid or a Rose grower to stage an inconspicuous Orchid or a monthly Rose, for not only does it not convey an idea of the object in view, but it throws discredit on the name of hardy herbaceous plants; and were it not that it was in some measure compensated by the sight of the lovely hybrid Columbine close by, the uninitiated would have had but a poor idea of the beauty of outdoor garden plants. It cannot be that there is a lack of plants in flower at this season that were introduced previous to the present century, for in my rambles the following day I noticed many fine plants which, if well-grown specimens of them were exhibited, would make a dangerous rival to the choicest collection of Orchids or stove and greenhouse plants. I have jotted down a few of the most desirable plants which I noticed, together with the year in which they were introduced, and no doubt the list could be extended, but these are all readily procurable and of easy culture. They are as follows:—

<i>Aquilegia alpina</i> , 1730	<i>Cypripedium pubescens</i> , 1730
<i>Androsace Lilastrium</i> , 1629	" " <i>spectabile</i> , 1731
" " <i>Liliago</i> , 1698	" " <i>parviflorum</i> , 1769
<i>Iris sasiensis</i> , 1698	" " <i>Calceolus</i> , British
<i>Philox divaricata</i> , 1746	<i>Iberis gibraltarica</i> , 1732
" <i>ovata</i> , 1736	<i>Saxifraga Cotyledon pyramidalis</i> , 1693
<i>Pancreatum maritimum</i> , 1697	<i>Ranunculus acanthifolius</i> (l. pl.), 1696
<i>Ranunculus pyrenaicus</i> , 1731	<i>Trollius asiaticus</i> , 1769
<i>Phlox pilosa</i> , 1759	<i>Sarcocolla purpurea</i> , 1840
<i>Corydalis nobilis</i> , 1783	<i>Anemone palmata</i> , 1697
<i>Aquilegia canadensis</i> , 1840	" " <i>alpina</i> , 1665
<i>Faonia anomala</i> , 1783	" " <i>coronaria</i> , 1698
" " <i>tenuifolia</i> , 1765	" " <i>lortoniensis</i> , 1697
<i>Verbascum phoeniceum</i> , 1698	<i>Hesperis matronalis</i> , 1697
<i>Linum narbonneense</i> , 1759	<i>Ornithogalum pyramidale</i> , 1762
<i>Dodecatheon Meadia</i> , 1744	<i>Sedum Doronicum</i> , 1765
<i>Cortusa Matthiola</i> , 1696	<i>Lupinus arborescens</i> , 1783
<i>Lupinus nootkatensis</i> , 1794	<i>Genutiana verba</i>

In the class for Alpines but one exhibitor appeared, and although the collection contained some well-flowered plants massed in large pots, yet, strange to say, there was not one characteristic Alpine, not a crustaceous Saxifrage or Alpine Dianthus, or any of the true Alpine gems. Moreover, instead of being shown in imitation of growing in fissures of rock, by placing pieces of sandstone round the neck of the plants, they were closely packed round with ordinary Moss, as if they had been taken from a forest instead of the exposed mountain side.

The hybrid Columbines above alluded to were simply magnificent, the pot specimen being a cross between *Aquilegia cœrulea* and *chrysantha*, and partaking of the floral characters of both in a striking degree; it was also a good example of superior culture. The cut specimens represented hybrids of the finer kinds, as *A. californica*, *alpina*, &c.; and, well illustrated, what can be done by judicious hybridising and careful selection? If these were shown in the high state of perfection which we are accustomed to see in the case of other classes, I feel sure that no better step could be taken to popularise these charming plants.

A LOVER OF HARDY FLOWERS.

[We quite agree with our correspondent, and also hope the Royal Botanic Society will do away with the useless separation of hardy plants into "old-fashioned" and the reverse. The prizes given ought to be framed so that people might see at their exhibitions some of the beauty of the rich collections of hardy flowers now in English gardens. We fear this rule about "old-fashioned" plants accounts for the weedy rubbish frequently seen at the Botanic shows.—Ed.]

### STONE LEDGES FOR ROCK GARDENS.

In a paper read before the Botanical Society of Edinburgh on May 3 last I stated that the blooming of the Pasque-flower (*Pulsatilla vernalis*) was greatly enhanced by being planted



within the narrow low stone compartments formed round the base of the larger rough upright stone walls of the rock garden. These upright or back wall stones stand from 1 in. to 2½ ft. above ground, and are generally sunk from 1 ft. to 1½ ft. in the soil, according to their length. Dwarf stones of a uniform



length and depth are also sunk into the ground 6 in. or 8 in., so as to stand 2 in. or so above the surface, and from 1 in. to 3 in. apart from the permanent upright stones, both in high and low situations. These stone ledges are filled with good soil for the growth of dwarf plants. Many of the stones used in the rock garden have been procured from the Hailes Quarry, near Edinburgh. They are generally received in slabs 4 ft. long and from 10 in. to 1 ft. broad, and are readily cut into suitable lengths and easily split into thicknesses suitable for the various places in which they are to be used. These stone ledges, formed along the base of the rockery, are usually filled with prepared soil, and they receive, in addition, the fine particles of earth washed down from the upper parts, and prevent them from coming down upon the gravel walks. These dwarf stone ledges certainly improve the appearance of the rock garden and are capable of holding a large number of plants, particularly bulbous and tuberous-rooted sorts, kinds that are often lost sight of in ordinary open borders and sometimes on rockeries. Most of the description of plants here

alluded to flower early, and their foliage, in many cases, soon dies down; therefore, when in open borders, they are not unfrequently dug over for the reception of scarlet Pelargoniums and other summer bedding plants, unless much care is taken to have them named or otherwise protected, which is not always done. In such stone ledges as are here described all the species of *Erythronium* are quite at home, as well as *Galanthus nivalis* and *plicatus*, *Scillas*, *Muscari*, *Leucocoryne*, *Leucojum vernum*, dwarf *Fritillarias*, *Corydalis*, and a multitude of others. Besides the *Pulsatilla vernalis* already noticed, all other species of dwarf *Anemones* succeed well under such conditions, as do also *Dondia Epipactis*, *Hepaticas*, *Primula vulgaris* and its varieties; likewise *Gentiana gelida*, *septemfida*, *ornata*, &c. The accompanying sketch shows a portion of the higher upright walls of the rock garden 2 ft. in height, with a section of the same, each showing the stone plant ledge at the base. At intervals between the upright stones are masses of dwarf *Phloxes*, particularly of *Phlox setacea violacea*. The various species of *Aubrietia* have also a striking effect under such conditions. Besides these, *Polygonum vacciniifolium*, *Arctostaphylos californicum*, *Cytisus prostratus*, *Parochetus Communis*, &c., are useful pendent plants; also *Daphne Cneorum*, *Dryas Drummondii*, *D. octapetala*, and all the double and single *Helianthemum* when planted near the edge are very useful, while the open chinks in the upright stone slabs are filled with innumerable plants, such as *Alpine Auriculas*, *Primulas*, *Hepaticas*, *Linaria alpina*, various sorts of *Erinus*, and many others suitable for a northern aspect. Mr. Jenner, of Easter Duddingston Lodge, recently presented to the Botanic Garden about 400 *Orchis* roots, chiefly *O. mascula*, to be cultivated in the rock garden. Most of them have been placed in the open rock ledges already alluded to, and if they succeed as well as some *Orchises* previously inserted there they will prove very ornamental. Mr. Jenner has long been celebrated as an Alpine plant cultivator. He is now arranging at Easter Duddingston one of the largest, and perhaps the most artistic set of artificial rockeries to be seen near Edinburgh, and that in addition to those previously described in THE GARDEN, Dec. 6, 1873; one of large size is entirely devoted to the cultivation of Ferns, and the others for the different sections of Alpine, dwarf herbaceous, and hardy formal-growing plants, such as *Yuccas*, *Phormiums*, *Cordylines*, *Bambusas*, &c. This undertaking is being carried out under the superintendence of Mr. Gorrie, whose artistic taste in such works cannot be questioned. J. McNAB.

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### LILIUM BROWNI v. JAPONICUM COLCHESTERI.

OBSERVING Dr. Wallace's remarks about these Lilies in THE GARDEN (see p. 505), I have again referred to Mr. Elwes' observations, and I have thought that it might interest some of your readers to know what I have to say respecting the history of these Lilies and their allies. About forty years ago there was cultivated with success in my father's garden, under the name of *Lilium japonicum*, a fine and rare Lily. I cannot say whence it was introduced, but it is possible that my father bought it at the sale of the stock of the famous nursery of Voorhelm Schreevoegt in 1837. Of this Lily there were sold annually a few dozen bulbs, especially in Belgium, at a price of 10s. 6d. each. It was then considered to be the true *Lilium japonicum* of Thunberg, and was a form allied to *Lilium odoratum* of Planchon, figured and described in the "Flora dea Serres," t. 876-77. I find *L. japonicum* under that name in the nursery catalogues of our firm in 1850-1855; the last year at a much higher price than before. It had not been offered for a couple of years, as the stock had diminished too much. In 1858 it is again quoted at the former price, with a remark as to its rarity, but in the following year it was omitted, being lost or sold out, and since that time I have never met with this form in any collection. Planchon speaks about this Lily as being figured in *Lodiges' "Botanical Cabinet,"* t. 438, and states that it is in some points different from his *Lilium odoratum*. This is quite true, and both Lilies must be considered as two, perhaps closely allied, but different forms. *Lilium odoratum* was introduced to our nursery in 1854, and in the catalogues of that and the following year it was noted that it was a distinct form of the old *L. japonicum*. Both these Lilies showed, at least from a horticultural point of view, so great a difference from *Lilium Browni*, that, if not considered as distinct species, they at least must be accepted as strikingly different varieties. L. Browni

was once cultivated, too, as *L. japonicum*, and quoted in the catalogues as *L. japonicum* of gardens in contradistinction to the true *Lilium japonicum*, the old sort which was considered to be that of Thunberg. In England at that time *L. Browni* was considered by some to be identical with Thunberg's *Lilium japonicum*. This erroneous impression was, if I remember rightly, first cleared up by Spæe in his "Mémoire sur le genre *Lis*," offered to the Belgian Academy of Sciences in 1845. *L. Browni* was introduced into Holland in 1838 either from England or Belgium. M. Const. Gheldorf, Ghent, in his catalogue (1844-5) writes about the two *Liliums* in question as follows:—"In *L. Browni* the exterior of the petals is white, striped with dark crimson, nearly  $\frac{1}{4}$  in. broad, sepals greenish-white, dotted with crimson, and bordered with clear white. The Japan *Lily* introduced in 1801, which is now very scarce, has only the top petals tinged with crimson." The last is quoted in this catalogue as *L. japonicum verum*, and was the same as that cultivated by my father under that name. As for *Lilium japonicum Colchesteri*, not having been fortunate in its cultivation, I have not yet seen it in flower, but, judging from the figure of it in the "Flore des Serres," I suppose it is nearer to the old *L. japonicum* and *L. odoratum* than to *L. Browni*. As for the true *Lilium japonicum* of Thunberg, I find that the opinion that it is identical with the white form of *Lilium Kramerii* is not contradicted by what is said about it by Planchon in the "Flore des Serres," ix., p. 53. M. Van Houtte, in his article on the Colchester Lily, arrives at no decision on this point, and only puts a (?) after the word *Japonicum* in his name of *L. japonicum Colchesteri*.

As far as I can judge, there are mixed up in this question four different forms of *Liliums*, which I should be inclined to unite in two groups, one consisting of *L. Browni*, the finest of all and the most popular in cultivation, as well as the most hardy and most easily grown when once established. The other group should consist of the three others, viz., the old *L. japonicum*, *L. odoratum* of Planchon, and *L. japonicum Colchesteri*. Being delicate and difficult to manage, the two former are at present probably lost in Europe. These three forms are perhaps very closely allied one to the other, but in various points they seem to differ much from *L. Browni*, especially in the bulbs.

Haarlem.

J. H. KRELAG.

**Aquilegias from Seed.**—A week ago I should have been inclined to agree with Mr. Dod (see p. 515) that any attempt to grow seedlings of *Aquilegia chrysantha* and *Skinneri* was a farce, but on my return home the other day, after two months' absence, I was surprised to find a bed of each variety blooming well, and I was so much struck with the exceeding beauty of *A. chrysantha* and the quaint colour of *A. Skinneri*, that I am most anxious now to continue growing them. The seed was sown in the spring of 1876, and in the autumn the young plants were pricked out on the warm border where they are now flowering; last year they made no growth, and thus it was that I had given up all hopes of success and had almost forgotten their existence. I should be glad if anyone would tell me what is the best thing to do with them, and if it be necessary, as with *A. cœrulea*, to have young plants every year.—E. FARRER.

— I find *Aquilegia chrysantha* to come true from seed and to thrive well, but it does not like frequent removal, and it is well to sow a little seed of it every year. *A. glandulosa* does badly generally; the seed germinates indifferently, and the young plants grow very slowly. I find that seeds of *A. cœrulea* also germinate slowly, and so do those of the new hybrid *cœrulea*, as seed of that and of *californica* hybrids, sown at the same time, showed the latter to germinate in one-half the time required by the other, and the plants are now much larger. I have seeded plants to bloom next year of *A. chrysantha*, *glandulosa*, *cœrulea*, and the two new hybrids, and directly I get seed ripe—which will be in a day or two—I shall sow seed of that earliest of all *Aquilegias*, the dwarf *A. formosa*, and shortly seed of the fine purple *A. alpina superba*. I shall thus be enabled next year to thoroughly test the point as to the truthfulness of varieties from seed. Beautiful as *Aquilegias* are in the open border, I cannot but think that many of the choicest kinds are well worthy of pot culture; indeed, in the fine group of choice plants staged by Messrs. Veitch at South Kensington last week few were more attractive than a well-flowered plant of the new *A. cœrulea* hybrids, which held its own, as regards elegance and beauty, even when associated with *Orchids*, *Gloxinias*, and other richly-coloured flowers. Perhaps some day flower show committees may take *Aquilegias* under their patronage, and offer prizes for plants of them in pots. One of the prettiest kinds, the early dwarf *A. formosa*, is by no means common, but it is well worth a place in any hardy plant house, as it flowers freely through the month of April. That it will invariably come true from seed there can, I think, be little doubt, as it is in bloom so long before other kinds. *Aquilegia* seed should be

sown in pans or boxes under glass not later than the month of April, if possible, as it is then easy to secure good plants to flower the next year. The common garden kinds will germinate anywhere, but my remarks are intended to apply to the choicest species and hybrids.—A. D.

**Coloured Primroses in Woods.**—Mr. Williams (see p. 530) seems to imply that the naturalization of coloured Primroses in woods is a hopeless task, and doubtless it would be if they were to be planted in positions where every one calling themselves "naturalists" had free access to them; but there is no lack of semi-wild gardens as much secluded from "British plant collectors" as are the carpet beds of modern flower gardens. I well remember the lovely effect produced at Cliveden by planting large masses of coloured Primroses, *Polyanthuses*, *Oxlips*, &c., in semi-wild portions of the grounds, and even by sowing the seed of such varieties in borders or margins of shrubberies where they had a chance of perfecting their growth unmolested. I am myself an ardent admirer of our native yellow Primrose, but I certainly think that masses of it would be none the less effective by being intermixed with the bright coloured varieties; they increase so rapidly by division, that hundreds this year might be multiplied into thousands next season.—JAMES GROOM, Wangford.

— Mr. Williams recommends us to plant in a wholesale manner such flowers as Snowdrops, Crocuses, Snowflakes, and Hyacinths in places remote from the garden, but treats as absurd the idea of introducing the coloured Primrose into similar situations. At p. 457, in speaking of *Lilies* of the Valley, he advised us to "plant them in abundance," as they "would not then need to be guarded;" whereas at p. 530 he insists that such a proceeding would merely serve to attract predators. At p. 457 Mr. Williams says: "The fact is, there is too much conservatism as regards these sorts of flowers. Some imagine that flowers of this or any other class never ought to be out of a garden. If all surplus stock of Snowdrops, Crocuses, and Hyacinths were distributed in woods and copses, a new feature would be added to them which they do not at present possess." It appears to me that if such flowers as those enumerated may be planted and preserved in woods, that the Primrose would be equally secure, for I am sure that the *Lily* of the Valley and garden Hyacinths would be equal in value to the Primrose in the eyes of the spoiler. In spite of Mr. Williams' censure, I cannot see that there are such insuperable difficulties in the way of naturalising the Primrose. On most estates there are little bits of shady wood, not necessarily a mile away from the dwelling, where the experiment could be made with a prospect of success. I know of many such in which there is but little danger of flowers being stolen. Owners of property manage to prevent indiscriminate trespassing and pilfering now-a-days, and it must be something a little more valuable than a few roots of flowers that will tempt a person to run the risk of the penalties to which the theft of them would render him liable. There is a wood in this neighbourhood, near a large manor, which is carpeted with the common Primrose and *Ferns* of various kinds. Permission is annually given to the neighbouring population to go and gather the flowers on the condition that no roots are taken up, and I have never known this privilege to be abused. Were other kinds of flowers introduced into such situations, I cannot imagine that the owner would have any difficulty in protecting them. "A. D." suggests the *Polyanthus* instead of the Primrose. If a greater amount of seed can be had of the *Polyanthus*, then that is perhaps the most suitable flower with which to start. Why I suggested the Primrose was because in many districts this tribe of plants do not hold out in beds and borders, whereas in the same places they thrive almost without care when in perpetual shade during the summer. I hope that some of your readers will give them a trial.—J. CORNHILL, Blythe.

— I will use all the spare plants I have to carry out Mr. Williams' suggestion, and they shall be placed in a wood, situated as he describes, where already Snowdrops, Aconites, and Daffodils grow in profusion.—E. FARRER.

**Dicentras.**—It is almost impossible to praise these too highly. Three plants of *D. spectabilis* bought in Covent Garden, in March, 1877, had all their flowers cut off for decorating vases, and their roots, which were afterwards planted in a shady part of my garden, have this year produced enormous clumps of blossoms and foliage. Early this spring I bought two more pots of it, cut off all the leaves and blooms for vases, and placed the pots in a cold, shaded frame. They are now in flower again, and very pretty objects they are. *D. eximium* and *D. pulchellum* used to be considered identical, but a visit to Mr. Parker's nursery grounds at Tooting just now will enable any one to note the differences amongst them.—W. T. T.

**Violas at Swanley.**—The improvements that have taken place in this ornamental class of hardy border plants during the last few years are so satisfactory, that now we have kinds with flowers as large as those of the garden Pansy of a quarter of a century ago, while, as

regards rich and varied colours and profusion of blossoms, they are quite equal to the still beautiful *Viola cornuta*. Mr. Cannell, of Swanley, who has lately planted nearly an acre of ground with the best known kinds, will, in a short time, have such a display of blossom as has rarely before been seen. Grown in good, rich, sandy loam, the plants make rapid growth, and, even in exposed positions, if the soil be deep, they continue to yield masses of blossom from April till October. Although shady places are usually recommended for *Violas*, they will succeed equally well in sunny ones under the conditions just named. Among the sorts which appeared to be the best we selected *V. Admiration*, bright purple; *Mulberry*, dark claret; *Blue Gem*, very large and of a lively blue; *Spring Beauty*, purple; and *Cliveden Purple*. These have large, well-formed flowers, and are in every way well worth culture. *Sovereign* has smaller flowers of a bright golden colour, with a dark eye, and *Queen of Spring* is of a self lemon colour. The best whites were *Vestal* and *Purity*, and *Blue-bell* is a profuse bloomer and very attractive. Some kinds may be found probably with larger flowers than those named, but, for abundance of bloom and good quality, all of them are excellent.—S.

### THE SNOWDROP IN SOMERSETSHIRE.

ANYTHING that throws a light on the native habitats of beautiful plants may be useful to those interested in naturalising them, or in



Snowdrops in "bottom" in Somersetshire.

introducing them to fresh places. The little illustration herewith given shows one of the homes of the Snowdrop in Somersetshire, where it grows in spots that at first sight would be thought unsuitable. It grows in a woody valley with a stream running through its centre, both in places where there is an open carpet of Grass, and also on the margin of the stream, under the shade of bushes, and about the stumps of old Hazel trees and Alders. In a low-lying, damp wood, near the same valley or "bottom," they grow abundantly under deciduous trees and under bushes. In both these places they display great beauty in early spring.

**Double-flowered Eschscholtzia.**—I send you a flower of *Eschscholtzia*, which has come double for these past two seasons, and this is the first flower which it has produced this year. What is your opinion of it? The plant is of a very dwarf habit.—H. D. PALMER, *Noyland, Colchester*. [The flower sent is certainly double, and very pretty.]

**Old-fashioned Flowers.**—I have just now in fine bloom what I may term an intermediate flower garden, consisting of white Pinks, East Lothian Stocks, various kinds of Pansies, Daisies, Carnations, and Pæonies. The better kinds of Pinks, just coming into flower, dressed with *Fyralthrum*, make a fine display, which also includes London Fride, Lilies of the Valley, and Forget-me-nots—together a pleasant sight. Nor must I forget that beautiful spring-flowering plant, *Dicentra spectabilis*, which, being quite hardy, is simply unique.—R. GILBERT, *Burgley*.

## THE INDOOR GARDEN.

### FORCED FLOWERS FOR WINTER.

In addition to the numerous species of tender or exotic plants whose natural time of flowering is during winter or early spring, there are also many hardy or European species which can be induced to unfold their blossoms at a period long anterior to their usual or natural season of doing so; and this result is, of course, accomplished by subjecting such plants to the influence of an artificial temperature. Some species of plants, as well as some varieties of the same species, are more easily started into active growth than others, and are consequently better suited for forcing. As regards the Rose, to which I will first allude, some of the more recently introduced sections, such as the Hybrid Perpetuals, are forced into bloom with greater facility than the old Provins or Cabbage variety (*Rosa centifolia*); and formerly this was almost the only variety which was forced. There is, therefore, now little difficulty in having a display of Roses in bloom during February and March under glass that will rival that of July in the open air. Under proper care, most varieties of the Rose will remain in a healthy condition, although forced, year after year for an indefinite period. A collection near here is now (middle of March) in full bloom, and the plants of which it consists have been forced every season during these last twenty or more years, and have never once failed to bloom profusely, and they are still in perfect health. They are chiefly Hybrid Perpetuals and Tea-scented varieties, and the majority of them are on their own roots, a few upon the Manetti stock, and a few upon the Brier; and of these three methods I am inclined to give preference to the first, viz., on their own roots. The plants were originally potted in light, rich, fibrous loam, and they are re-potted every season about the beginning of January into the same sized pots, *i.e.*, 8 in. and 10 in. in diameter. In doing this the drainage is carefully renewed, the balls of soil considerably reduced, and straggling roots are cut back, so as to admit of the use of a considerable portion of fresh rich soil. The annual pruning of the plants is generally done some time previous to the re-potting, and as soon as the latter has been performed the pots are placed upon a slight bottom-heat, and the atmospheric temperature of the structure is gradually increased, although the minimum or night temperature is seldom allowed exceed 55° with a maximum of 65°. Thus treated, the plants generally commence to bloom about the third week in February, when they are removed from the forcing pit and placed in a light greenhouse, in which they continue to bloom until the middle of April, or even later, and furnish all the time an abundant supply of flowers in a cut state. During summer the plants are placed or plunged in ashes on the north side of a wall, where they are carefully attended to with water, until the return of the season, when they are pruned, re-potted, and again placed in the forcing pit.

The genus *Deutzia* has already been mentioned as comprising plants well suited for forcing. But the well-known, although comparatively recently introduced, *D. gracilis* is well worthy of special notice. It is a dwarf-growing deciduous shrub, and, although sufficiently hardy to be grown in the open air, is, nevertheless, seen to the greatest advantage as a greenhouse plant, and is easily forced into flower at any period during winter or spring, when it forms a decorative object either for the greenhouse or conservatory, and furnishes at the same time an abundant supply of pure white Orange-blossom-like flowers that are useful in a cut state. Plants of this *Deutzia* remain for a considerable time in bloom. Old plants of it may be readily increased by division, or the young unripened shoots from plants which have been forced made into cuttings, will be found to root as freely as *Verbeas*. When plants which have been forced are out of bloom they should have the shelter of a cold pit or frame until about the beginning of May, when they may be more or less cut in and thus induced to assume any form desired, such as that of a standard or a pyramid, and they may either be retained in pots, or planted out in any ordinary rich light soil, where, during the ensuing summer, they will produce and ripen young shoots. The same plant may generally be forced year after year for some considerable time, although, as has been recom-

mended in the case of the Persian Lilac (see p. 518), it is advisable to have a stock of suitable sized plants in reserve from which to select the necessary number required for forcing each season, potting them during October, and transplanting those not intended to be forced, cutting back the roots more or less at the same time, so as to prevent the plants from becoming unduly large. The cutting in of the shoots should be deferred until the spring is somewhat advanced, and all danger from severe frost past. By pursuing this or some similar system it will seldom be found necessary to force the same plants two years in succession.

Among hardy herbaceous plants suited for forcing, the position which is assigned to the Rose among hardy shrubs may be accorded to the various varieties of Pinks. The sorts suited for this purpose are now numerous, and are mostly in the way of the well-known Anna Boleyn, which may be considered as the type of the forcing kinds, many of which are exceedingly beautiful as well as fragrant, and are great improvements upon the original type. The necessary stock of each sort should be annually raised from cuttings, put in early in March. And the earliest batch of forced plants will generally furnish the supply of cuttings. They will strike freely in a compost consisting of about equal parts of sharp river or silver sand and finely sifted leaf-soil, using well drained pots some 6-in. in diameter, placing them upon a slight hotbed, and covering them with a hand-glass. Thus treated, they soon become well-rooted, when they should be potted off singly into 3-in. or 4-in. pots, and be kept in a somewhat close and growing temperature until they have become well established, when they may be placed in a cold pit. When the pots have become well filled with roots, they should be shifted into their flowering pots, which need not exceed 5 in. or 6 in. in diameter, and placed in any sheltered, but open situation in the open air; or the plants, when well rooted, may be taken from the 3-in. pots and planted out in a bed of moderately rich soil in the open ground, and carefully raised with good balls of soil and potted in October, using soil for the purpose of a light rich character. Among the best sorts for the purpose are Lord Lyons, Rosy Morn, Claude, Mrs. Pettifer, Coronet, Most Welcome, The Duchess, Miss Jolliffe, Garibaldi, and Anna Boleyn. The last named is exceedingly fragrant and beautiful, but the pod is liable to burst, a circumstance which detracts from the value of the bloom.

The *Hotesia* (*Spiraea*) *japonica*, as it is frequently called, is an exceedingly useful plant for forcing, on account of its fine foliage and large panicles of leathery-white flowers, which it usually produces in great abundance, and these have also the very desirable property of remaining long in good condition when cut and placed in water, as well as when allowed to remain upon the plants. The latter are naturally of a dwarf and compact habit of growth, and seldom require support in the form of stakes or otherwise; consequently they are well adapted for all decorative purposes. And although no foliage can be supposed to associate better with flowers of any kind than that of the plants which produced them, still it so happens that some plants, such as the Lilac, Ghent Azaleas, Kalmias, &c., when forced into flower, do not produce foliage enough for the purpose, and there are certainly few plants whose foliage is so well adapted to supplement this deficiency as that of the *Hotesia*, which is exceedingly ornamental, and when placed in water keeps long in good condition. In the open air this plant succeeds best in a somewhat damp situation; the soil and climate of Holland are, therefore, admirably suited to its culture, and it is consequently imported annually from that country in small clumps or pieces ready for potting for forcing. It may, however, be successfully grown for that purpose in suitable situations in this country, and the number of plants likely to be required should be potted in October and placed in a cold pit or frame, from which they should be introduced at intervals into the forcing house. A somewhat brisk heat is necessary to induce it to start into growth; but this, at the same time, should be applied gradually, and before the flowers are fully expanded the plants should be removed into the greenhouse, or some other cool structure. As an abundant supply of water is absolutely necessary, the pots may with advantage be placed in pans or saucers, which will retain the water which drains from the pots, and which the roots of the plants will speedily absorb.

The Lily of the Valley is deservedly held in high estimation for forcing, and, like the *Hotesia*, it is annually imported in considerable quantities from Holland in patches of a suitable size for potting, and the imported roots are generally found to succeed better than those produced in this country. After being potted, it should be plunged and covered up to a depth of 5 in. or 6 in. in old tan or cinder ashes. The slight warmth in the plunging material will soon stimulate the roots into activity, and a portion of the plants should be transferred at intervals into the forcing house, in order to keep up a succession; but it is always advisable to remove them into a cooler structure as soon as the blooms begin to unfold.

Solomon's Seal is also a native of Britain, and equally well adapted for forcing as the Lily of the Valley. It seldom fails to produce abundance of shoots clothed with innumerable silvery bell-like flowers, and is altogether more effective when grown in pots under glass than it is when out-of-doors, where it is apt to become somewhat coarse. On that account it should be cultivated for the supply of plants for forcing in beds of light, not too rich soil, in an open situation, and from these beds the portion of plants required for forcing should be annually potted about the end of October, using pots of some 6 in. or 8 in. in diameter. After being potted the pots should be covered with cinder ashes or old tan, and the plants should be introduced at intervals to the forcing house in order to keep up a succession. The leaves (depending of the gracefully drooping blooms) are exceedingly useful, being of a delicate yet rich shade of green, more particularly so when the plants have been forced, and are admirably suited for mixing with cut flowers in vases. The plant is easily increased by division and soon recovers from the effects of forcing, but it is, at the same time, unadvisable to force the same plants two seasons in succession.

*Dicentra spectabilis*, one of the most beautiful of hardy herbaceous plants, is very easily forced into bloom, and forms an exceedingly effective plant for the decoration of the greenhouse or conservatory. When growing in the open air it is sometimes injured by spring frosts, which not unfrequently occur during the latter part of April and early in May, while plants grown under glass appear to possess a delicacy in foliage as well as in flower, which even surpasses that of plants in the open air. The plant requires little or no preparation for forcing; all that is necessary is to pot the desired number of roots in pots of various sizes early in autumn, plunging them in cinder ashes in a cold pit or frame, from which portions of them should be introduced at intervals into the forcing houses, and as soon as they are in flower they should be removed into a cooler structure. It is easily increased by division of the roots, or by cuttings which will root readily if inserted in light soil or sand and leaf-mould under a hand-glass. There is also a white-flowered variety of this plant, which forms a contrast to the original type, but does not surpass it in beauty and elegance. It retains, however, the purity of its colour better when grown under glass than it does in the open air.

The Neapolitan and other sweet-scented Violets are easily forced into bloom during winter and early in spring, and beds of them in the open air should be encouraged to furnish rooted runners as early in the spring as possible. In order to promote this the surface of the beds should be covered with a portion of sifted leaf-soil and sand. As soon as they have become well rooted they should be separated from the old plants and planted out in a bed of rich light soil, and if in a somewhat shady situation so much the better. They should be supplied well with water during dry weather, and any runners which may be produced should be removed. In October they should be potted into pots 5 in. or 6 in. in diameter, and at once placed in a light, warm situation near the glass, where they will soon commence to bloom, and will continue to do so throughout the winter and spring; or a portion of the rooted runners, instead of being potted, may be planted in a frame upon a slight bottom-heat, keeping the plants quite close to the glass, covering well up during frost, and admitting air whenever the weather will permit.

In addition to the plants already named there are many other hardy species, many of which are exceedingly impatient of artificial heat; but they may, nevertheless, be induced to flower at periods much earlier than is natural to them by merely

potting them during the month of October and placing them in a light, warm greenhouse, or similar structure, carefully attending to them as regards watering, and keeping them as near the glass as possible. By this means the beauty and fragrance of such plants as the Jonquil, the various varieties of the hardy Primrose, the Crocus, the Winter Aconite, the Snowdrop, &c., may be enjoyed under glass at times when the state of the weather will not permit this to be done in the open air.

Culford, Bury St. Edmunds.

P. GRIEVE.

### MAMMILLARIA ELEPHANTIDENS.

This is a somewhat corpulent-looking species, each mamma being about  $\frac{1}{2}$  in. long and 2 in. round, terminated by a cluster of from seven to nine pale brown spines. The flowers, which are large for those of a Mammillaria, are straw coloured. Plants belonging to this section of the genus are apt to become affected by red spider; there-



fore they do best in the open air during summer. They only grow about 6 in. high, and are, as a rule, favourites with those who are fond of Cacti.

Sudbury House, Hammersmith.

J. CROUCHER.

### IMPROVED TEA ROSE CULTURE.

The manner of growing these, the only Roses worth calling "perpetual," is destined to undergo a revolution. There has of late years been a great move towards growing, flowering, and finishing with plants in pots in one season—for instance, Fuchsias, Gardenias, Tree Carnations, and many others of less importance—but till within a year or two I had no idea that Tea Roses were amenable to this style of culture. It is, however, proved that they are not only amenable to it, but that grown in any other way they will bear no comparison at all. Our young beax will have to look elsewhere for a supply for their button-holes, for Catherine Mermot and Souvenir d'un Ami 5 in. or 6 in. across will be voted vulgar in the extreme; even in the bud just showing colour they almost look like miniature "Sugar-loaf" Cabbages. Happily our ladies do not object to large Roses, even should they be able to bury their faces in them; therefore I am on the side of the ladies (the next best position to that enjoyed by Mr. Disraeli when he said he was "on the side of the angels"), and shall listen to no one who decries large Roses, unless they are at the same time either coarse or scentless; for remember the words "large" and "coarse" are not synonymous. Anyone who has noticed the natural mode of growth of Tea Roses will have observed that to thrive at all well they must throw up a continual succession of suckers, first weak, then a little stronger, and afterwards, if encouraged, stronger still. This, then, is the key to the only right way of growing them, and to make sure that all the

suckers shall be of the right sort it is necessary to have the plants on their own roots. I know no reason for growing them on Briers or Manettis; it cannot be to make them grow stronger, for it has the very opposite effect in the long run. It cannot be to enable them to withstand winter, because if they are killed down to the ground all is gone but the Brier, whereas Tea Roses on their natural roots down in the ground a foot or two would probably start again from the base in the spring. Nor is it because they are difficult to propagate, for they are as easy to strike as Verbenas. If it be argued that it makes them more floriferous, then remember that, with the exception of one or two sorts not strictly Teas, where there is growth flower will follow as a matter of course, and the finest flowers do not come on the weakest growth.

In July, 1876, I inserted cuttings of the best sorts I then had, including some which are not yet surpassed—viz., Devoniensis, alba roses, Catherine Mermot, and Souvenir d'un Ami. The cuttings were made of the firmest growth of the current year, and placed under handlights on the north side of a wall. They soon rooted and started growing without losing much of their old foliage; they were then potted into 4-in. pots, placed in a cold frame kept rather close and shaded till they started, then gradually hardened, and soon after—probably in September—they were shifted into 8-in. pots and placed outside. They were protected a little during winter, being in a cold house not by any means frost-proof, and during last summer were re-potted into 14-in. and 15-in. pots, using soil such as would grow fruit trees well in pots—viz., fresh rather heavy turfy loam, a sprinkling of  $\frac{3}{4}$ -in. boiled bones, a few pieces of charcoal, and a little decayed farmyard manure of good quality dried and rubbed through a sieve. The loam was rough, many of the pieces being half the size of a brick.

This spring we have had flowers such as I had never seen before, and the plants have kept constantly throwing up suckers stronger and stronger, with flowers to correspond. But the pots are already too small for the plants; they will, therefore, be transferred to the open ground on the north side of the walls of some of the houses, and be succeeded by a fresh batch. It will be seen that the plants now to be turned out are nearly two years old; but from past experience I have no doubt of being able to do them nearly as well, if not quite so large, in one year. It may be said that the same liberal treatment given to plants not on their own roots might have produced equally satisfactory results, but I can say decidedly, no; for I bought some of the best plants procurable, and treated them as well as I was able, and they are simply nowhere in comparison.

Mildew does not often come spontaneously on plants grown thus without a check, but the purchased plants of newer sorts had some and it spread to the others. When such a case occurs I practise and advise no half measures, but gather all expanded flowers, place some sulphur with water in a waterpot, stir well about, and apply with a syringe in fine spray to both sides of every leaf in the house whether affected or not, and the first time the sun shines on it every spore will be killed. This is much easier and a far more effectual plan than dusting. The sulphur can be syringed off in a day or two, leaving hardly a trace behind. I do not think sulphur does much good in dull weather either inside or out; it is not at all easy to kill mildew outside in autumn when the sun has but little power.

So much for Tea Roses indoors. I have said that the plants in pots now will be turned out against the north side of some of the houses. I am fully convinced that Tea Roses do not like extreme temperatures. A south wall is the very worst possible position for them, but the north side of a heated house suits them to perfection. I have all such positions almost covered with them, but some of the sorts will have to give place to their superiors. I should advise friends in a less genial climate to try their Roses on the western or south-western side of a building. Mere garden walls will not do so well as the walls of a building. Tobacco powder is very useful for dusting whenever there is a suspicion of fly. It is certain death to the fly with which it comes in contact, and if applied in the evening when the sun is not powerful it will not injure the foliage even if allowed to remain on next day. Dusted over cuttings closely confined in a hand-light or bell-glass, it will kill every insect whether it touches them or not, but in this case the sun must on no account touch it. The powder I use is prepared by Corry & Soper, London, and is supplied by nurserymen; but I believe there are other manufactures equally to be depended on. It is free of duty, and therefore costs little.

WILLIAM TAYLOR, in "Journal of Horticulture."

Clorodendron Balfourii.—I do not know any stove creeper which can be relied on like this to produce a great quantity of bloom for a long while, unless it be the Bougainvillea; the two would certainly not be easy to match. A plant of this Clorodendron here, which was a small plant about 9 in. high two years ago, was then put into a

14-in. pot, and it now extends one way down the stove path for 20 ft. on a broad trellis, and nearly as far the other way, through a hole made in the glass partition into the intermediate house, which gives us flowers for a much longer period. In the stove the flowers are nearly over, but in the intermediate house they are still in perfection. Possibly this plant has given us about one-quarter of the trouble that an exhibition "specimen" of the same kind would have done, and it has produced more flower in one season than such specimens usually do in half-a-dozen years, judging from the plants we have seen grown by the foremost cultivators. From the base of our plant right to the extremities of the shoots it has been one mass of flower, and I should hardly be believed if I were to state how much flower has been cut from it for indoor decoration. Just at present it seems to have flowered itself nearly to death, having as yet made little growth; but it will recover as it has done before, and finish its growth in good time. It delights in good strong loam principally, and, when once it is established in the pot, it can hardly be too well fed with top-dressings and liquid manure. Our plant has not been shifted for these last two years, but it will receive another shift as soon as it has done flowering, and afterwards top-dressings must keep it going. In a 20-in. pot we expect it to cover a trellis some 60 ft. long and 4 ft. wide; it now covers more than the half of that in its 14-in. pot. This shows the advantage of allowing such plants to grow after their natural bent instead of confining them to a pot, and after years of culture getting a specimen perhaps 2 ft. through, with as much bloom on it as they can ever carry away in his hat, which is certainly as much as the finest specimen I ever saw produced.—J. S.

#### CONTINUOUS FLOWERING OF BOUGAINVILLEAS.

*B. SPECTABILIS* is much more difficult to manage than *B. glabra*; it will never flower satisfactorily, if at all, if kept in a growing state all the year round, nor will *B. glabra* continue to produce its beautiful racemes of flower in the same strength and profusion long without a period of rest. A plant of *B. glabra* covers the roof of a span-roofed house at Court Hill, near here. This plant, which is planted out, always flowered very well under ordinary stove treatment, but in consequence of alterations in the house, the stove was turned into a cool house in winter, and in the summer there was a high moist temperature kept up for general purposes. Under this change of treatment it seemed to be transformed into a huge mass of flower, the racemes being of unusual length, and the colour a richer and deeper purple than usual. Another notable plant of *B. glabra* may be seen at Calderstone. This I have been in the habit of seeing for over seven years. It is trained exactly like a Vine on the "short spur" system, and is supposed by many to be a distinct variety, and the way in which it is treated is attributed the reason why it always flowers so regularly, and so equal in strength. The spurs are about 8 in. apart, and the shoots, which are trained with system and regularity, are cut back to an eye at the base at the winter pruning. It would thus appear that the proper system to pursue in regard to the cultivation of this plant would be to treat it much in the same way that we do the Vine. That the Bougainvillea will flower continually over a short period, more or less, according to its strength, there can be little doubt, but it will soon become a "thicket," and ultimately get flowerless. A neighbour tried the *Allamanda Schottii* on the continuous flowering principle, and success seemed to attend his efforts for a time, but eventually the size of the flowers began to diminish to such a degree that one could hardly have recognised the variety. With regard to *Bougainvillea spectabilis*, it is absolutely necessary to give it a good rest in winter. Twelve months ago I saw this variety in magnificent condition at Kew. It was in luxuriant health, and the flowers were of a rich purplish shade, considerably more striking than that of *B. glabra*. It was growing in a small house adjoining the Victoria house, in which a high summer temperature is kept up, but in winter the thermometer is allowed to fall as low as 40°. In this I was told laid the secret of success. I do not think any one will ever succeed in flowering this variety where it is planted out in a warm moist stove. The best plan would be to grow it in a pot as we do Vines, and rest it in winter.

W. HINDS.

**Ficus repens.**—For covering a bare and unsightly wall, either in a greenhouse or stove, this plant stands unrivalled, owing not only to its rapid growth, but also to the tenacity with which it clings to the wall against which it may be planted. I have seen houses with walls in a wretched condition which one or two of these creepers planted against them soon made attractive, especially if a variegated plant, such as *Cissus discolor*, be allowed to run amongst them. I could point to a number of walls, ranging from 8 ft. to 10 ft. high, where it is impossible to see a single brick.—J. PEAKE, Worcester.

#### PLATE CXXXI.

#### THE EVERLASTING PEA.

Drawn by H. NOEL HUMPHREYS.

NEXT to the Sweet Pea (*Lathyrus odoratus*), the Everlasting Pea (*L. latifolius*) is perhaps the most ornamental of a genus comprising upwards of 100 species, nearly all of which are pretty and many of them very handsome. Although an exceedingly hardy, as well as a showy, plant, it has apparently never before been figured in a horticultural or botanical journal. Both the white and rose-coloured varieties have long been in cultivation—how long it is impossible to say—but the striped variety is of more recent origin. This, some people would say, is the least pretty of the three. Doubtless much more ornamental varieties might and will be raised, and if a variety were raised in which the white and rose were contrasted, as in some varieties of the Sweet Pea, it would soon have many friends. The name Everlasting Pea is in reference to its perennial character in contradistinction to the annual duration of the Sweet Pea. It is readily distinguished from the latter at a glance, in consequence of the racemes being many-flowered instead of only two-flowered. Generously treated, it will grow 3 ft. or 10 ft. high, and bear a succession of flowers. In many country places it is a favourite cottage garden plant, though it has been much neglected by gardeners. A native species, *L. sylvestris*, is a similar, though less showy, plant, smaller in all its parts. This is also sometimes cultivated and mistaken for *L. latifolius*, which has become naturalised here and there in various parts of the United Kingdom. The true *latifolius* has a wide range of distribution in Continental Europe. Before leaving this I cannot refrain from recommending the elegant Grass Vetch (*L. Nissolia*), an annual species with Grass-like foliage and almost crimson flowers. It is a rather rare native plant in Sussex and some other counties of England.

W. B. HEMSLEY.

—The genus *Lathyrus* contains many beautiful plants, as the Sweet Pea, or the Posey Pea, as it is called by cottagers in many parts of England, bears evidence, and even the pretty little blue Tangier Pea must not be overlooked. *Lathyrus latifolius* is not a very happily named plant, but the specific name must only be taken in a comparative sense, as the leaves are not at all broad. It is an old inhabitant of our gardens, and perhaps one of the hardiest and most easily cultivated plants in existence. Thriving, as it does, almost anywhere, even in court-yards, amongst flags and boulders, it may be made to ornament any dead, naked walls, for a few bits of it dibbled in among the stones under a wall will take care of themselves, as the long, leathery roots penetrate to a great depth. The white variety of Everlasting Pea has come into notice during these last few years. Different coloured kinds would look well planted together so as to form one mass. Such plants are peculiarly well adapted for wild, rough, stony places, rambling and scrambling over bushes and stones. Codling, and tying, and training only spoil them. Other Everlasting Peas are *L. grandiflorus*, which is not so rampant in growth, but infinitely handsomer than *L. latifolius*; the stems are weaker, and the flowers twice the size. This I consider the handsomest of all. Another species, *L. rotundifolius*, is comparatively a lower-growing plant than any of the family, having some affinity to *L. latifolius*, but neater in habit, and excellent for stony banks. Another one, *L. pyrenaicus*, is the most rampant of the family, growing 20 ft. in a single season, and bearing a prodigious quantity of blossoms of a yellowish tint, veined with purple. This is a charming kind for running over the trunks of dead trees and similar places. The last which I shall notice is *Lathyrus sylvestris*, which is one of the gems of our native flora, and I have often wondered that it is not more sought after and cultivated than it is. Its flowers are large and greenish, with purple veins, and to see this plant as I have seen it in Wales, festooning the bushes in open places in woods, is a sight worth seeing.

THOS. WILLIAMS.

Ormskirk.

[The specimens from which our plate was prepared were supplied from Mr. Robert Parker's nursery at Tooting.]



VARIETIES OF THE COMMON EVERLASTING PEA (*LATHYRUS LATIFOLIUS*)



## PROPAGATING.

**AZALEA INDICA.**—There are two ways of increasing this fine tribe of plants. The first is by means of cuttings taken off in the following manner:—When the plants have done flowering they will push out a number of shoots at the ends of the branches; press them down gently to the right and draw them off, then cut off any small pieces of bark that may be attached to them, leaving a little heel to each cutting, as shown in fig. 1. Fill some well-drained pots with soil consisting of one-half



Fig. 1.

peat and the other half equal parts of loam and silver sand, making the whole somewhat firm; then insert the cuttings firmly. Give a good watering, and place them on a half-penny manure bed in a frame with closely-fitting sashes. Shade during the middle of the day, and in about six weeks they will be ready for potting off. A second mode by which Azaleas may be increased is by grafting, and in order to have good shapeable plants the stocks should be from 6 in. to 9 in. high, according to the height required. The graft should consist of half-ripened wood, with from three to six eyes; the half-wedge



Fig. 2.

Fig. 3.

graft at the top, as shown in figs. 2 and 3, is a very good method. Bind both stock and scion together with matting or thread, and place a small piece of grafting-wax on the top of each, then set them in a close box on a cool bottom, and give air occasionally if they show signs of damping. H. H.

**Culture of Camellias at Florence.**—One of the most extensive and magnificent collections of Camellias, perhaps in Europe, is to be seen in the garden of the Cavaliere Cesare Franchetti, at Florence. The Camellia was introduced into Europe, in 1730, by the Ven. Father Kamel, and was first cultivated in Florence in the garden of Count Leopoldo Galli about 1794. The rich collection of Cav. C. Franchetti consists entirely of the best varieties, he being a most artistic and enthusiastic admirer of this flower. The following are among the most recent kinds added to his collection: Generalo Pescetto, Luisa Franchetti, Mapino d'Azello, Duchessa del Balzo, Principessa Antonietta Strozzi, Marchese Luisa di Lascio. The variety *Goffredo Odero* merits particular mention. In a plant containing thirty flowers no two are alike, so much do they differ in form and colour. The variety, however, which is decidedly the most remarkable as regards the beauty of its stripes, regularity and fineness of petals, and brightness of colour, is not yet in commerce, and has been named *Engenia Parlatore*. Cav. Franchetti has no fewer than 30,000 plants of all sizes, many of them raised from seed.—“*Bullettino della R. Società Toscana di Orticoltura.*”

## GARDENING FOR THE WEEK.

## Indoor Plant Department.

**Treatment of Orchids when in Flower.**—With such Orchids as succeed under cool treatment there is little drawback to their inspection when in flower on the score of too much heat in the houses in which they are grown, and, to some extent, this holds good with those that thrive in an intermediate temperature; but with such species as are indigenous to the hottest parts of the Eastern and Western Hemispheres, it is anything but an unalloyed pleasure to remain in the house in which they are grown at the season of the year, even for a short time. Where large collections of Orchids are cultivated, it is always advisable to have a small house or a compartment partitioned off for the reception of the plants when in flower. Where a separate house does not exist that can be devoted to this purpose, the best position is to have a division at the entrance end of the Mexican house, where such plants as are in flower can be accommodated for the time with a temperature and condition of the atmosphere such as are most calculated to prolong the bloom for as long a period as possible, and where it can be viewed with comfort to those who are wishful to give more than a passing glance to these most singular and interesting plants. Another advantage in the use of such a house or compartment is, that the plants, even from the hottest houses, can remain here for a reasonable time without suffering any injury; and if a little taste be exercised by the judicious introduction of a few small, elegant-habited Palms, Ferns, Lycopodiums, Bertolonias, and other subjects of similar character, it will result in a combination at once beautiful and effective. One of the first essentials in such a house or division of a house is that the temperature can be kept equable. The best during the night should be as low as the plants grown in the hottest structures can bear, with a considerably less proportionate increase of warmth during the day than is given to them when in their growing quarters. This will have no injurious effect, for the simple reason that the majority of the plants whilst here will not be making growth. Another primary consideration is the state of the atmosphere; it should not be so dry as to completely stop the root extension of such plants as *Aerides*, *Saccolabiums*, and *Vandas*, which, being true air plants, make a good deal of roots completely above the soil, neither must there be sufficient humidity to permit of the slightest condensation of moisture on the flowers, as this especially is fatal to the bloom of those plants that luxuriate in a higher temperature, and more particularly in the case of white flowers such as the greater portion of *Phalenopsis*. Enough shade ought to be used during sunny weather to prevent the temperature rising too high, otherwise it will necessitate giving more air than is conducive to the well-being of the warmer section, as also to the duration of the flowers. A little thicker shade whilst the plants are here and making little or no growth will have no injurious effects upon them, such as the insects which do so much shade which is injurious in its effects, but, although, as I have intimated, it will require to be given in the daytime, still I should advise its admission being confined altogether to the roof ventilators, and under no account given in such quantities as to cause a perceptible current amongst the plants, which would do no harm to the generality of other flowering subjects, but with most Orchids very soon has the effect of drying the air in a way alike detrimental to the bloom lasting and the health of the plants. In such a structure, subjects from the coolest house, such as *Odontoglossum*, *Masclevallias*, *Epidendrum*, *Ruellias*, and similar plants that thrive in a low temperature, may be placed without suffering any injury; and if, as already said, the arrangement be effected with taste, the house will possess a charm such as not to be equalled by a combination of any other plants.

**Orchids for Exhibition.**—Orchids are now so generally exhibited that a few words may not be out of place to those who have not had much experience in the matter. Where it can be avoided it is very much better not to have to subject the plants to any extremes of temperature either by the application of too much heat to force on such as it is necessary to get to open their flowers in time, or by retarding others that may be advancing too quickly, but, of the two evils the former is the most likely to be injurious in its effects, for although the flowers of any species in strong heat will usually open more kindly and grow to a larger size than under cooler conditions, yet the plants when moved from such a temperature to that of an exhibition tent are very liable to suffer severely through the sudden change from a hot to a low temperature. Wherever Orchids are submitted to anything approaching a sudden change from heat to cold they should be as dry at the roots as it is safe to keep them without danger of their being injured by the leaves or bulbs shrivelling, and it must ever be borne in mind that almost all Orchids that consist of leaves, simple stems, and roots alone, with the absence of pseudo-bulbs, are invariably more susceptible of injury from this cause than those that are furnished with pseudo-bulbs; consequently, it is necessary to be more careful in dealing with the former, and wherever under the influence of an excess of heat it is well to give more light, as this will be found to have a favourable counteracting effect. In the case of plants that have to be kept back this, like all other operations connected with retarding flowers, should be done in the early stages of the flower development. If kept too cool when the bloom is made considerable progress and approaching the last stages of growth it is certain to expand deficient in size, and generally in substance and colour; and if subject too long to cool treatment at this stage it will often cause the destruction of the flower-stems altogether. Whilst this retarding process is going on it is essential to be very careful in the application of water to the roots, using no more than is necessary to keep the plants plump, and to duly sustain the advancing flowers; the atmosphere should not be so dry as to induce a shrivelled condition, but

all over-humidity must be guarded against, as it will be very injurious in its effects. The plants must not be kept too dark, neither should very much air be admitted, or it will cause the necessity for more water being applied, both to the roots and in the atmosphere, than is conducive to their well-being.

**Packing Orchids for Exhibition.**—This is an operation that can only be learnt effectually by practice and observation. From the soft fleshy nature of the greater portion of the species they are extremely susceptible of injury from the rubbing and chafing inseparable from the shaking they undergo in transit; this not only results from the flowers individually rubbing against each other, but also through the friction of the various parts of each bloom; for instance, the large-flowered *Laelias* and *Cattleyas* of the Mossin section require most careful packing, otherwise the sepals and petals are certain to chafe against each other or with the labellum, consequently every flower must have all its parts packed with fine cotton wool, so that not the slightest friction can take place, as will the flowers secured so as not to rub one another. *Angulias* again require special packing. It is no uncommon occurrence to see splendid examples of the beautiful yellow *A. Clowesi* or *A. eburnea* with the internal portion of their flowers all blackened through moving only a short distance, as the column and labellum, although entirely enveloped within the cap-shaped petals and sepals, get completely blackened through vibration, unless well packed with cotton to keep them from touching the side of the flower. The chaste white blooms of *Phalaenopsis amabilis* and *grandiflora* require to be protected with cotton, so that there is no possibility of their touching each other. The same is the case with *Odontoglossums*, especially the beautiful *O. vexillarium*, the immense labellum of whose flowers frequently overlap each other in a way that causes their rubbing, to certain destruction if sufficient of the wool be not used to keep their parts separate. The dense spikes of *Dendrobiums* of the densiflorum section are best enveloped in fine tissue paper tied round them so as to prevent the individual flowers moving against each other. The old but beautiful white *Calanthe veratriflora*, from the purity of its colour, shows the effect of the least friction more than most Orchids; with this also thin tissue paper is the best, completely enveloping each head of flower, folding the paper round it and securing it by tying firmly immediately below the head and also at the top of the spike, so that the paper will lay in contact with the whole of the flowers without pressing them too tightly, but so as to prevent their rubbing against each other. In the case of *Vandas*, each individual flower on the spike should be enveloped with as much cotton as will keep it completely away from the others. The spikes of all such plants must be secured by small sticks firmly inserted in the pots, to which they must be tied. It is also necessary to see that the leaves of the plants cannot, even when shook severely, touch the flowers. *Sobratias*, with their immense blooms, are very difficult plants to pack, and should have a petal animal of every leaf of the spike covered with cotton, which material, as in the case of all other Orchids, should be so secured that it cannot shake out. *Acerides*, *Scaccolabiums*, *Oncidiums*, *Epidendrums*, *Cypripediums*, *Barlerias*, *Brassias*, *Lycastes*, *Madevallias*, and *Stanhopes* require to have every flower, or raceme of flowers, tied to a single neat stick sufficiently secured that they cannot touch each other. If these directions are followed out with care and foresight, the disappointment which young exhibitors so frequently experience in finding upon opening their best flowers so disfigured as to be useless, will be avoided.—T. BAINE.

**Stove Plants.**—These, as a rule, are now making free growth, and, consequently, should be kept moderately warm, shaded, and well watered. By running *Dipladenias*, *Stemplantosias*, *Clerodendrons*, &c. and *Allamandas* on threads stretched across the rafters inside the houses, a greater quantity of bloom is produced on them than when their growth is more restricted. If required for specimen plants, the strings may be cut down and drawn out from amongst the shoots, which should be carefully and equally trained around a trellis. Re-pot all young plants as they require it, and by plunging them for a few days afterwards in a gentle bottom-heat the roots are stimulated into action. Attend to staking, tying, and keeping the plants free from insects. Ventilate moderately in the earlier part of the day, and opening in the afternoon; shade from strong sunshine, and with syringings and water sprinkled on the walls and paths keep up a moist atmosphere.

**Ferns.**—These are now growing vigorously, therefore abundance of root and atmospheric moisture is necessary as well as gentle syringings. *Chloridiums*, *Claytonias*, and other ferns, such as *Aspleniums*, *Adiantums*, should not be syringed overhead, such treatment being more injurious than beneficial to them. Sow spores under favourable circumstances, prick them off in little patches about 3 in. or more apart after they appear, and pot all seedlings requiring it, as well as young and vigorous-growing Ferns of all kinds. Thin out any old and decaying fronds so as not to impede the progress of younger ones. Replenish Fern baskets; seedlings inserted between the meshes of wire baskets give a good appearance to all suspended plant baskets.

**Greenhouse Soft-wooded Plants.**—Keep up a succession of annuals, such as *Balsams*, *Cockscombs*, dwarf *Asters*, *Mignonettes*, and others. During all stages of their growth plenty of ventilation must be admitted, and abundance of water given. Than the scarlet *Salvia fulgens* and the blue *S. splendens* plants are more beautiful, free blooming, and satisfactory, either in pots or planted out; they require rich soil and plenty of water, and by cutting off the spent flower-spikes and maintaining a regular supply of young wood they continue in excellent flowering condition until late in the season. Keep *Pelargoniums* and shrubby *Calceolarias* in open houses or frames, and give them plenty of water, but

as soon as they come well into bloom remove them to the conservatory. Discard herbaceous *Calceolarias* when past their best, and if seed be required let it be saved from plants that have borne the finest-formed and best-marked flowers; place them in a cool and light house, and supply them moderately with water. Any suckers of *Cinerarias* ready for potting should now be removed from the old stock, potted singly in moderately rich soil in thumb or 3-in. pots, and put for a time in cold frames, placed so as to face the north. Re-pot *TREE Carnations* as they require it.

**Pelargoniums.**—Some autumn-struck cuttings of scarlet and pink *Pelargoniums* should now be potted for winter-flowering. Amongst the single red varieties I have found nothing better than *Vesuvius*, nor in single pinks the old sort *Christine*; both are short-jointed compact growers, producing their flowers freely through the winter with a little warmth. To prepare them for winter work they need special treatment; the first essential point is not to over-pot, the object being to have the plants in a dwarf, compact, thoroughly ripened condition, consequently the pots used should not be over 6 in. in diameter; ordinary loam, with a little rotten manure and sand, is the best material in which to grow them; press the soil quite firm on the pots, plunge them in a bed of ashes out-of-doors in a situation fully exposed to the sun, stop the shoots as necessary to induce bushy growth, pick off all flowers as soon as they are formed, give water as required; they will need nothing more until September, by which treatment [the plants will be in the hard, stocky condition that enables them when placed in warmth to produce flowers freely instead of pushing off into growth.

**Heliotropes.**—Some spring-struck cuttings of these favourite plants should now be moved into 6-in. or 7-in. pots, plunged outside, kept stopped, and the flowers picked off similarly to the *Pelargonium*. This sweet-scented favourite so managed will produce flowers, with the assistance of a little warmth, all through the autumn up to the end of the year.

**Lilies** in pots will now require more water as the soil gets full of roots, and should be placed in an open airy position, away from the influence of walls or trees to avoid weak and spindly growth; turn the pots round every two or three weeks to prevent the plants getting drawn to one side. The earlier-flowering kinds, such as *L. eximium*, will now be benefited by the application of manure water. See that all are kept perfectly free from aphides, which get down into the points of the shoots on the partially-developed leaves, and in a very short time cause them to become curled and permanently injured. A little Tobacco water syringed into the points of the affected shoots and on the under sides of the leaves will be found effectual in destroying them. The plants will be much better for being plunged in ashes, which will save labour by their requiring considerably less water and greatly benefit them by preventing their thick mass of roots from being affected by the sun. The earliest-flowered kinds should be staked and tied, so far as they require it, before the growth gets too far advanced.

**Deutzias** in pots, that were forced in the winter and have been since kept in a Vinery or other structure where a little warmth could be added, will now have so far completed their growth as to be ready for turning out-of-doors; this is one of the few hardy plants that makes its growth for next year's flowering much better when kept inside than in the open air. A good succession to the above is the double-flowering *Plum*. These should now be plunged during summer.

**Chrysanthemums** that were moved a short time ago into their flowering pots should now be plunged. It often happens that a few of the strongest shoots of these so far take the lead as to deprive the weak ones of their share of nutriment. Where this is the case, pinch out the points and peg them out horizontally to the sides of the pots.

**Petunias and Balsams.**—*Petunias* struck late should also be potted, tying them well out and stopping the shoots to keep them bushy. Many of the double varieties now in cultivation possess a compact habit of growth, and, from their easy culture and free, continuous blooming disposition, they are very useful for growing as decoration during the summer and autumn. Earlier plants of these *Petunias* that have been flowering for some time should be assisted with manure water and kept tied into shape, by which means they will continue blooming for some time yet. The later-sown *Balsams* should be moved out of the small pots they occupy into others 7 in. or 8 in. in diameter. These quick-growing, cross-feeding plants require a rich soil, a light position, and a plentiful supply of water to produce them in anything like condition.

**Centareaus and Coleuses.**—If a few small plants of the different varieties of *Centareaus* used for bedding be placed singly in 6-in. or 7-in. pots, and grown on in a cold frame or pit, they will be found very useful for standing about in the conservatory amongst flowering plants through the autumn; they are useful for window decoration, bearing confinement better than most plants. A few of the most handsome-leaved *Coleuses* should now be put into pots proportionate to the required size of the plants—8 in. will be sufficiently large for general decorative purposes; they should be accommodated in a frame or pit, or they may be kept where they are to remain through the summer in the greenhouse.

**Window Plants and Boxes.**—Windows should now be gay with flowering plants, both inside and out. Such plants as are inside should be as near the glass as possible, regularly and well watered, but they should not be permitted to stand in pans or saucers of water for any length of time; their young growths should be pinched if they become too long. *Myrtles*, *India-rubber plants*, *Callas*, and similar plants that have smooth and thick leaves should be gently sponged; but *Pelar-*

goniums, Heliotropes, most kinds of Ferns, and such plants as have hairy leaves, should be taken out of doore and sponged occasionally, in order to clear them from dust. Window boxes, if well drained, allow superfluous water to pass off freely; water may, therefore, be administered plentifully without any fear of its stagnating about the roots. A good loamy soil, mixed with leaf-mould or decayed manure, makes a good compost for plants in boxes. The beauty of *Calceolarias* is soon over, as is also that of several other flowers; therefore, some preparatory means must be adopted for supplying their places with fresh material, and for this purpose *Pelargoniums*, small plants of *Acacia lophantha*, *Fuchsias*, *Nasturtiums*, *Lobelias*, *Mignonettes*, &c., should be held in readiness. Plants now in the boxes should be induced to display themselves to the best advantage, and for this purpose, if a very narrow strip of wire netting be run along the top of the box and made to lean backwards, and another piece bent downwards in front, and some of the shoots of the plants attached thereto, a large and showy surface is obtained. Brackets and suspended baskets should likewise be well furnished with suitable plants, such as the hardier sorts of *Adiantums*, *Polypodiums*, *Aspleniums*, *Aspidiums*, *Athyriums*, *Pterises*, &c. Ivy-leaved *Pelargoniums*, *Lobelias*, *Petunias*, and the small-leaved dwarf-growing *Ivies* are also very pretty when used as basket plants.

#### Flower Garden.

Look well to such plants as *Verbenas*, *Asters*, and others that are similarly subject to the attacks of green fly; for, if it is allowed to remain upon these plants, it will, in a short time, spoil them for the season. Even when all the necessary care has been taken that they were clean when turned out, it frequently happens that they become affected afterwards, in which case there is no remedy but a thorough washing with Tobacco water, or dusting with Tobacco powder.

**Herbaceous Borders.**—Numbers of plants will now require snipping by sick and tye. This should always be carried out as soon as it is needed, or the plants get broken down and disfigured by the wind. To do the work in a proper manner requires some taste and consideration as to the nature of the plants. Nothing is more common than to see the sticks and matting brought so prominently into view as to make it appear that they, and not the plants, were intended to be looked at; or to see each plant bound up as tight as a Birch broom, with an injurious effect, both as regards their health and natural appearance. Never use more supports than are absolutely necessary, and keep them as much out of sight as possible. There is nothing like getting the seed of such herbaceous plants as are generally raised in this way sown in good time, by which means they get strong before winter, instead of struggling for existence through the dry late summer months, requiring much more nursing than if they had attained more strength early in the season. *Polyanthuses*, *Delphiniums*, *Sweet Williams*, *Aquilegias*, with a host of similar kinds, if sown at once, will make plants by the autumn superior in quality to what they would be if the sowing is longer deferred. Sow on a well-prepared piece of ground, with the surface made quite smooth, and cover the seeds lightly with sifted vegetable mould; if the situation be a little shaded from the mid-day sun, so much the better; but it should not be where the plants will be weakened and drawn up by the too near proximity of trees.

#### Hardy Fruit.

Now that all danger from frost has passed pinch or cut off all superfluous growth from Pears, Plums, and Cherries, and apply the usual remedies for the destruction and prevention of aphides and blight of all kinds. Gordons and espaliers of Apples and Pears should now have the fruit thinned and the leaders tied to supports. Strawberry runners, whether intended for forcing or planting out, should be layered as soon as the young plants are formed. For the former purpose early runners are essentially necessary, that a long season may be had for the full development and ripening of the crowns, without which it is useless to expect successful results. Blackbirds and thrushes attack the fruit as soon as, and sometimes before, they change colour, and it is advisable, therefore, to protect it with netting as soon as it begins to turn. Water effectually when necessary.

**Raspberries.**—There is often a great waste of strength in the canes by allowing them to produce a greater number than can be retained for bearing the ensuing year, and which necessarily have to be cut away. To avoid this and to concentrate the energies of the plants in the production of the present season's fruit and the growth of next year's bearing wood, the young shoots that spring up from the bottom should now be thinned to within something near the required quantity. In the case of young plantations that have not yet attained their strength, two or three bearing shoots will be enough; those that are stronger may have six. In thinning the young shoots it is not sufficient to cut or break them off level with the ground, for if so treated they will quickly spring again. I have found an ordinary planting trowel the best implement to use for the purpose, removing 1 in. or 2 in. of the soil, whereby the shoots can be taken off directly from where they spring, in all cases retaining the strongest. The ground amongst these, as well as Gooseberries and Currants, should be again hoed over. If this be attended to sufficiently, often the weeds can be effectually kept down with comparatively little labour. Delay in this work often causes the part of the garden devoted to these fruits to have an untidy appearance and be a source from which the seeds of weeds of a light character are carried by the wind to the surrounding portions of ground.

#### Kitchen Garden.

**Planting Celery, Sowing Peas, Endive, &c.**—The main crop of Celery should now be planted, choosing showery weather for this operation, should such occur within reasonable time, as when the ground is moist and the weather dull the roots will hold of the new soil more quickly than they could be induced to do by artificial watering. The last sowing of Peas may now be made where these are required as late as they can be had; but, unless in open favourable situations, the produce of such late sowings is precarious. Give them, as previously advised, plenty of room, by sowing thinly and having the rows placed far apart. Where Endive is required early a little of the Green Curled variety may now be sown, but as this early sown crop is liable to rot to seed, it is not well to have too much of it. Where Broad Beans grow strongly when they come into flower they will be benefited by having their tops nipped off. This has the effect of concentrating the efforts of the plants to form pods instead of making useless growth.

**Planting Broccoli.**—Winter and spring Broccoli should now be planted, and if the plants have been treated as advised some time ago, they will now be fit for putting out. In the case of Broccoli, it often happens that with only a moderate frost great quantities of it perish. Except in extremely low damp localities, this is more attributable to the way in which the crop has been treated than to the kinds grown being tender or the situation at fault. In order to impart to the Broccoli that hardy condition of growth which is indispensable to its standing a severe winter, it should be planted widely apart; if planted too close, it is certain to be weak and soft, and almost sure to succumb on the first occurrence of severe weather. If the land on which it is to be grown is of average quality and fairly manured, the plants should stand 3 ft. apart each way. Where ground is limited, this may seem extravagant, but it is false economy to run the chance of losing the greater portion of the crop through an attempt to grow more than the space at command will permit. On poor inferior soils, where the plants will not attain full size, they may stand 2½ ft. apart.

#### Extracts from my Diary.

**June 10.**—Sowing two rows each of the following sorts of Peas—*Ne Plus Ultra*, *British Queen*, *Fortifield*, and *Laxton's Omega*. Potting off Cucumbers and Melons. Planting out Cardoons; also Wheeler's Imperial and Carters' Heartwell Early Marrow Cabbage plants. Thinning Onions and giving them a top-dressing of soot. Making a new Mushroom bed under north wall for summer use. Nailing in and tying Roses on wall and washing them well in the evenings with the garden engine to keep down green fly. Hoeing up weeds and all suckers that are not required amongst the Raspberries. Clipping Box edgings. Hoeing and weeding amongst herbs.

**June 11.**—Sowing early Snowball and American Strap-leaf Turnips. Putting in cuttings of choice *Pelargoniums*. Pricking off *Geranias* and *Primulas*. Planting out another piece of Veitch's Autumn Self-protecting Broccoli. Thinning out Parsley, Spinach, and Turnips. Looking over all wall trees, nailing in leaders, and washing the trees where required with the garden engine to keep down insects. Cutting out all small fruit and late blossoms of President and British Queen Strawberries to make sure of fine fruit, and giving them a good soaking of manure water. Watering all newly-planted fruit trees and bedding plants.

**June 12.**—Sowing Broad-leaved Batavian and Green Curled Endive; also Mustard and Cress. Potting on *Fuchsias*, *Colons*, and *Calandinas*. Planting out Savoy, double Wallflowers, and *Asters*. Layering *Vicomtesse Héricart de Thury* and President Strawberries on pieces of turf 4 in. square, and well watering them every evening when they require it. Looking over Cucumbers and Melons; stopping them and giving them a little earthing where required. Digging out more Celery trenches and getting the manure into them.

**June 13.**—Sowing Scarlet Runner Beans to come in for a late crop. Potting on young Vines; also seedling *Cyclamens*, *Stocks*, and dwarf *Asters*. Planting out Brussels Sprouts, Broccoli, and three more rows of Celery. Giving main crops of Carrots a final thinning and running the Dutch hoe between them. Looking over all Vineries, tying down leaders, stopping the laterals, and taking out all small berries where required. Looking over the Pines, tying them up, and well watering them.

**June 14.**—Sowing Wheeler's Imperial and Carters' Heartwell Early Marrow Cabbage to come in ready for September and October. Potting on Balsams, *Chrysanthemums*, and *Heliotropes*. Planting out *Spiraeas* and *Dentzias*. Drawing drills and planting out Lettuce plants. Staking Scarlet Runner Beans, and nailing the runners round all manure frames. Planting a new Vine border with Muscat of Alexandria struck from eyes the same season. Mulching Peas with rotten manure. Hoeing and weeding amongst all growing crops, and getting the nets put over Cherry trees.

**June 15.**—Planting *Vicomtesse Héricart de Thury* Strawberries that have been forced on a south border for autumn crop; also *Colons*, *Alternantheras*, and other carpet bedding plants. Stopping and nailing in the Vines on walls. Thinning out the Apples on the border trained trees. Stopping the Fig trees and watering the Fig house; also all newly planted *Camellia* and *Lettuce* plants. Hoeing, cleaning, and weeding all gravel walks and Box-edgings in the kitchen garden; also mowing and cleaning up the flower ground, and rolling the grass and turf on which that require it. Fruit in use for dessert—Pines, Grapes, Melons, Peaches, Nectarines, and Strawberries.—W. G. P., Dorset.

## THE KITCHEN GARDEN.

### CULTURE AND WINTER CARE OF COLEWORTS.

NOTWITHSTANDING the popularity to which this vegetable has attained in large towns, and the vast quantities which are grown for the supply of the London markets, the Colewort is far from being so generally cultivated as one might naturally suppose it might be. In large private establishments it is of course well cared for, and is there considered to be indispensable. In smaller gardens, however, it does not appear as a rule to be thus recognised, and I have often felt much surprise that it is so seldom found in good condition therein. In mid-winter, when fresh green stuff is more or less scarce, the Colewort, owing to its tender juicy nature, proves a most delicious dish, and amply recompenses anyone for the little care that is necessary to procure it in good condition. Many who attempt the culture of the Colewort fail, and the reason for this is, I think, easily to be accounted for. The fact is, that great exactitude is required as to the time of sowing; in this particular point lies the main-spring of success, and a little divergence in this respect either one way or the other will suffice to entail disappointment. In Colewort culture there is always a danger of running to extremes; either the plants may not have time to heart sufficiently, or they may run too much to head, in which case they are more susceptible of injury in inclement weather. Now, as the sowing time falls just in the height of summer, when the attention is apt to be distracted therefrom by press of work, it often happens that the proper moment passes unawares. Then, again, the weather being often very hot and parching, the seed, in the ordinary way of sowing, does not germinate quickly, thereby creating such a loss of time as cannot possibly be recovered. The seed should be sown not later than the first week in July, and it is not advisable to be much earlier in so doing, as, if the sowing and planting be done then, there will be just the proper time to bring the heads to the desired substance. The seed should be soaked for forty-eight hours before sowing; in the meantime, let a piece of good mellow soil be prepared, and draw some drills therein about 9 in. apart. If the weather be very dry, water the drills well before sowing the seed in them, which it is not well to do very thickly, as, if the seed be good, nearly every grain will come up. When sown, the bed should be covered with a few boughs, which will exclude birds and help the soil to retain its moisture. In a few days the seed will be coming through, when the shading must be removed. By this manner of sowing success is ensured, even in the most trying weather; in fact, owing to the heat of the soil, germination takes place more rapidly in a dry time. As soon as the plants have acquired sufficient strength, they should be planted out upon a piece of moderately rich ground, in rows about 1 ft. apart and 9 in. from plant to plant. It is as well to make two plantings, drawing out the strongest plants first, and leaving the remainder for a week to gain strength. It sometimes happens, too, that, through press of work, it is hardly possible to attend to them all, but if a portion be thinned out the rest may stand without injury until it is convenient to plant them. A good watering now and then in the earlier stages of growth will be found beneficial, and the soil should be well stirred amongst them, keeping them free from weeds. They are liable to the attacks of a brown grub, which eats them off at the collar. When this is perceived they must be looked over now and then and the maggot destroyed; it will generally be found concealed just under the soil close to the stem. A dressing of soot is of great service in keeping them away. A few plants should always be kept in hand to fill up the blanks thus created. In mild and ordinary winters the Colewort will stand uninjured, and may be cut fresh and tender the whole winter through. There sometimes comes a season, however, when they get entirely destroyed. Those who would like to save their crops which they have been at the pains to grow should endeavour to secure a little protection for them. This is best effected by taking them up and laying them in a sheltered place where they may be covered in very severe weather by a few shutters or some Fern. This really delicious vegetable is worth taking some pains to secure, and it is no small satisfaction in a severe

winter, when green vegetables generally are scarce and of poor quality, to be enabled to keep up a supply of tender Cabbages.

*Dyflcet.*

J. CORNHILL.

**Best Time for Planting Asparagus.**—We have invariably found Asparagus to succeed best if removed while in active growth, say in April and even as late as July. We have never known one-year seedlings to fail, and we have never known perfect success to attend the removal of older plants. Many object to the loss of time caused by planting one-year-old seedlings. To overcome this difficulty, we manure the ground very highly on which the seed is to be sown. It is sown in rows 1 ft. apart, and the young plants are thinned out to 4 in. or 5 in. asunder, by which means we obtain better roots than ordinary two-year-old plants, and from these some heads may be cut twelve months after planting.—RICHARD SMITH & Co., Worcester.

**A Plea for November-sown Peas.**—On the 29th of May I gathered my first dish of Peas outside from plants the seed of which were sown on November 9. The variety is Dillistone's Early William I, sown on the same day and in the same border, will be ready in a few days. I find the former to be much the hardiest, the rows being thickset, while those of the latter are ragged in appearance. William I, sown on the 8th of February, is showing flower, but I hold one dish of Peas in May to be worth three in June. For three weeks past I have been gathering Little Gem, sown in boxes at Christmas, and grown in one of our cool fruit houses.—R. GILBERT, *Burghley.*

**Lettuces.**—Herniman's Lettuce or Royal Albert and Grand Admiral are what are grown here as the best winter sorts. I have had the Grand Admiral in fine condition for a month past, but now the best have bursted. Herniman's or Royal Albert, so named hereabouts, is beautifully crisp, like the Neapolitan. The Grand Admiral is the winter Lettuce with the market and other gardeners here. The Hammersmith never does well with me, and it runs to seed in the spring. The above will be succeeded by Paris White Cos, stout plants of which are now 8 in. high. They were sown amongst Carrots in a frame in January. I get them in June and July from 3 lb. to 4 lb. each; this and the Neapolitan are my summer sorts. All the Year Round I have grown, but it was similar to the Grand Admiral. I make about three sowings in August and September, and the produce of the last will be good for a month to come.—JOHN GARLAND, *Killerton, Exeter.*

**The Potato Crops.**—Seldom have these looked better than during the present spring. A cool, even-tempered winter, with neither sharp frosts nor quick reactions, and not an excessive rainfall, kept seed Potatoes in check, so that they broke later and stronger than they usually do. To plant them about the middle of April with good stout shoots of 1 in. in length, well-seasoned by exposure, is the best possible safeguard against the effects of dangerous spring frosts; but sets planted even a month earlier have this year met with no check, and everywhere the tops look robust and healthy, and in some instances have made a remarkable growth. Those who gave up planting in November have lost one of the best seasons for early winter planting that ever offered, but the risk of average seasons is too great to allow this plan to be recommended. With such a fine promise now it may be thought unreasonable to indulge in fears for the future, but a long continuance of cold, quite unseasonable for the end of May and beginning of June, combined with heavy rains, has hardened and cooled the soil, and induced a somewhat drawn, succulent haulm that would, in the advent of the disease, soon fall an easy prey to its effects. Well as the growths look, there can be no doubt that all prospects of a good healthy crop now hinge upon a change to warm, sunny, dry days. Hot, scorching weather and heavy dews are to be dreaded, as with the mists of night often come the destructive fungus, and the labour of months is thus destroyed in a few hours.—ALEX. DEAN.

**Which is the Earliest Potato?**—I have this day tried a root of each of the following, viz., Extra Early Vermont, Ashtop, Bedford Prolific, Coldstream, and Alpha. The last is at least ten days in advance of any of the others as regards size and beauty, the tubers being egg-shaped, and clean, and as large as good-sized Walnuts. Ashtop comes next; the others are the size of marbles. Bedford Prolific, from Mr. Dean, bids fair to be a good cropper; the top is short, and the leaves lie low down on the soil, which is a good sign in a Potato.—R. GILBERT, *Burghley.*

**Slugs and Zinc Collars.**—Several of your correspondents have mentioned that rings of zinc around a plant will keep off slugs; but, supposing that a colony of young slugs were concealed under the ample foliage of a Polyanthus when the ring was placed round it—slugs so small that old eyes do not find them during the short time that rheumatic limbs allow of the head being so close to the earth—what is to be done then? Will soot entice the plant as well as clothe the slimy victims in a suit of mourning?—W. T. T.

## GARDEN BOTANY.

(Continued from p. 525.)

**MOBILITY AND IRRITABILITY OF LEAVES.**—Both of these phenomena, in some of their most striking exemplifications, are familiar to most people, but they are much more common than is generally supposed. Movements in leaves (and other parts of plants) are due to various causes and circumstances, combined often with a peculiar structure of the organs, or some part of them. To give even an outline of what is known on this subject would occupy more space than we can afford to devote to it. Briefly, the movements we have to consider under this head are entirely distinct from those of growth, and only take place in the fully-



Fig. 186.—A branch of *Mimosa pudica* (the Sensitive Plant); one leaf depressed and its leaflets appressed.

grown leaves. We may distinguish between movements caused by contact or concussion and those caused by alternation of day and night, by alternation of heat and cold, &c. But the influences are too numerous and complicated for definition here. The seat of both kinds of movement (that is to say, sensitiveness to touch and what is called the sleeping and waking of leaves, &c.) is in the joints of the petiole and petiolule, and the mechanism of it is a sort of cushion of contractile tissue. What is termed irritability in plants is susceptibility to touch or shock, the susceptibility being exhibited by move-



Fig. 187.—A branch of *Desmodium gyrans* (the Moving Plant), or Indian Telegraph Plant.

ment. The Sensitive Plant (*Mimosa pudica*—fig. 186) illustrates this remarkable phenomenon in a high degree; but the intensity of the sensibility depends upon the health and vigour of the plant and the temperature to which it is subjected. When touched or shaken, the petioles of the active leaves of the sensitive plant are deflected, the pinnæ converge, and the upper surface of the leaflets on the opposite sides of the rhachis are brought close together by an obliquely upward movement. Thus the movements of each of the three systems, if we may so call them, of articulations, are different, and their combined movements produce the effect described and shown in one leaf of fig. 186. *Dionæa muscipula* (Venus's Flytrap) also exhibits irritability to touch in certain parts of its leaves.

Each of the two halves of the blade of the leaves is provided on its upper surface with three rather conspicuous, slender glandular appendages, arranged in the form of a nearly equal-sided triangle; and any insect or other body coming in contact with them excites the motile mechanism which resides in the midrib, and causes the two halves of the blade to close upon each other. Some time after the irritating agent has ceased to act the leaves recover their normal position, but the duration of the effects of contact or of concussion is governed by a variety of external conditions. Besides the movements in leaves from a diurnal to a nocturnal position, or from the waking to the sleeping condition, there is a periodic spontaneous movement which may be too slow to follow, or relatively rapid, as in *Desmodium gyrans* (fig. 187). This plant has a compound (trifoliolate) leaf, the lateral leaflets of which are comparatively small. The latter are attached by short petiolules, which are the organs of movement, and the motion is of two kinds, a rotatory and an oscillating, so that the leaflets are alternately bent upwards and downwards, and their tips describe nearly a circle. According to Sachs, one revolution takes place in from two to five minutes, when the temperature is above 72° Fahr., and the motion is often irregular, proceeding gradually or by jerks. There is also an oscillating movement of the terminal leaflet. Leaves which exhibit a periodic spontaneous movement, or are irritable to the touch, frequently also assume a different position at sunset, or go to sleep. This phenomenon is strongly developed in the compound leaves of many Leguminosæ, of *Oxalis*, and some others. During the day, or at least during sunshine, the blade is spread out flat, whilst at night it is folded in some way. In Clover, Tares, the Sensitive Plant, and a vast number of others the leaflets are folded upwards, so that the upper surfaces of the opposite ones are closely applied to each other. *Amorpha fruticosa* is an example of a plant with similar leaves, in which the leaflets move in the opposite direction, that is to say, they are bent downwards, and the backs or undersides of the opposite rows of leaflets touch when they are in their natural position. The trifoliolate leaf of *Oxalis acetosa* has the leaflets deflected at night on the petiole, and their backs touching each other; but one of the most singular nocturnal positions is that affected by the leaflets of *Cassia marilandica*. This plant has pinnate leaves, the leaflets of which are bent downwards at night, and by a twist in their petiolules their upper surfaces are brought together beneath the rhachis. The petiole also of some plants differs in its diurnal and nocturnal positions. In *Mimosa*, for instance, the petiole is bent downwards at night, and the leaflets folded together upwards; whereas, in *Phaseolus* the petiole becomes erect, and the leaflets turn downwards.

**THE SIZE OF LEAVES.**—The comparative size of the leaves of closely allied species is taken into consideration in descriptive botany; but the actual size of the leaves of any individual plant of a species is a character of little importance. Leaves vary from a line or two in length, as in some of the Cypressess, to 40 or 50 ft. long and 20 ft. across, as in certain Palms; and the leaves of a given species are often spoken of as large or small in relation to the leaves of its congeneric or allied species, and not to leaves in general. Thus a large-leaved Oak, a broad-leaved Grass, or a small-leaved *Euonymus*.

**ABSENCE OF LEAVES.**—Many of the Cactaceæ and other plants are quite leafless, or the leaves are reduced to small scale-like organs. Generally speaking, plants that are destitute of leaves have green stems or branches, which perform the functions of leaves. Sometimes, as in *Ruscus* (fig. 188), the branches are flattened, and resemble hard, rigid leaves, but their true nature is determined by their being axillary productions. They spring from the axils of small scale-like leaves; and leaves, broadly speaking, do not proceed directly from the axils of other leaves. In the British species (*R. aculeatus*) the flowers are borne upon the flattened branches (cladodes).

**VERNATION OF LEAVES.**—The condition in which the separate leaves are in the bud is called the vernation or prefoliation. They are variously folded and rolled, according to their shape, size, &c., or they are flat, as in *Pinus*, &c. A common form of vernation is that of the Lime, in which the two halves of

the blade of the leaf are simply folded together upwards. In *Richardia aethiopica* the leaves are rolled up longitudinally from one side to the other, or what is termed convolute. There are numerous other modes of veneration, only one of which we will specify, and that is the circinate veneration of Fern fronds, which are rolled up from the tip to the base.

**FUNCTION OF LEAVES.**—In this place it is only necessary to mention the use of the leaves to the plant in a general way, as far as it is known. Everybody, we may say, is aware that leafy plants will not thrive without healthy foliage. Stripping a plant of its leaves as fast as they are put forth will soon cause it to have a sickly appearance, and ultimately kill it outright. Researches and experiments seem to prove that it is in the leaves where the food taken up by the plant in the form of gases, water, and various substances held in solution by water, undergo certain chemical changes, and are transformed into nutrient compounds required for the further growth of the plant. The generally accepted theory is that the food thus assimilated is drawn from thence to any part where active growth is going on, or where it can be stored up for the future use of the plant. There are certainly some

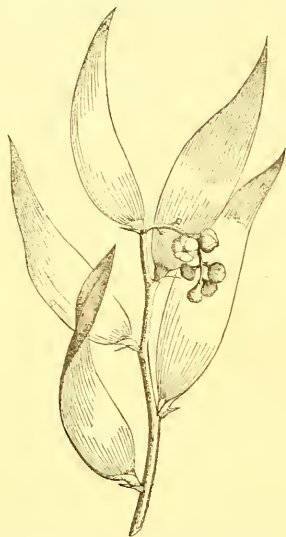


Fig. 188.—Flattened branches (cladodes) of *Ruscus racemosa* proceeding from the axis of the small, scale-like leaves.

difficulties in the way of accepting this theory in its entirety, though it is based upon a number of indisputable facts. But however much future investigations may modify existing notions on the economy of plant life, from a practical point of view we cannot do wrong in assigning a very important part to the leaves.

#### Accessory or Subsidiary Organs.

**DEFINITION.**—For convenience sake a number of organs of quite different nature are included under this head. Some of them are stem structures (caulomes), some are leaf structures (phyllomes), and some are epidermal structures (trichomes) or outgrowths (emergences) of tissue covered with the epidermis. It may be explained here that all parts of plants, excepting true roots, are referred to the three types just named; that is to say, they are metamorphoses of three primary types, all the metamorphoses of each type being of the same nature or morphological value, whatever their final form or function.

**HAIRS.**—The surfaces of leaves and other organs are smooth (glabrous), as in the common Laurel, or more or less clothed with hairs or other excrescences. Mr. Bentham uses the term

"smooth" when the surface is without any protuberance whatever, and "glabrous" when without hairs of any kind; but these terms are generally regarded as synonyms, and a surface is said to be naked (*levis* in Latin descriptions) when it is devoid of hairs and all other outgrowths. In descriptions the absence of excrescences, other than hairs, is understood without being expressed, because they are comparatively rare, and when present they are described. But it is necessary or desirable in most cases to mention whether the surface of leaves is glabrous or hairy; and it is usual to indicate the kind of hairs or degree of hairiness. Hairs of all kinds are trichomes or outgrowths of the epidermis or skin, and are very variable in their structure; but it is only of their outward forms, texture, and density we have to speak now. The kind of hairs is designated by such terms as woolly, as in *Stachys*

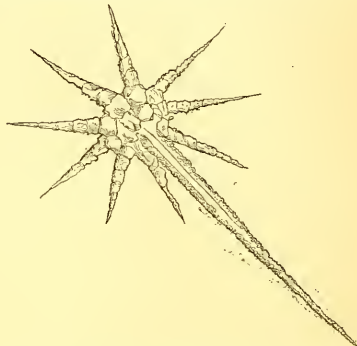


Fig. 189.—Stellate hair of *Onosma tauricum*. Magnified.

*lanata*; hispid, as in Borage, Comfrey, and most of the plants of the family to which they belong; silky, as in *Potentilla anserina*; downy, when the hairs are short and soft; bristly, when they are stiff and erect; glochidiate, when they are hooked at the tip; and sometimes they are mealy or chaffy in their nature. Several other terms are employed by botanists, but not often in a very definite and uniform sense, therefore it would be of little use to particularise them. Of course there will always be more or less vagueness in the use of comparative terms, especially when the characters they are

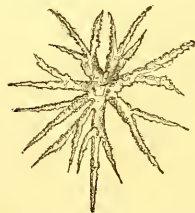


Fig. 190.—Stellate hair of *Alyssum montanum*. Magnified.

intended to express are taken separately; and it is only by an aggregate of characters that it is possible to determine plants from descriptions. Hairs are simple or branched, often in a stellate manner, as in *Onosma tauricum* (fig. 189) and in *Alyssum montanum* (fig. 190). Certain kinds of hairs are characteristic of whole families. The Malvaceæ (Hollyhock, &c.) have usually stellate hairs; most of the Boraginaceæ have harsh or bristly hairs; in the Malpighiaceæ they are commonly attached by the centre; and in the Urticaceæ (Stinging Nettle family) and the Loasaceæ, stinging hairs are frequent.

**OTHER DIVERSITIES OF SURFACE.**—Colour is not regarded as a distinctive character for species, but it is often convenient to mention not only the colour of the flowers, but also the hue of the leaves. Thus, when they are of a bluish-green, as in

the common garden Pea, they are termed glaucous. The surface is sometimes furrowed, or ribbed, or wrinkled, or scabrous (rough to the touch), or viscid, or glutinous, or warty. In many families the leaves, &c., are beset with immersed, sessile, or stalked glands, which contain various secretions. The glandular hairs of some *Pelargoniums* and *Roses* contain an agreeably fragrant secretion. Prickles sometimes occur on the surface of leaves, as in *Victoria regia* and some of the species of *Solanum*. The leaves of *Elaeagnus* and allied genera are clothed with elegant scale-like appendages.

**PRICKLES DIFFERENT FROM SPINES.**—Prickles, like hairs, originate from the superficial tissue, as may be proved by breaking off those which clothe the stems, and more or less the leaves, of *Brambles* and *Roses* (fig. 191); they are therefore called trichomes. But spines have a deeper origin, and are either leaf structures (phyllomes) or stem structures (caulomes). Some of the branches of the *Hawthorn*, *Blackthorn*, and some species of *Elaeagnus* (fig. 192), are aborted and terminate as sharp spines. The common *Furze* has spiny branches, and some of the leaves are reduced to spines. The common *Barberry* (fig. 193) is another familiar instance in which some of the leaves are reduced to spines. Usually it is not difficult to ascertain whether spines are metamorphosed



Fig. 191.—Branch of Rose covered with prickles.

lower part of the shoots, and then usually there are two leaves with tendrils opposite to them, followed by one leaf without a tendril, two with, and again one without, and so on. This order is disturbed only by the bunches of fruit. The strength of tendrils, when fully grown, is prodigious in relation to their size. A remarkable instance of adaptability to circumstances



Fig. 192.—*Elaeagnus*; branches terminating in a spine.

is exhibited by the *Virginian Creeper*, the tendrils of which form adhesive disks at their tips on coming in contact with a wall or rock, &c. Mr. Darwin, in his admirable essay on tendrils, states that a single branch of a tendril, at least ten years

leaves or branches, because we find when the former is the case all sorts of transitional stages may be found.

**TENDRILS.**—Some plants possess slender filiform appendages which have the power of twining round other bodies, and by means of which the plants are able to climb towards the light. These are called tendrils, and they are either reduced leaves or branches. Among familiar foliar tendrils we may name the *Sweet Pea*, *culinary Pea*, and *Everlasting Pea*; the upper part of the leaf is transformed into a branched tendril, the number of branches representing the number of reduced leaflets. The tendrils of *Cobaea scandens* belong to the same category. In *Flagellaria indica* and *Gloriosa Plantii* the midrib is continued in the form of an unbranched tendril; and in *Lathyrus Aphaca* (fig. 194) the whole leaf is reduced to a simple tendril, which is compensated for by the stipules becoming foliaceous. The tendrils of the *Grape Vine*, *Virginian Creeper*, and *Passion-flowers* are arrested or metamorphosed branches. In the *Grape Vine* the tendrils are opposite the leaves, the same as the bunches of fruit, of which they may be regarded as modifications to support the branches. This view is strengthened not only by the position of the tendrils, but also by the fact of their sometimes becoming more branched and bearing a few berries. The production of the tendrils of the *Grape Vine* is very singular. None are formed on the



Fig. 193.—*Berberis vulgaris*, with some of the leaves reduced to spines.



Fig. 194.—*Lathyrus Aphaca*, in which the leaves are reduced to simple tendrils, and the stipules are large and foliaceous.

old, of the *Virginian Creeper*, bore a weight of 2½ lb. without being detached, and he calculated therefrom that the entire five-branched tendril would support 14 lb. or 15 lb., so that the tendrils of a large plant attached to a wall must be able to

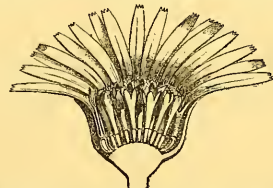


Fig. 195.—Section of a flower-head (capitulum) of the *Corn Marigold* (*Chrysanthemum segetum*), showing that it consists of a cluster of flowers.

support an enormous weight. The position of the tendril in the *Cucumber*, *Melon*, *Gourds*, and other plants of the *Cucurbitaceæ* is below and a little on one side of the insertion of the leaf.

### The Inflorescence.

WHAT IT IS.—The flowers of plants are very variously arranged, and the manner in which they are arranged is the inflorescence. An inflorescence comprises all the flowers of a plant collectively, as of *Agave americana*, *Hyacinthus*, and of all plants which throw up only one flowering-stem above the ordinary foliage leaves; or all the flowers of each separate



Fig. 196.—Section of flower of a single Rose, for comparison with fig. 195.

stem of a plant, as of Foxglove, Lily of the Valley, Aconite, Daisy, Dandelion, &c.; or when stems are branched, each cluster or spike of flowers separated by leaves constitutes an inflorescence, as the terminal clusters of flowers of *Rhododendron* and the lateral spikes of *Lavender*. Sometimes an inflorescence consists of only one flower. *Lysimachia numm-*



Fig. 197.—*Coreopsis aristosa*. (See text under "Difference between an inflorescence and a flower.")

*laria* (Creeping Jenny) and *Anagallis arvensis* (Poor Man's Weather-glass) are examples of this kind of inflorescence, as only one flower proceeds from the axil of each leaf. Before describing the various types of inflorescence it may be well to warn the beginner against falling into the error of confounding an inflorescence with a flower.

**DIFFERENCE BETWEEN AN INFLORESCENCE AND A FLOWER.**—The structure of a Buttercup flower has already been explained, and the names of its different parts given. Now, there are some inflorescences marvellously like flowers in external appearance, and which are popularly called flowers. The *Dahlia*, *Aster*, *Marigold*, *Daisy*, and *Zinnia* are of this class, and the natural order or family to which they belong is the most numerous both in genera and species of any in the vegetable kingdom. Hence the importance of learning their real nature. In cutting longitudinally through an inflorescence of this kind it is easy to see that it consists of a number of small flowers crowded together—see fig. 195, and compare this with fig. 196, which is a single flower of a *Rose*, not differing materially in its structure from that of the *Buttercup*. *Coreopsis aristosa*



Fig. 198.—Inflorescence of *Coreopsis canadensis*. Reduced.

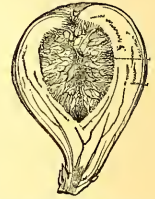


Fig. 199.—Section of a Fig showing the flowers inside

(fig. 197) has heads of flowers remarkably like the separate flowers of some *Anemones*. And, again, the inflorescence of *Coreopsis canadensis* (fig. 198) is not unlike a single flower, as seen in the cut, but it is much larger than here represented, and the separate flowers of which it is composed are conspicuous and evident to the naked eye. There is one more curious inflorescence which should be mentioned here. It is that of the Fig tree. Fruits of different sizes may often be seen on the same tree, but visible flowers there are none, at any season of the year; and it seems to be a case of a tree yielding fruit without producing flowers. But it is not so. If a section of a Fig be made, it will be found to contain a number of small bodies,



Fig. 200.—One female flower of the Fig removed from the inside of the fruit. Enlarged.

which, with the aid of a lens of low power, prove to be flowers (figs. 199 and 200). These inflorescences are more fully described below.

**NOMENCLATURE OF THE DIFFERENT PARTS OF AN INFLORESCENCE.**—Flowers, of course, constitute the most important part of the inflorescence, but the flowers are usually provided with stalks, and the inflorescence itself is often branched and bears other appendages besides flowers. Flowers, like leaves, are sessile, or stalked, and the stalk of a flower is the peduncle in an unbranched inflorescence; but when the latter is branched, many botanists employ the diminutive pedicel to designate the flower-stalk. It should be observed, however, that there is a great want of uniformity in the application of these two terms, one often being substituted for the other. Here they are used in the sense indicated. A peduncle which springs from the crown of the root is termed a scape, whether it bears one flower, as in the *Tulip*, or several, as in the *Hyacinth*; and when the peduncle is enclosed or sheathed by a large leafy expansion (spathe), as in *Arum maculatum*, *Anthurium Scher-*

zerianum, and *Richardia ethiopica*, it is termed a spadix. The ramifications of the inflorescence are usually provided with leafy appendages, more or less like the ordinary leaves, from which they often exhibit a gradual transition, or they assume very different forms. They are called bracts. There is no absolute distinction between leaves and bracts; but if the leaves subtending the flowers differ in shape or other characters from the ordinary leaves of the plant, then they are called bracts. In reality, bracts are reduced leaves, and the ramifications and flowers of the inflorescence have their origin in the axils of the bracts. Occasionally the bracts are very minute, or altogether obsolete, or they fall off as the inflorescence unfolds. Sometimes the ultimate branchlets (the pedicels) of an inflorescence bear small bracts, in the axils of which no further branches or axes are produced. When the bracts on the pedicels are dissimilar to those on the main axis or axes of the inflorescence, they are distinguished in descriptions as bracteoles, otherwise no distinction is made. Some of the most noteworthy modifications of peduncles, pedicels, bracts, and bracteoles will be pointed out in succeeding paragraphs.

**TYPES OF INFLORESCENCE.**—There are two distinct types of inflorescence based upon the mode of branching, but both of these types may be combined in the entire system of the inflorescence of one and the same plant. These types are termed indefinite when the primary axis does not terminate in a flower and when the flowers open successively from the base upwards, or from the circumference towards the centre, that is to say, in centripetal order.

W. B. HENSLEY.

**The Spring Snowflake** (*Leucojum vernum*).—I have noticed in THE GARDEN certain paragraphs concerning this pretty spring flower, which, instead of increasing its popularity, are apt to cause it to be still more rarely grown; therefore I was pleased to see in this week's number that "Salmoniceps" endorses my opinion (p. 251), that until the plant is fairly established judgment as to its merits ought to be withheld. My plants have no extra care bestowed upon them; the soil and situation, to all appearances, are anything but favourable, and yet the result this spring was all that I could desire; and I think if others can be induced to try this Snowflake, they will succeed equally well.—E. FARREK.

**The Root History of Lilies.**—My promised paper, with "photographic specimens of offsets of the first year, bulbules or small bulbs of the second, third, and fourth years, together with fully-developed bulbs," was finished and closed on the day before I had the pleasure of seeing Mr. D. T. Fish's most interesting article on "The Root History of Lilies." As he has drawn my attention to the importance of leaves, and to the feeding of the germ or young Lily bulb through the old bulb, I shall have much pleasure in complying with his invitation in my second succeeding paper; and shall have additional pleasure if I can be instrumental in removing from his mind any doubts on the subject. I may, at all events, be able to lay before him certain facts, which may enable him to settle the matter to his own satisfaction. All I ask is to have what I propound carefully considered, and this Mr. Fish has already convinced me he is quite prepared to do.—DUNEDIN.

**Hardiness of *Lilium auratum*.**—I have been reading and re-reading "Dunedin's" lengthy notes on the tenderness of Lily "germs" until I begin to doubt if what my own eyes have seen of the hardness of the bulbs of, for instance, *L. auratum* is correct. His theory as to the cause of the too frequent death of imported bulbs of *L. auratum* may be correct, but it is at least fortunate that bulbs from home-raised seeds are neither so delicate nor so easily killed. Indeed, I know of no Lily more hardy than this for outdoor cultivation in Britain. Four years ago I raised a large quantity of bulbs from seeds ripened out-of-doors here. For the first two years they grow in the shallow pans in which the seeds were sown, having been exposed to all weathers for two winters. The surface soil got washed out of a few of the pans, thereby exposing the young bulbs bare to their roots. In this condition I found them one morning when the thermometer registered 20° of frost. They had been so injured by exposure to the inclemencies of the weather previously, that the only apparent effect which such severe frost had upon them was that they were reddened, but they subsequently grew as well as any of the others that were not so exposed, and all, I may say, now that they are planted out, are swelling into good-sized bulbs, many of which have already flowered.—GEORGE SYME.

## THE FRUIT GARDEN.

### THE ORCHARDS OF HEREFORD AND WORCESTER.\*

Though differing in many other respects, these two contiguous counties are mostly reckoned as one, as regards their fruit cultivation. Parts of Gloucestershire, Shropshire, and Warwickshire, which adjoin, are also included in this tract of orcharding. Nurserymen are fond of stating in their catalogues that Apples do well in any soil. No doubt by such assertions they gain more orders, but it is a question whether the country has many more Apples. Some are bold enough to add that a deep, friable loam suits them best. No doubt of it; and most other things as well. It is quite certain, however, that the most important condition of the soil for the Apple tree is depth, and this, in the neighbourhood above referred to, it thoroughly enjoys. The formation of the country, too, affords numberless sheltered hills and sunny slopes where fruit trees luxuriate, as if in walled gardens. There is no doubt that Worcestershire was inclosed and highly farmed at a very early period, and the cultivation of Apples and Pears must have been energetically carried on from the first. Herefordshire produces, perhaps, the best Apples, but very few Pears. The latter fruit gives one the best idea of the antiquity of this sort of cultivation. The remaining trees in the celebrated Barland Ferry Orchard at Monksfield Farm, near Malvern, are stated by one writer to be six hundred years old. This is probably an exaggeration, but there are, doubtless, many trees scattered over a large area that must be several hundred years old. An Apple tree would hardly be of any use to the owner after a hundred years, but the Pears above referred to are still, many of them, most valuable. The ground, however, seems tired of them—and no wonder—and the grafts taken from them do no good. Few Worcestershire homesteads do not possess a few of the "Early Jennet" trees, which still bear bountifully, though of an enormous age. This and other descriptions of the earliest Pears ripen about the 1st of August, and in a good year help the farmer very much with his labour bill, so heavy at that time of year. The fruit is shaken down by boys who climb into the trees with long, hooked poles, and picked up by women underneath. Sacks and cider cloths are spread underneath to break the fall of the fruit. These are the Pears that are so constantly seen in the early autumn hawked about the streets.

Hop and fruit cultivation often go hand in hand, the former demanding even more imperatively a deep soil. In the famous Temes valley—one of the richest spots in England—the ground will grow Hops for ever, such roots as die being re-planted. On the uplands, however, it is found necessary to change the Hop-ground every twelve or fourteen years. The effect of Hop-growing on the soil, contrary to what one would suppose, is to render it almost as fertile for a renewal of general cropping as virgin soil. An old writer, indeed, drily remarks that "the greatest profit in Hop-growing is the breaking up of the soil afterwards." Up to the present time, whenever Hops were planted, an orchard was planted at the same time, as an economy of labour and ground. By the time the trees began to be prejudicial to the Hops, it was time to remove the latter altogether. Of course the field remained arable, but that used to be thought no hindrance to the orchard; or rather, the orchard was thought no hindrance to the arable field. When it is considered how much finer the trees grow on an arable field, and that they are thus nearly always out of the way of cattle and horses, it will be seen that the disadvantages are compensated for. These are the spilling of Corn crops by the sun being kept from them (a trifling loss if the trees are not planted too closely), and the difficulty of cleaning the field when encumbered with trees. No difficulty exists as to ploughing, though a slight extra expense is entailed by the necessity of having three men or boys attending to the horses when the tree rows are being ploughed out, and also of having the ground just round the trunks dug with the spade. This is well done by any labourer for a penny a tree.

When orchards are planted in Grass land it is much better to have the young trees dug round for several years. They

\* A paper, contributed to the Annual May Conference of the Vegetarian Society, by Mr. Baron D. Webster, of Nowland Court, Great Malvern.

require to be fenced in on Grass land with great care and expense, and at the time of the ripe fruit everything must be kept out of the field. It is far better, when planting an orchard on the green, to stock it for the first few years with nothing but sheep and young cattle. Horses and full-grown cattle will knock over any fencing, unless made so strong as almost to interfere with the growth of the trees. The best and cheapest fencing for young trees is of this description: Plant firmly in the ground, in the shape of a triangle, three stout Hop poles about as thick as a man's arm, and cut them off to about 4 ft. or 5 ft. high. They should stand about 1½ ft. from the stock, and lean outwards. To these nail wire netting as high as a sheep can reach. You are then safe from sheep and game. If calves and young cattle are to be in the field, protect the wire netting again well with bushes fastened round with wire. If cattle and horses must come in, however, there is nothing for it, but the old-fashioned heavy wooden cribs, which, besides being very cumbersome and expensive, are also very detrimental to the prosperity of the tree. Their great posts make holes for the wet to accumulate and lodge in during the winter, and cracks to let the drought through in summer. Of course, in pruning, the object is to keep the branches growing outwards from a stem about 5 ft. high. Some farmers, who are convinced of the profit of growing fruit, are so particular on these points, that they get slightly eccentric, to say the least, and discharge their men for the slightest infringement of their rules. An Apple tree can hardly become very profitable under fifteen years' growth at least, and it certainly is most aggravating to have a tree, or perhaps an orchard full, seriously damaged by purely avoidable causes after, perhaps, a most careful watch has been kept on them for ten or twelve years. After an orchard is once well started the only expense connected with it is the pruning, and that is about covered by the sale of the "brash." Apple trees in Worcestershire often attain the size of an ordinary Oak, and a tree of a good sort will bear 25 bushels of Apples. One Pear tree will often make as much as 200 gallons of perry.

It is very dangerous to lay down to Grass an orchard that has hitherto been in tillage. It often causes all the trees to die. The ordinary one year's course of seeds does not seem to hurt them, but a two years' ley undoubtedly does. The decrease in the extent of orcharding and the inattention to fruit cultivation is very sad to see, and it will not be amiss for us to look into the reasons for it:—

1. First of all we have the enormous and grossly unfair profits taken by the "middleman." A pot (5 pecks, or 80 lb.) of fruit bought from a farmer for, say, ten shillings, is not sold to the public under twenty shillings or twenty-five shillings. The usual system is for the farmer to take his fruit to one of the merchants in Worcester, who sells it for him on commission, in reality to middlemen in large town; so—at least so he is told—the merchant, in paying the farmer, always professes to be getting only sixpence or so per pot out of the matter. At the same time they carry on the business in other ways, buying fruit in large quantities on the trees or after being picked and keeping it themselves as a speculation. A large farmer with much business to transact cannot be always personally looking after the sale of every load of fruit, and most of them usually sell it in this way. All that the farmer does not want to keep for the winter he sends in as fast as it is picked, and notes the quantity in a book which is taken to the merchant, who signs it and adds the price he means to give for it, or sometimes the price he will give for the previous lot, this being still uncertain. The farmer can, if he is at any time dissatisfied, close up accounts; or, if he goes on all the year, can draw money as he wants it, sometimes drawing more than is due. At Christmas the book will be squared for the season. Sometimes the fruit is sold by auction on the trees, orchard by orchard. In the former way, of course, each individual lot of fruit is quite at the mercy of the merchant, and the farmer loses the full advantage of sudden and spasmodic rises in the market. On the other hand, he never has his fruit refused in a great flush. It is the profit made after the fruit has left the merchant and before it reaches the public that is so unfair. For instance, in one abundant year, when a pot of good fruit did not fetch more than two shillings in Worcester, enough to make an Apple tart cost one and eight-

pence at Malvern. A commodious fruit market has been built at Worcester, but it does not seem to work in any beneficial way to the large growers. Farmers give up the business in disgust at the unfairly low prices they get for their fruit.

2. The next cause that acts so much to check English fruit-growing is the foreign importation. Of course fruit from abroad is landed in large consuming towns, and close to railways, so that it can be easily and cheaply distributed over the country. Nobody would deny that we could produce fruit enough for our own use. And the question arises whether, for the sake of removing a very slight addition to the immediate cost of an article to the public, it is worth while to persistently discourage an excellent industry, pay our money into foreign pockets, and reduce employment for our large population. Depend upon it, the 4d. loaf is well worth 5d. to the English labourer, if entirely grown in his own country. Let us be only reliant and self-supporting. Besides, if English fruit-growers had really a fair chance, English fruit would soon be as cheap as foreign supplies. It is well known that the diseases which foreign cattle bring in with them destroy more English meat than they supply. The importers of foreign cattle possess by their wealth an improper influence, and the importers and dealers in foreign fruit to some extent the same. "Why," says a writer on English agriculture, "do we not turn fruit growers? I was in Covent Garden market yesterday, there was £20,000 worth of fruit, and it was all from abroad." Every year we had articles in the papers on this subject. The chief reason why this cultivation is not increased is because there is no getting a fair price for the produce. When a Worcestershire farmer travels to Manchester or London in the vain hope of selling his large stock of splendid fruit, he is told that foreign fruit can be got so cheaply that he cannot be offered anything worth his acceptance. What is the consequence? The farmer goes home disgusted, five or six extra men hand-picking at 2s. 6d. a day are dismissed, and the fruit is either made into cider or devoured by the sheep and pigs. At rent day, when the farmer meets his landlord, he cannot pay all his rent, his farm being valued at perhaps 10s. per acre all round over its corn-growing value for the fruit that is supposed to be sold off it. Then as to labour. A few years ago there seemed no certainty at all as to where the demands of the agricultural labourer would stop, and farmers all turned their attention to methods of making money without need of labourers. Of course, to market a crop of fruit takes labour, and that of an expensive kind. Had the movement continued, the English labourer might soon have found himself out of employment altogether. And although wages were raised to the highest pitch five or six years ago, Worcestershire farmers have never since reduced them; still the attitude of the labourers caused terrible mischief, and has in these counties conduced to the present lamentable state of agricultural affairs. No doubt we have improved, and that enormously, in our stock-raising. But, alas! for the ploughed land. Will anyone look at our fruit-growing districts and say if there is any improvement there? Where are the crops of Wheat and Beans that were grown forty years ago; where is the workman-like, clean appearance of the land, and where are the workmen? We must be growing less and less Corn every year.

3. And this brings us to the last cause we will mention of the deterioration of our fruit growing. Generally in this district all farming, except stock raising, is going backwards, and at the same time we are trying to make ourselves believe it is quite the contrary. Landlords in this neighbourhood have determined to have the land farmed on what is called the "high" system, and they want to help both themselves and the farmers by reducing labour. Trees, wherever planted, are of course an obstacle to the use of machinery; but the system of farming which, no doubt, answers well in the Lothians of Scotland and on the broad plains of Norfolk will never succeed in such a neighbourhood as this. The whole formation of the country and the character of the soil are against it. No greater mistake is being made than that of the landowners in discouraging fruit cultivation, or, perhaps, rather, not exerting themselves to interest and improve it. Every farm should be well inspected with regard to its fruit-growing capabilities. Orchards that are half-stocked with trees should be planted up and kept planted up. Tenants

should be bound to plant a new tree for each one that comes to an end. The green orchards which are almost worn out should be either entirely planted up or entirely rooted out. A farmer is often losing weekly five pounds worth of dairy or other produce for the sake of a pound's worth or so of fruit that is not fit to be gathered. An orchard should be well worth shutting up altogether when necessary, and by taking care no inconvenience will be occasioned. It is easy to eat down the orchards bare and let the open land grow up till the middle or end of August. Straggling trees all over the farm are a great nuisance on this account also. Cattle thus get a chance of tasting the fruit, and they often, especially in a dry season, get such a hankering after it that they cannot be safely confined in any field by any fence. A dairy of cows turned into a field of splendid keep, after being brought back from their "fruiting," will not put their heads down to eat for hours together. Why we bring our Wheat from Russia and our fruit from America, leaving agriculture in our own land to go down hill, and the country generally to be ruined, is a question to which economists might well apply themselves. Our soil is probably not above the European average, but, on the other hand, we have more capital than any other country, and we have far more knowledge of how to apply this capital to agriculture. Were this surplus capital put into our own soil, and those branches of agriculture encouraged which feed most, and employ most, we should find ourselves at times like the present in a very different position. Why, it is said that the troublesome little state of Servia can put more men into the field than we. Vegetarians will be interested to know that the only branch of industry in that country is Plum growing. There can be no doubt that by increased attention to fruit growing in England a great deal more useful, wholesome food would be produced, and many more people employed. Of what use would be tons of gold and silver in the Bank of England if foreign produce were prevented, by any reason, reaching our shores?

It is satisfactory to turn for a moment from the Apple and Pear cultivation of this district, which is certainly either at a standstill or going down hill, to that of Plums, Gooseberries, and Currants, carried on so extensively in the neighbourhood of Pershore. Enormous plantations of the white *Magnum Bonum*, commonly called the Pershore or Egg Plum, are there to be seen, and it is difficult to know where market gardening ends and farming begins. One holding of 200 acres is entirely devoted to Plums and Gooseberries, with the exception of a few Pears, and is well worth going a long way to see. On an average, this garden is very profitable, but the losses some years are, of course, very great. It was planted by Mr. Varden, an engineer, who was employed in the construction of the Great Western Railway, and who was so much struck with the Pershore system of cultivation, that he devoted himself to it on this scale. Since his death it has been bought by Mr. Bomford, who farms about 3000 acres besides. Along the Teme valley are many valuable Cherry orchards, some of which bring from £10 to £15 per acre annually to the farmer without expense on his part, the crop being sold on the trees by auction or otherwise. Cherries should invariably be planted together, and as thickly as possible, as it is necessary for some weeks before they are gathered to have a man living in the field to scare the birds. Damsons would be more cultivated were it not for the difficulty of getting women to pick them. A woman must work hard to pick a pot in a day, and there are fewer women to do to work now than formerly. Damsons fetch as much as 3s. a pot in some good years, and are always saleable on account of being used for dyeing purposes. Plums here in a very abundant year can hardly be got rid of at all. Damsons, of course, do better on light soils, but they thrive well along with the Apples and Pears.

#### THE RIPENING OF MELONS.

MORE Melons are wrecked at the finish than through all the preliminary stages of culture; in fact, there may be said to be but two crucial stages in the growth of Melons—the set and the finish. Secure a simultaneous set of, say, six fruit to a plant, and see that they all start abreast, and the Melons are sure to swell under ordinary treatment. An average temperature of 75°, a moist atmosphere, a fair amount of moisture, and

sundry stoppings of the lateral shoots in advance of the fruit to prevent overcrowding, and the fruit swells rapidly and well. But as it nears the finish, difficulties and dangers multiply in the ratio of ripeness. First, there is the danger of fruit splitting—the result generally of an excess of water at the roots. The plan of growing Melons on manure beds has many advantages. Prominent among these are a genial atmosphere and a warm soil enriched by the escape of ammonia from the manure. One great drawback of a manure base for the soil of Melons is, that the roots escape into the manure, and often imbibe far more food and moisture than is good for the fruit. It is difficult, if not impossible, to curtail or regulate the supply of either with the roots free to roam through several square yards of manure. The manure is apt, also, to become too dry as well as too wet. What with the heat of fermentation running to excess, and so burning the manure as dry as chaff, and the roots absorbing all the moisture applied to the surface soil, the bottom roots very often suffer much from drought, the plants show signs of distress, the fruit stops growing, when suddenly the entire bed is saturated through with manure or other water. The sudden transition from dearth to plenty of food and water gives such a stimulus to the plants, as to furnish the leaves, stems, and fruit with so much sap, as to split the fruit. It is impossible, in fact, to be too careful in watering Melons during their later stages of growth. Another source of danger is leaving the fruit to lie on the damp soil. This rather helps than hinders Melons to swell the faster through their earlier stages. To such an extent do some carry this, that they even bury the fruit for the first few weeks of its life. The young fruits swell very rapidly treated thus, and, if carefully exposed afterwards, take no harm from being buried; but contact with the soil is dangerous as the Melons approach maturity. It not seldom causes blotches on the rind, which speedily advance into absolute rottenness of the flesh and decomposition of the sweet juices of the Melon. All the fruit should, therefore, be elevated above the ground, and also more or less above the leaves. The commonest modes of elevating Melons are those of placing one or more tiles, bricks, or pots under them. Most of these modes are faulty; the best plan is to raise wire or wooden cradles, 6 in. or so square, on two or more pots or cleft sticks, and place the fruit on the latticed or reticulated cradles. Light and air have thus free access to all parts of the fruit, which is by no means the case when the lower portion of it lies on a solid or opaque base. Next to these open rests for ripening Melons, glass rests are the best. These, though shutting out the air from the lower portion of the fruit, admit the light to most of it. A good deal also depends on the height of these Melon-rests not only above the soil, but in relation to the leaves and stems of the plants. In the case of weak plants, the fruit should be under the line of the stems and leaves, and the fruit be permitted to pull slightly on the branch that carries it. In the case of strong plants the fruits should be elevated as much as possible above the line of the bearing branches. The sap will thus have to run uphill—an unnatural course for the fruit food of Melons—and, consequently, less of the sap will find its way into the elevated fruits. In cases of abnormal luxuriance the supply of food to the fruit through its last stages may be further limited by cutting the stem of the Melon, or the branch on which it is growing, partly through. This checks the flow of watery sap into the fruit, hastens maturity, and heightens quality.

These cradles or Melon-rests are as useful to Melons on trellises as to those grown on manure beds in pits or frames. On trellises, the weight of the Melon during its later stages endangers its safety. The stalk either gives way, and lets the Melon fall with a crash that breaks it in pieces, or the mere weight of the fruit cuts the branch through, or partially or entirely hinders the passage of fluids through it. The simplest cradle for Melons on trellises consists of two wide, strong strands of Russian matting brought to a point at both ends and open in the middle, something in the form of a canoe. The Melon lies in the middle, and is thus upheld in safety. A dry atmosphere is as essential for the development of flavour as the regulation of the supply of fluids through the roots. But this is another rock on which many promising Melon crops are annually wrecked. It is

vitaly important in horticulture to discriminate wisely and well between the relative and absolute meaning of words. Dryness, aridity, wet, heat, cold, ventilation, &c., all have different meanings only. A dry atmosphere, for example, means only such a degree of aridity as shall preserve the Melon leaves in health. This is too often lost sight of. As soon as the Melons begin to ripen, all root waterings, surface sprinklings, &c., are at once withheld. The natural consequence is, the leaves either wither up prematurely or are devoured by red spider. The fruit, deprived of the leaves when it needs them most to change the crude juices of the soil and the plants into lusciousness and sweetness, either fails to ripen at all, or ripens of very inferior quality. It is, however, just possible to maintain a temperature sufficiently dry to develop the highest flavour, and yet to keep the roots, stems, and leaves of the plants healthy to the close. This feat is the perfection of Melon culture, and hardly ever fails to finish fruit of the highest quality. The exact time to cut Melons is another difficult and delicate point in their cultivation. The majority of Melons are left too long on the plants. It is no uncommon thing to find crops of Melons half roasted into ripeness without leaves, stems, or roots. The pit or frame bakes them into maturity as a baker's oven does alike the tops and bottoms of loaves brown. This is bad enough, but the Melons are more like burnt bread than that done to a turn. They are left on the plants far too long. Melons ought to be cut as soon as they begin to swell. It is a grave mistake to leave them swelling in hothouses, pits, or frames for days until they become full to overflowing of odours rich and sweet. The more aroma escapes from a Melon the less flavour remains in it; therefore, husband aroma as you would treasure gold, and, in nine cases out of ten, Melons would be far higher flavoured when they came to table. Some cultivators, not content with semi-roasting their fruit into maturity, lay them up on shelves or on the hot soil of pits and frames to heighten their maturity after they are cut. All this is wasteful and ruinous to the highest flavour. The scent of Melons, instead of being thus scattered broadcast on the wings of the air, to the attraction of all vermin to prey upon the fruit, and the reckless loss of its choicest elements, should be jealously preserved thus: Cut the fruit carefully as soon as it begins to swell and the stalk is seen to have almost severed its vital connection with the fruit; wrap it round carefully in several folds of tissue paper or fine cotton wool, and lay the Melon aside in a cool, dry fruit room till wanted. From three to five days after it is cut it will, as a rule, have reached its highest flavour. Melons, thus carefully finished and preserved, have a vinous richness and a delicious coolness which render them perfect and as different as well can be from those that are left after they are ripe in the sweltering atmosphere of hothouses, pits, and frames until they are placed on the table. Much of the unpopularity of Melons arises from their being thus emptied before eaten of their best qualities. Good Melons are second to no fruit; and as considerable skill and capital are expended on their cultivation, it is to be regretted that their quality should so often be spoiled through lack of attention to a few trifling matters at the finish. London never wrote a truer sentence than that "good gardening consists in attention to trifles;" and this is emphatically true in regard to the ripening, cutting, and preserving of Melons. D. T. FISH.

*Hardwicke House, Bury St. Edmunds.*

**Fruit Prospects in Durham.**—In looking over my own and some of my neighbours' fruit trees and orchards, I find that the crops of fruit in this district (North Durham) are not quite so promising as they were in the early part of the year. On Apricots there is a good crop, but Peaches are scarcely up to the average, except where they have been protected with tiffany or good copings. In many low-lying places Peaches and Nectarines are an entire failure, owing to the immature state of the wood, the excesses of rainfall last autumn preventing its proper maturation. Plums are, generally speaking, a good crop, and the same may be said of Cherries. Apples and Pears are not quite set yet, and should the present dull damp weather and low temperature continue, I am afraid that the result will not be satisfactory, although I notice that Jargonelles are pretty well set in most places, as are also the Keswick Codlin and Lord Suffield Apples. Gooseberries we must

regard as a failure, but Red Currants are an abundant crop—greater, in fact, than we have had in this district for many years. Black Currants were injured by the sharp frost which we had on May 19, and the cold easterly and north-easterly winds that followed it have, to all appearances, ruined the crop, the ground being literally covered with fallen half-set fruit. Strawberries are a mass of bloom, and the same may be said of Raspberries. On the whole, I think, in spite of the dull outlook at present, that we will have a crop of fruit equal at least to that of average years. I notice, too, that Hollies are again full of blossom; therefore we are likely to have another heavy crop of Holly berries. The common Laurel is also producing plenty of flowers, but we never see any berries here. The Mahonias are plentifully covered with fruit, except *Berberis Darwini*, which is still in flower.—TYNE DALE.

**Fruit Crops near London.**—Whilst we have been comforting ourselves that the effects of the hard March frosts on fruit trees were but partial, and that some kinds would produce heavy crops, subtle influences have been at work to destroy our hopes. The Apple bloom was so fine and so abundant, and as there was no frost during the time when it was expanded, we naturally looked for a heavy crop, and such a crop has generally been anticipated. Some keen observers, however, did not fail to remark that the flowers fell early, and that at no time did the trees present those rich garlands of flowers that in some seasons characterise our Apple orchards, and now, when it is seen that there is not half a crop of Apples on the trees, the speedy falling of the blossom is explained. The early frosts did the mischief even whilst the flower-buds were almost dormant. The Black Currants are in a similar condition. A heavy crop of fruit set, but two-thirds of it have fallen, and the bushes present but a barren aspect. Red Currants are little better, and we have known all along that the Gooseberry crop was but a light one. Plums and Cherries are the best crops so far, but should the present cold weather continue, much of the fruit will become stunted and will presently fall. Thus we are again brought face to face with another indifferent fruit season, and growers see but a poor prospect of recouping the losses incidental to the past two years.—A. D.

**Fruit Crops in Cleveland.**—In this district the fruit crops are somewhat better than was expected after the severe frosts that were experienced in March and April. Gooseberries are, however, hardly to be called a crop this season. At Egglecliffe, Yarm, about two acres are planted with Gooseberries, and the variety called *Industry* is the only one that carries anything like a crop. This is remarkable, considering that such fruitful sorts as Whitesmith and Aston are berries. In the same district I examined carefully many acres of Gooseberries, but saw nothing to compare with *Industry* as to crop. Red and Black Currants are a fair crop, as are also Raspberries, with a few exceptions. The Strawberry crop is likewise very promising, especially at Egglecliffe, where Strawberries are grown extensively. Pears, with a few exceptions, are a light crop. Apples appear to be a poor crop. Cherries are a fair crop. Plums are fair crops on walls, but poor on standards; *Victoria* is the best Plum in Cleveland.—CHAS. McDONALD, *Stokesley*.

**Brown Dead Spots on Peach Leaves.**—Will some of your correspondents tell me the cause and cure for brown dead spots and subsequent holes in Peach leaves? Only two of the trees in the house seem really injured; one is an old tree trained on the wall (inside), the other a young plant trained under the opposite glass on wires. Some of the fruits are affected with brown spots, which appear to be but skin-deep at present. I am consulted about it because I am interested in insects and plants, but I am unable to detect any insect or fungus as the cause of the mischief.—F. N.

**Apple Tree Caterpillars.**—I should be glad if any one would inform me what remedy I should employ to prevent small grobs or caterpillars infesting my Apple trees. I hand-pick them to the best of my ability, but when they enter the bloom the damage is done before their presence can be detected. On some trees I have had every bloom in past seasons destroyed, and this year I was beginning to flatter myself that the trees were going to be spared, but they have re-appeared, though later than usual, and the bloom, I am in hopes, is setting well. I may mention that there are three different kinds of grub—one almost black or dark brown, another green, and the third yellow, but the two former are the most common.—W. B.

**The Strawberry Crop of 1878** bids fair to rival that of any year within my recollection. The crops on Sir Charles Napier and Amateur—two especial favourites here, planted last August with runners layered in small pots—are enormous. I counted 328 fully expanded flowers on one plant, and I fully believe those on each plant would average 300, while two and three-year-old plantations close by are most satisfactory.—R. GILBERT, *Burgley*.

## ANSWERS TO CORRESPONDENTS.

**Pruning Roses.**—I have some Roses on their own roots in pots. How short should I prune them so as to have plenty of bloom? Should the shoots be tied down to make them push out the whole length of the shoot? My Roses are the Provence (Moss and plain) and Devoniensis.—H. S., *Argyloshire*. [Neither Tea nor Moss Roses will bear hard pruning. It is a good plan to tie the shoots down so as to make them break at all the eyes.—R. N. G. BAKSA.]

**Coverly Plants.**—What are the best plants for covers that will grow under trees?—F. W. [Common Bracken and other strong-growing hardy Ferns make excellent cover for pheasants, and St. John's-wort (*Hypericum calycinum*) will thrive under trees and forms capital shelter for game; when once established in small patches it soon spreads over a large area of ground.—G. B.]

**Double-flowered Rhododendrons.**—I send you some blooms from a Rhododendron truss, in which every flower is more or less double.—H. TAAZ, *Bushy Grove, Watford*. [Double and semi-double flowers amongst the common kinds of Rhododendrons are not uncommon. That figured at p. 517 is an Indian one.]

**Cucumbers (K).**—Your Cucumber seems a good one, and is very large, but we never can see what the public gain by these new and enormous Cucumbers, which is not so useful for general purposes as those of ordinary length.

**Melons Splitting.**—I have seven Melons consisting of different sorts, the fruit of which averages from 4 to 7 lb., and I fear they may split. How is this to be prevented?—NOANON. [Cesse watering at the roots, ventilate freely, leaving a little air on all night, and keep the temperature of the house dry.—S.]

**Swamp Gum Tree.**—Can seeds of the Tasmanian Swamp Gum Tree (*Eucalyptus viminalis*) be procured in England? and if so, where?—C. B. [We fear you will be unable to get seeds of it in England, but it may be obtained of Vilmorin-Andrieux et Cie., 4, Quai de la Mégisserie, Paris.]

**Caladiums and Gloxinias.**—What amount of heat is necessary to start Caladiums into growth in the spring? and what heat is necessary to grow Gloxinias and Dracenas successfully?—K. B. [A bottom-heat of from 60° to 65°, and a top-heat of from 55° to 60°, or they may be started well enough without bottom-heat. Gloxinias will grow well in a temperature of 60°, also Dracenas; but some kinds will succeed in a much lower temperature, whilst some of the choicer kinds are benefited by one a little higher.]

**Thuja gigantea.**—Is this as hardy as the common American Arbor-vitæ? Would the Arbor-vitæ family be generally likely to succeed under tall trees, there being no low branches or undergrowth to interfere with them?—R. [Thuja gigantea is quite as hardy as the common Arbor-vitæ, and is at the same time a much faster grower. It will thrive well enough amongst tall trees, provided the soil be not too much impoverished by trees, such as the Beech, Ash, &c., whose roots run on the surface. When planting, fresh soil should be given to each plant so as to ensure a good start.—G. B.]

**Herbarium Paper.**—Can you inform me what is the best way of fastening dried plants to paper? What is the best paper for the purpose? and where is the best place to get it?—S. M. M. [The best paper on which to mount dried specimens is plain white cartridge, and the most convenient sized sheets are those which measure about 15 in. in length and 10 in. in width. Gum the whole specimen over on one side, and press it down upon the sheet. Both sides, however, must be shown if this method be adopted; some simply strap down the main stem with gummed paper.—W. H. G.]

**Moss on Lawns.**—What is the cause and remedy for Moss in a Grass plot. I have had for some years past a very good piece of Grass, but for the last year or two Moss has made its appearance, until now it half covers the plot.—H. K. [The superabundant growth of Moss on lawns is frequently caused by imperfect drainage, and often also through poverty of soil brought on by repeatedly cutting with the scythe or mowing machine, and clearing away all growth without returning anything to the soil for the encouragement of the finer Grasses. Scarifying with a sharp rake in February or March, and applying a good dressing of lime, will kill the Moss, after which some good lawn Grass seeds should be sown and covered with fine rich soil. Then roll down firmly, and otherwise treat as in the case of newly laid down sward.—J. G.]

**Names of Plants.**—E. 1. Rhododendron arboreum album. 2. R. argenteum. *Bolton*.—We have received a few young leaves apparently of a *Daphne*; from such materials it is difficult to name plants. M. C.—1. *Pittosporum tobira* (hardy in southern counties). 3. *Rhynchospermum jasmoides*. The other is a very imperfect specimen; a shoot with flowers should be sent if you require the name. H. J. *Ross, Italy*.—1. *Sarcanthus* species; cannot say which. 2. *Dendrobium*, probably crassinode, but must see a piece of bulb to be sure. 3. *Dendrobium Pierardii*. W. C. *Frimley, Londoners tatarica*. W. T. P.—We do not name varieties of florists' flowers which should always be sent for naming to the grower of a collection of the same plants. Never pack flowers in cotton wool, as it is one of the worst materials for the purpose.

**Propagating Stove.**—In answer to "J. P." (see p. 506) allow me to say that a span-roofed house 8 ft. high and 12 ft. wide outside, with bars fixed to the top rafter and a plate on the brickwork, will answer perfectly. It should have a door at one end with a ventilator over the top, and one in the brickwork at the other end. Inside

there should be a path down the centre, with a platform on one side and a bed on the other, constructed by running up a 4-in. wall to the height required, and bottoming with slates. Lynch White's No. 2 cast-iron conical boiler and stand for use without brickwork will heat about 200 ft. of 4-in. piping. The boiler would be best placed at the end outside, with a flow and return under the platform and under the bed, with an air tap at the highest point.—H. H.

**Gorse Covert.**—I want to get up a Gorse covert on a piece of dry granite soil. The land, about eight acres, has a southern aspect, and is now producing bunches of short mow Furze, with coarse Grass in the intervals, which together make a rough surface. What is the best preparation for the land, the proper time for sowing, and the quantity of seed per acre?—A. K. [The land should be ploughed up at once, and allowed to remain fallow during summer; but if it is urgent to have the seed sown this season, the surface-soil should be well broken up by means of a grubber several times over the whole pieces in opposite directions, and afterwards repeatedly harrowed. The present is a good time to put in the seed; about 16 lb. per acre is sufficient; it is worth from 1s. 6d. to 1s. 8d. per lb. It would be a good plan to divide the eight acres into six or eight quarters (or blocks), leaving a space of 24 ft. or 30 ft. between, which should be sown down with Grass seed, so as to supply food for rabbits. Moreover, a covert, with open spaces and glades, so as to admit the sun, is preferable to one continuous mass of covert, either for vermin or game.—G. B.]

**Visiting Paris Gardens.**—I purpose going to Paris for a week or so soon. I shall, of course, be very busy, and will, I fear, not see one-third of the places named in the "Gardens and Parks of Paris." I should esteem it a great favour if you would mention a few of the most noteworthy. I shall try and see the Argenteuil Asparagus, Montreuil Peaches, Versailles, and the Municipal Gardens and Mushroom caves. I shall be located in the Avenue Bois de Boulogne. My chief business will, of course, be with the Exhibition.—HORRUS. [Among gardens worth seeing are the Parc Monceau, Bois de Vincennes, as well as the Bois de Boulogne; the Parc des Buttes Chaumont, several of the best squares—a little one Montrouge, a big one Batignolles—and Versailles. The "florists" in the Little Trianon, which means the gardener's garden. For a winter garden properly arranged, if possible see that in the garden of Madame Fould, at St. Germain. The School of Horticulture, or old Imperial Kitchen Garden, is distinct from the ornamental garden of Versailles, and certainly ought to be seen. For an example of a neat little fruit garden, although a nurseryman's, M. Jamin's, at Bourg-la-Reine, will do. There is a very good example of tropical plant culture at M. Truffaut's, at Versailles. If possible, see the way in which people grow the outdoor Pines at Thomery; the culture also of Asparagus at Argenteuil (in the fields as well as in the gardens), and when there also have a look at the Fig trees, which are cultivated in a very curious and instructive way. The little market gardens near Paris are exceedingly well worth seeing; you ought to get into one or two of them, but it would be worth while to get an idea of their general aspect by riding round Paris on the railway (Chemin de Fer de Ceinture), and from the carriages you can see a good deal of them. Probably the quickest way you could see a Mushroom cave would be about Montrouge. Make a point of seeing the flower markets; early in the morning, of course. Your guide-book or the journals in Paris will tell you the days. The Cité and Madeleine are two of the best, and worth going to look at.]

## Questions.

**Roses not Opening.**—Amongst my pot Roses on cultivated seedling Briers in a greenhouse I had six fine blooms on *Comtesse de Serenye* which did not open, but appeared as if an insect was eating them away, although I could not find one upon them. The tree was in a most healthy state. Can any of your readers inform me the reason? Is this Rose in the habit of not opening?—ANT.

**Roots of Fruit Trees too Deeply Buried.**—I have fruit trees about twenty years old. Gradually the roots have been buried by the ordinary operations in a kitchen garden. Soil and manure have been placed on the ground, and thus the surface has been raised. For the last two years I have had no fruit. Can I improve the trees by lowering the surface and partially exposing the roots?—AN AMATEUR.

**Colourless Marechal Niel Roses.**—Mr. Dean says (see p. 495) that he has no reason to complain of his Roses as regards colour. What is the nature of the manure required for the cultivation in which he has been apparently so successful? I have been so disappointed by the absence of the grand tint of this splendid Rose, that I am endeavouring to grow plants of it entirely on their own roots. My blooms have in bud shown some colour when looked into, but when they have opened the colour has entirely gone, so that they more resemble Lamarque or some equally pale Rose than Marechal Niel.—E. A.

## SOCIETIES AND EXHIBITIONS.

## ROYAL HORTICULTURAL SOCIETY.

JUNE 4.

THE exhibits at this meeting were limited to small collections of plants from Messrs. Veitch and Sons, Mr. B. S. Williams, and a few miscellaneous subjects.

**First-class Certificates** were awarded to the following plants:—

**Adiantum cycloosorum** (Veitch & Sons).—A graceful Fern, the plants of which resemble those of *A. Capillus-Veneris*, and which in a young state are of a beautiful silvery-venerous colour. Its fronds are light and graceful, and it is altogether a valuable Fern either for culture in pots or pans.

**Xeromea Moorei** (Veitch & Sons).—A curious Iridaceous plant, having short, stiff, and sword-like leaves, and bearing flower-spikes 2 ft. to 3 ft. long, terminating with a cluster of crimson flowers, the stamens of which form the chief part.

**Platycoerium Hilli**.—An ornamental species of the Stag-horn Fern, from Queensland; well worth attention.

**Gunnera manicata** (C. Green).—A gigantic-growing variety of the well-known *Gunnera scabra*, distinct in habit and general outline; well worth planting in ornamental grounds.

**Lathyrus Drummondii** (R. Dean and C. Green).—An old but useful species of the Everlasting Pea, bearing a profusion of red blossoms; excellent for pot or border culture.

**Miscellaneous Subjects**.—Messrs. Veitch & Sons had in their collection of plants well-flowered examples of the Cinnamon-flowered *Rhododendron Crown Princess of Germany*, the scarlet-flowered *Hemantthus Kallreyrii* (from the West Coast of Africa), a specimen of the Peruvian Daffodil (bearing flowers of a bright yellow colour), and a finely coloured plant of *Croton Hanburyanum*, the leaves of which are large and graceful, and beautifully mottled with orange, crimson, green, and rose. This collection also contained a painful of *Nertera depressa*, covered with bright orange-coloured berries, and a flowering example of *Lilium coloratum*. Mr. Williams had *Asplenium horridum*, a strong-growing, *Blechnum*-like plant having brance-coloured fronds; *Eranthemum variabile*, a useful plant for pan culture, with lance-shaped, white, green, and rose-blotched leaves; also plants of *Phoenix canariensis*, *Maxillaria grandiflora*, and the useful table plant *Panax elegantissimum*. Mr. Green, Bletchingly, sent a interesting group of plants, in which were noticeable the curious *Carolina insigula*, *Gardonia Stanleyana*, the curious *Aristolochia orithocarpala*, and the long, white-flowered *Posequeria longiflora*, also out sprays of the snow-white *Libertia formosa*. Mr. Kingsbury, of Bevis Valley Nursery, Southampton, sent a new Colens named *Empress of India*, which appeared likely to prove a valuable kind; also a finely-colored tricolor *Pelargonium* named Mrs. Russell Gurney, and a silver-leaved kind named *Florence*. The same exhibitor likewise contributed several single-flowered *Patnias* of an attractive description. From the Society's gardens, Chiswick, were beautiful flowering plants of *Saxifraga nepalensis*, *Orchis foliosa*, and the useful white-flowered *Veronica pinguifolia*. Mr. Donald, Lea End, Alvechurch, near Redditch, sent blooms of a seedling *Piotee* named Mrs. James Birchley, resembling *Princes of Orange*, of a meritorious character. Mr. R. Dean contributed blooms of *Antirrhinum* with rich and varied colours, and which were much admired. Messrs. Paul & Sons, Chesnut, showed a curiously-shaped Strawberry named *Pauline*, the flavour of which was not good. Several seedling Melons came from Mr. James Manderson, Ottershaw, Chertsey, and Mr. Atkins, Wantage; and a bundle of fine Asparagus came from Mr. Allan, Gunton Park. A commendation was awarded for 'Tobbs' universal travelling pot, which is made of stiff paper and pitched inside. It is made in such a form that mousing is not required in packing, and the weight of the plants is reduced considerably—altogether a good idea.

## SCOTTISH HORTICULTURAL ASSOCIATION.

JUNE 4.

MR. HUGH FRASER gave a short account of the history of the *Rhododendron* and of some of the more striking hybrids that have been raised from it. Mr. Jas. Spiers, Haddington, next read a paper on the "History of the Haddingtonshire Ancient Fraternity of Free Gardeners." Mr. Spiers said that the minutes, proceedings, and competition of this fraternity are correctly recorded since Aug. 16, 1676, and there are traces on the minutes that this body must have existed for a much longer period. It is thus established that the Haddingtonshire Association is one of the oldest

horticultural institutions in the country. As far back as 1774 monthly meetings have been held, previous to one meeting a year, and four times a year. In 1671 prizes were offered for the Carnation, and regular competition has taken place each year since. The enthusiasm of this ancient body, and the public spirit which has always characterized it, were abundantly proved by Mr. Spiers quoting extracts from the minutes of the resolutions passed from time to time. Messrs. Dicksons & Co. exhibited *Rhododendron Broughtoni* superbum; Messrs. Mithven & Sons, *Rhododendron cinnabarinum*; Mr. John Carson, Miles' spiral *Aligouette*; and Mr. Mark King, *Scarlet East Lothian Stock*. The following awards were made on the occasion: *Gloxinia* Mrs. Smart (commended); *Patunia Craigleigh Beauty* (certificated); both from Messrs. Ireland & Thomson. *Fancy Pansy Hugh Fraser* (certificated), *Empress* and *Memento* (commended); these three were shown by Messrs. Dicksons & Co. From Messrs. Downie & Laird came *Fancy Pansies Lady Clerk*, *Lady Falmouth*, and *Mrs. Wolfe Murray* (to which certificates were awarded); and *Lady Hay* and *A. McLeod* were commended.

## LAW.

**Removing a Greenhouse** (*Moss v. James*).—This was an action of trover for a greenhouse. The facts, which are somewhat peculiar, were as follows: James had let a house and premises to one Hargrove, and permitted him to put up a greenhouse, which he was to be at liberty to remove at the expiration of the tenancy. Jackson assigned all his goods and chattels, and among them the greenhouse, to one Hargrove by a bill of sale. Hargrove enforced the bill of sale and sold the greenhouse to the plaintiff for a sum of £20. This occurred on June 7, on which day the plaintiff attempted to remove what he had purchased. Jackson's solicitors, with the knowledge of Hargrove, on May 14, had surrendered the lease of the premises to the defendant, who refused to allow the plaintiff to remove the greenhouse on the ground that they had no right to do so after the surrender. At the trial before Mr. Justice Denman it was admitted that the plaintiff had a right to move the greenhouse within a reasonable time after the surrender, and the only question to be decided was whether the time which had elapsed between May 14 and June 7 was a reasonable time or not. This question was left by consent to the learned judge, who decided that the greenhouse had not been removed within a reasonable time, and gave judgment for the defendant. On appeal, their lordships thought it was a severe finding on the part of the learned judge, but could not say, upon the evidence, that it was wrong. They therefore dismissed the appeal.

**Alleged Wrongful Exhibiting**—(*Edwards v. Cooke*).—This was an action to recover damages for an alleged libel in the "Wandsworth and Battersea District Times," of which the defendant, who is also a chemist, is the proprietor.—Mr. Wright appeared for the plaintiff; Mr. Lyon was counsel for the defendant.—The plaintiff is one of the parochial officers of the district, and the libel complained of imputed to him that a Cabbage exhibited at the flower and vegetable show last summer at Battersea, which gained the third prize, had not been grown by him, but purchased of a neighbouring market gardener. In consequence of this imputation he had been forbidden by the committee, the vicar, and churchwardens to exhibit any more till his character was cleared. The letter was signed "Observer," and the plaintiff had endeavoured in vain to obtain the name of the anonymous correspondent. Thereupon this action was brought. It appeared the plaintiff had written to the defendant complaining of these aspersions on his honesty, and that the following footnote, commented on strongly by Mr. Wright in opening the plaintiff's case to the jury, had been appended to his letter:—"Our correspondent would have been wiser if, instead of writing threatening letters, he had given proofs that the assertions of 'Observer' were untrue." At the conclusion of Mr. Wright's opening address, Baron Huddleston asked the learned counsel for the defendant if some apology would not be made, and Mr. Lyon said he should certainly advise his client to make one. The name of the writer would probably have been given up had it been asked for sooner. But it had not been demanded till long after the action was brought.—Mr. Wright said he would be content with a verdict for 40s. and all costs, with an apology published in the paper, and these terms were accepted.—Baron Huddleston remarked that no doubt the defendant would withdraw the imputation, express his belief that the plaintiff had not purchased the winning Cabbage, and regret that such a document should have appeared in the paper. There was certainly a point of honour among newspaper proprietors, who invited the public to contribute on matters of general interest, to shelter those who wrote for them; but whether this was right or wrong he would not express an opinion.—Verdict for the plaintiff—Damages, 40s. and costs.

**Crimum capense**.—A grand specimen of this noble plant may now be seen in good bloom in the Fulham Nurseries. It is growing in front of one of the glass houses, and bears six or seven strong flower-spikes, each of which is surmounted by at least ten large handsome blossoms and buds. Isolated in front of shrubberies which would form shelter from cold winds and frosts, such plants as this would do well, and if planted with care at first they would never fail to yield abundance of blossoms early in summer.

**Scarcity of Laburnum Bloom**.—It is somewhat singular that the *Laburnum* should be an exception to the general abundance of flower on trees and shrubs this season, but it is so. Is this failure local, or has the same occurrence been noted in other places?—J. G., *Zenkon*.

"This is an art  
Which does mend Nature: change it rather: but  
THE ART ITSELF IS NATURE."—*Shakespeare.*

**Romneya Coulteri in Essex.**—This fine plant, recently figured in THE GARDEN, proves quite hardy in one of the gardens of the New Plant and Bulb Company, at Colchester. It forms a luxuriant bush, the shoots of which die back a little, but break again vigorously. The soil is dry and good, and the position somewhat elevated. Many of our readers will be pleased to know that the genial climate of the southern and western coasts is not essential for the successful growth of this plant.

**Tritonia crocata.**—This fine showy bulb, sometimes seen as a spring-blooming plant in the conservatory, is now bearing numerous blossoms in Mr. Barr's grounds, grown along with the *Ixias*, *Sparaxis*, &c., in the open air in sheltered beds in light, well-drained soil.

**Iris Darius.**—Among the beautiful Irises now in flower is *Darius*, a variety raised by Mr. Brown, manager at the Exotic Nursery, Tooting. It is novel in colour as well as large and free in habit, and should be noted as an acquisition by all interested in these beautiful hardy flowers—the Orchids of the north.

**Echium vulgare.**—This is a charming plant in certain positions, its long racemes of blue flowers are even handsomer than those of the Italian *Anchusa*. Against a hot wall, where nothing else will grow, in the Grammar School at Colchester, Dr. Acland planted some which have increased, and now furnish a beautiful display of bloom. It is most valuable for similar positions, particularly on hot gravelly or chalky soils.

**Cyananthus lobatus.**—This very interesting blue Himalayan rock plant is now in flower in the Exotic Nursery at Tooting, and is likely to continue a long time in bloom. It was protected during the winter by a shallow frame, but is, we believe, quite hardy in rock gardens. When plants are rare, however, it is often desirable to protect them as far as possible against accidents and changes, even if able to resist cold.

**Blandfordia nobilis grandiflora.**—This is one of the most useful of the *Blandfordias* for pot culture. It grows well, has long, grass-like foliage, and flowers freely. Plants of it in Mr. Williams' nursery at Holloway, growing in 6-in. or 7-in. pots, are furnished with four or five strong flower-spikes, each of which is surmounted by at least a dozen finely-coloured bell-shaped blossoms. These, associated with *Liliums* and similar plants, have a fine effect.

**Lilium Szovitzianum and its Varieties.**—Our plants of *Lilium Szovitzianum* are now finely in flower, and amongst them I have marked the following distinct forms:—1. The unspotted form, a rich canary-yellow. 2. A nearly allied form, with a very few small dots and richly tinted. 3. A very rich-coloured and regularly and numerously dotted form, with fine petals. 4. A pale whitish form. 5. A form with rich central yellow streak and white edges. 6. A form with light-coloured anthers, generally deep-tinted, and regularly spotted with larger dots than usual. *Xiphion filifolium* is now out—a most beautiful lilac-purple and fine flower.—ALEXANDER WALLACE, Colchester.

**Bollea celestia.**—This rare Orchid is now blooming freely in the York Nurseries, and it is, even with single flowers, a striking and beautiful plant. The idea of its being either difficult to cultivate or shy to bloom must surely vanish now. Several of the crowns have two and three, and one four, blooms. One plant with two new growths has eight grand buds all nearly ready to expand. The flowers vary much in colour. In some the ground colour is very pale—almost white; in others a decided blue-lilac; in others downright purple. All are more or less heavily blotched in the upper portion of the petals with deep and rich or very dark purple. The labellum is bright yellow, and marvellously plumed. Even yet the full beauty of this plant is probably not gained, as a single shoot (imported) had the remains of eight flower-stems on it.—P.

**Anemones in June.**—Large beds of *Anemones*, from French and Dutch sources, in Mr. Barr's grounds at Tooting, are just now in fresh flower, and many buds are coming on. They are of the *A. coronaria* section and are mixed varieties, among which are some possessing beautiful and distinct colours, well worth being permanently named. Striped flowers, scarlet with white edge, pure white, and all shades of blue are here represented. The curious fact about these

plants is, that the roots were kept for two years in the shop without being planted, which no doubt accounts for their lateness in blooming, and this shows that, under certain treatment, a display of *Anemones* may be kept up for a long time. *Ixias*, *Tritonias*, and *Babianas* are also still very showy, as are likewise *Lilium umbellatum*, the lemon-coloured *L. Szovitzianum*, and *Gladiolus Colvilei*.

**Iris sibirica orientalis.**—Messrs. Barr and Messrs. Hooper have what appears to be a fine large variety of the well-known Siberian *Iris* under the name *orientalis* and other names. It seems to differ only from the species in its larger flowers.

**Passiflora vitifolia.**—This beautiful Passion-flower, so seldom seen, is now finely in flower in Mr. Parker's nursery, at Tooting. Its blossoms are of the most brilliant scarlet. The plant is a free grower, and well worth planting in any warm house.

**Hardy Lady's-slippers at Chester.**—Our bed of *Cypripedium* spectabile has now several hundreds of blooms fully expanded, and is very effective. We consider the plant to be perfectly hardy, as no protection, except a few leaves, has ever been put upon the bed, and we do not think these even necessary.—JAMES DICKSON & SONS, Chester.

**Primula sikkimensis at Kew.**—In order to form an adequate idea of the beauty of this charming Primrose, such specimens should be seen as are now in flower on a rockery at Kew. The flower-stalks are over 2 ft. in height, each bearing at their points an umbel of from thirty to forty beautiful lemon-coloured blossoms, borne on slender drooping pedicels, contrasting agreeably with the bright green foliage. It is perfectly hardy in the neighbourhood of London, provided its position be elevated and it is afforded thorough drainage. It succeeds well in a compost of good fibrous loam and a small quantity of well decomposed manure or leaf-mould. Partial shade is indispensable to its successful culture, and also a plentiful supply of water during the growing season.—A.

**Tree Lupin.**—A large good yellow variety of the Tree Lupin is a most precious plant now in great beauty. One can imagine nothing more beautiful than this for rough rocky banks or slopes. It flowers most profusely, and the scent of a single bush of it reminds one of that of a field of Beans. The purplish variety of the same plant, though good, is not nearly so valuable, and there are also inferior yellowish varieties. The best variety which we have seen is in Mr. Barr's trial ground at Tooting, and is, indeed, the best of all yellow Lupins with which we are acquainted. The bluish variety of the Tree Lupin is not so good, because there are good blue herbaceous Lupins, whereas there is no other good yellow.

**Symphyantra Wanneri.**—This beautiful hardy plant is a member of the Bell Flower family, and is one of the only two species of the genus which we have in cultivation. It differs but slightly from *Campanula*; in fact, it is as well known under that generic name as under the one above mentioned. It is of dwarf habit, rarely exceeding 1 ft. in height, rather narrow toothed and hairy leaves. Its flowers are borne very copiously on branching racemes, and are of about 1 in. in length by  $\frac{3}{4}$  in. in breadth, and of a deep mauve colour. It differs from *S. pendula* in its corolla being very slightly lobed, and in the colour of the blossoms, which in *S. pendula* are white. It succeeds well in company with the majority of the Bell-flowers, but it is one which is apt to be short lived, therefore a duplicate should be kept at hand. It is a native of Austria, whilst *S. pendula* is a Caucasian species.—W.

**The Paris Exhibition.**—M. Godfroy-Lebon, of Argenteuil, requests us to inform visitors to the Paris Exhibition who may wish to visit his Asparagus grounds that they can always do so on Saturdays, and, indeed, on all occasions on any other day, by giving previous notice to him of their intention.

**Royal Horticultural Society.**—In addition to the prizes gained by Mr. Turner, of Slough, for his beautiful Roses exhibited at the Royal Horticultural Society's great show on May 23, the Council have specially awarded him the Lindley Medal of the Society.

**Scottish Fanny Society.**—This holds its meeting in Edinburgh on the 21st inst. The schedule contains fifty-seven classes, so arranged that the smallest growers have as good facilities for exhibiting as those having large collections. As it is an open show, cultivators from all parts of the country are invited to send blooms for competition.

**Preston Show.**—A deputation from the local committee, consisting of three members and the hon. secretary, had a conference on Tuesday last with the Council of the Royal Horticultural Society at South Kensington, at which they reported progress. Arrangements were stated to be far advanced towards completion, and there is every reason to expect that the show will be a success,

## NOTES FROM KEW.

**Hardy Trees and Shrubs.**—Conspicuous for the fine tint afforded by the golden-yellow foliage, and on that account worthy of special mention, are the three following: *Quercus coccinea*, *Neillia opulifolia* aurea, and *Ptelea trifoliata* aurea. The first is a variety of our common English Oak, and, unlike many variegated trees, is a vigorous grower; its yellow leaves, too, do not scorch. The next-named is a sport from the North American type *Neillia*, or, as it is sometimes called, *Spiraea opulifolia*, the clusters of white, Hawthorn-like flowers contrast well with the large leaves (which resemble those of the Gaelder Rose) of the green kind, though they do not show off so well with the yellow foliage as a background. *Ptelea trifoliata* aurea is a very pretty variety of the Hop Tree of the Eastern United States. *Pieris ovalifolia* is a Nepalese shrub with bronzy-red leaves and shortly-stalked white flowers, pendulous from the underside of the branches. The peculiar colour presented by the foliage at the present time, very like the autumn tints of some trees, renders this shrub a valuable one for effective grouping; for the flowers alone it is scarcely worth growing. *Rosa rugosa* is a handsome Japanese species, with large deep rose-coloured flowers; it forms a compact bush about 3 ft. high, and, even when the blossoms have fallen, is very striking with its large orange-red fruits. This has been blessed with a variety of names, under which it has been distributed at various times as new. It is certainly one of the most distinct of the Roses which have not been created, as it were, by the hybridist. *Rosa chlorocarpa* is a native of Siberia, and has rosy-pink flowers nearly 3 in. across, followed by very peculiar spiny fruits.

**Hardy Herbaceous Plants.**—*Lilium monadelphum*, one of the Martagon group, is a noble Lily about 3 ft. high, having numerous, rich yellow flowers, spotted with black; it is a native of the Caucasian region. *L. tenuifolium*, a very beautiful Siberian plant, belongs to the same section as the last-named, its flowers being rich scarlet in colour. *L. concolor*—scarlet, slightly spotted with black—comes from Japan and China, and belongs to the set with erect, bell-shaped blossoms. The most noteworthy of the kinds of *Oxalis* at present in flower are *O. latifolia* spectabilis, a dwarf sort with manure-coloured flowers and prettily marked leaves; *O. odorata*, with magenta flowers; *O. floribunda*, a very floriferous Brazilian perennial, with blossoms a shade deeper in colour than those of *O. odorata*; and *O. Smithi*, with rose-coloured flowers. *Tropaeolum polyphyllum*, recently figured in THE GARDEN, does well in the open border at Kew, and its brilliant yellow blossoms last some time. *Medicago mariana*, a creeping plant from the south of Europe, has silky leaves and branches, and heads of golden-yellow flowers. *Allium Murrayanum* is one of the finest of the Alliums; it grows 1 ft. or more high, and has heads of large, rose-coloured flowers. *A. polyphyllum*, a Siberian kind of graceful habit, grows to a height of 2 ft. or 3 ft., and has reddish flowers. *A. paradoxum*, from the Caucasus, has heads of golden-yellow blossoms, as rich in colour as those of the South European *A. Moly*; the habit of the plant, though, is totally different from that of the last named.

**Greenhouse Plants.**—In the Winter Garden may be seen a large specimen of *Convolvulus canariensis*, the blossoms of which are mauve-coloured and have white centres. As a corridor plant, this free-flowering, strong-growing, woody climber can be highly recommended. *Phyllocactus crenatus*, from tropical America, has large flowers, the sepals of which are greenish, and the petals white. For brightness of colour and for easy culture few plants surpass the Fig Marigolds or Mesembryanthemums, and yet they are not nearly so much grown as they were many years ago; the most striking of those now in flower are *M. aurantiacum*, a shrubby kind with deep orange-red flowers, which grows to a height of 2 ft.; *M. cespitosum*, a stemless species, with large, beautiful, lemon-yellow flowers on stalks about 3 in. high; *M. roseum*, a dwarf, shrubby sort, with large rose-coloured blossoms; and *M. spectabile*, of similar habit to the last, and having rosy-purple flowers 2 in. across. *Swinosia elegans* is a fine Australian shrub, with snowy-white, Pea-shaped flowers. The Peruvian *Dafodil* (*Ismene Amancebes*), with its golden-yellow, very fragrant flowers, is a charming bulbous plant, worthy of general cultivation. The Scarlet Trumpet Honeysuckle, *Lonicera sempervirens* and its variety minor make two of the most beautiful corridor or pillar plants possible. Although introduced to English gardens more than 200 years ago, these charming North American climbers seem little known. *L. sempervirens* minor, being a native of Carolina, would only prove hardy in favourable conditions. *Hedychium Gardnerianum*, a Brazilian giant flower, planted out in a cool house, makes a very charming object.—†

**Rubus deliciosus.**—In reference to Mr. Anderson-Henry's note on the subject of the introduction of this plant, I have to express my

sincere regret that I should have fallen into the error of supposing that he obtained his plants or seeds of me. On the question of the priority of introduction I have, however, nothing to retract, the seeds having been received by me in January, 1863, and raised by me the following spring, since which period it has been uninterrupted in my possession. In evidence of this I have forwarded to Mr. Anderson-Henry a copy of my seed catalogue for the year named, and you will doubtless receive from him an acknowledgment to that effect. I do not possess a copy of my seed catalogue for 1872, referred to by that gentleman, but the Rubus seed there offered was no doubt that first saved from my own plants. Your readers will therefore doubtless exonerate me from the charge of rashness for having claimed that such merit as may be due—and I do not by any means desire to exaggerate it—to the first introduction and raising of the plant in question, should be placed to my credit.—W. THOMPSON, Ipswich.

— I have some seedlings of this Rubus about 7 in. high. The seeds sent me by Mr. Thompson, of Ipswich, were sown early in the spring of last year, and did not germinate till they had been in the mould twelve months. I have lately sown some of the seed in a small pot filled four-fifths of its height with rich earth, into which the seeds were firmly pressed and covered with the earth about  $\frac{1}{2}$  in. The pot was then filled to the top with silver sand and immersed in mould in a larger pot, in which it will be allowed to remain till next spring, and kept moderately moist. The pot will then have to be removed, the sand shaken out, and the seeds, if necessary, stimulated with a gentle heat.—B. S.

## OPENING OF KEW GARDENS.

ONE of the statements in the recent controversy is not true. The Jardin des Plantes is open, but the botanical division in the garden is not, and admission can only be obtained by tickets, while it is said that the botanical garden of Paris is open all day.—A. BOTANIST. [There is one division of the Paris garden shut off, but it is only separated from the rest of the garden by a low railing. This fact has more than once been stated in THE GARDEN. This is a very different thing from shutting the garden altogether. The portion alluded to is laid out in narrow beds, and is out off by a low railing in the interest of the student no doubt. We believe it to be, like many such restrictions, needless, and one of many in the Garden of Plants which might be changed with advantage.—Ed.]

— The fitness of Whit Monday morning tempted thousands out early, destined for the parks, the river, and Kew Gardens. The District Extension ran one train per hour extra, and the whole of the Kew and Richmond trains were crowded, while the Metropolitan Company also conveyed many thousands in the same direction. Kew Gardens, for the second time, were opened at ten instead of one o'clock, and as soon as the gates were opened the grounds were besieged by an orderly crowd, who distributed themselves over the various paths and walks, and went through the museums and glass houses. The new regulation for earlier opening did not appear to act prejudicially; indeed, there were at least 25,000 persons admitted, and they were widely dispersed over grounds which cover several hundreds of acres. The police bore testimony to the fact that the earlier opening of the gardens had a beneficial effect, inasmuch as the people passed quickly into the grounds, instead of congregating and drinking at the public-houses.—"Daily News." [So far, it will be observed, the recent agitation has done good, even carried on as it has been, according to some writers, by persons actuated by selfish and unworthy motives. It has been argued that the agitation was "local," but who so likely as local gentlemen to see and deplore the scenes that used to occur on Kew Green before the gardens were opened at 10 o'clock on bank holidays?—Ed.]

**Antirrhinums.**—Plants of these from early-sown seed put out now will bloom in August and September, and succeed the plants raised from seed in August last. In this way the pretty homely Snapdragon can be had in bloom throughout a good part of the summer. A good strain only should be grown, as it is a waste of time to cultivate inferior forms; and now that a preponderance of striped flowers is certain to occur in a good strain, that is an additional reason for having a plantation in a garden. The cold wet spring has had an injurious effect on some of the old plants kept over from last year, and many that were in a cold wet soil have died away altogether. On the other hand, plants in a light drier soil have done wonderfully well; and really very fine specimens can now be seen in gardens in full bloom. Those who have a wet, cold, uncongential soil will do best to raise plants in the autumn, winter them in store boxes in cold frames, and plant them out in March and April, when the weather is favourable.—D.

PROPAGATING.

ROSES.—Cuttings of these should be made of half-ripened wood in March and April, as shown in fig. 1. A compost consisting of equal parts of loam, well-decayed manure, and leaf-mould, to which a little sand has been added, will answer the purpose. Sift it fine, and fill well-drained pots with it; insert the cuttings, fasten them well in, give a good watering, and



Fig. 1.

place them on a gentle bottom-heat in a hotbed; look them carefully over from time to time, removing all decayed leaves that may be seen on them; they will soon emit roots, and will be ready to pot off in about six weeks. Roses may be grafted indoors in January and February. One of the best and most successful modes I have found is to get the stocks (Manetti) in and laid in by the heels for a week in some old tan or Cocoanut refuse; cut the scion either as shown in fig. 2 or fig. 3, make the incision in the stock as in fig. 4, and fit in the scion;



Fig. 4.



Fig. 2.



Fig. 3.

tie firmly with worsted, and place them in rows in a gentle bottom-heat, covering up with the plunging material just above the ties. It is best to place glasses or lights over them, which must be opened every morning to allow all excess of moisture to escape. In about three or four weeks they will be ready for potting. They must still be kept in warmth for a short time, so as not to give them a check. H. H.

**Darlingtonia californica Hardy in England.**—This very interesting plant has proved hardy at Tooting. Having seen the plant growing wild in the mountains of California, and gathered it where it was making very great efforts to hold its own amongst the Common Rush in small bogs covered with Sphagnum Moss and deeply covered with snow in winter, I always felt that the common way of growing this plant could only lead to failure. Many thousands of imported plants have died owing to their being treated like exotic Orchids. Mr. Parker put out a small plant in his arti-

social bog; it has come through the winter quite fresh, and is now growing well. Failing a bog, the best place for the plant is a sunny shelf in a greenhouse, or a place not shaded in a pit or frame, with its pot standing in a saucer of water.—V.

THE KITCHEN GARDEN.

KITCHEN GARDEN CROPPING.

Plot No. 1.—Well trenched for Onions last year, pulled and carried off the ground to dry under our south walls; ground cultivated and planted the same day with little Pixie Cabbages 15 in. apart, all out, and cleared off by April 8. The ground was then manured with a few loads of old rotten sawdust, and again cultivated, and planted with show Potatoes, the produce of which will probably be exhibited at the Crystal Palace for Messrs. Sutton and Sons' prize.

Plot No. 2.—Potatoes last year. Well manured and dug for Cabbages, every alternate row being planted with Scarlet Runner Beans. Just now, June 7, Cabbages all out, Beans staked, and a row of Brussels Sprouts planted between each without any digging whatever. In fact, summer digging in my opinion, is a waste of time.

Plot No. 3.—Trenched and well manured for Strawberries. These are allowed to stand two years; the Strawberries are chopped off with a spade and Broccoli planted, in the crowbar fashion, without any digging. After Broccoli, Celery, with two rows of Lettuces, planted on each ridge. Ten years' experience here and twenty-five at other places tell me too truly that too much digging is a great mistake. R. GILBERT.

Burghley.

**Asparagus Culture.**—Reading the remarks on this subject in last week's GARDEN, I thought it would not be out of place to state what came under my notice last week. I was invited to spend a day at Forrby, a sandy desert-looking place at the mouth of the Mersey, between Liverpool and Southport, on the Lancashire and Yorkshire Railway; and there, to my surprise, amidst the surrounding desolation of sand-hills, spotted here and there with the coarse Star Grass, I came upon a field of Asparagus sown in drills about the same distance apart as Potatoes. The soil is nothing but sand, to which I could see a little manure had been added. The field was surrounded by wire netting to keep off rabbits, and I was told that it was bringing to its owner, Mr. Forrby (after whom the place is named), a large amount per week for Asparagus sent to Liverpool market, and that his was the best sent to that market. I did not see fully the extent of ground under cultivation, but the thought that struck me was that here is a new source of wealth to those who own these hills or who can rent them cheaply, for there are thousands of acres in the neighbourhood all along the coast that might produce similar results, and, as the subject is one of food for the people, it is for the public good that this should be made known.—THOS. STUDD, *Heaton Mersey.*

—With all due deference to the perhaps deserved criticism on my little article on the growth of Asparagus, I must still think my plan a good one, and in confirmation of which I can appeal, if need be, to Mr. Radclyffe, one of our greatest amateur gardeners in Dorset. On light, or very rich loamy soils, Asparagus may and can be grown on a perfectly even surface, but in my deep-blue clay soil the plants would rot in a short time, except as I treat them. As to 19 in. being too close, I have in light soil seen good crops on a bed sown to raise plants; but of course I do not advocate the plan. By my plan I cannot get the heads of the Asparagus much more than 3 in. to 4 in. in girth, but I am satisfied.—EUGENE P. LEGGEE.

—I send a few specimens of our Asparagus cut from single lines. It is not so fine as it was a fortnight ago. We have had a great fall of rain for the last four weeks, with a low temperature; consequently, the ground is cold and wet, and the growth of the Asparagus at a standstill. Our Asparagus is not large, as our soil is not all that can be desired for its growth; still we have always an abundant crop, which is of excellent quality.—D. LUMSDEN, *Bloxholm Hall, Lincolnshire.*

[Very good Asparagus, but a little too bitter for some tastes, owing to its greenness. The question of blanching, however, or not blanching is quite apart from the question of culture. We believe the happy medium will be found in partial blanching, as is the practice of the London market growers.]

**Early Peas.**—Like Mr. Gilbert (see p. 550), I still retain a liking for the oldest of all practices, that of sowing Peas in November for

a first picking; and in localities not too wet, where they can be grown profitably, they, as a rule, come in the earliest. Sweet Peas for cut flowers are by some had very early by sowing in November. Where mice and other vermin are troublesome the seeds may be sown on the flat surface; cover them first with chopped Furze, and then mound the earth over the rows, using a covering of soil over the young tops when they begin to show their green points through the ground. A good dusting of sifted ashes or chaff from Barley is used by some for the purpose of preventing the depredations of slugs. This system of raising early Peas was at one time largely practised, and I have observed good results from it, both as regards quantity and earliness, in Scotland, and near Dublin especially. For the sake of having a double chance of an early crop, I always sow a number of boxes with early kinds of Peas some time in January, only using protection for them against severe frosts and heavy rains, and if they are not required for podding under glass they are planted out in a sheltered border in March and staked at once for protection. Extra caution did not act as a specific against frost this season. Even those planted late in March suffered severely from the frosts which occurred early in April, of which we had one night 15°. We thought at one time that our Peas were entirely destroyed, but they afterwards branched out and enabled us to pick a dish on May 27; the kind was Dillestone's Early. I find that the dwarf Pea named Blue Peter bears very early, and is of good flavour and a capital cropper. Sangster's No. 1 was in good bearing condition the first week in June, and, though they were severely injured by frost early in April, they have branched out with great vigour and require topping. Rich and deeply-trenched ground changes the character of Peas materially, and under such circumstances they should be planted as thins as French Beans.—M. TEMPLE.

#### NOTES ON TULIPS.

THE Royal National Tulip Society held its annual exhibition at Manchester on May 25, and the Northern Counties Tulip Show at Gorton on May 30. These are the leading Tulip shows held in the north of England. It is not my intention to give any report of these exhibitions, but briefly to indicate a few of the leading flowers, and more especially some of the newer ones that were exhibited at these shows. Bizarre Sir Joseph Paxton, an old standard variety of great merit, was in fine form, especially as a flamed flower, and some feathered forms were also remarkably good. Dr. Hardy, flamed Bizarre, was also very fine, and remarkable for its bright colouring. John Morris, feathered Bizarre, was not much shown, but generally in rare condition. Slater's Masterpiece is fine always whether feathered or flamed, but on this occasion it amply justified the encomium passed upon it of being the best feathered Bizarre that has yet been raised. Headley's Demosthenes, though worthless as a flamed flower, was thoroughly good in its feathered character; it is in the way of the old Royal Sovereign, and very often seen in winning stands. How good Willison's Sir Joseph Paxton is, and how constant its fine character, may be properly inferred from the fact that for the past nine years it has won the premier prize as the best flamed Tulip at the Royal National Tulip Society's Show. It should be included amongst the most select collection of florists' Tulips. Hardy's Ajax, which is regarded as a seedling from and a great improvement on Polyphemus, was, as usual, fine as a flamed flower, and this is invariably its best character; and when it comes feathered the markings are very fine. Lawrence's George Hayward is a fine old Bizarre, which is always best in the feathered state; it is unfortunately somewhat inconstant and uncertain. Hardy's Lord Delamere is a new and scarce variety, and comes very fine both in the feathered and flamed state; it always takes high rank, and is characterised by great refinement in the marking. In the class of Roses, Annie Macgregor was an exceedingly fine-flamed flower, the pencilling of the feather being of the most refined and delicate character possible, although firmly laid on and carried well around the edges of the petals. This and Lady Sefton were raised by Martin, the latter being a flamed Rose of the highest quality; and both are regarded as the two best flamed Roses in cultivation. They are as yet quite scarce, and those who are looking after them will have to patiently wait till the overflow of stock reaches them. Martin's Mabel is also a charming flower as a flamed Rose, and is identical with Mrs. Lomax. The old Triomphe Royale was also in good character as a flamed flower. The most attractive feathered Roses were

Hepworth's Nancy Gibson, very beautiful and very handsomely marked; Modesty (Walker), a finely-marked flower with a pure white ground; Charming (Martin), a useful flower in the way of Mabel, but scarcely so refined; Industry (Lea), regarded as the finest feathered Rose in cultivation, the colour being a bright carmine-scarlet on the palest of white grounds; and Heroine, a fine old variety, and a favourite old flamed Rose, and, being plentiful, is generally shown; in its flamed character it is known as the Triomphe Royale, referred to above. Aglaia and Madame de St. Arnaud are old varieties of considerable merit, still much grown for show purposes.

Of Byblomens, Headley's Adonis is always good; both in the feathered and flamed state it is a fine variety, and well deserves to be grown. Hepworth's Bessie is a noble feathered flower when well grown, and though it sometimes comes flamed, it is decidedly best when feathered. Mrs. Cooper is a very fine feathered flower, and when in good character not surpassed by anything; it is also known under a later name of Rutley's Queen. Martin's 101 is a very useful flower in its feathered state, and though not perfect, is always a great favourite. Mrs. Pickerrill was also good in its feathered character, but it is an old variety gradually being displaced by newer introductions. Adonis was also good as a flamed flower; and Hardy's Talisman showed the refined marking, for the possession of which, when in good character, it is so famous. It is the finest flamed Byblomen in cultivation, and sometimes in finely feathered condition; but the feathered breaks, so far have shown no stability, but have passed into flamed flowers. Slater's Friar Tuck was fine in the flamed character; it also comes good as a feathered flower, and has won the premier prize. Brown's Salvator Rosa is a first-class uncertain flower, and because it is uncertain is seldom seen in good character; much, however, depends on having a good strain of it. A few of the newest and scarcest flowers were found in Bizarres William Willison, a very useful flower, both feathered and flamed; Byblomens David Jackson, fine, both feathered and flamed, and Hardy's Nimbus, supposed to be a seedling out of the same pod which produced Talisman, and grand in any form; and Rose Mrs. Barlow (Hepworth), a very fine flamed flower, and exceedingly beautiful in the Breeder form. The Breeder Tulips, in their beautiful and delicate self-coloured and splendid forms, are always objects of great interest. The most attractive were Bizarres Sir J. Paxton, Willison, Dr. Hardy, and William Lea; Byblomens Glory of Stakehill, Talisman, delicata, and Martin's 117; and Roses Mabel, Annie Macgregor, Mrs. Barlow, and Olivia.

**Auriculas.**—At no season of the year does green fly more persistently congregate on Auriculas than at this season of the year. They cluster about the hearts of the plants and on the undersides of the leaves, and their presence in force is detrimental to the well-being of the plants. A good fumigation with Tobacco smoke is the best and most thorough eradicator, applying it strongly too, for it will not injure the plants, and following it up with a good brushing by means of an artist's brush. If the plants be looked at daily, and the brush applied for a few minutes, the enemy is soon routed. There is a small green caterpillar also that needs to be sharply looked after. He gets into the heart of a plant, and feeds on the tender leaves, and soon eats away the heart. A good Auricula cultivator makes a constant practice of looking over his plants, and he soon detects if anything is wrong. If, on the other hand, Auriculas are neglected, insidious foes soon storm the citadel. Auriculas bearing seed are best left in their blooming pots till the harvest is gathered, but as the soil at this time of the year, through frequent waterings, is apt to become sour on the surface and covered with Moss, it should be frequently stirred. The plants that have been re-potted, if kept cool and shady, will not require much water, and root action goes on merrily in a moderately moist soil. The young stock is now growing fast, and should be shifted into larger pots as required. Over potting in the case of the Auricula is a great mistake, and especially is this true of small plants, for when overdone with pot room beyond their requirements, the plants will decline and die outright. Seedling Auriculas raised from seed sown last autumn, and already pricked off from the seed-pans into store pots, will soon require another shift. The largest plants can be placed singly into thumb-pots; but it is a saving of time and labour to put three or four plants into small 3-in. or sixty-sized pots and allow them to flower in them.—D.

## THE FLOWER GARDEN.

## HARDY ORCHIDS.

Few classes of hardy plants afford more interest than a well-grown collection of hardy Orchids. Although their flowers are not so gorgeous as those of some of their epiphytal congeners of the Tropics, yet they are extremely beautiful both in colour and form; indeed, language fails to convey an idea of the subtle tints belonging to some of them, and it would be equally

difficult to describe, without the aid of drawings, the many singular forms which they assume. In them we find mimic representations of insects, birds, reptiles, &c., although it must be admitted that in some the similarity to the objects which they are supposed to represent is somewhat vague. Notwithstanding all this, they are, however, but seldom seen in gardens, or if so, but rarely in a thriving condition, and doubtless the reason why so few attempt their culture is, that they are reputedly difficult to cultivate; the failure, however, may in the majority of cases be attributed to either an improper mode or time of transplanting them, or in placing them under unnatural conditions. Perhaps the following remarks may tend to induce those who have not yet attempted to grow them to form a collection, and also encourage those to persevere who have hitherto had but ill success with this interesting tribe of plants. The best way is to begin with the kinds that are the most readily procurable, and after gaining experience with these, rarer kinds may then be taken in hand without fear of failure. Even our British Orchids have amongst their number some really beautiful kinds, and open a wide field for experience in culture; for instance, those who can keep in a thriving condition the bee or fly Ophrys need not hesitate to try the rare, and even more beautiful,

South European kinds of Ophrys; and at this season, when the indigenous species are in flower, a word on the mode and time of transplanting them may be useful, though I should be sorry to see it carried to such an extent as to endanger the extermination of these gems of our native flora. After success depends greatly, as I have said, on this operation, and the time at which it is usually performed is altogether wrong. The usual plan is to do it just when the first or second flower has opened, so as to enjoy the remaining few in the garden, and, this done, the cultivation has in most

cases begun and ended. To show how mischievous such a course of procedure is, I may state that at this period of growth the plant is forming a new tuber for the following year, and if this is in any way injured, it shrinks and dies, thus oftentimes causing disappointment at its non-appearance in spring. If, instead of this, the plants were marked when in flower and allowed to remain until August or September, when the newly-formed tuber will be thoroughly matured, the risk of transplanting it is considerably lessened, provided it be taken up with a good deep sod. It is advisable to take from the sod

the roots of other plants, though some allow them to remain to spread over the Orchid border, thus imitating natural conditions by protecting the roots in winter and preventing evaporation in summer. In a garden, however, this presents an untidy appearance, besides the risk of cutting away the Orchids as well as the Grass, &c., in the flowering season. In this matter we can be aided by such plants as the pretty Balearic Sandwort (*Arenaria balearica*), Lawn Pearlwort (*Sagina glabra*), the mossy and tufted section of Saxifrage, and many others, which are at all seasons very beautiful and interesting, and serve the purpose equally well. The next thing to consider is a place in the garden best suited to their requirements. Doubtless many have grown and will continue to grow the more robust kinds successfully in mixed borders or amongst the denizens of the rock garden, or in a detached portion of it; but, where space is no objection, a place set apart for a collection is by far the best plan, and, in lieu of a more appropriate term, it may be called the "Orchid garden," though in such a small space as a garden can afford the natural condition of each kind cannot be very minutely imitated, some being shade-loving, others delighting in sunshine; so experience has shown that partial shade is most congenial to them when under cultivation, such as



The Wild Garden in Early Spring.

may be obtained with an eastern or western aspect, with trees or, less preferable, a high wall as the means of affording shade. The Orchid garden should consist of a raised portion, from 5 ft. to 6 ft. at the highest parts, with a gentle slope outwards and a more steep slope inwards (towards the trees or wall). Thorough drainage by means of rubble is indispensable, the importance of which cannot be too emphatically impressed, as it is in the neglect of this precaution to which one of the chief causes of failure may be attributed; so to whatever height the border is raised the soil should not be more than 15 in. in

depth, the rest being taken up in drainage material. On the outer slope should be planted those kinds that are found in pastures and exposed places, &c.; on the inner slope those whose wild haunts are in woods and thickets, &c., therefore requiring more shade. For the kinds that inhabit bogs, swampy and other wet places, an artificial bog may be easily constructed at the base of the raised portion, by sinking troughs or large glazed earthenware pans, so that the rims are within 2 ft. of the surface, and then filling them with water and large stones, and on these placing the peat or other soil; the water will then rise in it by capillary attraction, thus rendering it a good spongy bog, in which *Cypripediums* and other bog-inhabiting kinds will thrive. It will be necessary to have a pipe to each pan or trough in order to refill it, though this is but seldom needed, except in hot weather. The soil for the slopes should consist of three kinds—A, equal parts of good sandy loam and chalk from under trees, which, being mixed with decomposed leaves, &c., is preferable to any other soil. To those who reside in a chalk district this is a simple matter, but if this be not obtainable, old mortar, or sandstone broken finely, is the best substitute. Nearly the whole length of the outer and part of the inner slope should consist of this compost, and a lesser portion should consist of peat mixed with the above (B) and on a small portion of the inner slope a compost consisting of (C) peat with chopped *Sphagnum Moss* and sand in small quantity; in this the kinds of *Goodyera*, &c., delight to creep. The artificial bog should be extended half-way round each slope with a compost 2 ft. in depth of two parts of fibry peat D, one part of well-decomposed leaf-mould, and half part sand; the remaining portion of the base should consist of a deep, rich loam, with an admixture of limestone E, but should be also well drained; in this the more robust kinds should be planted. The surface of the slopes should be undulated; but straight margins should be carefully avoided, and by forming here and there little nooks, wherein many kinds would delight to nestle, it would greatly enhance the utility of the place. Large stones should be placed half-buried on the slopes to serve as stepping-places, and the roots of many will be benefited by being in contact with stones; some may be placed at the base also, to serve as stepping-stones across the bog. Now for a word on the exotic kinds of hardy *Orchids*, which may be obtained at any of the large nurseries where hardy plants are treated as a speciality. Taking first the *Lady's Slippers* (*Cypripediums*), which bear the largest flowers, we have about a dozen species introduced to our gardens, all deserving of cultivation, but I need scarcely say much about these, as the faithfully-coloured illustrations, lucid descriptions, and excellent cultural notes that have appeared from time to time in *THE GARDEN* have brought them very familiarly before us; suffice it to say, that they will all thrive in the bog in the compost D, with the exception of our English *Lady's Slipper* (*C. Calceolus*), which requires a clayey loam and leaf-mould, in a well-drained situation. Taking next the genus *Ophrys*, we find in it the gems of the family, for we have in them strange forms and indescribable colours, especially in those that come from the Mediterranean region. As an instance of this, I quote the words of a distinguished botanist and traveller when speaking of *Ophrys Speculum*, the Looking-glass *Ophrys*, which inhabits the Grassy hill-slopes of Greece, &c. "The brilliant polished surface of the disk of the lip shines like a blue steel looking-glass edged with gold, and that, again, set in a rich maroon-velvety frame, presents a combination of colours quite unlike anything known to me in the vegetable kingdom;" and those who saw the fine collection exhibited a few years since at some of the metropolitan shows by the Comte de Paris, an ardent lover and cultivator of these plants, can corroborate this assertion, and also the amount of interest and admiration that was evinced by all who saw them. All the kinds must be planted on the outer slope of the *Orchid Garden* in the soil A, and by carefully watching for their live enemies, and perhaps using an inverted pot to protect the more southern species from too much wet and cold in winter, success will be inevitable. The greatest number of kinds belong to the genus *Orchis*, and amongst these are many beautiful sorts, perhaps the handsomest being *O. foliosa*, a native of Madeira, but quite hardy in the neighbourhood of London. I have seen magnificent specimens of this fine species at exhibitions

staged with a collection of its tropical associates and yet out-vying many of them in beauty. The indigenous species of this genus are also numerous, the best being *O. hircina*, *O. mascula*, *O. militaris*, and the beautiful Channel Islands species *O. laxiflora*.

The genus *Satyrium* affords two lovely species—*S. aureum*, with flowers of a bright golden-yellow colour, and *S. carneum*, with large flowers varying from white to deep rose. Both are natives of the Cape, and therefore require slight protection in winter. The position best suited to them is in the artificial bog at the base of the inner slope. The beautiful *Goodyera pubescens*, with its velvety green leaves and silvery veins, is quite a rival to the tropical *Naectochili*; it will succeed in the soil C, on the inner slope, in company with our native species *G. repens*. It seems needless to comment more on the beauties of these plants; I will now append a list of the best kinds, of which many may be obtained at nurseries, whilst others are very rare; but some of your readers may have correspondents or other means of obtaining the South European and other kinds, or perhaps some of our enterprising nurserymen will undertake their introduction in quantity, as they have in the case of those from the Tropics. Unfortunately, we cannot look to our National Botanic Garden for their introduction, or to see them in a living state there under the most approved mode of culture.

*List of Kinds Best Suited for the Artificial Bog (D).*

Those marked thus \* are British species.

<i>Cypripedium acule</i>	stemless <i>Lady's-slipper</i>	United States
" <i>arictinum</i>	Ram's-head "	Canada
" <i>candidum</i>	white ditto "	United States
" <i>guttatum</i>	spotted ditto "	Siberia
" <i>japonicum</i>	Japanese ditto "	Japan
" <i>macranthum</i>	large-flowered "	Siberia
" <i>occidentale</i>	Western ditto "	United States
" <i>parviflorum</i>	small-flowered "	"
" <i>pubescens</i>	hairy "	Virginia, &c.
" <i>spetalabile</i>	showy "	United States
" <i>ventriosum</i>	ventriose-flowered "	Siberia
<i>Calopogon pulchellus</i>	pretty <i>Calopogon</i>	N. America
<i>Calypso borealis</i>	Northern <i>Calypso</i>	"
<i>Aretusa bulbosa</i>	bulbous <i>Aretusa</i>	"
<i>Habenaria fimbriata</i>	fringed <i>Habenaria</i>	"
" <i>blephariglotis</i>	white fringed "	"
" <i>psychodes</i>	purple fringed "	"
<i>Pogonia divaricata</i>	Lily-leaved <i>Pogonia</i>	"
" <i>ophioglossoides</i>	Alder's-tongue "	"
" <i>pendula</i>	pendulous ditto "	"
<i>Satyrium aureum</i>	golden <i>Satyrium</i>	Cape of Good
" <i>carneum</i>	flesh-coloured "	[Hope

*To be Planted on the Outer Slope (A—sandy loam, chalk, and leaf-mould).*

* <i>Ophrys apifera</i> var.	Bee	<i>Ophrys</i>	Europe
" <i>mutlex</i>	"	"	"
" <i>apiculata</i>	"	"	"
" <i>aranifera</i> var.	spider	"	"
" <i>specularia</i>	"	"	"
" <i>arachnites</i>	Late spider	"	"
" <i>atrata</i>	dark-flowered "	"	S. Europe
" <i>Bertoloni</i>	"	"	"
" <i>bombiflora</i>	Humble Bee	"	"
" <i>ericolor</i>	"	"	"
" <i>Ferrum equinum</i>	Horse-shoe-flowered "	"	"
* " <i>fucifera</i>	Drone	"	"
" <i>fusca</i>	brown "	"	"
" <i>insectifera</i> (rare)	insect bearing "	"	"
" <i>Intea</i>	yellow "	"	Spain
* " <i>muscifera</i>	Fly	"	Europe
" <i>mammosa</i>	teated "	"	S. Europe and N. Africa
" <i>niceensis</i>	"	"	"
" <i>Scelopax</i>	Snipe	"	"
" <i>Speculum</i>	Looking-glass "	"	"
" <i>tubifera</i>	Dun-fly	"	Greece
" <i>tenthredinifera</i>	Saw-fly	"	S. Europe
" <i>vespifera</i>	Wasp bearing "	"	Corfu
<i>Orchis coriophora</i>	"	"	S. Europe
" <i>fasca</i>	brown-winged <i>Orchis</i>	"	Europe
* " <i>fragrans</i>	fragrant "	"	S. Europe
" <i>hircina</i>	Lizard	"	Europe
* " <i>incarnata</i>	"	"	S. Europe

*To be Planted on the Outer Slope (A—sandy loam, chalk, and leaf-mould).*

" longicornu	long-horned	Orchis	Barbary
" longibracteata	long bract	"	S. Europe
* " militaris	soldier	"	Europe
" oliensis	"	"	"
" pallens	pale-flowered	"	S. Europe
" papilionacea	Butterfly	"	"
* " pyramidalis	pyramidal	"	Europe
" purpurea	purple	"	S. Europe
" provincialis	"	"	"
" Robertianus	"	"	"
" quadricolor	four-coloured	"	"
" sambucina	Elder-smelling	"	Italy
* " Sinia	Monkey	"	Europe
" spectabilis	showy	"	"
" tridentata	three-toothed	"	"
" ustulata	dwarf dark-winged	"	"
* Serapias cordigera	heart-lipped Serapias	"	S. Europe
" " "	tongue-lipped	"	"
" " "	"	"	"
" " "	rare	"	"
" " "	long petal	"	"
*Cypripedium Calceolus	English Lady's-slipper	"	Europe
*Aceras anthropophora	Green Man Orchis	"	"

*On the Inner Slope.*

*Cephalanthera ensifolia	narrow-leaved	Europe
" " "	white	"
" " "	red	"
" " "	large-flowered	"
*Habernaria bifolia	two-leaved Habernaria	"
" " "	Butterfly	"

*With Soil (C—peat, chopped Sphagnum, and sand).*

*Goodyera repens	creeping Goodyera	Europe
" " pubescens	hairy	N. America

*To be Planted at the Base (E—loam and limestone).*

Orchis foliosa	leafy	Orchis	Madira	Is-
" laxiflora	lax-flowered	"	Channel	
" " "	"	"	lands	
* " latifolia	Marsh	"	Europe	
" " "	var. hagotis	"	"	
" " "	var. sesquiped-	"	"	
" " "	mascula [dalis	Man	"	
" " "	maculata	Hand	"	
" " "	majalis	large-flowered	South Europe	
" " "	Morio	buffoon	Europe	
*Epipactis latifolia	broad-leaved	Helleborine	"	
" " "	palustris	Marsh	"	
" " "	ovata	"	"	
" " "	violacea	violet	"	
*Gymnadenia conopsea	Gnat	Orchis	"	
Nigritella angustifolia	dark-flowered	Nigritella	"	
" " globosa	globose-flowered	"	S.	

**COLUMBINES AND THEIR CULTURE.**

My experience of the finer kinds of *Aquilegia* differs greatly from that of Mr. Dod (see p. 515). Possibly this high situation—720 ft. above the sea level, and a consequently cool climate—may be suitable to the growth of these beautiful plants, which are worth any amount of trouble expended on their culture. I began about five years ago with *A. canadensis*, an old friend, with which I first made acquaintance on the rocky banks of Niagara. It grows like a weed in this garden, and seeds itself pretty freely. This year, for the first time, I notice signs of deterioration, and shall therefore raise a new stock. Since then I have had *A. Skinneri*, *glandulosa*, *corules*, *chrysantha*, and *Wittmanni*, all of which have done well, though in different degrees. *Skinneri* is a luxuriant bush, 2½ ft. high, with more than 200 blossoms on it of exceeding elegance. Most of last year's seedlings of *A. glandulosa* are blooming well, with very large individual flowers, but it is a somewhat shy bloomer, and looks best in tolerably large clumps. This species seems to me to be biennial. *A. chrysantha*, on the contrary, is a good perennial. Here it is not yet in bloom, but looks promising, with strong-flowering shoots. *A. corulea* I find to be the most difficult to manage, and it seems to require more shade than the others; but I have several plants of it in bloom, and do not despair of growing it better in the future. *A. Wittmanni*, a hybrid, is not to be despised as a substitute for it. I believe most people would prefer it from its much greater luxuriance, while in colour it is almost identical with *A. corulea*. The long spurs which add so greatly to the beauty of the latter species are wanting in *Wittmanni*, and its whole growth is less elegant, but as a decorative border plant of

strong constitution and an undoubted perennial I should think it could hardly be surpassed. It grows about 3 ft. high. I should add that I obtained my seed from Mr. Thompson, of Ipswich, who has done so much for our gardens in introducing these amongst many other valuable hardy plants, and every variety that I have flowered has come true to its name without a failure, which is very remarkable. I know other gardens in the south of England where *Aquilegia* grow more freely than with me, and a relative in Devonshire keeps them in pots in a cold frame, for the decoration of an open verandah, being afraid to trust them in the thick clay and slug-infested soil of that neighbourhood, and who blooms them with very fair success.—*D., Ashmore, Dorset.*

— I think Mr. Farrer (see p. 542) is in error about having a bed in bloom of *Aquilegia Skinneri*. This variety is a very late bloomer. I never have it till July, when the others are over, and in all probability the one Mr. Farrer has is *A. californica*. Both *A. Skinneri* and *A. chrysantha* do perfectly well in beds, but to get good blossoms of the latter the plants should be grown under glass, as the weather impairs their beauty. I have three and four-year-old plants blooming well, but it is better to keep them only for two years if fine flowers are required. The small seedlings should be kept under cover the first winter. I find *A. corulea* a miffy plant to grow in the open ground, but there is no difficulty with it under glass. *A. glandulosa* does not do at all well in the south; it wants a damp climate. It is almost impossible to get the seed of *Aquilegia* true unless a single plant is kept perfectly apart from all other varieties. It is surprising



*Aquilegia chrysantha.*

that florists do not carefully cross some of the better varieties. If Mr. Farrer will look at vol. iii., part 18, of Henderson's "Illustrated Bouquet" for 1864, he will see a plate of some beautiful hybrids which I raised between *A. fragrans* and *A. Skinneri*. He will in the same place find some hints as to their culture. The germination of the seed varies. I have at this moment hundreds of *A. chrysantha* seedlings coming up in the open air as thick as Mustard and Cross sown in April, and sometimes they take a year to vegetate. I think it does best if sown as soon as the seeds are ripe.—*A. R., Bromley.*

**Columbines in the Isle of Wight.**—I cannot think that the deterioration of *Aquilegia* is altogether due (see p. 516) to locality. I believe that they can be grown as well in the south of England as in the north, with the single exception that some of them are not worth much after the first year. There is, however, something very puzzling about *Aquilegia glandulosa*. Some four or five years ago I raised three of these fine plants from seed, which were as beautiful as anything could be. They acquired quite a reputation in the place, and several persons visited my garden to see them. I fondly imagined that *Aquilegia glandulosa* would be permanently established here, and I looked for it the next year as a matter of course, but it never came again, though I have grown scores of plants from the best seeds I could get. I never have been able to make out why success was so easy at first and has never since been obtained. I can only suppose that there must have been some great difference in the seeds themselves to cause results to be so different under the same conditions. I was fortunate, I fancy, in the first instance with the seeds, but unfortunate afterwards. *Aquilegia corulea* and *A. chrysantha* are, in my experience, much more to be relied on than their

very beautiful congener, and they do hold on fairly well from year to year.—H. EWANK, *St. John's, Ryde.*

#### SEDUM MAXIMUM.

It seems strange that the genus *Saxifraga* should engross so much attention while the *Sedums* are, in a degree, kept in the background. There is certainly more diversity of beauty and form among the *Sedums* than among the *Saxifragas*, from the minute *S. brevifolium*, with its turgid leaves, like small pearls, and the delicate sea-green *dasyphyllum* up to the arboreous *S. populifolium*. There is every conceivable form of outline and colour in this tribe. The plant under notice (*S. maximum*) is one of the finest and most distinct of the family, unique in colour, being a rich chestnut-brown. It is a most telling plant, nor can I at this moment call to mind a hardy plant of the same colour—just one of those plants that every one stops to ask what it is. The plant is of bold, stately growth, grows about 1½ ft. high, and is admirably adapted for massing; and, if better known, would, I believe, find its way into every park and public garden. A bed of this mixed with *Cineraria maritima* or *Centaurea candidissima*, and edged with Golden Feather *Pyrethrum*, would be very effective. To have this plant in perfection, it should be planted in the poorest, stony, gravelly soil, and smoke will not injure it. On rockwork of a white calcareous nature, it is all that can be desired. The term *maximum* is not a very appropriate one, as there are several more robust species than this, notably *S. latifolium*. In conclusion, I may say no plants want less care than *Sedums*; they do not even care about being planted—you may lay them down on the ground where wanted, and go and find them rooted and growing in a few days.

*Ormskirck.*

THOS. WILLIAMS.

#### NOTES AND QUESTIONS ON THE FLOWER GARDEN.

**Rate of Growth in the Lichen geographicus.**—Can any of your readers tell me what the rate of growth is of this Lichen? It will soon be a year since I placed a piece of flint, picked up on Sea Fell, in Cumberland, in a shady window of my house, and I cannot say that the Lichen on it has extended a hair's breadth during that time. It is difficult to tell whether a plant, which grows so close to the stone as to appear to be painted on it, is dead or alive; but my specimen, examined through an ordinary microscope, seems to-day just as fresh as the day it was picked up. Judging from its apparent rate of growth, the specimen, which covers about a couple of square inches, must have taken 100 years or more to grow.—J. S. W.

***Eremurus robustus.***—As I was told when I bought this plant from Mr. Ware last autumn, that there were not six flowering specimens of it in the country, some particulars about it may be interesting to readers of THE GARDEN. I planted it in ordinary soil under a cold frame in autumn, and in February, finding that it was growing, I planted it, as I was recommended to do, in a well-drained, sunny position. The roots were large and pushing actively. It grew quickly, and I protected it during frosts with a bamp. Large leaves measuring 3 in. across were produced, and towards the end of March the scape began to appear. At the present time (June 7) it measures a little more than 6 ft. in height, and it is 2½ in. in circumference at 3 in. from the ground. The spike is 2 ft. 1 in. in length, and as only a few of the lower whorls of the flowers are expanded, it will probably grow longer. The blooms are of fair size, and of a delicate pale rose colour, with orange-coloured anthers. A frost in May has, I think, touched the apex of the spike, which might otherwise have grown more. The plant seems impatient of drought at the flowering time, as a few dry days caused the spike to droop, and watering the root did not perfectly straighten it. My impression is that I did no good by coddling it in winter. I may add that beside it is a good bloom of *Iris asiatica*, which I have never before succeeded in flowering.—FREDERIC CLOWES, *Widdermere.*

***Saxifraga pyramidalis.***—Why this *Saxifraga* (see p. 537) is so little known is, because it is often confounded with, and sold for, *S. Cotyledon*. The latter, though handsome and having a more dense inflorescence, with curving racemes, is still inferior to *pyramidalis*, which has a more diffuse, branched panicle of flowers, and makes a very fine conservatory plant. In order to grow this plant to perfection, a single strong crown or rosette should be aimed at by keeping the plant clear of suckers. I need scarcely add that *pyramidalis* is not a species, but a variety of *S. Cotyledon*. The fine *Saxifraga*, too, from Nepal, *S. nepalensis* of many, is the *S. ligulata* introduced nearly sixty years ago. While on *Saxifragas*, let me add that, take it for its all in all, I consider *S. ajacifolia* one of the handsomest *Saxifragas* grown, certainly so in the section to which it belongs—the Cassian or Mossy group.—THOS. WILLIAMS, *Ormskirck.*

#### A RURAL VILLA GARDEN.

THE rural villa garden, of which the following is a description, possesses many good points, although it may not embrace what may be termed the "latest improvements" which usually figure conspicuously in the decoration of suburban villa gardens. The extent of ground, too, is larger than that attached to most villa residences near thickly populated towns; but in rural districts, where land is of less value than near towns, and the houses in many cases built specially for the owner, a considerable amount of land is often enclosed and divided into pleasure grounds and kitchen gardens, and in most cases a small meadow or paddock is added. In the case to which I am about to allude the property is under two acres, yet I doubt if many owners of fifty times that extent derive more pleasure from their estates than the occupier of this well-managed garden and grounds. The house stands just far enough back from the high road to be partially concealed from it by a belt of evergreen Oaks that flourish amazingly near the seacoast, and afford a grateful shelter to tender vegetation from the rough blasts that prevail in the locality. A verandah covered with Roses and other climbers runs the whole length of the house, and forms both shelter and shade, while a quantity of that excellent seaside shrub, the Golden *Buonnyms*, in a contiguous plantation, is effective at all seasons of the year. A half-circular Grass plot in front of the entrance is bordered with herbaceous plants, and even under the deciduous trees a beautiful display of early spring flowers is obtained by naturalising hardy, bulbous, and other early flowering plants that flourish under semi-wild conditions. Folding glass doors separate the drawing-room from the plant house and Vinery combined, which is interesting the whole year through, the owner knowing what plants to grow and how to grow them. Hotbeds are extemporised for propagating and raising seeds of tender plants, and sheltered nooks and corners are made available for raising successional stock up to the period when it becomes available for decoration. A few Ferns and fine-foliated plants, such as the hardiest Palms, *Dracænas*, *Ficuses*, and succulent plants, contrast well with the flowers of any season of the year. From this house a flight of steps leads to a lawn, consisting of mossy turf, that answers at once for pleasure ground and orchard combined, as nearly all the trees on it are fruit-bearing ones. The central one, a fine Mulberry, is a beautiful object, and a Medlar and several fine Apples and Pears grow wildly and mingle with good effect with evergreen trees. In autumn the trees are literally loaded with fruit, while in spring the blossoms are most effective. No regular bedding out is attempted, but large, irregular masses of Roses, mixed with *Gladioli*, *Stocks*, and showy-flowered and scented annuals, ensure a continuance of bloom both early and late. I am aware that a certain degree of prejudice exists against the employment of useful fruit-bearing trees in positions that are supposed to exclusively belong to the ornamental department. This may be a very good arrangement in large gardens where ample scope is allowed. But why amateur gardeners with a limited area at command should devote two-thirds of that space to purely ornamental subjects while they have scarcely enough vegetables, and little or no fruit, passes comprehension, except on the plea "that it is the fashion." In this case, however, the owner has reason to congratulate himself on being an exception to the rule; consequently, his fruit room is every year abundantly supplied, as, owing to the trees being sheltered, I have seen good crops of Apples when trees more exposed were bare. The kitchen garden, which is well sheltered on the north and east by lofty trees, is enclosed by a good high wall on the north, and by a low one on the south, and thus a good south aspect is secured for Apricots, Plums, Figs, &c. Figs are especially prolific, and require no protection in winter, owing to their proximity to the coast. The north walls are devoted to Gooseberries and Currants—a useful and certain crop on such aspects. One walk, 10 ft. from the wall all round, leaves a good border for the roots of wall trees, and for early crops of vegetables and salads. Two narrow central walks in the form of a cross divide the main portion into four equal compartments. Pyramid fruit trees, closely spurred in, are planted at the corners, and espaliers by the sides of the walks. Good beds of Strawberries, Asparagus, and the more permanent crops occupy a quarter by themselves for a term of

years consistent with a proper rotation of crops, by which means the whole is kept in the highest state of productiveness. Rough, strong-growing vegetables are grown in the paddock that was formerly devoted exclusively to the production of Grass for hay, but during the last few years better results are obtained by breaking up a portion, cropping it for a few years, and then relaying it with Grass seeds. Some may contend that this is not an ordinary villa garden; but what is done in one case may be done in another. The owner does all the sowing, gathering, pruning, and training himself, merely employing a day labourer occasionally for digging or other laborious work.

J. GROOM.

## THE INDOOR GARDEN.

### MASSANGEA HIEROGLYPHICA.

A FINE specimen of this plant, according to the "Revue Horticole," has lately been imported from Brazil to the Jardin d'Acclimatation, at Neuilly, under the name of *Tillandsia musaica*. It is well worth attention on account of its incomparable beauty and gracefulness. It measures about 6 ft. 7 in. in diameter, and 3 ft. 3 in. in height. Its habit and general aspect resemble those of a strong *Tillandsia musaica*, but it is



*Massangea hieroglyphica.*

larger, lighter, and more graceful. The stem is thick and has a swollen appearance, caused by the sheathed base of the leaves. The latter are bright green in colour, marked, as will be seen by the annexed woodcut, transversely with irregular zones (thicker on the inside than on the outside) of violet-black. The extremities of the leaves become slightly narrower and suddenly round, the ends turning under. The marks towards the points become more and more irregular, and have the appearance of Hebrew characters or hieroglyphics, hence the specific name *hieroglyphica*.

### EPACRISES AND THEIR TREATMENT.

THESE indispensable plants for greenhouse decoration have a strong objection to artificial heat during certain stages of their growth, while at others it is highly beneficial and even necessary. Although the flowers do not fall off, like those of Camellias, forcing causes them to come small and puny and without their proper colour, and not only this, but it endangers the health of the plants; and yet, strange and paradoxical as it may appear, at certain times, as just remarked, a little warmth does good. This is after they are cut down and have begun to break again, and from thence onwards till they have made

plenty of young wood, after which, the cooler and more airy they are kept the better and finer will the individual blooms be. The minia type or section, however, will bear closer confinement than any of the others, and, from their more continuous blooming habit and generally graceful appearance, are of greater value than most of them, and are just the plants for those who wish to make a fine display. The treatment requisite for these differs somewhat from that required by the more upright-growing kinds, inasmuch as they should only be thinned out, and not pruned hard in after they have done flowering in the way that is customary with most cultivators who grow the other varieties. All the different sorts of *Epacris* delight in fibry peat, which should be chopped up moderately fine and have a portion of the earthy matter sifted out by using a small-meshed sieve, and as this will carry away any grit the peat may contain, the loss must be made good by adding a heavy sprinkling of sharp silver sand, and mixing the same well up before using. One of the most important things to attend to is to see that the pots are properly drained, as nothing is so inimical to the welfare of the plants as water-logged soil. A single crock over the hole, placed so as to fit and prevent the ingress of worms, is a good practice, and over this about 1 in. in depth of others broken about the size of a nut. If on these a little *Sphagnum* or common Moss be scattered, it will keep the interstices clear by preventing the finer portions of the peat from running amongst them, which it is otherwise sure to do, and thus impede not only the percolation of the water, but also interfere with a free circulation of air through the soil, by which alone roots can be kept in health. These being of a hair-like nature, the potting should be done firmly by ramming the peat well down with a blunt stick made for the purpose. The great mistake many make when shifting *Epacris* and other hard-wooded plants is in filling the pots too full, by doing which sufficient room is not left to hold enough water to thoroughly moisten the ball through; and this is a frequent cause of plants dying or getting stunted in their growth when, to all appearance, the soil is quite wet enough, if judged by that on the top. Even with the smallest pots, the space left should not be much less than 1 in., and for others of larger size nearly double that is necessary; and, with this much allowed, it is advisable, when watering has to be done, to go over the plants twice, so as to ensure a thorough soaking, for in this way alone can *Epacris* be kept in perfect health.

S. D.

### DOUBLE AZALEAS FOR CUT FLOWERS, &c.

As a rule, double or semi-double flowers last longer in a fresh condition, either when the flowers are left on the plant or when cut, than do single flowers of the same species. This is very strikingly exemplified in *Azaleas*; and though it cannot, perhaps, be said that double *Azaleas* are more beautiful or generally effective than single ones, neither can it be said that they are less so. The doubles very far surpass the singles in the length of time they remain in bloom, as well as for their endurance when cut for bouquets and vases. On this account the culture of a fair proportion of them is very desirable both as decorative plants and for affording sprays of bloom for mixing with other flowers in vases, and for wiring in single blooms for bouquets. Indeed, very few plants excel them for these purposes, especially when it is considered that their flowering period can be extended from October to June, and that the colour of their flowers ranges from the purest white to nearly crimson. The whites are especially useful for bouquets, from the fact that some of them, such as *Maria Waterougl*, are small.

To all who have a supply of flowering plants and cut flowers to keep up in the autumn and winter months as well as early spring, double *Azaleas* are most useful. The length of time they remain in bloom is remarkable. On the 3rd of April we had a plant of the semi-double and charming *Souvenir de Prince Albert* in bloom that has outlasted several sets of single varieties growing in the same house. The same may be said of the following selection, which can be strongly recommended for the qualities and purposes we have referred to:—

**BORSIC.**—Pure white, medium size; can be had in bloom by the end of October.

**CHARLES LEIRENS.**—Very dark salmon, with crimson blotch on upper petals; blooms in October.

**FLAG OF TRUCE.**—Splendid large pure white, vigorous habit; excellent for February and March.

**IBERICATA.**—As double as a Balsam—said to be the finest of its class. We can only speak of a small plant that bloomed in February; appeared not so pure a white as it has been described.

**MARIA WATERBOUGH.**—Pure white, flowers small and neat, and valuable for bouquets; can be flowered in winter.

**NARCISSIFLORA.**—White, and the earliest of all the double varieties; can be bloomed easily in October.

**SOUVENIR DE PRINCE ALBERT.**—In every respect a charming variety, and can be flowered in winter; a beautiful rosy-peace, broadly margined with white; lasts a very long time in bloom.

These eight varieties are well worthy of special culture for winter and early spring decoration; and, for cutting at a season when white flowers are scarce, the whites are invaluable.

At no other season are Azaleas more enjoyable than in winter and early spring, when they last longer in bloom than later in the season. By growing a few of President Van der Hecke, a single variety, and Narcissiflora, to come into bloom early in October, there is no great difficulty in prolonging the Azalea season to eight months of the year. Of course, for this purpose it requires that a growth should be forced on different sets of plants in succession, so as to be easily got into bloom at their respective seasons. D. T., in "Gardener."

**Camellias in Winter.**—With Camellias and their culture all are familiar, but, valuable as they are for blooming during the winter and easily as they may be grown, many fail in producing them at that season through want of knowing how to grow and prepare them to come in a month or two earlier than they will do under ordinary treatment. The practice with many is a few weeks before the flowers are wanted to place the plants in heat with a view to force them, when after a short time, to their amazement, off come the buds, or if by chance they should remain on, the blooms when they come are never anything like the size or substance they would be if the plants were kept in an unheated structure. The only way Camellias can be forced successfully and get into flower early is by inducing them to make their growth early, which may be done by subjecting them to a moderately warm temperature, where they can be screened from the sun's rays, and afforded plenty of atmospheric moisture by giving them copious syringings, and keeping the floors and other available surfaces well damped. Managed in this way, they make vigorous young shoots and set their buds long before they otherwise would, and these keep on gradually increasing in size till they expand before the end of the year. When once they are got into this early blooming habit, it is an easy matter to keep it up, as it is also to bring them to it; but to do this, no time must be lost in getting them into gentle heat after the flowers have fallen. Another frequent cause of bud-dropping is through allowing the plants to become dry at the roots; and any sudden change in this way, as well as undue excitement, Camellias are very impatient of, but if attended to properly with water and kept cool during the autumn and early winter without any attempt at forcing, there is nothing more easy to grow.—S. D.

### MAY FROST IN NEW JERSEY.

WHEN in England I expected to experience frost as a matter of course from May 1 to 21, and to see fruit crops destroyed from that cause; but for the first six or seven years after coming here I considered myself safe from frost after the first week in May. We frequently had quite severe frost at intervals during April, and it was seldom out of the ground till after the middle of that month, a circumstance which prevented vegetation from making much progress before the middle of May, and then trees previously bare would be in full leaf in a few days; but during the last two years matters have altered. Last season we had cold nights and frequent frosts until the end of May, and this year, after an unusually mild winter and very hot April and beginning of May, we are now (May 16) having frost every night. In April there were only two nights on which the thermometer fell below freezing, and then not more than 3°. On the morning of May 14 everything outside was covered with white frost from eleven on the previous evening until 6 a.m.; and as the thermometer had ranged each day during the previous week from 75° to 85° for several hours in the daytime, and from 50° to 60° at night, vegetation had progressed at a tropical speed. Shoots, therefore, from 1 ft. to 1 ft. long are killed back to the old wood, not one green leaf remaining. *Deutzia gracilis* and *Spiræa japonica*, just opening their flowers, are in the same condition. Weigelas and wild Ferns look as if a fire had passed over them. Strawberries, which had just commenced to ripen in this district, are all frozen through. Asparagus is killed to the ground, and any of the tender vegetables which the long term of hot weather had

tempted people to plant were completely destroyed. The few newspaper accounts as yet published report the total loss of the fruit crop, which was previously promising. If the frost was general the damage must amount to many millions of dollars. JAS. TAPLIN.  
South Amboy.

### VEGETATION ROUND CONSTANTINOPLE.

A LONG drive through the suburbs of Pera and over the bare, undulating downs separating the Golden Horn and Bosphorus, brought me, on the afternoon of my arrival, to the Sweet Waters of Europe, a pleasant valley at the head of the Golden Horn, with long reaches of quiet waters and pretty groves of trees, interspersed with a few handsome buildings, including one of the Sultan's numerous palaces, and environed by steep bare hills on all sides. Lencocium æstivum formed large tufts in the bottom of the valley, and the hill slopes were covered with *Poterium spinosum*, one or two species of *Erica*, and several *Ornithogalum* and other bulbous plants. On the evening of the following day I availed myself of an invitation from my friend Mr. Millengen, of the Imperial Ottoman Bank, to visit Buyukderé, or the Bosphorus. The Judas Tree (*Cercis Siliquastrum*) was in full spring glory, its brilliant rosy-crimson flowers contrasting with the dull masses of Cypresses rising out of the almost continuous bordering of white marble palaces, barracks, and villages which line the Bosphorus on both shores. The hills between Buyukderé and the Black Sea, attaining a height of 500 ft. or 600 ft., are, for the most part, covered with scrub of *Erica arborea*, *Cisti*, *Arbutus Andrachne*, and several small evergreen and deciduous Oaks, with occasional patches of taller trees, including the Velonia Oak, Chestnut, Beech, Horse Chestnut, Plane, Poplars, Elm, and Stone Pine; but there is no extent of wood till the Belgrad Forest is reached, a few miles inland on the European side. *Crocus pulchellus* is most abundant amongst the underwood, varying occasionally with white flowers; and Mr. Millengen informs me that a variety with double flowers is sometimes met with. The shady dingles running down to the Bosphorus abound with herbaceous and bulbous plants, including *Lilium martagon*, which here occurs within 100 ft. of the sea-level. *Fritillaria pontica*, several *Ornithogalum*, a *Geranium*, *Epidemium pubigerum*, *Hellebore orientalis*, *Hypericum calycinum*, *Colchicum byzantinum*, and several species of *Muscari* and *Bellevalias* also occur about Buyukderé.

On the slopes and summit of Chamlijah I found a second annulate *Crocus* out of flower, with narrow leaves, probably *C. biflorus*. This was accompanied by *Colchicum variegatum* and a very small *Iris*, with the habit of *Iris pumila*, but with much narrower leaves; also many leguminous plants, one or two *Ericas*, *Poterium spinosum*, *Muscari*, *Ornithogalum*, and other bulbous plants. The public garden of Pera is of very limited extent and poor in arrangement and detail, but the standard Roses were exceptionally fine. Small *Platanus* trees planted in winding avenues are extensively used, and yellow *Banksian* Rose intermixed with *Wistaria* had a remarkably good effect. *Ligustrum japonicum* is planted in masses bordered with *Yuccas*. The *Loquat*, *Wellingtonia gigantea*, and *Cedrus Deodara* also thrive, but the attempt at flower gardening everywhere is poor in the extreme.—G. MAW, in "Transactions of the Bot. Soc. of Edinburgh."

### THE SMYRNA SEEDLESS GRAPE.

IN Mr. G. Maw's interesting note on the "Vegetation of Smyrna and Ephesus," read before the Botanical Society of Edinburgh, and quoted in THE GARDEN of June 1 (p. 525), he gives a strange mixture of "z" and "f" for the Turkish name of the Smyrna Seedless Grape. Mr. Maw has evidently been misled by some Greek friend, who, like most of his race, is incapable of pronouncing Turkish words, and, in addition, maltreated by the printers of the Edinburgh "Transactions." The proper Turkish name is *Chekirtekis üzüm*, *chekirtek* meaning pip, *siz* less, and *üzüm* Grape, literally the pip-less Grape. It is also called *Soultaneh üzüm*, literally the Sultan's Grape, being so luscious as to be thought worthy of gratifying the palate of the Commander of the Faithful. Our corruption of *Soultaneh* into *Sultana* is doubly incorrect, the word *Soultan* being applied equally to males and females. Can any of our Grape-growing readers tell me if the cultivation of this most delicious Grape has ever been attempted in England? It would well repay a trial, for the best Boujah qualities when eaten fresh can hardly be surpassed for lusciousness and delicacy of flavour. Should any one like to try the experiment, I should be most happy to put them in the way of obtaining plants. C. W. QUIN.

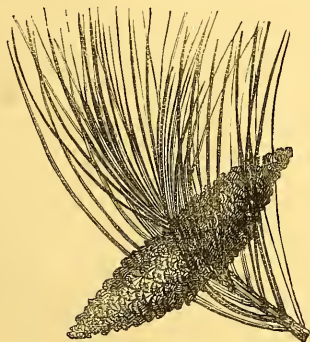
Imported Cherries.—Hundreds of baskets of these have lately been sold by auction in Covent G den. They came from Algiers, and realised from 4s. to 6s. per basket of 15 lb. or 20 lb.

## TREES AND SHRUBS.

## THE CORSICAN PINE.

(PINUS LARICIO.)

THIS Coniferous timber tree was first discovered in the island of Corsica, where it grows abundantly on the summits of the highest mountains, forming large woods and forests. It is also indigenous to the uplands of Spain and other countries bordering on the Mediterranean. It is said to be a lofty tree, attaining a height of from 120 ft. to 140 ft. This valuable Conifer was introduced into England about 1759; it cannot therefore be called a modern introduction, but, so far as I am aware, it has not been planted extensively until comparatively lately, as there are but few large specimens of it to be found in this country. It is now, however, well known amongst experienced planters as the best of all the Conifers for planting as a forest tree in poor soils and on exposed sites, and it even thrives well on the seacoast. It forms the best substitute for the Larch where the latter does not succeed well; we have examples of it here growing on an exposed plain in a thin poor sandy soil where the Larch has in many cases failed. Thus situated, *Pinus Laricio* is shooting up and growing at a rapid pace, quite over-topping the Scotch Fir, Austrian Pine, and other Conifers with which it is associated. It seems to shape itself at once, even in a young state, into a timber tree by forming a round, straight, clean stem; the branches, too, are not only few in number, but are small and

Cone and young shoot of *Pinus Laricio*.

less woody than those of any other Conifer, except the Larch. In habit it is quite distinct; its branches grow in regular whorls horizontally from the stem, and the terminal shoots turn upwards. In all stages of growth this Conifer presents a thin and bare appearance with little to recommend it as an ornamental tree; but, on the other hand, for planting extensively on sites and in soils not suited for the healthy growth of profitable hardwoods or the Larch, it is the tree above all others to introduce with a view to a profitable outlay. Its timber will most probably prove to be of about the same value as that of the Scotch Fir, and possibly, like the latter, vary in quality according to soil and situation. It is a more rapid grower, and does not take up so much room as the Scotch Fir; hence, a greater number of trees may be grown on a given space, and, consequently, I may safely assert that it will yield a more profitable return as a timber tree. During the last ten or fifteen years the good qualities of *Pinus Laricio* have become better known by landed proprietors and foresters than hitherto, and it has been planted out in great numbers; indeed, during the last few years nurserymen have hardly been able to keep up a stock of it equal to the demand. The consequence is that it is difficult to procure, at a moderate price, good-sized plants of it well rooted and fit to plant out. Possibly another reason why it keeps scarce in the trade is it being a difficult tree to transplant, and unless great care and attention be given to it when moved in the nursery lines large quantities of it often die. It should be

moved in the nursery every year in order to check its rapid top growth and to induce the formation of fibrous roots. The system which I adopt here is to buy from 5000 to 10,000 two-year bedded seedlings every year, and to grow them on in our nursery in a light kindly soil until they are from 2½ ft. to 3 ft. high. They are shifted in the nursery lines every year until they are finally planted out in the woods. By following this plan I have always a good stock with excellent roots and moderate top-growth, and the result is but few deaths. There is this advantage, too: they are lifted one day and carefully "heeled" in and planted out the next; their roots are not allowed to be exposed long enough to the air to become dry. From much experience with *Pinus Laricio*, I have found it quite necessary, in order to ensure success, to use these precautionary measures, or I am quite sure disappointment and loss would be the result. We have planted out many thousands during the last six or eight years with the greatest success; they are mostly planted in large masses on exposed situations, and where the soil is not deemed good enough for the profitable growth of hardwoods. In such positions this Pine flourishes, and I have no doubt that it will prove successful in a pecuniary point of view. I should not omit to mention that *Pinus Laricio* is practically a hare-and-rabbit-proof plant; at least I have found it to be the tree of all others least relished by ground game. Of course I cannot say that I have never known it to be injured by these troublesome and mischievous depredators, for what Coniferous tree will they not nibble and bark when their natural food is covered up by snow for several days? Nevertheless, the fact remains the same, that, under ordinary circumstances, it is better calculated to resist the attacks of hares and rabbits than any other Coniferous tree with which I have had experience in planting amongst game coverts. GEORGE BERRY.

Longleaf.

## TWO NEW JAPAN QUINCES.

THIS species of shrub possesses many qualities which well fit it for frequent use in lawn planting. We have known it so long and become so accustomed to its presence everywhere that we hardly realise the superior advantages it undoubtedly offers for every purpose required of a flowering shrub. Hardy, compact, and vigorous of growth, its bright glossy leaves and numerous richly-coloured flowers, clinging closely to the stem, would certainly call forth rapturous expressions of delight were they presented as a new introduction from foreign countries. As it is, every one enjoys the early beauty of the glowing flowers formed before the leaves are developed, and no group of deciduous shrubs that pretends to offer a series of blooms extending throughout the spring and summer can dispense with its rich colours. The Japan Quince is a large-growing shrub, and hence should occupy positions in the centre or rear of the mass, unless some prominent point of a peculiar character requires a larger growth than is ordinarily used. It should be set out early, although, on the whole, it is quite easy to transplant. Years ago it was considered somewhat difficult to propagate, but now it is grown readily from root cuttings. As already intimated, the foliage constitutes one of its great charms, and a thorny habit has caused its successful employment for ornamental and impassable hedges. To sum up its advantages, it has nearly everything necessary to the character of a perfect hardy deciduous flowering shrub. Although the general appearance of the foliage of the Japan Quince in its many varieties is much the same, the colour, size, and shape of its blossoms form a very distinctive peculiarity. Distinguished chiefly by the appearance of the flowers, there are at least a dozen varieties common in nurseries. Their colours range all the way from scarlet or crimson to white, with some varieties striped in a very attractive manner. The red and white are, of course, most popular because most distinct. Almost the only accusation that can be justly made against the Japan Quince is that it grows too large for some positions. My object, however, in calling attention to the Japan Quince is not only to offer a brief tribute to its many choice qualities, but to describe two distinct varieties that are really very fine and quite unknown to the lawns of America. They come from Mr. Thomas Hogg, as do so many other good plants, and have now attained a size which very fairly indicates their nature at maturity. The first is a strong-growing kind, with leaves of a more oval form than usual and very large flowers of white, touched on the upper edge with rose colour. The flowers are well formed and clustered in the usual way about the stem. Their size is very striking, and the habit of the entire shrub decidedly attractive. It will undoubtedly be found a great improvement and addition to the present list of Japan Quince varieties.

The other variety of *Pyrus japonica* is still more remarkable than the last. I have already noticed that for some positions the heretofore known varieties of Japan Quince were too large. Nature has apparently become cognizant of the fact, and therefore has sent us from Japan this little gem of the species. Dwarf enough to occupy any position near the house where small plants would be used, it has, in addition, literally masses of pretty salmon-coloured flowers and a most lovely variegation of the leaves in red, white, and green. The flowers rest like a rich crown on this compact little plant. It may be readily seen how charmingly adapted such a plant would be to a group of low choice shrubs near the house, a place from which the common Japan Quince is perforce excluded. The great value of the introduction of such new deciduous shrubs lies in the increased beauty and variety of foliage and flower afforded at a particular season by groups arranged for continuous blooming. It is not easy to speak too strongly of the importance of deciduous shrubs on a lawn, and, in order to increase the list of materials to be combined by the landscape gardener, it affords a pleasure to present two new Japan Quinces for consideration.—"Rural New Yorker."

#### NOTES AND QUESTIONS ON TREES AND SHRUBS.

**Crimson-leaved Japanese Maple** (*Acer polymorphum atropurpureum*).—There is in the grounds here a plant of this Maple 8 ft. in height, and as much through the branches, which reach almost to the ground. It is now densely yet elegantly clad with its pretty palmate leaves of a bright, almost dazzling, crimson. It is a living wonder amongst the various green tints surrounding it. Seen near or far from it, it is the one object that arrests the eye. Compared with it, the purple Beech is sombre. As the growth matures the colour of the leaves becomes subdued, until about the end of June a second growth of fiery foliage is added to the first. The Japanese Maples are generally considered to be tender, and better adapted for conservatory decoration than for out-door planting in Britain. This may be true of some varieties, but surely not of this one. The plant I have mentioned has been out-of-doors for four years, and although it had commenced to grow this spring at the time of the late severe frosts, which blasted so many of the early fruit tree blossoms throughout the country, the only effect which they had on this Maple was to discolour the leaves a little; but it soon recovered, and is now the glory of the nursery.—Geo. SYME.

**Purple-leaved Peach** (*Amygdalus persica foliis purpureis*).—This, though less effective than the crimson-leaved Japanese Maple, is also very ornamental. The young leaves are reddish-crimson, deepening with age to a coppery-brown, with somewhat of a metallic lustre on the upper surface. It is of free growth, but, like ordinary Peaches when grown in the form of bushes out-of-doors in Britain, it shoots do not get fully matured; therefore it is necessary to prune the young wood rather severely, by which, however, the colour of the leaves the following season is heightened. It is very effective in a mixed shrubbery.—Geo. SYME, *Elvaston Nurseries, Borrowash*.

**Catalpa Wood**.—The wonderful durability of the wood of the American Catalpa has long been known; but Mr. E. E. Barney, of Dayton, Ohio, has done an excellent work in collecting together several letters written by him at different times to the "Railway Age" in regard to the economical value, especially with reference to the employment which can be made of it, for railway sleepers. To these letters are added satisfactory evidence of the astonishing durability of the wood of this tree, its adaptability to many useful purposes, besides some excellent suggestions as to the best methods for cultivating it. The whole forms a neatly-printed pamphlet of twenty-six pages, under the title of "Facts and Information in relation to the Catalpa Tree (*Catalpa bignonioides*)," which can be procured from the author. Mr. Barney calls attention to the fact, which has heretofore escaped our notice, that in some of our Western States a variety of the Catalpa is found in cultivation with very large white blossoms, appearing two weeks earlier and much more abundantly than in the common form. Experiments, too, show that this early blooming variety is of more upright, rapid growth and considerably hardier, and so more valuable for forest planting; a fact well worth bearing in mind. To all with whom the question of a supply of fence posts is getting to be a serious one, and especially to the managers and owners of railroads, Mr. Barney's pamphlet will be found useful and instructive reading.—"Gardeners' Monthly."

**Acer platanoides Schwedleri**.—This hardy, free-growing, purple-leaved Maple should not be lost sight of by planters. It is a real acquisition, as far as effective contrast is concerned, amongst trees of light green foliage. The leaves of this beautiful Maple are bright reddish-purple when newly unfurled, very brilliant and glossy, and as large as those of the common *platanoides*, or Norway Maple.—G. B.

#### PLATE CXXXII.

#### MAGNOLIA HALLEANA.

Drawn by Miss DUFFIELD.

With reference to this valuable addition to our hardy flowering trees, Mr. S. B. Parsons, of Flushing, U.S., obliges us with the following note:—"Regarding this Magnolia, some time prior to 1862 I had been much interested as to the best mode of getting access to the flora of Japan. I knew no one who possessed the tact and perseverance requisite at that time for such an undertaking, and for want of such an one my enterprise languished. In the darkest hour, however, the man appeared. One day in 1862 there walked into my office a gentleman with a frank and pleasant manner, who introduced himself as Dr. G. R. Hall, of Japan, who had for some years been making collections of plants in that country, and who had with him in Wardian Cases the whole collection. He desired to know whether we would take, propagate, and distribute them. We consented at once, and the cases came. Did you ever see a connoisseur unpack a fine painting or litterateur open a case of books? Or can you dream how Schliemann felt when he unearthed the treasures of Priam's palace? You can thus fancy the enthusiasm of our *employés* when these cases were opened. I cannot tell you at this date what plants made their appearance, but I recollect the Japan Maples, the Yeddo Grape, *Thuopsis dolabrata*, *Deutzia crenata* flore-pleno, and a few bulbs of *Lilium auratum*, which we sold to a firm in Europe for 80 dollars each. From the seed then sent we grew *Sciadopitys*, *Abies polita* and *Alcocquiana*, *Hydrangea paniculata*, *Planera Kaki*, and others. From the seed of *Retinospora obtusa* we grew many thousands. Among the plants were two Magnolias, one of which we named Halleana, after Dr. Hall, and the other Thurberi, after Dr. Thurber. The former proved a gem, but for various reasons our propagation of it was small until 1869, when its merits, clearly displayed in large plants, induced us to extend its cultivation by all the means in our power. A large number near our office are now in bloom while I write, and their general effect is like a mass of Water Lilies. The plant is dwarf, and will probably not attain a greater height than 6 ft. or 7 ft. Its flowers appear much earlier than those of *M. conspicua* or *M. Soulangeana*, and when fully opened will often measure 4 in. in diameter. The individual petals are  $\frac{3}{4}$  in. wide, and  $1\frac{1}{2}$  in. to 2 in. long. When fully expanded they do not lie close together, and the sunlight between them gives to the whole flower a very unique appearance. It has a delicate fragrance, and is in all respects very charming. When well known it cannot fail to be a general favourite."

The drawing for our plate was made from a specimen that flowered in Messrs. Veitch's nursery at Coombe Wood.

**Hardy Geraniums in Flower**.—In the Kew collection some good specimens of the finest kinds of this handsome genus may now be seen in flower. The lovely *G. arvense* is flowering very freely; its blossoms are of a bright magenta with a jet black centre, from which radiate delicate black lines to the margin. One detractive point is, that its flowers are very fugitive, but this is in some measure compensated by the profusion in which they are produced. It is still but little known, although it was described and figured in THE GARDEN last year (Plate 77, p. 478), and various other notes in reference to it have appeared from time to time. Amongst the indigenous kinds are some which are very ornamental, the best being the dwarf magenta-coloured *G. sanguineum* and its beautiful Lancashire variety with rose-coloured blossoms finely pencilled with dark lines; *G. pratense*, a tall-growing kind, with large purple flowers, and its pure white variety, are very desirable. There is also an intermediate form with white and purple flowers. The Caucasian species, *G. gymnocaulon* and *ibericum*, with rich purple blossoms 2 in. across, delicately pencilled with black, are strikingly beautiful. *G. eriostemon*, much resembling the preceding, and *G. Wassouianum*, with pink flowers, are the best of the Siberian kinds. The most desirable of the South European sorts are *G. sabaucalense*, from the mountains of Greece, a lovely dwarf plant not more than 1 ft. high, with finely streaked pink flowers. It is admirably adapted for the rock garden on account of its compact habit. *G. Endressii*, a tall-growing kind with rose-coloured blossoms, is also very attractive. All the above are perfectly hardy, easily cultivated, and should be in every collection of hardy flowers.—A.



MAGNOLIA HALLEANA.

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## GARDEN DESTROYERS.

## ELM TREE BEETLES.

(OTIORHYNCHUS NOTATUS.)

IN THE GARDEN for May 25 (see p. 503) is an excellent article by Mr. Fred H. Pearson, of the Chilwell Nurseries, on the depredatory habits of a species of Otiorhynchus which he calls *O. notatus*, but which, by his own inadvertent showing, is probably *O. notatus*. He says, "to find it on the soil is nearly like 'looking for a needle in a bush of hay,' as its colour so much resembles the soil." The foregoing fits *O. notatus*, but not *O. silvaticus*. Before me is a letter, dated April 29, 1876, from the late Mr. A. Murray, thanking me for what he was pleased to call "original notes," which I had previously sent him on the habits of a beetle, to which, from specimens that I had admitted to him, he gave the name of *O. notatus*. In the letter which I sent to him I remember saying that I knew more of its natural history and habits than was good for me, and that my great object in writing to him then was to get the name of the beetle, that I might the better deal with it, for if there lives a beetle more deserving of destruction I should like to know, at least, its name. The *O. notatus*, according to the same author, is black and at least three times the size of *O. notatus*, being quite  $\frac{1}{2}$  in long. Like *O. notatus*, it is a general feeder, but by no means so common, at least, in this district. Unfortunately, what I know of the habits of *O. notatus* enables me to endorse all that Mr. Pearson has timeously said about it, and I am also prepared to prove that of all the secret enemies of the out-door propagator this is the king. Here we annually graft a large quantity of the different varieties of Elms and other hard-wooded ornamental trees. Of these a certain percentage die, and the death rate I have found is mainly traceable to the pernicious habits of this insect. In the dusk of the evening it sallies from its hiding-place, beneath the surface of the ground near the root of the tree, and travels to the top of the stock, where it may be seen gouging out the buds of the scion, and eating the bark off in irregular flakes and patches until there is not a chance left for the scion to live. With this in view, and the widespread distribution of the species, I have sometimes thought that it would be well if nurserymen were not too hasty in condemning their propagators from want of success in grafting such subjects as I have mentioned. This beetle is too common an enemy, but, being somewhat secret as regards its operations, it is not generally known. Mr. Pearson has given us his *modus operandi* of collecting the beetles, but as our plan differs slightly from his, it may bear well to give it. Two men are each provided with a light board about 2 ft. long by 1 ft. wide, on one edge of which is cut a half-moon-shaped notch sufficiently large that when the two boards are brought together they will clamp the stem of an ordinary sized nursery plant. A third party, a lad, carries a lantern and a tin bucket. All three quietly approach the plant, the men with the boards from different directions, and when the boards are met together they gently tap the plant two or three times, and the "bugs" as they fall are caught on the boards and conveyed to the bucket. By this means we have sometimes got as many as fifty from one plant.

GEO. SYMIE.

*Testacella halotidea*.—This is most likely to be the name of the slug which "W. J. T.," Brixton, mentions (see p. 504) as having been found in his garden looking like a slug with a horny substance like a shell; this is a true shell. The wearer of it belongs to the extensive family Helicoides, and differs from all others of our British land Molluscs in being entirely carnivorous, its food consisting of earth worms, which during the greater portion of the year, I am inclined to think, they hunt underground, but late in spring I have seen them seize their prey above, as also more rarely in the autumn. They have been accused of devouring slugs (*Limax agrestis*), and even of cannibalism, from the fact of the shell of small individuals having occasionally been found in their intestines. Owing to the peculiar construction of their dental and digestive organs, it is impossible they can devour any vegetable substance; they may therefore be looked upon as a true gardener's friend. There are too species of *Testacella* found in this country. The one just named which is indigenous, and is also certainly found in some parts of Germany; in fact, Albers gives the west of Europe. The other species, *Testacella Maugei*, is said to be a native of Portugal and Teneriffe, and supposed to have been imported somewhere about the early part of the present century, and, I believe, first discovered by Mr. Miller of the eminent firm of nurserymen, Miller & Sweet, Durdham Down, Bristol; and I remember one of the firm showing it to my father and myself (a child) nearly sixty years ago. A good account of these interesting creatures is to be found in Jeffrey's "British Conchology," vol. i. pp. 140—148.—JOHN E. DANIEL, 6, *The Terrace, Epsom*.

—The slug with a small shell on its tail is, I presume, *Testacella*

*Maugei*. In 1843, the late Prof. Lindley offered one guinea for 100 of them, and I had the good fortune to obtain it. At that time it was considered to be of use in gardens. I have frequently seen it with half a worm protruding from its mouth, the other part being in course of digestion.—JAS. WEGLEY, *Henbury, Bristol*.

## THE FRUIT GARDEN.

## NEW DISEASE IN YOUNG VINES.

NEXT to the Phylloxera, I am not aware that the Vine is subject to the attacks of any other pest or disease of so irremediable a character as the one which is about to form the subject of my remarks. I have not any specific name for the disease, so that the best that I can do is to lay before your readers the symptoms by which it will be easily discovered. Until recently, I attributed it to a sort of fungus, but I am now convinced that there is a very minute insect at work, a white spider, much smaller than our common enemy the red spider. It requires the assistance of a powerful lens and a keen eye to be able to discover it, for, unlike red spider, it is not easily seen by the naked eye. Whether the fungoid appearances on the leaf of the young Vines owe their origin to the presence of this insect, or whether the insect is the natural companion of a fungoid disease, I am not at present in a position to state. Is it possible that the Vine, constitutionally speaking, is becoming less hardy, or is the disease the result of atmospheric conditions, or some other local cause? In its first stages the disease somewhat resembles what is commonly known as warts on the back of the leaf, which is purely the result of a saturated atmosphere and a low temperature. The leaf becomes narrower and pointed at the extremity of the lobe, gradually assumes a black, contracted appearance, and eventually becomes covered with a fungoid-like excrescence, which seems to arrest further expansion; indeed, the Vine is practically at a standstill so far as leaf development is concerned. I have seldom, if ever, seen the disease attack old Vines or young ones that are planted out and growing with vigour. It seems to make the greatest havoc with young Vines of the current year's growth. The reason of this I think is obvious. The young Vine is raised from an eye, which produces a shoot with from three to four leaves, the result of sap already stored up in the bud. After this is used up roots begin to form slowly, and the Vine rapidly extends itself, say from 2 ft. to 3 ft. in length. When the disease appears at this stage it becomes most dangerous; the young Vines, unlike those that are established in borders, or that have already become well furnished with roots, are brought to a premature standstill immediately the leaves cease to act, and the insect thus becomes the conqueror. The point of the young Vine gets destroyed, every leaf vanishes, as if it were scorched or burnt with sulphur, and quantities of laterals take their place.

When I had but a very imperfect knowledge of the pest a few years ago I had a smart attack of it in a house of young Vines which were in a vigorous condition, and which had made canes from 6 ft. to 9 ft. long. The second year I got rid of it by pinching out the affected portions, taking care not to cut back into the hard wood; the lateral growth was removed, and the roots being in full action, the bud at the base soon pushed away, and the stopping of course only helped to thicken the young canes. From the success of this experiment I looked upon the disease as one of little moment until last year, when I decided (instead of growing pot Vines) to plant them out in pits on either side of a little span-roofed house. Several of the Vines were slightly attacked with the disease before they were planted out, but, trusting to previous success, I thought that the Vines when planted out in a rich border would soon grow out. We kept them in a steady temperature for a time, and hoped against hope, but all to no purpose, as the disease seemed to grow worse instead of better. I then pulled the Vines out of one side of the pit, and re-planted it with clean healthy young ones, but in a fortnight or so they looked nearly as bad as those that were taken out. Several other Vines badly effected were also pulled out, and their places were filled up with healthy stock, but the result of all our

efforts was, that all ingress as regards the house was stopped, and the Vines were left to take care of themselves. A crop of Melons in a house adjoining was also lost through the same cause, the communication between the two houses not being cut off in time to save the latter crop. More than one good cultivator said the best plan would be to destroy the Vines altogether, and a recurrence of the disease this season was predicted, but I am glad to say the reverse is just the case, for finer or healthier young Vines no one could wish to see. They were, of course, cut down to two or three buds at their base last winter, and have had every attention in the way of a steady temperature and careful ventilation.

The lesson, therefore, to be drawn from the case is this, that young Vines from eyes should, where possible, have a house exclusively to themselves, where their wants can be attended to as necessity indicates; secondly, that on the first appearance of the disease the affected Vines should be immediately destroyed; and, thirdly, that there is no use in attempting to "patch up" as long as a particle of the disease is left.

Our Vines from eyes this year are quite as badly affected as they were last, and will therefore only make "cut backs" for another season. The best remedy for keeping the pest in check next to destroying the Vines is to maintain a comparatively low dry atmosphere and to ventilate freely, but carefully avoiding all checks or extremes. I have heard cultivators say that the disease was caused by lack of vitality, inaction of the roots, &c., which is, in a sense, true, but the origin of the inaction begins with the leaf, and he who can propound a remedy for the utter annihilation of the insect will be doing good service.

W. HINDS.

—*Otterspool.*

#### WIRING GARDEN WALLS.

REFERRING to some recent objections to this practice, Mr. J. Sheppard, of Woolverstone, writes to the "Gardeners' Chronicle" as follows:—"As I have perhaps been foremost of late in advocating the wiring of walls for training fruit trees, and finding that doubts exist in the minds of some as to the desirability of doing this, I should like to have a little further say in the matter. I may remark at the outset that I have had many years' experience with the use of galvanised wire for the above-named purpose, both indoors and out, and I have never yet seen a single branch or shoot injuriously affected by coming in contact with it, unless where they have been tied too tightly, thus causing a pressure on the underside of the bark. Gross unripe wood is subject to causer under any circumstance, and it is generally this that suffers from being pinched, owing to the rapid rate at which it swells, and from having an insufficient amount of room in the ties. Some years ago I had a young vigorous tree on a painted wire trellis almost spoiled through tight tying, but since I have insisted that every shoot shall have room enough to grow to at least double its size, I have had no further trouble with gumming or causer. It is a well-known fact that Apricots are more liable to these maladies than any other trees; but, from close observation, I am convinced it is more the result of cold and sudden transition of temperature than anything else, and last season helped to confirm my opinion, as they were worse then than I ever remember. I can, however, just now point to some trained on a galvanised wire trellis on a south-east wall in the most perfect health that were so full of blossom as to be quite a sight, and on the whole of these I do not think a diseased branch could be found. Besides this stretch of Apricot wall we have nearly 300 ft. done in the same way for Peaches and Nectarines, and we intend to continue on as rapidly as possible till the whole is finished, so as to entirely do away with the nuisance of nails and shreds and their attendant evils. The least of these are red spider and earwigs, which are fostered and encouraged by the innumerable perforations made for them to lay their eggs and secrete themselves in, but if this were all it could be readily got over. Unfortunately, however, this is not the case, for the bricks and joints in course of time become so ruinously defaced as to be let in wet, which lowers the temperature considerably, and impairs the wall as a means of protection. Frost, too, acts rapidly on them when in that state, and soon brings about their ruin, so that there is every reason why wiring is so much to be preferred to nailing, but so tenaciously do some cling to old customs that it is hard to convince them. The mistake many make in wiring is in having it placed too far from the wall, thus allowing a draught to get behind the trees, which, acting on the tender blossoms and shoots, has a most injurious effect. I fell into the same error at starting, but since I have had it placed close to the bricks, the results have been as satisfactory as I could possibly wish.

The way we manage here is to drive in studs at about 8 in. or 9 in. apart so as to work the trellis into squares standing on end, as I find the training can be done much more expeditiously and neatly than is possible when the wires are simply strained horizontally. In this latter fashion it often becomes necessary to run a strand of matting across to secure the point of a branch or shoot. A trellis formed as above is much neater and better in every respect. Instead of tying, the young shoots may be quickly made secure in their places during the summer by the use of a few small twigs—such as the clippings of Privet edges or anything of that kind—which answer every purpose, and this is a great saving of time. Under the old system this would have to be done by nailing, and that at a busy season, so that here again the trellis has the advantage, as it has likewise in other respects. That tying may involve an equal amount of labour at the final winter training I am free to confess, but much depends on the activity of those engaged at the work, and the amount of practice they have had at it; for my part, I would much rather tie a tree than nail one, and I am sure this would be the choice of most others. Although wiring walls is an innovation here, it has been in use on the Continent for many years, and if it produced any unfavourable action on the bark of trees the mischief would not have escaped notice, but would have been reported long ago. That it has no injurious effect on any of ours is certain. I shall have great pleasure in showing them to any one interested who may favour me with a call. I am of opinion, therefore, that your correspondent, Mr. Hudson, will find the disease of which he complains lies in the roots, or that it is brought about by the particular kind being on an unhealthy stock, or growing in a wet, cold border; and if not this, possibly it is the effect of the sharp frost that occurred in May last, the shock from which was so great as to disorganise the whole system of such tender fruit as Peaches, and the wonder is that many of them ever recovered. Looking at them in the condition they were last June, one could not have expected to see them in the satisfactory state they now are; indeed, so great is the promise that, should the weather be anything like favourable, the fruit harvest will be an unusually abundant one. As wiring walls, although not costly, is a work that partakes of a permanent character, it will be well if those who have had a lengthened experience of it will say how they have found it to answer, as the subject is a most important one, seeing there must now be many walls in the country that are so damaged that they will scarce hold a nail. Such was the condition a large portion of ours was fast getting into, but with the joints neatly stopped with cement, and the fruits wired, they will now last sound for generations to come."

#### AMERICAN FRUITS.

THE "Proceedings of the American Pomological Society" have just reached us, and, as usual, they are well printed, well arranged, and full of valuable matter. Amongst other things they contain an interesting list of native and introduced species of fruits and nuts growing or cultivated in the open air in the United States and Canada, which we subjoin. Those marked with an asterisk (\*) are of native origin. To avoid unnecessary detail, the States lying between latitudes 42° and 49° are termed the Northern Division; between 35° and 42°, the Central Division; and between 28° and 35°, the Southern Division.

ACHRAS SAPOTA (Sapodilla Plum)—grown in Florida.

\*AMELANCHIER CANADENSIS (Service)—Nova Scotia, New Brunswick, Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, Ontario, Michigan, Wisconsin, Pennsylvania, New Jersey, Delaware, Maryland, and D. C., Virginia, North Carolina, Ohio, Indiana, West Virginia, Kentucky, Illinois, Iowa, and Missouri.

ANANASSA SATIVA (Pine-apple)—Florida.

ANONA CHERMOLIA (Cherimoyer)—Florida.

ANONA SQUAMOSA (Sweet-sop).

ANONA MURICATA (Soursop)—Florida.

\*ASMINA TRILOBATA (Papaw)—Pennsylvania, Virginia, Ohio, Indiana, West Virginia, Kentucky, Tennessee, Illinois, Missouri, South Carolina, Georgia, Alabama, Florida, Indian Territory, Arkansas, Mississippi, and Louisiana.

BERBERIS VULGARIS (Barberry)—Massachusetts, Rhode Island, Connecticut, and New York.

CACTUS OPUNTIA (Indian Fig)—Virginia, North Carolina, Ohio, Indiana, West Virginia, Kentucky, Tennessee, Illinois, Missouri, Nebraska, Kansas, Indian Territory, Arkansas, Mississippi, Texas, New Mexico, and Arizona.

CARICA PAPAYA (West Indian Papaw)—Florida.

\**CARYA ALBA* (Shell-bark Hickory)—Massachusetts, Rhode Island, Connecticut, New York, Ontario, Michigan, Wisconsin, throughout the Central Division, except Colorado; Utah, Nevada, California; also in South Carolina, Georgia, Alabama, Indian Territory, Arkansas, Mississippi, and Texas.

\**CARYA OLIVEFORMIS* (Pecan)—Indiana, Kentucky, Tennessee, Illinois, Missouri, Florida, Indian Territory, Arkansas, Mississippi, Louisiana, and Texas.

\**CARYA SULCATA* (Large Shell-bark)—Kentucky, Illinois, and Missouri.

\**CASTANEA VELOCA* (European Chestnut).

\**CASTANEA AMERICANA* (American Chestnut)—Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, Pennsylvania, New Jersey, Delaware, Maryland and D. C., Virginia, North Carolina, Ohio, Indiana, West Virginia, Kentucky, Tennessee, and Illinois.

\**CASTANEA PUMILA* (Chinquapin)—Pennsylvania, New Jersey, Delaware, Maryland and D. C., Virginia, North Carolina, South Carolina, Georgia, Alabama, and Florida.

*CITRUS AURANTIUM* (Orange)—California, Georgia, Alabama, Florida, Mississippi, Louisiana, and Texas.

*CITRUS LIMONUM* (Lemon)—Florida.

*CITRUS LIMETTA* (Lime)—Florida.

*CITRUS MEDICA* (Citron)—Florida.

*COCOS NUCIFERA* (Cocoa-nut)—Florida.

\**CORYLUS AMERICANA* (American Hazel)—Ontario, Indiana, Illinois, Missouri, Nebraska, and Kansas.

*CORYLUS AVELLANA* (Filbert).

\**CORYTHUS ROSTRATA* (Beaked Hazel-nut)—New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut.

*CYDONIA VULGARIS* (Quince)—Rhode Island, Connecticut, New York, Ontario, Pennsylvania, New Jersey, Maryland and D. C., Virginia, North Carolina, Ohio, Indiana, West Virginia, Kentucky, Tennessee, Illinois, Missouri, and New Mexico.

*CYDONIA SINENSIS* (Chinese Quince)—South Carolina, Georgia, Alabama, Florida, Arkansas, Mississippi, Louisiana, and Texas.

\**DIOSPYROS VIRGINIANA* (Persimmon)—Pennsylvania, Virginia, North Carolina, Ohio, Indiana, West Virginia, Kentucky, Tennessee, Illinois, Missouri, South Carolina, Georgia, Alabama, Indian Territory, Arkansas, Mississippi, Louisiana, and Texas.

*DIOSPYROS KAKI* (Japanese Persimmon)—South Carolina.

\**DIOSPYROS TEXANA* (Black Persimmon)—Texas.

\**FAGUS FERRUGINEA* (Beech)—Nova Scotia, New Brunswick, Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, Ontario, Michigan, Wisconsin, Pennsylvania, New Jersey, Virginia, North Carolina, Ohio, Indiana, West Virginia, Kentucky, Tennessee, Illinois, Missouri, South Carolina, Georgia, Alabama, and Indian Territory.

*FIGUS CARICA* (Fig)—South Carolina, Georgia, Alabama, Florida, Arkansas, Mississippi, Louisiana, and Texas.

\**FRAGARIA VESCA* (Alpine Strawberry)—Minnesota, Dakota, Montana, Wyoming, Idaho, Washington, and Oregon.

\**FRAGARIA VIRGINIANA* (American Strawberry)—throughout the Northern Division, except Montana, Wyoming, Idaho, Washington, and Oregon; throughout the Central Division, except Colorado, Utah, Nevada, and California; throughout the Southern Division, except Florida and Arizona.

\**FRAGARIA CHILSENSIS* (South American Strawberry)—Oregon and California.

\**GAYLUSSACIA RESINOSA* (Black Huckleberry)—California.

\**GAYLUSSACIA FRONDOSA* (Blus Dangleberry).

*GHIAS CALIFORNIA* (Anchovy Pear)—Florida.

\**JUGLANS CINEREA* (Butternut)—Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, Ontario, Michigan, Pennsylvania, New Jersey, Maryland and D. C., Virginia, North Carolina, Ohio, Indiana, West Virginia, Kentucky, Tennessee, Illinois, and Missouri.

\**JUGLANS NIGRA* (Black Walnut)—Rhode Island, Connecticut, Ontario, Michigan; throughout the Central Division, except Utah, Nevada, and California; not at all in the South.

*JUGLANS REGIA* (European Walnut)—Connecticut, Pennsylvania, and California.

*LAURUS PERSEA* (Avocado, or Alligator Pear)—Florida.

*MESPILUS GERMANICA* (Medlar).

\**MORUS RUBRA* (Red Mulberry)—Massachusetts, Rhode Island, Connecticut, New York, Ontario, Michigan, Wisconsin; throughout the Central Division, except Colorado, Utah, Nevada, and California; not at all in the South.

*MORUS NIGRA* (Black Mulberry).

*MORUS ALBA* (White Mulberry).

*MUSA PARADISIACA* (Plantain)—Florida.

*MUSA SAPIENTUM* (Banana)—Florida.

*OLEA EUROPEA* (Olive)—Florida.

*PHENIX DACTYLIFERA* (Date Palm)—Florida.

*PROTINIA JAPONICA* (Loquat)—Florida.

\**PODOPHYLLUM PELTATUM* (May Apple)—Massachusetts, Rhode Island, Connecticut, New York, Ontario, Michigan; throughout the Central Division, except Colorado, Utah, Nevada, and California; not at all in the South.

*PRUNUS [AMYGDALUS] COMMUNIS* (Almond)—Nevada, California, and Arizona.

*PRUNUS [AMYGDALUS] PERSICA* (Peach)—Massachusetts, Rhode Island, Connecticut, New York, Ontario, Michigan, Oregon; throughout the Central Division, except Colorado; throughout the Southern Division.

*PRUNUS ARMENIACA* (Apricot)—Oregon; throughout the Central and Southern Divisions.

*PRUNUS DOMESTICA* (Garden Plum)—throughout the Northern Division, except Minnesota, Dakota, Montana, Wyoming, Idaho, and Washington; throughout the Central Division; not at all in the South.

\**PRUNUS MARITIMA* (Beach Plum).

\**PRUNUS AMERICANA* (Wild Red and Yellow Plum)—Michigan, Wisconsin, Minnesota, Dakota, Ohio, Indiana, West Virginia, Kentucky, Tennessee, Illinois, Iowa, Missouri, Nebraska, and Kansas.

\**PRUNUS CHICASAW* (Chickasaw Plum).

*PRUNUS CERASUS* (Garden Red Cherry, Morello, &c.)—throughout the Northern Division, except Minnesota, Dakota, Montana, Wyoming, Idaho; throughout the Central Division; not at all in the South.

*PRUNUS AVIUM* (Bird Cherry, Heart, &c.)—Vermont, Massachusetts, Rhode Island, Connecticut, New York, Washington, Oregon; throughout the Central Division; not at all in the South.

\**PRUNUS PUMILA* (Dwarf Cherry)—Oregon.

*PSIDIUM PYRIFERUM* (Guava)—Florida.

*PUNICA GRANATUM* (Pomegranate)—throughout the Southern Division, except Indian Territory and Arizona.

*PRUNUS COMMUNIS* (Pear)—throughout the Northern Division, except Nova Scotia, New Brunswick, Montana, Wyoming, and Idaho; throughout the Central Division; throughout the Southern Division, except Florida and Arizona.

*PRUNUS MALUS* (Apple)—throughout the Northern and Central Divisions; not at all in the South.

*PRUNUS PRUNIFOLIA* (Siberian Crab)—throughout the Northern Division, except Montana, Wyoming, Idaho, Washington, and Oregon; throughout the Central Division; not at all in the South.

\**PRUNUS CORONARIA* (American Crab)—Michigan and Wisconsin.

\**PRUNUS RIVULARIS* (Oregon Crab)—Idaho, Washington, Oregon, and California.

*RIBES CROSSULARIA* (English Gooseberry)—Nova Scotia, New Brunswick, Washington, Oregon.

\**RIBES HIRTELLUM* (Houghton Gooseberry, &c.)—throughout the Northern Division, except Wyoming and Idaho; throughout the Central Division, except Utah, Nevada, and California; not at all in the South.

\**RIBES RUBRUM* (Red Currant)—Nova Scotia, New Brunswick, Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, Ontario, Michigan, and Wisconsin; throughout the Central Division, except Nevada and California; not at all in the South.

\**RIBES NIGRUM* (Black Currant)—same as Red Currant.

\**RUBUS OCCIDENTALIS* (Black-cap Raspberry)—same as Red Currant.

*RUBUS IDREUS* (European Raspberry)—Nova Scotia, New Brunswick, Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, Ontario, Pennsylvania, and New Jersey.

\**RUBUS STRIGOSUS* (Wild Red Raspberry)—Nova Scotia, New Brunswick, Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, and Ontario.

\**RUBUS VILLOSUS* (Blackberry)—Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, Ontario, Michigan, and Wisconsin; throughout the Central Division, except Kansas, Colorado, Utah, Nevada, and California; throughout the Southern Division, except New Mexico and Arizona.

\**RUBUS CANADENSIS* (Dewberry)—Massachusetts, Rhode Island, Connecticut, and New York; throughout the Central Division, except Kansas, Colorado, Utah, Nevada, and California; not at all in the South.

\**SHEPHERDIA AROBENTEA* (Buffalo Berry)—Minnesota, Dakota, Montana, Wyoming, Idaho, and Washington.

*TAMARINDUS INDICA* (Tamarind)—Florida.

\**VACCINIUM PENNSYLVANICUM* (Dwarf Early Blueberry)—throughout the Northern Division, except Canada, Wyoming, Idaho, Washington, and Oregon.

\**VACCINIUM CANADENSE* (Canada Blueberry)—same as Dwarf Early Blueberry.

\**VACCINIUM CORYMBOSUM* (Swamp Blueberry)—same as Dwarf Early Blueberry, except Minnesota, Dakota, and Montana.

\**VACCINIUM TENELLUM* (Southern Blueberry) — Virginia, North Carolina, and South Carolina.

\**VACCINIUM MACROCARPA* (American Cranberry) — Connecticut, Michigan, Wisconsin, and New Jersey.

*VITIS VINIFERA* (European Grape) — Utah, Nevada, California, New Mexico, and Arizona.

\**VITIS LABRUSA* (Northern Fox Grape, Concord, &c.)—throughout the Northern Division, except Nova Scotia; throughout the Central Division; not at all in the South.

\**VITIS ÆSTIVALIS* (Summer Grape, Hebeumont, &c.)—throughout the Central Division; throughout the Southern Division, except South Carolina, New Mexico, and Arizona.

\**VITIS CORDIFOLIA* (Winter Grape, Clinton, &c.)—throughout the Northern and Central Divisions; Georgia, Alabama, Florida, Indian Territory, and Arkansas.

\**VITIS VULPINA* (Bullace Grape, Muscadine, &c.)—throughout the Southern Division, except New Mexico and Arizona.

*ZIZYPHUS SATIVUS* (Jujube) — Alabama, Florida, Mississippi, Louisiana, and Texas.

The above "Catalogue of Native and Introduced Fruits and Nuts" was a favourite idea with Mr. Flagg, the late lamented secretary of the Society, and was prepared by him just previous to his decease.

### ROOTS OF FRUIT TREES TOO DEEPLY BURIED.

ONE would like to know a little more about "An Amateur's" fruit trees (see p. 559) before framing an answer to the question asked by him. There is no doubt that the ordinary manuring and cultivating operations carried on in a combined kitchen and fruit garden during a period of twenty years or less will drive the roots too far from the surface, and, consequently, induce the production of watery spray that cannot properly ripen or produce fruit spurs. But in this case the remedy should be sought not in removing the good surface-soil, but in pruning the roots that are descending, and, by discontinuing deep digging close to the trees, permit the roots to again occupy the upper soil. Of course, if at any time fresh soil has been brought in, so as to raise the surface round the stems of the trees, burying the collars and literally suffocating them, then the soil should be removed immediately. But the probabilities are that the cause of barrenness may be ascribed to deep rooting, which may be traced generally to two main causes, viz., injudicious pruning and digging too much over their roots, accompanied by the use of rank manure. Root-pruning has often been described in the columns of THE GARDEN, and need not be fully entered on here further than to say that such work is always best done tentatively, beginning at a good distance from the stem, and, after digging a deep trench, working up towards the trunk with a fork, carefully turning back all healthy horizontal roots and severing only those that are going down perpendicularly. When the ball has been worked under as far as can be done, the earth can be replaced, or, what is better, changed for fresh material from another part of the garden where no trees are growing, and the roots that have been saved laid in a horizontal direction, making the earth beneath them firm, in order to prevent them from their being ruptured, or their course altered by much settling. The best season for root-pruning is from the end of September to the beginning of November, but, like transplanting, in careful hands root-pruning may be done at almost any time of the year, except in winter. If I had a quantity of trees that I was sure required a check, I should have no hesitation in gently repressing some of the worst cases now. The only difficulty is in knowing the amount of check to give, as the only danger to be apprehended is in growing too much, but roots severed when the foliage is in full activity soon heal, and throw out fibres from their extremities which will not be without effect upon this season's growth; and as the trees in question are bearing no fruit there will be no crop to sacrifice; and if the trees, or some of them, could have a careful root-pruning, say on one side, and be encouraged by the addition of a little fresh loamy soil laid in immediate contact with the roots, a season might be gained. In dealing with large old trees, open the trench 5 ft. or 6 ft. from the trunk of the tree, deep enough to reach the perpendicular roots, and gradually undermine and work out the soil with a fork. A good deal of the success of root-pruning depends upon the care exercised in its performance.

E. HOBDAV.

## THE LIBRARY.

**First Principles of Agriculture.**\*—Mr. Tanner's little volume, which forms the latest addition to Messrs. Macmillan's excellent series of Science Primers, although written specially with a view to the instruction of agricultural students, may, nevertheless, be read with profit by those amateur and professional horticulturists who are desirous of knowing the scientific principles involved in the growth of plants. The book is written in a plain, clear style, all pedantic epithets being carefully avoided. The chapters on manures are the ones which will most interest our readers; and amateurs, who are often too fond of loading their garden plots with every description of fertiliser—animal, vegetable, and mineral—will do well to read Mr. Tanner's warnings on this subject in the chapter in which he describes the effects of over-maturing on cereal crops. The remarks, too, upon the treatment that different kinds of soil should receive will also be of great use to the amateur gardener. Mr. Tanner's method of conveying instruction to his readers is evidently the result of long experience in teaching, for he never makes a statement or lays down a principle without giving abundant reasons for so doing, a duty only too often neglected by popular instructors. We cordially recommend this little work to our readers.—C. W. QUIN.

**Hints on the Culture of Ornamental Plants.**†—A third edition of these practical hints, by Mr. John Adair, of Dublin, is welcome as a useful local effort. Mr. Adair has done much to increase the knowledge of tropical plants in Ireland. Written in an easy discursive style, with frequently a touch of history or anecdote, the author gives us some sound practical information and hints, in a small compass, upon a somewhat extensive field for observation, the eleven principal heads dealing respectively with plants for dwelling houses, including window gardening, table decoration, gardening in yards, areas, &c.; town gardening, viz., in city squares, &c.; rock gardening, street planting, churchyards and cemeteries, botanic gardens, people's parks, and gardening for villas and country seats. To town dwellers the work most appeals. We have some doubts, however, about flavouring an Apple pie with *Pyrus japonica* (see p. 25).

**A Monograph of the Vine Fungi.**‡—This monograph of the fungi of the Vine is a work of interest not only to the scientific botanist, but also, though perhaps in a lesser degree, to all our cultivators. It contains an enumeration of some 220 species of fungi which occur upon the Vine, its leaves, fruit, stems, branches, and roots, in various parts of the world. It treats of the fungi found upon the following nine species of *Vitis*, viz.:—*V. vinifera*, *Labrusca*, *æstivalis*, *vulpina*, *riparia*, *cordifolia*, *rotundifolia*, *candicans*, and *sylvestris*. Of the nineteen fungi affecting the Grape itself, *Oidium Tuckeri* is of course the most important in a practical point of view. Baron Thumen appears to follow Pöckel in regarding it as the conidial form of *Sphaeroteca castagnei*, and therefore distinct from the American *Erysiphe necator*, which species does not seem to have been recorded since Schweinitz's time; while it is classed by Dr. Cooke, in the "Erysiphe of the United States," with the species *dnica*. The author also considers it unconnected with a variety of *Uncinula spiralis* that occurs sometimes upon the Grape in the United States. Amongst the great number of fungi upon the living and dead Vine stems and branches are many new species. The Spheria are designated by their new generic appellations—*Cryptovalsa*, *Ectrospheria*, *Bertia*, *Teleospora*, *Anthostomella*, *Rebentiochia*, *Valsaria*, &c., names much more familiar to Continental botanists than to us in this country, who are somewhat slow in appreciating the advantages of this system of nomenclature. Of the Hymenocytetes fungi twenty-two species are mentioned, mostly on the dead stems, including a small *Agaric* from the Cape of Good Hope, *A. proteus*, allied to *A. variabilis*. Of the fungi on living Vitis leaves one of the most interesting is a new species of *Uredo*, *U. vitis*, which, like *Peronospora vitis*, is of Transatlantic origin. The difference between the American and European Vine flora is very striking; so many fungi occur in America that have not been met with in Europe, where Vines form such an important industry and mycologists are so much more numerous. Many of the old species of Schweinitz have never been met with here. A figure is given of the curious mould which grows parasitically upon *Oidium Tuckeri*, the *Cicinobolus Cesatii* of De Bary, a plant apparently common enough on the Continent, but as yet unobserved in Great Britain. Baron von Thumen is to be congratulated upon the exhaustive manner in which he has compiled this monograph.—C. B. BLOWRIGHT, in "Journal of Botany."

\* "First Principles of Agriculture." By Henry Tanner, F.C.S., Senior Member of the Agricultural College, &c. Macmillan & Co. 1878.

† Dublin: E. Ponsonby, W. McGee. London: Simpkin, Marshall & Co.  
‡ Die Pilze des Weinstockes. G. Felix von Thumen. Vienna, 1875. (Pp. 225, with 5 plates.)

GARDEN BOTANY.

(Continued from p. 555.)

**INDEFINITE INFLORESCENCES WITH SOLITARY FLOWERS.**—Flowers are termed solitary when only one is borne in the axil of each ordinary leaf, or at the extremity of each branch.



Fig. 201.—*Vinca herbacea*; flowers solitary and axillary. Fig. 202.—*Fabiana imbricata*; flowers solitary and terminal.

In *Vinca* (fig. 201) they are solitary and axillary, and in *Fabiana* (fig. 202) they are solitary and terminal.

**INDEFINITE INFLORESCENCES WITH AGGREGATED FLOWERS.**—Of this class there is a great variety, the principal modifications of which we will review. They may be divided into two groups—a spicate group and a paniculate. In the spicate group the lateral axes of the first order do not branch and all bear flowers, and the primary axis or peduncle (rachis of some botanists) terminates with or without a flower. To this group belong—

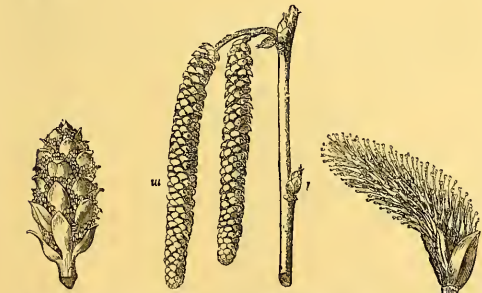


Fig. 203.—Catkin of flowers of *Fothergilla amifolia*. Fig. 204.—A branch of Hazel bearing both male catkins, *m*, and female catkins, *f*. Fig. 205.—Catkin of female flowers of a Willow.

**THE SPIKE.**—The peduncle is elongated and the flowers are sessile upon it, as in *Plantago*.

**THE CATKIN.**—This is distinguished from a true spike in being deciduous, that is, falling bodily, and in bearing unisexual flowers which are destitute of true floral envelopes. The male and female catkins are borne on the same plant, as

in the Hazel (fig. 204), or on separate plants, as most Willows. The male and female catkins of the Hazel are very dissimilar, whilst those of the Willow (figs. 205 and 206) are not unlike each other.

**THE SPADIX.**—A spike with a more or less fleshy axis, usually sheathed by a large bract (spathe), and the flowers unisexual or bisexual, but on the same spadix (fig. 207—spathe removed), or on different spadixes.

**THE RACEME.**—Here the flowers are distinctly stalked (pedicellate), as in the Red Currant (fig. 208), Laurel, Berberis, Deutzia, &c., and there is a small bract at the base of each pedicel, and the pedicels are nearly all of the same length. This

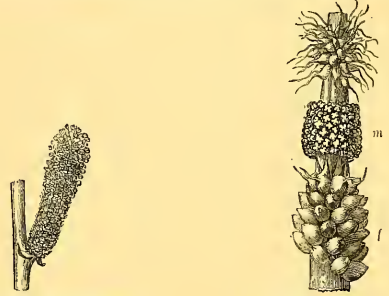


Fig. 206.—Catkin of male flowers of a Willow. Fig. 207.—Portion of spadix of *Arum maculatum*; *m*, male flowers, *f*, female flowers.

kind of raceme is usually pendent, though sometimes the peduncle or main axis of the inflorescence is stout and nearly erect, as in *Berberis Beali*. The flowers of most Cruciferae (Wallflower, Shepherd's-purse, and Cabbage, for example) are racemose, but the racemes are erect and destitute of bracts

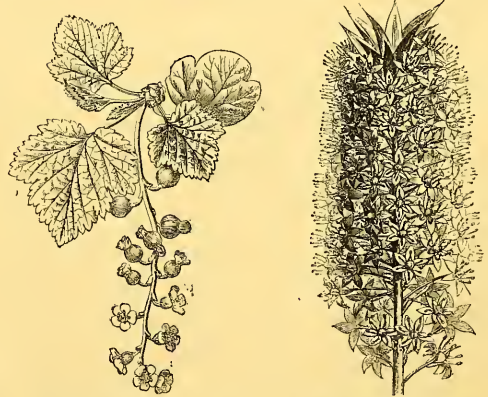


Fig. 208.—*Ribes rubrum*; flowers in a raceme. Fig. 209.—*Eucomis punctata*; flowers in a raceme.

(ebracteate). Another kind of racemose inflorescence is offered by *Eucomis punctata* (fig. 209), also sometimes called scapose, with a many-flowered scape. It is erect, and has a long naked peduncle (scape), and terminates in a tuft of bracts.

**THE CORYMB.**—This kind of inflorescence differs from a raceme in the lower pedicels being longer than the upper, so that the flowers are nearly all on the same level, as in the Bird Cherry (*Prunus Padus*—fig. 210). An inflorescence which ultimately grows out into a raceme is often corymbose in an early stage—the Wallflower, for instance.

**THE SIMPLE UMBEL.**—In the simple umbel the main axis is arrested, and the pedicels are crowded together at the end,

proceeding, as it were, almost from one point, as in figs. 211 and 212. The bracts form a ring around the base of the pedicels, and when bracts are thus arranged they are termed, collectively, the involucre. The bracts of the involucre over-



Fig. 210.—*Prunus Padus*; flowers in a corymb.



Fig. 211.—*Prunus Cerasus*; flowers in a simple umbel.

top the flowers in *Astrantia* (fig. 212), whilst they are much shorter than the pedicels in the *Cherry* (fig. 211).

THE CAPITULUM.—Here not only the main axis is undeveloped,



Fig. 212.—*Astrantia major*; flowers in a simple umbel.

as in the simple umbel, but likewise the secondary axes (pedicels), so that the flowers are sessile on the expanded apex of the floral axis or flowering branch, as seen in fig. 213, &c. In

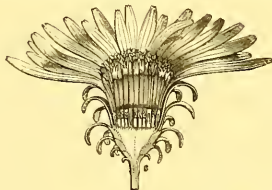


Fig. 213.—Section of a flower-head of *Aster grandiflorus*, showing the flat receptacle.

English descriptions these inflorescences are called capitules or flower-heads, and sometimes composite flowers, and the separate flowers florets, but the two last terms should be re-

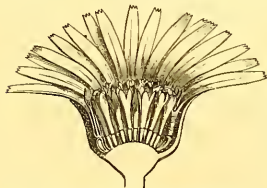


Fig. 214.—Section of a flower-head of the *Corn Marigold*, showing the convex or hemispherical receptacle.

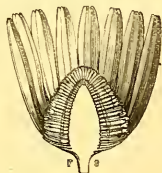


Fig. 215.—Vertical section of a flower-head of *Matricaria*, showing the conical receptacle.

garded as the remains of an inappropriate set of terms, because misleading. The largest family in the vegetable kingdom, the *Compositæ*, numbering some 10,000 species, are so named in consequence of the arrangement of the flowers in heads or

capitules; but the *Dipsacæ* (*Teasel*, *Scabious*) and several genera belonging to various families have capitulate flowers. A capitulum is really nothing more than an abbreviated spike. The expanded portion upon which the flowers are seated is the receptacle, which is flat in *Aster grandiflorus* (fig. 213), convex or hemispherical in the *Corn Marigold* (fig. 214), conical in *Matricaria* (fig. 215), and concave in *Centaurea Fontanesi* (fig. 216). The flowers, or florets as they are commonly called, of

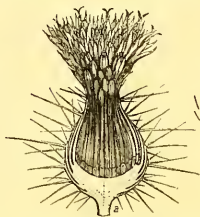


Fig. 216.—Section of a flower-head of *Centaurea Fontanesi*, showing the concave receptacle, and flowers all of the same shape.



Fig. 217.—Flowers in a capitule or head (*composite flower*), in which the flowers of the centre (*disk*) are different in shape from those of the circumference (*ray*).

a capitule are all of the same shape, as in *Centaurea* (fig. 216) or those of the centre (*disk*) and circumference, as in figs. 217, 218, &c., and as in the *Daisy* and *Chamomile*, are dissimilar. Where there is a distinction in the ray and disk flowers, the latter are split open nearly to the base on one side and flattened out, as



Fig. 218.—Disk flower of *Helianthus*; corolla tubular.

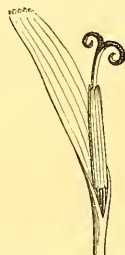


Fig. 219.—Flower of *Dandelion*; corolla ligulate.



Fig. 220.—Inflorescence of the *Fig* (*Ficus carica*).

in fig. 219, and the disk flowers are tubular, as in fig. 218. In the large sub-order of the *Compositæ* to which the *Dandelion* belongs all the flowers of a capitule are alike in shape (fig.



Fig. 221.—Inflorescence of *Doretenia contrayerva*.

219), and are what is termed ligulate. Such are the chief modifications of the capitulum. There is one other character which may be mentioned here. Besides the bracts forming the involucre, there are in some *Compositæ* chaff-like bracts intermixed with the flowers called pales. The Fig fruit, the nature of which we have already explained, may be regarded as

an extreme modification of the same type of inflorescence as the capitulum, in which the receptacle is hollow enclosing the flowers (fig. 220). In *Dorstenia* (fig. 221), a plant allied to the Fig tree, the receptacle is irregularly spread out. The foregoing are the principal modifications of the spicate group of



Fig. 222.—Compound spike or spicate panicle of *Panicum Crus-galli*.



Fig. 223.—Compound racemes or racemose panicle of *Ligustrum vulgare*.

inflorescences; and we will now examine those of the paniculate group, which differ essentially only in the lateral axes or branches again branching once or more.

**THE SPICATE PANICLE OR COMPOUND SPIKE.**—This differs from a simple spike in the flowers being sessile upon the lateral axes of the first order instead of upon the main axis (fig. 222). The ears of Wheat and the inflorescence of *Spiræa Aruncus* and *Veratrum* are spicate panicles, but it is very dense in Wheat.

**THE RACEMOSE PANICLE OR COMPOUND RACEME.**—Distinguished from a compound spike by its flowers being pedicellate.

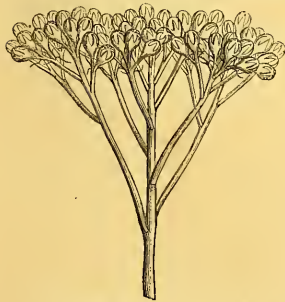


Fig. 224.—Compound corymb of the flowers of *Pyrus torminalis*.



Fig. 225.—Compound umbel of flowers of *Cheroxyllum temulum*.

The Common Privet (*Ligustrum vulgare*—fig. 223) is an example of this kind of inflorescence.

**THE CORYMBOSE PANICLE OR COMPOUND CORYMB.**—The Wild Service (*Pyrus torminalis*—fig. 224) differs only from the corymb of the Bird Cherry (fig. 210) in some of the outer and lower lateral axes of the first order bearing axes of the second order.

**THE COMPOUND UMBEL.**—In by far the greater number of the Umbelliferae the umbel is compound, as in fig. 225, and

in the Carrot, Parsnip, and Parsley the presence or absence of involucre should be noted. An involucre of bracts at the base of the primary ramifications of a compound umbel is the general involucre in contradistinction to the partial involucre at the base of the secondary ramifications. *Cheroxyllum temulum* (fig. 225) has no general involucre; in the Carrot it is very conspicuous; and in the Parsnip there is neither general nor partial involucre. For the sake of brevity they are sometimes spoken of simply as bracts and bracteoles, or the general involucre simply involucre, and the partial involucre involucrel.

**DEFINITE INFLORESCENCES.**—These include all inflorescences of the cymose class in which the primary axis or peduncle



Fig. 226.—Chickweed (*Stellaria media*); flowers in a dichotomous cyme.

terminates in a flower, and branches below this flower, each successive order of axes terminating in flowers and ramifying in the same manner. In this class of inflorescences the flowers expand in centrifugal succession, or from the centre towards the circumference.

**DEFINITE INFLORESCENCES WITH SOLITARY FLOWERS.**—There are two modifications of this type. The main branches of the



Fig. 227.—*Nemophila atomaria*, with solitary flowers opposite the leaves.

Chickweed (fig. 226), and many other plants of the same family, terminate in flowers, from below which, proceeding from the axils of the last pair of leaves, which are opposite, two opposite branches are produced. These secondary axes terminate in flowers, and in their turn branch in the same manner as the primary axis. Although the flowers are solitary and terminal, the whole system of ramifications, after the plant begins to bloom, forms what is called a forked or dichotomous cyme. In *Nemophila atomaria* (fig. 227) the development of the flowers is very curious. As may be seen in the cut, they are solitary and opposite the leaves, which are alternate. In this case also the flower is at first terminal, but as a branch grows out from the axil of the uppermost leaf of the axis which terminates in a flower, the latter then appears to be a lateral production. The succeeding leaf is on the same side as the first flower, and the

next flower is on the same side as the leaf, which is opposite the first flower. The second flower is soon overtopped by an axis of the third order, and so on until the plant ceases to flower. Now let us compare this inflorescence with that of *Vinca* (fig. 201), and we shall be in a position to perfectly understand the meaning and application of the terms definite and indefinite. In *Vinca* the primary branch or axis continues elongating and producing flowers, consequently the number of flowers which each branch or axis will bear is uncertain and indefinite; whereas in *Nemophila* and Chickweed each branch terminates in a flower, and a succession of flowers is only maintained by the development of branches of the second, third, and successively higher orders, from the axils of the leaves borne by



Fig. 228.—*Gypsophila paniculata*; flowers in a dichotomous cyme.

the older branches. As we know beforehand that each successive axis or branch will bear only one flower, the inflorescence is determinate or definite. A careful comparison of living examples of the plants named in illustration will enable the student to comprehend not only the differences between definite and indefinite inflorescences, but the general laws of branching.



Fig. 229.—*Hyoscyamus niger*; flowers in a scorpioid cyme.



Fig. 230.—*Alstromeria versicolor*; flowers in a helicoid cyme.

**DEFINITE INFLORESCENCES WITH AGGREGATED FLOWERS.**—The distinction between these and definite inflorescences with solitary flowers is not very obvious, and is really nothing more than the replacement of ordinary leaves by bracts, as a comparison of figs. 226 and 228 will show. It is a distinction without any fundamental difference, but, nevertheless, useful in descriptive botany.

**THE DICHOLOMOTUS CYME.**—*Gypsophila paniculata* (fig. 228) has a dichotomous cyme, differing only from that of Chickweed

in not being leafy; the mode of branching is the same, but the successive ramifications have their birth in the axils of bracts, or foliar organs different from the ordinary leaves.

**THE SCORPIOID CYME.**—The inflorescence of *Hyoscyamus niger* (fig. 229) is simply a modification of the same type as *Nemophila*. The uppermost leaf of the first axis, which terminates in a flower, gives birth to a leaf and a flower, the new



Fig. 231.—Simple umbels of *Hedera Helix* in a raceme.

leaf being at right angles to the last; and the same mode of branching is repeated throughout the inflorescence.

**THE HELICOID CYME.**—A glance at fig. 230 will be sufficient to enable one to understand how a helicoid cyme differs from a scorpioid cyme, as exemplified in *Nemophila*, *Hemerocallis*, &c. The successive branches of a helicoid cyme are all developed in the same direction as the primary one, and not alter-



Fig. 232.—Flower-heads of *Petasites sibus* in a raceme.



Fig. 233.—Inflorescence of Horse Chestnut; in which scorpioid cymes are arranged in a racemose manner.

nately right and left, so that they form one or more coils in a young state with flowers in a line on the outside of the coil and bracts on the inside (see fig. 230).

**OTHER DEFINITE INFLORESCENCES.**—A few other modifications of this group deserve mentioning, though the distinctions are rarely observed in descriptions of plants. In the Meadow Sweet and some Rushes the pedicels from the base of the inflorescence considerably overtop the succeeding ones, and the inflorescence is then termed an anthela. The axillary cymes characteristic of so many of the Labiatae (for example, the white Dead Nettle) are verticillasters, or false whorls.

**SECONDARY ARRANGEMENT OF INFLORESCENCES.**—The arrangement of such inflorescences as the capitulum and the simple umbel may be scapose, spicate or racemose, corymbose or paniculate, cymose, &c. Compare Dandelion, Butter Bur (fig. 232), Golden Rod, Yarrow, and other native Compositæ. The umbels of Ivy (fig. 231) are arranged in racemes. W. B. HEMSLEY.

## GARDENING FOR THE WEEK.

### Flower Garden and Pleasure Ground.

Where the planting out of bedding plants is quite finished, which will generally now be the case, little will require to be done for some time except attending to routine operations, such as mowing, cleaning, and the staking and tying up the various sorts of plants which require that attention. Copious waterings should, for some time to come, be given to the flower beds and borders whenever the state of the weather renders that attention necessary. Wherever the embroidered or carpet style of work is attempted, this must have unflinching attention in the way of regulating the different sorts of plants employed, an operation which involves stopping and pinching back throughout the greater part of the season. Carpet bedding, as a rule, should be effected without the aid of flowering plants. It should, in fact, be confined to plants possessing remarkable foliage, and of this class there is a considerable variety suitable for the purpose, hardy as well as tender, such as Ajuga, Antennaria, Echeveria, Sempervivum, Saxifraga, Veronica, Sedum, Cerastium, Cineraria, &c., most of which are indigenous to Britain or the south of Europe, and perfectly hardy; together with the highly-coloured tender species from Brazil and Peru, such as the Alternanthera, Coleus, Iresine, &c.; and lastly, but by no means the least useful, is the Golden Fether Pyrethrum, now so well known and so extensively used for this and other purposes, such as marginal lines to beds and borders. Sub-tropical plants, such as *Cycas revoluta*, Palms, Musas, and similar material, should be transferred to their outdoor quarters, giving them positions in which their beauty will be set off to most advantage; yet they must be sheltered, and not too confined with surrounding vegetation. *Monstera deliciosa* does well in a warm place under the shade of trees, and forms a good companion to tender Ferns, which may also be accommodated there. Plants of the green and also of the variegated leaved New Zealand Flax look well planted out, or plunged as centres to small flower beds, or used as specimens for conspicuous places, such as vases on terraces. American Aloes and Yuccas may likewise be used in the same way.

### Indoor Plant Department.

**Stoves.**—Fine-leaved plants now form a chief feature in stoves; every encouragement must, therefore, be given them, in order to promote the proper development of the foliage. They should have a moist, warm, and steady atmosphere, plenty of tepid water at the root, and daily sprinklings overhead with the syringe. The young leaves of the finer *Anthuriums* must be kept clear of foliage, which should be put aside, so as not to impede their growth. Some plants will require stakes, which should be neatly and sparingly applied. Remove such plants as are in flower to the coolest end of the house, if practicable. The propagation of stove plants from cuttings should, as a rule, be suspended for a time, until the wood becomes a little firmer than it is at present, but such as were propagated earlier should be potted as they become well rooted. *Coincettias*, however, are an exception, and the sooner good cuttings can be obtained from them and rooted the stronger the flowering plants will be. The young shoots nearest the end of the branches may be removed for this purpose, and about four or six of the lowermost left on the old plant if it is to be retained.

**Conservatories.**—*Passiflora*, *Bignonia*s, *Kennedya*s, *Hibbertia dentata*, *Lonicera sempervirens*, and similar plants, must now be regularly thinned, taking care to preserve a large quantity of young wood as possible, without overcrowding, and permitting the shoots, after they reach a certain height, to hang down in graceful festoons. Keep up a good accession of flowering plants from greenhouses and frames, and replace those going out of flower. *Acacias*, *Rhododendrone*, *Heaths*, and other hard-wooded plants will now be contributing to the beauty of indoor structures. Any appearance of mildew on *Heaths* should be immediately checked by dusting with sulphur; in the centre of large plants mildew often develops itself unnoticed.

**Greenhouses.**—These, being now clear of bedding plants, may be filled with annuals (*Pelargoniums*, *Fuchsias*, *Hydrangeas*, *Begonias*, &c.), in order to forward them for the decoration of the conservatory. *Hydrangeas* are now coming into bloom, and require some assistance in the way of manure water; any shoots not furnished with flower-buds should be removed and used for purposes of propagation. By means of plenty of ventilation—complete exposure, in fact, during fine weather—retard the show *Pelargoniums*. Old roots of *Cyclamen* not bearing seed-pods may be transferred to a frame having a north and shady aspect. The young ones must be kept in a good growing state. Plants of *Spiræa japonica* that have done flowering should be transplanted into a plot of ground that is rich, moist, and warm.

**Primulas and Cinerarias.**—Both *Primulas* and *Cinerarias*, if sown as advised, will shortly be fit for placing in thumb-pots in soil consisting of three-fourths good loam and one-fourth rotten manure and

leaf soil in equal quantities, with a good sprinkling of sand. When potted, put them into frames facing northwards, as these plants cannot bear exposure to full sunshine, to break the rays of which, when very bright, shade with a piece of netting or thin canvas. *Cinerarias* should stand on a bed of ashes that will hold moisture and maintain a humid atmosphere about the plants; they cannot endure being placed on shelves exposed to dry currents of air. Place *Primulas* on inverted pots, so as to keep them up near the glass, or they will become drawn and long in the leaf-stalks. After potting, keep the lights closed about dusk at night with only a little air on during the day until they have commenced to grow freely, after which give air plentifully night and day.

**Pinks.**—Cuttings of Pinks for forcing should now be put in and potted on singly in each separate row. They are easily managed, do not occupy much room, and, with a little warmth, afford a succession of elegant-scented flowers alike suitable for bouquets or vase decoration. They are not much subject to insects, though green fly sometimes attacks the young leaves; its presence, however, is easily detected by the leaves beginning to curl up. Dipping and syringing with Tobacco water will be found the best remedies. The plants must always be sufficiently supplied with water, or they get into a stunted condition, from which it is difficult to induce them to emerge.

**Salvia generosefolia.**—Cuttings of this put in some time ago will be ready for moving into 6-in. pots. This most useful winter-flowering plant naturally assumes a bushy habit, but to furnish the plants with plenty of shoots near the base the position of the leading growths should now be checked. These ought to be at once plunged out-of-doors in a sunny sheltered situation. It is a free grower and makes roots rapidly. In the course of six weeks' time the plants will require moving into 10-in. or 12-in. pots for blooming, keeping them outside till the beginning of September.

**The White-flowered Abutilon Boule de Nègre** is deserving of a place in even the most select collection of greenhouse plants. It blooms nearly during the whole year, producing in succession its beautiful drooping flowers, alike suitable for display on the plant or for cutting. It is of the easiest possible management. Cuttings of the half-ripened shoots, 5 in. or 6 in. in length, inserted singly in 3-in. pots in sand, moist, shaded, and covered with a propagating-glass in a little warmth, will strike in a few weeks, and make nice small specimens that will bloom through the autumn and winter. *A. vexillarium* and *A. vexillarium igneum* are equally worthy of cultivation, flowering freely in small pots with ordinary greenhouse treatment. The two latter, grown with single stems 12 in. or 18 in. in height, and then stopped so as to form a bushy head, make beautiful miniature standards suitable for table or window decoration, or for placing in the greenhouse, where, if raised on inverted pots, they greatly relieve the even surface of dwarf-growing subjects.

**Acacias and Cytisus.**—*Acacia Drummondii* and *A. armata* are the two best varieties for pot culture, as when placed in a little heat they can be brought into flower early in the winter. They are of easy growth, and not liable to die off suddenly through either a superabundance or long stay of water like many hard-wooded plants. Young plants of these *Acacias* that have been grown on from a small state, and others that are larger and have been cut back and re-potted after blooming, will, in most cases, have made sufficient growth, and should be exposed in the open air; this is necessary to fully harden and mature the growth and to induce the formation of flowers, for if the plants be kept under a glass in a growing state all the summer they will not produce flowers in such profusion as if thus exposed. By getting them out-of-doors in good time they will be in a condition to bloom earlier through the winter. The very useful winter-blooming *Cytisus racemosus superbus*, which is much better than the common *C. racemosus*, requires to be similarly treated. If a few examples of this free, delicate, yellow-flowering plant be grown, a succession of its highly-fragrant flowers may be had through the winter.

**Boronia serrulata** is another highly-fragrant subject, as a small plant in 6-in. pot will fill a large house with perfume. Any one with a moderate knowledge of general plant-growing may venture to cultivate it, as it is not liable to die off; it is of dwarf compact habit, and grows freely in sandy peat. When it has ceased flowering cut back the shoots to within 6 in. of where it was stopped last year; if this be omitted the plant soon gets into a straggling condition. It should be kept in the greenhouse for some time yet, exposed to full light and syringed overhead every afternoon; this treatment is necessary in order to keep down red spider, a pest to which it is somewhat liable.

### Indoor Fruit Department.

For Pines maintain a strong, moist, and steady heat; avoid draughts, and give just sufficient air to prevent too great a rise of temperature. Remove all strong suckers, pot, and start them in bottom-heat. Gradually lessen moisture, both in the air and soil, where Pines are ripening fruits. Notwithstanding many instances of badly ripened Vines last year, through careful treatment, and slow and not too early forcing, the plants are bearing well this season. Thin the shoots and berries as required; only allow one bunch to each lateral, and pinch the shoot at the second eye beyond the bunch. If the borders are indoors, see that they are thoroughly moistened. In the Peach house border watering must also be attended to, and liquid manure supplied now and then. Disbudding, syringing, and other daily operations will require attention. Top-dress Cucumber beds immediately the young roots are seen to be protruding above the surface, thin out superfluous laterals and decaying leaves, and always maintain a regular supply of young and good bearing wood. Never permit too many fruits to be on one plant at a time, as they only prevent

each other's development. Springs both Melons and Cucumbers twice a day with clean tepid water; but if mildew be suspected, mix with it a little flowers of sulphur. Strong and healthy plants militate against red spider; therefore manure water must be freely applied to Cucumbers. Melons ripening require to be kept a little on the side of dryness. As the frames are now cleared from bedding plants the latest-sown Melons should be put in them; these will come in late in the season. The beds need not now be made so substantial as was necessary earlier in the season; if a good supply of late autumn's leaves are at hand, they may be used; and not one-half of this and well-prepared manure. Three feet in depth will be enough now; beds of this description will be sooner cool enough to receive the plants than those recommended earlier in the season. In localities not favourable to the growth of Tomatoes, or where a difficulty has been experienced through attacks of the disease with which this vegetable has of recent years suffered, it would be advisable to grow some in frames. If the plants are put into 12-in. pots and plunged in the ground, and the frames elevated on bricks so as to give increased heat room, good crops may be secured. The principle thing to be observed in their culture is to keep the plants sufficiently thinned and well tied out, not allowing them to suffer for want of water, and giving enough air to induce stont growth. In Pine stoves or other forcing houses near the glass have a successional supply of French Beans; they require plenty of water, as well as liquid manure, also syringing twice a day, and the minute red spider is discerned, let the plants affected by it be immediately discarded.

**Vines.**—Encourage free growth in the case of all young Vines planted out this season by closing the ventilators early in the afternoon, so that the temperature may remain about 90° for an hour or two at that time. Damp all bare surfaces and use the syringe freely where the slightest indication of the presence of insects can be detected. Do not let the growths on one-year-old spring-planted canes become crowded, which they are apt to do early in the time. The leading rods, which may have been allowed to grow to make quantity of foliage for forming pots, should never be permitted to come nearer than 1 ft. of each other, and the lateral growths produced on these must be kept in to the first leaf. Where only one or two canes have been taken from each root, the secondary growths may be left longer, their length being regulated by the space there is around them. Vines planted last season and brought into growth early without forcing will now be getting well established. Bunches will be appearing on the strongest rods, and the number left on must depend on the capabilities of the Vines. Some may be allowed to bear two and others four and five, but it is always best to crop lightly when at this age, or the Vines will be liable to become prematurely impaired in health. No bunch should be left on the leading shoot, the great object being to get that as perfect as possible for next year's supply. Those who have plenty of Grapes on older Vines will lose nothing by not fruiting young Vines of this age till next season, but temporary ones planted along with them may be cropped heavily, as some of them may have to be dispensed with next spring. Those planted two years ago should produce some fine Grapes this season. The size of the bunch and strength of the Vine should determine the weight. When well regulated, a bunch on every alternate shoot on the lower portion of the rod is an average crop for ordinary Vines.

**Peaches.**—To prevent ripe fruit falling to the ground and getting spilt a good plan is to suspend a herring-net under the trees, or a series of flosses or doubles, so as to catch the falling fruits and yet not allow them to fall too far and perhaps knock against each other, as they would do if all fell into one part of the net. Succession houses may be kept closer and warmer than those in which the fruit is ripening, and syringed more liberally. Houses in which the fruit is stoning should be carefully attended to during bright hot weather, giving abundance of ventilation early; a slight shade would also benefit the trees at mid-day during hot weather. At this stage, at which an overstrain would have the tendency to cause the fruit to drop, see to the gradual thinning of the fruit in orchard houses, and take care that the borders are abundantly moist as a precaution against red spider and blight; for, sure enough, those enemies will at once attack a tree in distress. The crop must also suffer if the roots be dry, and if the fruit gets stunted from dryness now no front management will bring it up to the required standard. The fruit ventilators may be kept open day and night when the wind is south or south-west.

#### Kitchen Garden.

Whenever a crop is done with manure and dig the land on which it grew, in order to have it in readiness for something else. Nothing impoverishes ground so much or looks more untidy than runaway vegetables. Peas in windy places are sometimes apt to partially escape from the sticks which support them; when this tendency is first noticed, if a strand of rope yarn is run along the rows on the level and hooked here and there to the sticks, it will turn the back to the right direction and prevent them from being blown down. Make a further small sowing of Early Horn Carrots; there is a frequent demand for small young Carrots, which it is always best to anticipate. Sow Spinach once a fortnight in cool damp-bottomed land that has been deeply worked; in dry weather it is sometimes a disappointing crop. Sow Turnips to succeed those just up; burnt earth or ashes from any substance except coal has an invigorating influence upon the growth of Turnips in dry weather. The Red American Stone and Orange Jellies are the best Turnips for sowing at this season. Avoid, if possible, the necessity for sowing in freshly-dug land. If the land has been prepared a week or so, the moisture, even in dry weather, will have risen by what is termed capillary attraction, and by drawing the drills rather deeper than necessary or desirable early in the

spring, the seeds may be laid in moist soil, and germination thereby assisted. Continue planting, as opportunity offers and space becomes vacant, such crops as Brussels Sprouts and early Broccoli. A sufficient breadth of spring-sown Cabbages should also be planted, giving them room according to their kinds; small varieties, such as Cocco-nut or Little Pixie, will do if they be placed 15 in. apart each way, whereas those of the English Market class should stand 18 in. asunder in the rows with 2 ft. between. Savoys should have a similar space allotted to them, according to the small or large variety grown. A few spring-sown Red Cabbages should also be planted 18 in. from plant to plant, and the rows 20 in. apart. With the large number who cannot find room until something that has preceded them is cleared off, there is no chance but keeping the plants until the required space is at liberty in the nursery beds in which they were recommended to be pricked out a short time ago, from which they can be removed with very much less check than if allowed to remain in the seed-bed until permanently planted. The main crop of Celery may now be planted, choosing the first favourable opportunity when the weather is showery, for although the plants may not be so large as to be taking any harm in the nursery bed, they will receive less check from moving than if planted later when they are larger. Treat as to water as recommended for the earliest planted.

#### Extracts from my Diary.

**June 17.**—Sowing Parsley in cold pits for winter use. Potting off seedling Campanas. Planting out Wakeham, Snow's Winter White, and White Cape Celery. Preparing the soil and getting the Early Exhibition Celery earthed up. Cutting up small pieces of turf for layering Strawberries on. Clearing off Cabbage stumps, manuring the ground, and getting it dug up ready for another crop.

**June 18.**—Sowing Carters' Giant White Cos, the Favourite, and All the Year Round Lettuce. Potting on Cinerarias and Primulas. Putting out Celery plants. Raking down and levelling all flower borders and beds, and pegging down all plants that require it. Layering Vicomtesse Héricart de Thury and President Strawberries on pieces of turf 4 in. square. Watering all newly-planted bedding plants. Looking over Pines and watering them.

**June 19.**—Sowing Canadian Wonder and Long-podded Negro French Beans. Potting on Chrysanthemums and Pelargoniums. Cleaning out Potato frames and getting them ready for Melons. Sticking Peas and getting them earthed up. Looking over all Vinerias, tying down leaders, and stopping the laterals where required. Thinning Turnips and Spinach. Watering all newly-planted Cabbage, Cauliflower, and Lettuce plants.

**June 20.**—Sowing Coleworts and Little Pixie Savoys. Planting out another row of Peas. Dividing and planting out double Daisies. Thinning out Peas where hanging too thickly. Clipping Box edgings. Mulching Peas with rotten manure. Tying in all the leading shoots in Peach houses and watering the borders where required. Clearing off Lettuce stumps and Spinach. Giving all Vinerias as they require it a good soaking of guano water. Gathering Strawberries for preserving.

**June 21.**—Sowing Silene pendula and Forget-me-nots. Potting on large Colenases and Cockscabbs. Putting sticks to Fuchsias and Phloxes and tying them out. Turning gravel walks to give them a fresh appearance. Nailing in all the leading shoots of Plums, Apricots, and Peaches, and giving the latter a good washing with the garden engine every evening to keep down red spider and other insects. Putting back Ivy where overgrowing windows. Gathering Green Currants for bottling. Watering newly-planted Strawberries.

**June 22.**—Sowing Snowball, Veitch's Red Globe, and American Strap-leaf Turnips. Planting Grange's Autumn Cauliflower and Purple Sprouting and Adams' Early White Broccoli. Sticking two rows of Peas. Looking over Cucumbers and Melons and topping them where required. Clearing off Pea-sticks from early border and putting them round Asparagus beds to protect them from the wind. Planting six lights with Melons after Potatoes. Watering all newly-laid Strawberry runners. Fruit in use for dessert: Pines, Grapes, Melons, Peaches, Nectarines, Strawberries, Raspberries, and Cherries.—W. G. P., Dorset.

**Bone Dust as Manure.**—I find this invaluable both for flowers and fruit, especially pot Vines and Strawberries, and it is not only a rich, but a lasting manure, which I consider better than bones in a rough state. The latter are, however, best adapted for Vinery and fruit tree borders. For pot plants, such as Fuchsias, that bloom nearly continuously, if sufficient food be supplied to insure fresh growth, a liberal sprinkling of this kind of manure will be found to be of the greatest service. In vegetable culture, a sprinkling in the drills with Turnips and crops that are best pushed rapidly into full leaf beyond the attacks of fly and other insect pests, I have found bone dust most satisfactory.—JAMES GROOM.

**Garden Cats.**—I should like to add my testimony to the great utility of cats in gardens under certain circumstances. I am a great lover of animals, but still I dislike to see Peas or other seedlings destroyed by mice. I have about my premises some out-door cats, and two indoor ones. I thankfully give my scraps to the former, the latter being of course provided for, because I know their real value. True, I may find borders occasionally slightly deranged, but this only causes a little work; and how small is this in comparison with an

almost entire absence of mice from the garden. I have recently had two cats with one kitten in a conservatory, and have not received the slightest harm from their presence. It is no biased testimony which I give, but one resulting from an experience of some years. I can easily imagine a large number of cats to be a great nuisance, but the number in the country is more limited than near towns, and to a lover of a garden I cannot but recommend them as a certain cure for rats, mice, and too many birds, all of which so often disturb one's peace of mind.—A CONSTANT READER.

### ANSWERS TO CORRESPONDENTS.

**Italian Tulips.**—Can you inform me whether the Red and White Italian Tulip (T. Clesiana) will grow in this country?—**TURT.** [These grow perfectly well in light well-drained soil in England.]

**Ants in Cucumber Pits.**—How can I get rid of ants in a Cucumber pit? They make their hole within a few inches of the plants, which keeps the earth very loose and dry. I have tried paraffin and water, but without effect.—**E.** [Sprinkle guano about their holes and runs. If it does not destroy them, they will soon desert such unpleasant quarters.—**W. H. J.**]

**Weeds on Gravel.**—Can any of your correspondents inform me how to get rid of weeds in a yard covered with gravel? I have heard of arsenic boiled in water as a remedy, but do not know in what proportion to mix it.—**X.** [Have no dealings with arsenic. Hand-weeding is the best plan, but if very bad, give a rather heavy dressing of common salt, taking pains to keep it off Box, turf, or other edgings, as it is certain death to them. Such a dressing, repeated annually, will effectually rid your yard of weeds.—**W. W.**]

**Binding Gravel.**—Can you tell me any way of making loose gravel bind properly together? We have had some put down that does not get hard, though it has been down a good long time.—**T. M. PIRK.** [Before putting on the upper or final coating of gravel, apply a thin layer of fresh slaked lime; on this spread the fine gravel, and roll at once; some walks served thus are equal to asphalt.—**W. W. H. J.**]

**Morello Cherries Shedding their Fruit.**—Will some one kindly inform me whether any artificial means can be taken to bring Morello Cherries to perfection? My trees (on walls) blossom profusely, but each year at stoning time the young fruits all drop off.—**F. W. P.** [This the blossom previous to expansion. Morello Cherries always bloom profusely, and it is well that not more than half the fruit sets, or we should have poor samples indeed. Surely all the fruit does not drop? If so, examine the roots in the autumn to see that the drainage is effective; then dress with a compost with which lime-serape or chalk have been freely mixed.—**W. H. J.**]

**Wash for Fruit Buds.**—What are the proportions in which lime, soap, sulphur, Tobacco, and red lead should be mixed as a wash for the protection of fruit buds?—**J. J. M.** [We presume you mean orchard trees; if so, the following makes a good wash for keeping off both birds and insects. With each bushel of soot and lime mix, to the consistency of thin paint, water, in which has been previously dissolved 4 lb. of soft soap. Some fresh cow manure mixed with it will help to make it plastic, and prevent the dressing from being washed off by rain ere it has had the desired effect. Sulphur, Tobacco, or red lead, are not necessary.—**H. W. W.**]

**Insects on Melons.**—What kind of insects are those which I send on a Melon leaf? and what are the best means of destroying them? They are very numerous, both in the Melon and Cucumber pits, round the stems of the plants. Can you also tell me what the insect is which is on the back part of the Daisy or Pyrethrum leaf I send, and how to eradicate it?—**G. J. J.** [The Melon insects are mites, and should be got rid of. The way in which red spider is destroyed will put an end to their ravages. On the Pyrethrum leaf sent I find the operations of a small mining larva causing a bladdery appearance on the upper surface. Picking the injured portions off and destroying them is the most efficient way of preventing further injury.—**W. W. S. J.**]

**Paint for Hot-water Pipes.**—What is the best paint for hot-water pipes? Would the fumes arising therefrom affect any plants in the same house? Would Brunswick Black answer the purpose?—**DISQUIRER.** [Lamp-black, mixed with boiled oil and turpentine, is usually applied to hot-water pipes, and is perfectly harmless to plants. Our painter says if turpentine chine is used, and only a little oil the pipes will not smell so strongly nor be so long in drying.—**J. S. J.**]

**Mildewed Grapes.**—I have sent you a part of a bunch of Grapes for inspection. Would you kindly inform me the cause of the nasty appearance on the berries, and whether I am likely to lose any bunches through it? The Vine appears otherwise in good health, and on the average the bunches will run, if they ripen, about 2 lb. in weight. [Your Grapes are evidently attacked with mildew. Cut out what berries are worst affected, and paint the pipes with sulphur; keep them warm day and night, and the atmosphere of the house dry for a week or so. Afterwards ventilate freely during fine weather, but avoid draughts.—**S.**]

**Ribbed Glass.**—I am building a small house, and want to know the best sort of glass for the top, as I am away all day, and cannot depend upon anyone at home doing any shading. Will rough plate be of any use? If so, which side should I put out? The house will lie north and south, with an east front, and is span-roofed.—**J. E. W.** [Ribbed or obscured glass should not be used for plants that like plenty of sunshine, such as Peaches and Melons, for example,

Vines and most other subjects will do well enough under it, but it will not obviate the necessity of shading shade-loving plants occasionally. A good deal, however, depends upon ventilation: The rough side of the glass is usually placed outdoors.—**J. S. W. J.**]

**Ants' Nests.**—What will destroy these round Rose trees without injury to the roots?—**J. B. B. Bromley.** [We have found scattering guano about their runs the best antidote. A slight sprinkling daily soon disperses them.—**W. W. J.**]

**Apple Tree Caterpillars** (see p. 653).—We know of no plan better than hand-picking. As a preventive, will dress the trees in winter with the wash recommended below.—**W. W.**

**Dissolving Bones.**—Can you tell me how to dissolve bones for the purposes of manure? and, when dissolved, should the fluid be evaporated or used in the liquid state?—**J. W. N. N.** [Crush the bones, moisten with a quarter of their weight of hot water, and then pour over them half their weight of oil of vitriol. Stir with an old rake till gas ceases to be given off, and allow them to stand for a few days. If not sufficiently dry; add peat, sawdust, or anything else free from lime, for the purpose. The operation is best carried on in a leaden or earthenware vessel, or on the ground within a ring of ashes. Boiled bone or bone ashes answer better than raw bone, being more soluble. 2. Make them into a heap, and keep them moist, and cover with mould or manure. They will ferment and dissolve of their own accord.—**F. W. W. J.**]

**Disease in Pelargoniums.**—The accompanying leaves are from a garden near Winchester, in which neighbourhood the disease has been noticed in several places, and seems to have been increasing for the last three years. It is confined to plants in pots, and the only cure for it yet found none is to turn out the plants into the borders or beds, when in from two to three weeks the diseased leaves fall off and the plants assume a natural healthy appearance. What is the cause of it? and how can it be prevented?—**W. T. T.** [I have carefully examined the Pelargonium leaves for insects, but can find none. The small brown spots with yellow margins, which eventually decay in the centre and leave an opening through the leaf, may arise from insect action, but about this I cannot speak with certainty. The disease, if I may call it so, commences with a small, round, yellow, pellucid spot, which, extending, becomes a brown spot in the centre. This brown spot is the desiccated substance of the leaf, through which all nourishment has ceased to pass. When the brown spot gets much extended, it appears to crack and leave an aperture through the leaf. Was the uninjured leaf from the same plant as the injured one?—**W. W. S. J.**]

**Names of Plants.**—**Equisetum.**—1. The Orchid flowers sent are all forms of the common Orchis maculata. It is well worthy of garden culture, though rarely seen in gardens. 2. We have seen it thrive well as a border plant, growing into large tufts in moist loamy soil; such success was secured by some little care at first. 3. A greenhouse would not be the place for it. Wrapping plants in cotton wool is not a good way to send them. *J. E.*—We cannot undertake to name more than four plants at a time. 1. Indeterminate, from no leaves being sent. 2. *Fumaria officinalis* (Common Fumitory). 3. *Silene inflata* (Bladder Campion). 4. The Wood Moneywort (*Lysimachia nemorum*). *Sanguinea.*—*Hemerocallis flava.* *J. E.*—We cannot undertake to name Roses. They should be sent to some Ross grower who has the means of comparison at hand. *C. Fison.*—The shrub, as well as can be judged from the piece sent, is *Philadelphus hirsutus*, from North America. *Z. G.*—*Echinum vulgare*. *P. and M.*—The names of the Pelargoniums figured in THE GARDEN (see p. 550) are as follows:—The orange-coral variety in the centre is Earl Zealand (Pearson); the ocellate one on the right hand side is Evening Star (George); the salmon one on the left hand is Miss Strachan (Pearson); the magenta-coloured flower on the right hand top corner is Louis (Pearson); and that on the left hand bottom corner is Lais (Denny). *M. W.*—Apparently Common Ragwort (*Senecio Jacobaeae*); *M. M. C.*—Some species of *Pitheopogon* and *Dolichos ligulosus* from the East Indies.

**Vine Insects.**—I enclose two insects which were a great trouble to me when my Vines were first started, as they disfigured the leaves as soon as they opened. Can you give me any information respecting them?—**J. G.** [The long-snouted insect sent is, no doubt, *Hylobius abietis*. It is an insect usually found in Fir plantations, not infrequent in the south of England, but abundant in the northern parts of the country. It would be well if it were shown how this and the following insect injured the Vines by sending an illustration of the mischief done. The expression that the insects disfigured the Vine leaves is very vague. The other insect is one of the spring or click beetles. The larva of some of the species are most destructive to plants, and are well known as wire-worms. The specimen was much crushed, but by carefully examining the pieces I believe they belong to *Athous niger*.—**W. W. S. J.**]

**Dutch Bulbs.**—*Cymro.*—One is about as good as another. We cannot, for obvious reasons, recommend dealers:

### Question.

**Culture of Asparagus.**—I have read with much interest what has been lately written in THE GARDEN on this subject. I have a bed of about twenty-five years' standing, which has this year failed, and my gardener proposes trenching it 2 1/2 ft. deep with layers of manure 6 in. or 8 in., and then transplanting the old plants, after the decayed roots have been removed. He says he has seen it tried, and it gave the greatest satisfaction. Perhaps some of your correspondents can enlighten us as to their treatment.—**A.**

## SOCIETIES AND EXHIBITIONS.

## ROYAL BOTANIC SOCIETY.

JUNE 12.

This, the second summer show of this Society this year, was in every way a good one. The principal features were the banks of Orchids and the miscellaneous collections of new and rare plants from the leading nurserymen, together with well-grown Pelargoniums—both above and below—and there were several fine collections of stove and greenhouse plants.

**Stove and Greenhouse Plants.**—These were on the whole in excellent condition. The best group in the open class came from Mr. Tudgey, gardener to J. G. Williams, Esq., Hawick Grange, Worcester, which consisted of twelve even and well-grown plants, among which were especially noticeable remarkably well-flowered examples of *Allamanda Hendersoni*, *Dipladenia amabilis*, and a plant of *Anthurium Scherzerianum* bearing upwards of thirty large and brilliant blossoms. With these were associated a grand specimen of *Ixora Willmami*, one of the best of *Ixoras* for exhibition purposes, and one which was greatly admired. In the same class Mr. Donald, gardener to J. G. Barclay, Esq., Leyton, Essex, showed a magnificent specimen of *Hedera macrantha*, which was, however, too trimly trained to beset to the best advantage; also fine examples of *Aphexis macrantha* purpurea, and the white and pink *Erica Easoniana*. Messrs. Jackson & Sons, Kingston, had a good plant of *Pimelea mirabilis*, but its blooms were hardly open, and a healthy specimen of *Hedera fuchsoides* well bloomed. In the smaller collections of stove and greenhouse plants, Messrs. Jackson & Sons had a good example of the pink-flowered *Erica kingdonensis*, a garden variety admirably adapted for exhibition purposes; the finest plant of *Clerodendron Balfouri* which we have seen this season, and a good *Flamingo* plant. Mr. B. S. Williams, Holloway, sent a remarkable plant of *Pimelea densata* and a beautiful pink-flowered *Erica*, the name of which did not appear. Mr. Tudgey had a well-grown plant of *Allamanda grandis* beautifully in flower. Mr. Hennell, gardener to F. A. Davis, Esq., Anglesea House, Surbiton, had an excellent plant of the magenta-flowered *Phanocoma prolifera* Barnesi, one of the most difficult of plants to cultivate, but one of the most beautiful when seen in perfection. In the class for groups of stove and greenhouse plants arranged for effect, the competition was not so great as might have been expected, and the plants shown, though well arranged, were mostly of an ordinary character. The best came from Mr. Wheeler, Regent's Park, and consisted of healthy well-flowered plants of *Clerodendron Balfouri*, *Heaths*, &c. Interspersed among these were *Fuchsias*, *Colenses*, and *Dracenas*, the whole being backed up by healthy *Palms* and edged with *Begonias* and *Maidenhair Ferns*. Mr. Ford, gardener to J. G. Meegaw, Esq., Norwood, had an equally good collection in the same class; the plants were all well grown, and not quite so closely crammed together. Among them were noticeable fine specimens of *Dieffenbachia picta*, *Crotoms*, and *Caladiums*, backed up by column-like plants of golden-leaved *Fuchsias*, and edged with *Mosses*, *Grasses*, *Fittonias*, and other fine-foliated plants.

**Orchids.**—These occupied a prominent position in the show, and proved the greatest source of attraction, the finest display of the year being here on this occasion. The best groups in the nurserymen's classes came from Mr. B. S. Williams, who had finely-flowered plants of *Laelia purpurata*, *Odontoglossum vexillarium*, associating effectively with the brilliant scarlet *Epidendrum vitellinum majus* and the white-flowered *Calanthe veratrifolia*. The same exhibitor had also a healthy plant of the beautifully-marked *Cypripedium superbiens*, bearing twenty large flowers, and the curious *Nanodes Medusa*, which is seldom seen in flower. In the amateurs' classes, the best groups came from Mr. Denning, gardener to Lord Lonsborough, Norbiton, who had a plant of *Anguloa Clowesi*, furnished with over twenty large, golden, cup-shaped blossoms; *Odontoglossum Alexandræ*, with eight spikes of large, delicately-tinted flowers; and the gorgeously-flowered *Cattleya Warneri*, bearing nine remarkable blossoms. With these were associated grand examples of the beautiful *Vanda Boxalli*, *Dendrobium Bensoniæ*, and *Laelia cinnabarina*. Mr. Douglas, gardener to F. Whitbourne, Esq., Loxford Hill, Iford, had magnificent plants of *Madeoella Harryana*, *Odontoglossum Alexandræ*, the beautiful white-flowered *Thunia Marshalli* bearing over thirty waxy blossoms, and a specimen of *Cattleya Warneri* with nearly twenty unusually large and gorgeously-coloured flowers. The same exhibitor had also well-bloomed examples of *Dendrobium formosum giganteum*, *Cypripedium spectabile*, and *Odontoglossum crispum*. Mr. Salter, gardener to W. Cabb, Esq., Silverdale Lodge, Sydenham, had a grand example of the chocolate-flowered *Oncidium*

*crispum grandiflorum*, *Odontoglossum vexillarium* with nearly forty large delicately-tinted blossoms, a made-up potful of *Dendrobium anavisium* containing several dissimilar varieties, and *Odontoglossum Alexandræ* furnished with fourteen spikes of flowers. Mr. Heims, gardener to F. A. Philbrick, Esq., Regent's Park, had fine plants of *Sobralia macrantha*, *Aerides Schroderi*, and *Saccolabium Holfordi* furnished with long racemes of well-coloured blossoms. The same exhibitor also sent out blooms of the curious *Stanhopea tigrina*, which attracted much attention. Mr. Child had a remarkable plant of *Cypripedium Stonei* and *Oncidium ampliatum majus*.

**New and Rare Plants.**—Excellent groups of these were shown by the leading nurserymen. Messrs. Veitch & Sons had a collection which attracted much attention. Noticeable among other fine plants were good examples of *Adiantum Luddeemannianum*, the showy-leaved *Abutilon Sellovianum marmoratum*, finely-coloured examples of *Phyllanthus roco-peto*, plants of *Hemantthus Kalbreyeri* (bearing noble heads of scarlet blossoms), remarkable plants of *Acalypha muscica*, the brilliant-flowered *Scutellaria Moccasinæ*, choice *Crotoms*, *Begonias*, insectivorous plants, and the yellow-flowered *Madeoella Davisii*. Opposite this collection was one from Messrs. Laing & Co., Forest Hill, and consisted of new *Begonias* (with marvellous flowers), *Gloxinias*, variegated *Crotuloids*, and *Colenses*, backed up by graceful *Palms* and fine-leaved *Dracenas*. Mr. Bull had a very attractive group, consisting of finely-flowered plants of *Odontoglossum Alexandræ*, *O. vexillarium*, *Cattleya Mendellii*, fine-leaved *Anectochilus*, *Hemantthus cinnabarina*, and *Colognyne corymbosa*, tastefully disposed among light *Ferns*, and backed up by noble-leaved *Palms*, *Dieffenbachias*, *Alocasias*, and *Crotoms*. Mr. Williams had a collection which attracted much notice. In it were Pitcher-plants, fine-leaved *Yuccas*, well-flowered plants of *Blandfordia grandiflora*, new *Colenses*, *Dendrobium Galdieannum*, the silver-leaved *Nothochloa Eckloniana*, *Clerodendron Falax*, and *Liliums*.

**Pelargoniums.**—These were both numerous and good, and formed one of the most showy banks in the exhibition. Mr. Turner, of Slough, had well-grown plants of the choicest kinds, among which were the white *Clarel*, Prince of Prussia, the rosy-coloured *Ruth*, the rich dark crimson *Senator*, and the brilliant rose-pink *Ambassador*. Mr. James, gardener to F. Watson, Esq., Redles, Isleworth, had very large and well-flowered fresh specimens of *Bine Bell*, *Snowflake*, *Statesman*, and *King Charles*. Mr. Bones, gardener to D. McIntosh, Esq., Romford, had likewise excellent plants, but their blooms were hardly open enough. They consisted of the dark *Chieftain*, *Victory*, *Maid of Honour*, and other good kinds. The best *Fancies* came from Mr. Turner, in whose collection were noticeable *delicatun*, *Nelly Fordham*, the beautiful lavender-pink *Lady Carington*, and the magenta-coloured *Shah*—excellent kinds for show purposes. Messrs. F. & A. Smith, of Dulwich, sent baskets of plants of seedling show *Pelargoniums* of an attractive description, many of the kinds being beautifully striped, and possessing colours rarely seen in *Pelargoniums*. Mr. Turner also sent several new and attractive kinds, among which were noticeable—*Silvio*, a brilliant crimson flower, the upper petals being blotched with dark crimson; *Captivation*, a very dark kind named *Devastation*; and a kind having unusually large flowers with bright pink, recurved petals, the upper ones being of a rich velvety-crimson, the centre being pure white. All these were much admired, and are well worth adding to any good collection. Mr. Levesley, Isleworth, also sent several attractive striped kinds likely to be valuable for market purposes. The Rev. A. Matthews, Gunley, Leicester, also sent a magnificent kind named *Henry*, the flowers being very large and well formed, and of a brilliant crimson color, the centre being white; the same exhibitor also sent other good kinds. Mr. William Bull likewise sent a show *Pelargonium* named *Triumphans*, which attracted much attention on account of its ornamental, deeply-cut foliage, and its purple and magenta-coloured blossoms; quite a new colour in *Pelargonium*. Zonal *Pelargoniums* were well shown by Mr. Catlin, gardener to Mrs. Lermite, Finchley. The plants were nearly 6 ft. in diameter, and full of bloom. The best scarlet was *Corsair*, the best rosegay *Thomas Adams*, and a good salmon-coloured flower was *Band*.

**Heaths.**—These were well shown by Messrs. Jackson & Sons, who had a fine plant of *Erica verticosa Bothwelliana*, furnished with remarkably large clusters of waxy pure-colored blossoms; *E. tricolor rosea* and *E. ampullacea obtusa* were also in excellent condition. Mr. Tudgey had an unusually bright-flowered young specimen of *E. verticosa grandiflora*, and Mr. Child had a well-flowered young specimen of *E. odorata rosea*. Mr. Hennell had an excellent specimen of *E. verticosa magnifica*, and a vigorous healthy young plant of *E. Cavendishi* furnished with long racemes of brightly-coloured blossoms. Mr. Donald had excellent examples of *E. Candolleana* and *E. tricolor Lindeni rosea*.

**Fine-foliaged Plants and Ferns.**—These occupied the recesses in the tent, and effectually toned down the bright colours of the stove and greenhouse plants, near which they were arranged. Mr. Rann, Handcross Park, had remarkably fine specimens of *Croton undulatum*, C. Weismanni, and *Dasylirotum glaucum*, backed up by gigantic specimens of *Cycas circinalis* and C. *revoluta*. Mr. Donald, gardener to J. Barclay, Esq., had fine examples of the Weeping *Croton angustifolium* and a well-grown *Yucca aloefolia*. Mr. B. S. Williams had well-grown specimens of *Pandanus Veitchii*, *Dasylirotum acrotrochium*, and *Cocos Weddelliana*. Mr. Child had fine examples of *Geonoma Verschaaffii*, *Latania borbonica*, and *Croton Weismanni*. Messrs. Hooper & Co., Covent Garden, had a fine plant of *Dracaena Shepherdii*, the most beautifully-coloured plant of *Croton undulatum* which we have yet seen, and *Matepe odulia*. Mr. B. S. Williams sent a much admired group of Ferns, consisting of healthy examples of the Australian Bird's-nest Fern (*Asplenium Nidus*), *Todea africana*, and *Trichomanes radicans*. Among these were fine Tree Ferns, consisting of *Cyathea Burketi* and other valuable kinds, also *Gleichenia Spelunca*, and *rupestris*. Mr. Douglas had an excellent group of Ferns, in which were beautifully fresh examples of *Todea pelucida* and *T. superba*, *Gymnogramma Sauchiana*, *Gleichenia Spelunca*, the bronzy-green *Davallia divaricata*, and the lace-like *Pteris acubarda*. Mr. Rann had large specimens of *Cyathea dealbata*, C. *Dregii*, and *Gleichenia Spelunca*. Mr. Donald showed well-grown specimens of *Alouphia exelsa*, *Diokomia antiochia*, and an elegant example of *Davallia Mooreana*. Mr. Tudgey had *Cyathea dealbata*, *Cibotium Regeli*, and C. *medullaris*.

**Miscellaneous Plants.**—Messrs. Carter & Co., High Holborn, had an extensive and attractive group of miscellaneous plants edged with boxes of coloured-leaved plants used for carpet bedding. In this group were good examples of *Casuarina sumatrana*, *Adiantum Farleyense*, Bird's-nest Ferns, tuberous-rooted *Begonias*, finely-coloured *Crotone*, *Dracaenas*, and cut-leaved *Acers*. Messrs. Low & Co., Clapton, sent baskets of Orchids, which were much admired. In them were remarkably well-coloured varieties of *Dendrobium Bensoniae*, D. *suavisissimum*, and *Vanda cerculescens* Boxalli. Messrs. E. G. Henderson & Sons, Pine-apple Place, sent cut blooms of *Antherium Liliarium majus* of great beauty, also blooms of *Pyrethrus* and *Irises*. Messrs. Osborn & Son contributed a collection of Palms and other fine-leaved plants, among which were finely-coloured *Acalyphas*, *Marantas*, and *Pandanias*. Messrs. Wm. Paul & Sons sent blooms of old-fashioned Roses, which attracted much attention; and Mr. Parker, Tooting, showed an extensive collection of cut blooms of *Irises* and *Paeonies*. *Paeonies* of a meritorious description were sent by Messrs. Laing & Co. Mr. Cannell had brilliant blooms of *Zonal Pelargoniums* and *Verbenas*, and Mr. Douglas sent a dwarf *Ageratum* named J. Douglas; the plants were not more than 6 in. high, bushy, and covered with bright blue blossoms. Mr. Marchant, Isleworth, sent very attractively-striped single *Petunias*.

Messrs. Carter & Co.'s exhibition of annuals proved a source of interest. The plants, consisting of many thousands, are arranged in the glass corridor adjoining the conservatory; they are not so well grown as could have been wished, but their flowers are bright and effective, and well worth inspection.

Mr. Anthony Waterer's annual show of *Rhododendrons* was also at its best on this occasion. The plants, which are well bloomed, are admirably arranged, and form a source of great attraction.

**Certificates of Merit** were awarded as follows:—

Mr. W. Bull, for *Bowenia spectabilis serrulata*, *Adiantum tetraphyllum gracile*, *Doodia aspera multifida*, *Aralia venusta*, *Coffea liberica*, *Macrozamia Mackenziei*, *Echinocactus cylindraceus*, *Zamia Lindenii*, *Kentia rupicola*, *Coccoloba corymbosa*, *Croton Rex*, *Dracaena vivicans*, *Dieffenbachia Cordieri*, *Cibotium chamissoi*, *Gloxinia Duc de Cazes*, and G. *Mdlle. Angelina* Martin.

Messrs. Veitch, for *Cyrtipedium superciliosum*, *Aloesia Thibautiana*, *Begonia Daviei*, B. *Duchess of Teck*, B. *Symetry*, *Croton Challenger*, C. *Hanburyanum*, *Macrozamia Mackenziei*, *Davallia elata*, D. *fijensis*, *Sarracenia Chelsoni*, *Xerozema Moorei*, *Bollea colostis*, *Cattleya tricolor*, C. *Mardelli*, *Zygopetalum Lindenii*, and *Gloxinia Unique*.

Mr. B. S. Williams, for *Areca lapa*, A. *purpurea*, and *Nephrodium exensum*.

Messrs. E. G. Henderson & Son, for *Dactylis glomerata longissima* anrea and *Saxifraga valdensis*.

Mr. E. Holmes, Wellington Nursery, for *Juniperus virginiana* albo spica.

Messrs. Rollison and Sons, for *Erica obtata* exposita.

Rev. A. Mathews, for Show *Pelargoniums* Douglas, Osman, and Henry.

Mr. C. Turner, for Show *Pelargoniums* Illuminator and Criticron.

Mr. J. Levesley, for *Pelargonium Rose* Levesley.

Messrs. J. Laing & Co., for *Begonia* Baron Leguay and *Pierceli vitellina*.

Mr. Robert Parker, Tooting, for *Iris Darius*.

## MANCHESTER HORTICULTURAL EXHIBITION.

JUNE 7.

THE Manchester Society has again reason to be well satisfied with the exhibition brought together under its auspices this season, collectively, it is a fine one, though perhaps not quite equal to some that have preceded it as regards extent. It however possesses the essential feature of an absence, with few exceptions, of inferior productions. It is not to be wondered at that the large shows throughout the kingdom do not come up, as regards the quality of the exhibits, to what they once did, for although the numbers of plants grown now are no doubt greater than formerly, yet exhibitors of plants have not increased in proportion to the increased number of exhibitions. The exhibition house and the new annex had both a fine appearance on this occasion, and there was a large display of horticultural requisites in the shape of greenhouses, boilers, and almost everything required for garden purposes, the merits of which were closely scanned and commented upon. It is impossible within our prescribed space to notice all the fine plants and flowers shown; consequently, we have been obliged to confine our remarks to the most meritorious, and to give a list of the prizes in our advertising columns. Stove and greenhouse plants were well represented; the flowers were all fresh and beautiful, and the plants had that healthy appearance which is the best characteristic of good cultivation. Mr. Shuttleworth, Howick House, Preston, took a decided lead with plants not over large but generally well flowered and possessing the variety of colour indispensable to effect. Amongst them was a noble *Anthurium Scherzerianum*, bearing nearly forty very large blooms; *Statisia profusa*, some 4 ft. across, densely ornamented with its beautiful bluish-lilac flowers; two plants of *Ixora coccinea*, well bloomed; a grand *Primula mirabilis*; the glowing crimson *Azalea Holfordi*, profusely flowered; *Alamanda nobilis*; and *Franciscoa confertiflora*. Mr. E. Pilgrim, Cheltenham, also had a fine example of *Anthurium Scherzerianum*, a very large and finely-bloomed *Dendrobium* noble, *Azalea Souvenir de Prince Albert*, a strikingly handsome kind; and *Pimelea decussata*. In the amateurs' class for sixteen plants, Mr. Pilgrim stood in the foremost rank with plants profusely flowered and in unexceptionable condition, the most meritorious being *Erica tricolor impressa*, the orange-red *Ixora Williamsii*, *Hederaea tulipiferum*, well bloomed and finely coloured *Stephanotis floribunda*, and one of the best forms of *Pink Everlast-ing*. Amongst his fine foliaged plants were a grand *Pritchardia pacifica*, one of the finest of all Fan Palms; *Cycas circinalis*, and the variegated New Zealand Flax. Mr. Samson, Bowdon, had larger plants, but they were not so even in quality. In the nurserymen's class for fifteen stove and greenhouse flowering plants, Messrs. Cole, of Withington, showed much smaller plants than they usually exhibit; *Azaleas* Charmer and *Duc de Nassau*, both deep crimson, were the best examples, both being unsurpassed by any other varieties of the same colour. Mr. T. A. Bircley exhibited a varied and well managed group of fine foliaged plants. This exhibition is always noted for its Ferns, but on no occasion here or elsewhere do we recollect seeing such a splendid group as that shown by Mr. Hubberstey, gardener to O. O. Wrigley, Esq., Bury; his *Gleichenia Spelunca*, G. *flabellata*, and the scarce G. *Mendellii* were not less than from 6 ft. to 8 ft. through, by 6 ft. high, and alike remarkable for their clean and faultless condition; *Davallia polyantha* was 7 ft. across, and *Cibotium princeps*, C. *Schiedei*, and *Cyathea dealbata* were fitting companions both in size and condition to the foregoing. Mr. Lingard showed comparatively small, but really well grown plants. Palms were well shown by Mr. Smith and Mr. Corfield. The groups of miscellaneous plants well exemplified the better effect that can be produced by associating flowering and ornamental leaved plants together than by keeping them in distinct classes. Mr. Smith staged a good collection, conspicuous in which was one of the finest specimens of *Nepenthes Hookeri* that has yet been produced. It bore some thirty large, highly-coloured pitchers, and was otherwise in excellent condition. This group also contained other equally good fine-leaved subjects. Mr. MacKellar, gardener to Jas. Watts, Esq., Cheshire, had, amongst others, a very handsome *Acrophylum venosum*, and several grand plants of the beautiful *Yucca filamentosa variegata*. Three pots of *Lilium auratum* were shown by Mr. Fildes, Stretford. Heath and *Pelargoniums* were shown in considerable numbers, the latter being much better grown and flowered than such as are generally met with. Roses in pots were not nearly so good as those shown lately by Messrs. Turner & Paul, the weather having rendered it impossible to keep the plants back for this exhibition. In the amateurs' class were good examples of *Mario Baumann* and *Baroness Rothschild*. The prizes for hardy *Rhododendrons* were well contested, and the plants good and well flowered. Those who have never seen a Manchester exhibition can form little idea of its extent. As regards Orchids, it is no exaggeration to say that all those shown at metropolitan exhibitions during a season would not equal the

display here. In the class for 15 (amateurs) Mr. Hubberstey had some fine plants, uniformly large in size, and profusely flowered. *Masdevallia Harryana*, 2½ ft. across, bore some 120 large, highly-coloured, fully-expanded flowers; *M. Lindenii* was equally large and perfect; *M. sanguinea* was furnished with eighteen fine blooms, indescribable as regards colour; *Dendrobium Schroederi* had fourteen large drooping spikes; *Anguloa Clowesi* bore forty open blooms and A. Turneri thirty-four; *Odontoglossum vexillarium* was furnished with ten or twelve racemes; *Cattleya Warneri* with thirteen gigantic blooms, the petals of one, which was measured, being 3 in. across; *Vanda swavis* (Veitch's variety) had twelve spikes; *Thunia Marshallii* had eight spikes, and *Cypripedium Veitchii*, *C. niveum*, and *C. villosum* were all good; and last, but not by any means last in merit, was the old *Calanthe veitchii*, crowned with some thirty-five panicles of snow-white flowers. Mr. Mitchell, gardener to Dr. Ainsworth, Manchester, was second, and there also were good plants in the other collections. Of single Orchids Mr. Bolt contributed a grand example of *Saccolabium premorsum*, bearing six spikes, the largest 2 ft. in length. In the classes for nurserymen Mr. B. S. Williams was first for both twenty and ten, the two collections forming together such a group as one rarely sees from one establishment. Of *Filmy Ferns* Messrs. Standish & Co., Ascot, showed a grand group, in which *Todea superba*, *T. pellucida*, *Trichomanes radicans*, and *Hymenophyllum domissum* were large and fine. In the open class for Nepenthes, Sarracenias, &c., Mr. Hubberstey was deservedly first. Collections of plants arranged for effect were shown by Messrs. Caldwell and Messrs. R. P. Kerr & Sons, Liverpool. Messrs. Rollison contributed eighty Alpine and herbaceous plants, the whole making an admirable group in fine condition. Mr. B. S. Williams and Messrs. Rollison showed new and rare plants, and both exhibited large collections of miscellaneous flowering and fine-foliaged plants. Mr. Boller had a collection of Succulents similar to that for which he lately received a Banksian Medal at South Kensington. Fruit was fairly well shown in moderate quantity. Mr. Miles, gardener to Lord Carington, had a collection in which were good Foster's Seedling and black Grapes, a Queen Pine, very fine Black Circassian Cherries, a beautiful dish of Brown Turkey Figs, Peaches, Nectarines, and a couple of Melons; Mr. Banerman, gardener to Lord Bagot, was second. The best two bunches of white Grapes came from Mr. Banerman, who showed Backland Sweet-water. Mr. Green, gardener to J. Warrington, Esq., Barnsley, had Tynninghame Muscat. The best two bunches of black Grapes came from Mr. G. Smith, who had well-coloured Black Hamburgs. Twelve excellent pots of Strawberries were shown by Mr. Hinds, Otterpool; the sort was Sir C. Napier. Mr. Smith had President.

### ROYAL HORTICULTURAL SOCIETY.

JUNE 10.

The idea of holding a show on Whit Monday for the poorer classes of London was a good one, and, as far as can be judged, answered the expectations of its promoters. The wet weather no doubt kept many people away, but during the afternoon thousands of visitors entered the gardens. The exhibits were arranged in the Society's large tent, and although it was not filled, it nevertheless contained a large number of plants. The best collection of plants in the market growers' classes came from Mr. John Reeves, Acton, and occupied a prominent position. It consisted of well-grown pot Roses, Fuchsias, show Pelargoniums, blue and pink Hydrangea, *Lilium candidum*, *L. longiflorum*, and fine, dwarf, well-flowered plants of *L. aratum* and *Saxifrage nepalensis*; these were intermixed with Palms, Japanese Acera, *Ficus elastica*, *Dracaena*, and other fine-foliaged plants, all of which combined to make a very attractive group. The same exhibitor also showed baskets of plants of the dark crimson semi-double-flowered Pelargonium Dr. Masters in order to show its suitability for market purposes. It has an excellent habit, and its flowers last for a longer time in perfection than those of any other show Pelargonium grown for market. Messrs. Hayes, Edmonton, contributed banks of scarlet Pelargoniums and a fine group of miscellaneous flowering plants, in which were remarkable examples of Hydrangeas. Masses of *Calceolarias*, Fuchsias, Musk, and similar subjects were also shown by other market growers, and the brilliancy of so many plants in flower was toned down effectually by means of groups of ornamental-leaved plants from Messrs. Osborn & Sons, Rollison & Sons, and Mr. B. S. Williams. Messrs. Radclyffe & Co. sent examples of window boxes, Fern cases, and a rockery furnished with Ferns and miniature fountains, &c., all of which attracted much attention. Messrs. Barr & Sugden showed out blooms of Irises, and Messrs. Smith, Dulwich, seedling Pelargoniums. Spaces which would otherwise have been vacant were filled with plants from the Society's garden at Chiswick. The number of visitors was 15,763, of whom 15,558 paid for admission.

### HORTICULTURAL PROGRAMME FOR THE PARIS EXHIBITION.

JUNE 1 to 15.—3rd of Series of Horticultural Shows, viz.:—Orchids and Pelargoniums, Hothouse and Greenhouse Plants, Open-air Ligneous Plants, Roses, Forced Vegetables and Fruits. June 16 to 30.—4th of Series of Horticultural Shows, viz.:—Roses, Palms, and Pelargoniums, Orchid, Hothouse, and Greenhouse Plants, Open-air Herbaceous Plants, Vegetables of the Season, Exotic and Indigenous Fruits, &c., &c.

Trial of Agricultural Implements (3rd Series), viz.:—Machines and Implements for dealing with Hay. Trials of Agricultural Implements (4th Series), viz.:—Machines and Implements used for Harvesting, in June and July.

July 1 to 15.—5th Series of Horticultural Shows, viz.:—Pelargoniums, Gloxinias, &c., Hothouse and Greenhouse Plants, Orchids, Open-air Plants, Vegetables of the Season, Fruits, &c. July 16 to 31.—6th Series of Horticultural Shows, viz.:—Hothouse and Greenhouse Plants, Gloxinias, Open-air Plants, Ornamental Ligneous Plants, Fruit Plants, Vegetables of the Season, &c.

August 1 to 15.—7th of Series of Horticultural Shows, viz.:—Fuchsias, Gladioli, Hollyhocks, Climbing Plants, Dahlias, Phloxes, Fruits, Vegetables in Season, &c. August 16 to 31.—8th of Series of Horticultural Shows, viz.:—Arads and Ferns, Hothouse and Greenhouse Plants, Annuals, Bulbous Plants, Vegetables, Fruits, &c.

Trial of Agricultural Implements (5th Series), viz.:—Machines and Apparatus for decorating Cereals and other Plants, and for the Preparation of Food for Domestic Animals, in August.

September 1 to 15.—9th of Series of Horticultural Shows, viz.:—Dahlias, China Asters, Hothouse and Greenhouse Plants, Tea Roses, Fruits, &c. September 16 to 30.—10th of Series of Horticultural Shows, viz.:—Aralias, Dracaenas, Large-foliaged Plants, Fuchsias, Chrysanthemums, Cut Roses, Vegetables, Fruits, &c.

October 1 to 15.—11th of Series of Horticultural Shows, viz.:—Fruits of all kinds, Chrysanthemums, and Vegetables of the Season, &c. October 16 to 31.—12th of Series of Horticultural Shows, viz.:—Vegetables, Shrubs, Chrysanthemums, &c.

**Rooting Banyan Trees.**—The mention of the Banyan of India (see p. 528) reminds me of the noble tree which I remember admiring so much in the Calcutta Botanical Gardens. It was, indeed, a sight to see; but I believe that it was fearfully reduced and injured by the cyclone of (I think) 1867. I saw it some ten years before that date, and, when speaking admiringly of it to an old Indian acquaintance, he told me that a root-drop can be produced in the Banyan tree by suspending a "chatti" (an earthen vessel) full of water close beneath one of the branches. Can any of your readers corroborate this? My informant seemed to have no doubt whatever of its being a fact.—*ASHLEY LATOUCHE, 63, Warwick Street, Liverpool.*

**Laburnum Bloom.**—In reference to Mr. Groom's note on this subject (see p. 560), allow me to say that with us the Laburnum bloom is this year unusually abundant, although it is suffering considerably from the excessive wet weather that we are experiencing. Indeed, most of our lardy trees and shrubs have bloomed well this year; the Yew was literally a mass of bloom. Genas were also full of blossom. The Lilac was a complete sheet of flowers, which were, however, quickly wrecked by the frosts in the latter end of May, and the subsequent want of sunshine. Rhododendrons have also bloomed well, but from the causes just named their blossoms have never been seen to advantage.—*TYNEDALE.*

**Late Apples.**—As Mr. Groom and Mr. Fish have spoken so highly of the Norfolk Beefing, it may not be out of place at this season of the year to name a few others that are keeping equally well here, viz. Hanwell Souring, South Carolina Pippin, Harrison's Anne Elizabeth, and last, but not least, a kind unnamed, but which I believe to be "Enameled." Be that as it may, it is the best keeping serviceable Apple with which I am acquainted, and one which should be made known to all lovers of late-keeping fruit.—*T. SHINGLES, Tortworth Court, Gloucestershire.*

### OBITUARY.

Mr. George Wheeler, of the Warmister Nurseries, well known throughout England for his knowledge of hardy plants, expired at his residence on Friday evening last, June 7. He was in his eighty-seventh year, and till recently, though much enfeebled, led a very active life. His loss will be sincerely felt, for he was a good master and altogether an excellent man, as all who ever had business transactions with him will aver.

**Coluseses Out of Doors.**—Amongst soft-wooded plants now being speedily planted out, few deserve more attention than the Coluseses, owing chiefly to their rich and varying colours, which contrast so strongly with either white or green-foliaged plants. Some few varieties, such as Duchess of Edinburgh, Jewel, Bausei, &c., require a little more care than the others; but, when fairly established, nothing can look more lovely than the different tints of Coluseses, which, as regards softness and beauty, are unrivalled. For a dark variety, Napoleon III. stands unsurpassed, its leaves being nearly black, whilst it grows as freely as *C. Verschaffeltii*.—*J. PEARCE, St. John's, Worcester.*

"This is an art  
Which does mend Nature: change it rather: but  
THE ART ITSELF IS NATURE."—*Shakespeare.*

### EARLY PEACHES.

THERE is at present a great advance in so-called early Peaches, that is, Peaches ripening some three or four weeks before the old representative sorts, to wit, the Noblesse and Royal George. One of the finest of these early varieties is Hale's Early, of which I send you a specimen gathered from a tree forced by artificial heat and ripe, while the Royal George, and others under the same conditions are still hard and very faintly tinged with colour. The importance of this attribute of early ripening cannot be well over-estimated, as a great saving of fuel is effected, and thus one of the principal sources of expense in forcing is lessened. Hale's Early originated in America, and is included in Downing's "Fruits and Fruit Trees" of that country, edition 1869, but it is not mentioned in the edition of 1850. It was first distributed under the name of Early German. Whether forced or grown on walls it has here always proved a good and profitable sort, although not what is called a free bearer; the fruit is handsome and good flavoured, and has the merit of being very equal in size, colour, and taste.

The Early Rivers' Peach is, I think, perhaps the finest early Peach in existence when in perfection, but, unfortunately, the fruit has a tendency to crack at the stone, and when this defect occurs all flavour departs. I have thought that, as this evidently is produced by imperfect fertilisation, that a remedy may be found by using the pollen of those sorts which produce it more abundantly, and, to a certain extent, I think I am right; but I must add that the remedy is not complete, as this season almost every stone is perfect, although not artificially fertilised, and I am quite at a loss to account for this fact. Of one thing I am sure, and that is, that when bees are plentiful and at work in early spring—the time during which Peaches are in bloom—a heavier crop of stoned fruit may be expected; for, when not thoroughly fertilised, more fruit will drop during stoning; the fruit will drop, to speak practically, not because of the inability of the tree to ripen it, but from the fact that the blooms have not been perfectly fertilised. All the early Peaches, in which I include Early Beatrice, Early Louise, Early Rivers, Hale's Early, Early York (Rivers), Early Victoria, Early Alfred, Condor, and the Early Grosse Mignonne, may be grown in pots in an orchard house, and moved out to ripen their fruit, the removal to the open air being deferred until the weather is thoroughly settled, warm, and genial, and they should be carefully returned to their glass home in October. In order to give strength I should advise perforated pots being used, and the trees plunged in a border of light, well-drained soil, the perforations in the pots being covered by the soil. A light wire framework should be attached to the orchard house, to prevent the trees being injured by birds, and also to break the force of the wind. A wire house of this kind, which will not cost more than a poultry-pen, will make a pleasant promenade, and may be used not only for Peaches, but for Plums, Pears, and Apples, which, when sheltered in the spring, will amply repay the cost of their shelter four years out of five.

T. FRANCIS RIVERS.

*Sawbridgeworth.*

### VINE GROWING IN POTS.

WHAT becomes of the thousands of Vines grown in the London and provincial nurseries is a wonder even to the trade itself. Having the accommodation, I grow my own, very much like cutbacks, as the nurserymen term young Vines from eyes. My Vines for fruiting in 1880 are from 12 in. to 15 in. in height; these we shift out of 8-in. pots into 6-in. ones. They are grown without bottom-heat on the curb-stones of Pine and Cucumber pits, well ripened and cut back when the foliage drops. Those

for fruiting next season are now full grown (about 7 ft. high), and are ripening their wood. We commence forcing early in October, without any bottom-heat, and very steadily, the thermometer never being over 43° or 50° during the night until the young canes break. These, in consequence of being early and well-ripened, break with as much regularity as permanent Vines in the Vineries. Disbudding begins almost as soon as they break; at least, one-half of the buds are removed at once, and then we wait until we can see which are going to be the best bunches, when we thin them until about six bunches are left on each plant. Black Hamburgs, Foster's Seedling, and Trebbiano are the varieties chiefly grown here, on account of their being both good growers and also good setters. I see no reason why bunches not required should be allowed to set and grow. When thinned a top-dressing of rich soil is given them enclosed in a narrow strip of turf, which is put round the pots. We have this season fruited several plants of Golden Queen, and a very good pot Grape it makes, much better than when grafted on Hamburgs or other permanent Vines. The true Trebbiano is my especial favourite for pots. It has not the flavour of a Muscat, nor the size of berry of a Gros Colman, but it has a true amber colour and the freshness of a Sir Charles Napier Strawberry. Just now (June 11) I have grand examples of this variety. Two houses are yearly occupied with Vines in pots, and these, besides giving us our first ripe Grapes, are afterwards utilised for the growth of Melons, Cucumbers, and Tomatoes.

R. GILBERT.

*Burghley.*

**The Weather and the Fruit Crops.**—The rainfall here in May has been excessive; the rain gauge registered 5.33 in., which is more than that which fell during January, February, March, and April. Since June has come in, and up to this date (the 17th) 2.18 in. more have fallen, making the rainfall in forty-eight days 7.51 in. All strong soils are therefore soddened with water, and the temperature, being very low for the season, vegetation has made but slow progress, and, unless dry warm weather sets in soon, the season will be a late one. Conditions like these have had an unfavourable effect on the fruit crops, for aphides, blights, and other diseases have injured the foliage and young fruits, especially those of Apples, Plums, and Cherries. The tips of the young shoots on Gooseberries and Currant bushes are likewise curled through the attacks of aphides, and unless clipped off the fruit will be blackened with honeydew. The prospect of a good fruit year is not likely to be fulfilled, but there will not be such a scarcity of some kinds as last season. The Strawberry crop is making very slow progress in swelling and ripening, and warm dry weather is now much wanted to give the fruit colour and flavour. I have about 500 plants in pots in frames where they have not been forced, and they are now yielding good dishes. The sorts consist of British Queen, James Veitch, Dr. Hogg, and President, and the berries are of good size and flavour. I am afraid, should summer heat set in with the present saturated state of the soil, that the fungus will be developed on the early Potato crop. It is generally about the middle or end of July before it appears virulently in the early sorts in warm, wet summers, but this year, the weather being so exceptionally wet, it may appear sooner.—W. TILBERT, *Walbeck.*

**Roots of Fruit Trees too Deeply Buried.**—If "An Amateur" is disinclined to follow Mr. Hobday's advice (see p. 576), he might try the effect of merely removing the whole of the soil down to the level of the highest principal roots at the distance of, say, 1 ft. from the collar, and then filling in with 4 in. or 5 in. of earth taken from another part of his garden where ordinary vegetable crops only have been grown. If the whole, or a part of it only, could be obtained from a Grass field, all the better. The effect of this would probably be considerable for a few years, unless the evil complained of arises from over-insurance, in which case Mr. Hobday's remedy should be applied at once; and perhaps if only half of each tree had its roots pruned now, and the operation on the other half deferred for a time, that might suffice. It would certainly have the effect of restoring partially the productive element, and might, in "Amateur's" case, be a safer course.—B. S., *Uppingham.*

**Fruit Prospects in North Durham.**—Since I last wrote on this subject (see p. 558) our prospects of an abundant crop of fruit have sadly diminished. The long continuance of dull, cold, and rainy weather has prevented the general crop of Apples and Pears from setting, and those which did appear to be set have, from some cause or other, mysteriously dropped off. This may have occurred from the soil being cold and soddened, or through the great want of sunshine last summer and autumn preventing the buds from

being properly developed. However that may be, the fact remains that the apparently perfectly set fruits drop off without any warning. Plums, however, on walls appear to be going on all right, but the critical time for them has not yet arrived; on standard and pyramid trees they are not such a heavy crop as I thought they would have been. Cherries, particularly Morellos, are a good crop. Black Currants have further suffered since my last note on this subject. Nothing looks so well at present as Strawberries and Raspberries, and should the former not "go blind," there will be an abundant crop. It would, I think, be useful if cultivators would take notes of such Apples and Pears as have withstood the present unfavourable season; such notes, if made public, would be productive of good results. In reference to Apples, I may add that in our district, where the soil is suitable, no Apple appears to do so well, and bear such good, continuous crops, as the Hawthoruden.—TYNE-DALE.

**Lilies in the Wild Garden.**—Mr. G. F. Wilson, long known for his successful cultivation of Lilies in the garden, is now making a very interesting experiment with them in the wild garden. He has enclosed a piece of wood in which vegetable soil, the accumulation of ages, is deep, and in it planted a variety of Lilies without any preparation beyond that of digging up the natural soil. They are planted in groups and masses, and, so far as can be yet judged, they are doing very well indeed. There is no doubt that many Lilies will succeed better under such conditions than in bare borders, in which they are often planted. The effect also will be very fine when the plants flower amongst the Braeken and trees. This is one of the many ways in which hardy plants can be shown to greater advantage than in the mixed border.

**Trapa natans.**—This interesting aquatic is growing and fruiting freely in the Victoria tank at Kow. Cultivated in the open air the radiating clusters of triangular, toothed leaves assume a deep coppery colour, and the plants rarely flower, or if they do produce flowers the fruits do not come to perfection. At Glasevine, however, it succeeds admirably in the open air, but the water in which it grows is slightly heated by the overflow from the Victoria tank. Figures of a plant of this species and its fruit will be found in THE GARDEN, Vol. III., pp. 209 and 211, whilst an illustration representing the Chinese gathering Ling (*Trapa bicornis*) is given on p. 214 of the same volume. The stalks of the leaves are each furnished with a float-like swelling (much resembling that seen in many sea-weeds), which serves to buoy up the plant. It has been stated that a large portion of the food of the ancient Thracians was furnished by *Trapa natans*, and *T. bispinosa* (the Singhara Nut) is at the present day a most important food plant to the inhabitants of Cashmere. Dr. Royle affirms that it yielded as much as £12,000 a year revenue to the Government of Runjeet Singh, the tax being levied upon from 96,000 to 128,000 ass-loads from the great lake of Ooller.—N.

**Pansies from Bath.**—That the climate of the north suits Pansies best most people will agree, but that they can also be grown well in the south is proved by the fact that Messrs. Hooper, Bath, in competition with northern growers, carried off the first prizes at Manchester the other day. We have before us a boxful of their blooms, consisting of both show and fancy kinds, all very perfect in form and beautiful in colour. Amongst large-flowered striped kinds are John Cranston, bright crimson and maroon, very fine; E. B. Forster, rosy-scarlet, traversed with dark purple veins, blotched with maroon-crimson, and having a bright yellow eye; William Ogg, a fine dark self; and G. L. Brown, a good, rich plum-coloured self. With these came several excellent blue Violas, the flowers of which are large and fine. Amongst them we may mention V. Blue Bonnet and V. Lord Beaconsfield. It must be admitted that the present has been an unusually favourable year for Pansies and Violas, as far as southern growers are concerned, but in even dry seasons and in the warmest parts of England no one need despair of being able to grow these popular flowers to perfection, provided they give them proper treatment, which consists chiefly in planting them in deep, rich, well-drained soil, and in giving heavy mulchings during summer, and copious waterings.

**The Edelweiss at Dangstein.**—I am not surprised that the Edelweiss is cherished so much by the Swiss, for it is as beautiful as it is peculiar. Last year (see p. 105, Vol. XI. of THE GARDEN) I gave an account of Lady Dorothy Nevill's success with it at Dangstein. Her ladyship, through her precaution, in the first instance, of saving the seed from a small bouquet which had been given her by a friend, is now rewarded with scores of plants in her Alpine beds and other parts of the garden. In spite of the very mild winter which we have had and the excessive rainfall, the young seedlings are looking remarkably well, and are producing strong branching heads of bloom, finer, indeed, than I ever remember to have seen them. I am glad to find that within these last twelve months the Edelweiss is better appreciated by lovers of Alpine plants than it

has been, and that it is now considered to be a valuable addition to an Alpine garden. Lady Dorothy Nevill receives many congratulations respecting her success with this plant, and which she richly deserves, for I doubt if there can be found anywhere in England as large a quantity of such healthy plants flowering in such abundance as at Dangstein.—L. J. V.

#### GRAVEYARD GARDENS.

THE idea of turning disused graveyards into gardens for the use of the public is highly commendable; for open spaces in thickly populated districts in large towns is desirable, as much from a sanitary as from an ornamental point of view. But on visiting such graveyards in London as have been converted into gardens, and in some cases at great expense, one cannot help thinking that too much has been done in imitation of our public parks. We know of more than one churchyard in which the turf has been cut to pieces in order to make provision for long beds, which during summer are planted with long lines of Beetroot, Golden Feather Pyrethrum, or the white-leaved Centaureas; other round and oblong beds are filled with Coleuses, Pelargoniums, Alternantheras, and similar plants, the duration of which, especially in cold seasons, is indeed but short. These beds, for the greater part of the year, simply remain bare spaces, which form anything but a pleasing contrast to the green sward. Between the trees and shrubs, many of which have died through being planted late in spring, the ground is also bare, and until the shrubs are large enough to cover the soil is likely so to remain. Although a graveyard may be divested of its tombstones and its formal hillocks of earth, yet one cannot forget that it is still a graveyard. People planting individual graves generally aim at using such flowers and plants as are unobtrusive in appearance and devoid of glaring colours. Why, then, should this not be the case when embellishing a whole churchyard? The hundreds of easily cultivated, really good hardy flowers which we now possess afford a selection of suitable subjects, even for the most smoky parts of London; and whilst the garden may be made beautiful with plants which bloom naturally at all seasons of the year, the green turf may remain undisturbed, and no bare unsightly places need be observable. Then, again, the plants now in use involve a great expense yearly, and, in some cases, even hot-houses are built to propagate and protect them during winter; whereas, if a good selection of hardy plants were employed in the first place, no protection or further expense would be needed, which, in poor neighbourhoods especially, is an important advantage. Experience will, however, in this matter, as in others, no doubt lead to improvements; but there is still no reason why a pleasant, unpretentious, and enjoyable garden should not be made in the first place. One of the best graveyard gardens which we have seen in London, considering the limited means at command and the space occupied, together with an unfavourable locality for the growth of plants, is that attached to St. John's Church, Waterloo Road. Shady places near the building have been planted with British Ferns, wild flowers, and other shade-loving subjects, whilst the walls will be hidden by *Ampelopsis Veitchii*, Ivies, and other rapid-growing creepers. Several clumps of shrubs and trees have been planted, among which we noted the spring-flowering Almonds, silver-leaved Poplars, and other plants suitable for the situation. There is a good breadth of beautifully green turf, and a total absence of ill-formed flower beds. The ground is slightly undulating, and not a straight line or edging can be seen anywhere; although the borders round the groups of shrubs have this year been partly filled with common bedding plants, the contributions of people interested in churchyard gardens, it is proposed, as soon as suitable means can be obtained, to fill up the shrubberies with good hardy plants. People having a surplus of such hardy plants as will succeed in London would do well to give them for such a purpose, thereby encouraging a taste for true gardening in the heart of London.—S.

**Pelargonium Monstrosum.**—Mr. Gilbert, of Burghley, has sent us blooms of a seedling *Pelargonium*, which show a peculiar kind of monoströphy. The trusses, which are large, consist of flowers piled one above the other, house-hose fashion, for quite 1 in. in length, rendering the head of blossom not unlike cluster of Hope.

## NOTES OF THE WEEK.

**Oxalis floribunda.**—The masses of bright flowers now shown by this plant are quite remarkable for their beauty and abundance. It is an excellent plant in all ways, and quite easy to grow in most soils.

**Goat's Beard** (*Spirea Aruncus*).—This is by far the most valuable herbaceous plant now in flower, being beautiful in foliage and habit, as well as in its flowers, so freely produced in large, gracefully-drooping plumes. It should, however, be noted that there are inferior green varieties of this plant, and that they are not worth growing. In its best forms it is as good in midsummer as the Pampas Grass is in autumn.

**Lewisia rediviva.**—Large numbers of this singularly beautiful Rocky Mountain Alpine plant are now finely in flower in Messrs. Backhouses' nursery, York, where they make quite a display. Their blooms are of a lovely soft rose or pink, resembling those of a small Cactus, and they are produced close upon the ground. The plant appears to thrive best when planted in about half loam and half peat.—R. P.

**Genista virgata.**—This, the Twiggly Broom, as it is generally called, is now beautifully in flower in Messrs. Osborns' nursery at Fulham. When we state that it forms a plant 8 ft. high and 10 ft. through, one mass of bright yellow blossoms, and feathered all round quite to the ground, some idea may be gleaned as to the effect which it produces. *Magnolia Thompsoniana* is also just coming into flower in the same nursery.

**A New Yellow Torenia.**—Mr. Godefroy-Lesneuf, of Argenteuil, sends us a bloom of a yellow species of this popular genus, which seems as ornamental as it is interesting. If it prove as graceful in habit as the other *Torenia*s it will be a very welcome addition to our gardens.

**A New Variegated Cockfoot Grass.**—Messrs. E. G. Henderson showed recently in the Regent's Park a variety of *Dactylis glomerata* with very long leaves handsomely variegated. It seems distinct from the old variegated sorts of this plant and likely to be useful from its drooping habit and long leaves.

**Hardy Flowers at Tottenham.**—In addition to many well-known and popular flowers now in bloom in Mr. Ware's collection, we noticed the white *Brodiaea*, the light crimson *Bomarea oculata*, the elegant white *Hesperocordium lacteum*, several handsome varieties of *Papaver nudicaule*, three varieties of the Japanese *Rosa rugosa*, *Habenaria fimbriata* (a pretty hardy Orchid), and the double *Geum*, a bright flower of a fine orange-scarlet colour.

**The Large Thrifts.**—The seedling forms of the great Thrift are now very beautiful in the gardens round London, particularly in Mr. Ware's collection. Their rose and pink varieties especially are very handsome, and we cannot have too many of them so long as they are distinct, but we hope that no one will add to our sufficiently numerous collection of names by giving them separate ones.

**Stephanotis floribunda in Covent Garden.**—Neat little plants of this, loaded with blossoms, are now being offered for sale in Covent Garden Market. They are grown in 6-in. pots, and trained round a few slight stakes. Plants of this description are exposed during summer and autumn to plenty of air and sunshine, in order that the wood may get thoroughly ripened. They are shortened back and brought gently on in spring, and nearly every break produces a flowering shoot.

**Habrothamnus fasciculatus in Cornwall.**—I herewith send you flowering branches of this *Habrothamnus*, but it is not nearly so good as I expected on account of the continuous floods of rain and cold winds to which it has been fully exposed during the past fortnight. The plants have stood out as standards for several years without the least protection. It is a grand plant for a south wall, and enables us to cut from it large quantities of blossom for indoor decoration.—SANGUINEA, *Truro*. [Common as these *Habrothamnus* are, we had no idea of the great beauty of this species until we received these fresh and vigorous shoots of it grown in the open air, and laden with myriads of coral-coloured blossoms, of which there were 300 on a small twig 1 ft. in length. We should have had it drawn for a coloured plate had it not been so old a plant and already figured.]

**A Blue Bush.**—The best example of this which I have ever seen is *Ceanothus divaricatus*, now in full flower here, a condition in which it has been for a month or six weeks. It was planted about seven years ago, a small plant from a pot, and now it measures about 15 ft. high, about 18 ft. wide, and the stem near the ground girths close upon 2 ft. It is a mass of pale blue, and fills the air with an odour

like that of Hawthorn. Your Wexford correspondent must, I think, have been in error (see p. 533) when he stated that he had *C. azarvus* in flower in May, as this species does not usually come into bloom before August, and it continues here in full beauty until stopped by frost, but this for that season is far surpassed by *C. Gloire de Versailles*.—T. SMITH, *Nevry*.

**Orchis foliosa.**—A batch of this noble hardy Orchid, now in fine bloom, passed part of the spring under water, owing to floods—another proof of its hardiness, if any were wanted. It seems to grow, flower, and increase without any of the accidents or weaknesses which seem common to other hardy Orchids.

**Speckled Gloxinias.**—One of the best of these which we have seen is named *Papilion*. Its flowers are well formed, borne in an upright manner, white, and beautifully speckled with small bluish-purple dots. The plant grows freely, and is in every way a desirable one. It is now in flower in several of the principal London nurseries.

**Abutilon Lemoine.**—This lemon-coloured *Abutilon*, now flowering in the Holloway Nurseries, forms an excellent companion for the white *Boule de Nègre* and *rosafleur*. In habit it is similar to the white-flowered kind. Any one having well-grown plants of the three *Abutilons* just named will have no difficulty in securing abundance of yellow, white, and rose-coloured blossoms nearly every month in the year.

**Iris Ganymede.**—This beautiful variety of the Germanica section is now blooming freely in Mr. Parker's nursery at Tooting. Its body colour is yellow, irregularly margined with dark purple, the fall petals being suffused with crimson. It is in every way well worth having in any collection of hardy Irises.

**Royal Botanic Society's Evening Fete.**—At the evening fête of the Royal Botanic Society, which will be held on the 27th inst., prizes will be offered for dinner-table, sideboard, and buffet decorations, table and hand bouquets, hanging and standing baskets, groups of plants arranged for alcoves, fire-places, and balconies, and for flowers, in a cut state or otherwise, which only expand at night.

**Begonias at Forest Hill.**—A fine display of tuberous-rooted *Begonias* may now be found in Messrs. Laing & Co.'s nursery, Forest Hill. The plants, which are of good size, are unusually well grown, and free from that peculiar curl in the leaf to which, in some cases, they are subject, and which amounts to quite a disease. They are arranged in a light airy, span-roofed house in such a way that they can be seen to the best advantage, and, being now loaded with blossoms, present a sight, the brilliancy of which is surpassed by but few plants. These *Begonias* have been obtained from all available sources, both in England and on the Continent, and, by careful cross-fertilisation, remarkably distinct kinds, both as regards habit of growth, foliage, and flowers, have been obtained. Among the most useful sorts now in bloom, we selected the following, viz., Baron Hornby, a free-growing kind with large leaves, and bearing flowers of a bright ruby crimson, measuring nearly 5 in. across the petals; Coltoni, a large orange-crimson flower with broad stiff petals; W. E. Gumbleton, one of the best of the upright-flowered kinds, dwarf and bushy in habit, and producing abundance of flower-spikes from the root-stock, the blossom being of a vivid scarlet; White Queen, a good white-flowered kind of the *hollensis* type, bushy and compact; and Queen of Whites, of the *Roseflora* type, also excellent. *P. Lecontei* is a remarkably floriferous sort, having large drooping spikes, each of which produces seven to ten clear rose-coloured blossoms. Other good single kinds are delicate, of quite a new colour, and with flowers round and well formed; John Laing; Cornelles, rose colour; and Oriflamme, carnine. Excellent double kinds may also now be found, but only a few of them are at present in flower. Two good ones now in flower are President Burrole, brilliant scarlet, equal to a Carnation in appearance; and a delicate pink, Balsam-flowered kind named B. Calypso. Hundreds of plants of the older kinds are here planted out in the open air, and appear to be growing remarkably well, and it is probable that the day is not far distant when *Begonias* will play an important part in hardy flower gardening.

**National Rose Society.**—The second exhibition of this Society will take place at the Crystal Palace on Saturday, June 29, and the last day for forwarding entries is Saturday, June 22.

**Calcot Gardens, Reading.**—It will be seen by an advertisement in another column that these gardens, the property of the late Mr. Webb, are to be sold at the Mart, Tokenhouse Yard, on Wednesday next. They are famous for fruits, and especially for Nuts, of which Mr. Webb possessed several new and improved varieties.

**Papaver nudicaule for Cutting.**—This Poppy keeps fairly well in a cut state in rooms. The white, rich yellow, and orange forms are very handsome.

## NOTES FROM KEW.

**Hardy Shrubs.**—Perhaps the most interesting, as well as the most beautiful, of this week's hardy shrubs is the Mexican *Ilabrothamnus corymbosa*. This charming species is a near ally of the deservedly popular *H. elegans*, one of the most useful of pillar plants for the cool conservatory or greenhouse; it is, however, a much stronger and more rapid grower than *H. elegans*. Towards the extremities of the main branches short, leafy ones are freely produced, and each of these is terminated by a cluster of deep rose-coloured flowers; as a wall plant in sheltered situations this makes a fine object. *Ceanothus integriramus* is a very desirable kind, with a profusion of white flowers. *Raphiophloeum japonica*, a handsome shrub, belonging to the Rose family, has leathery, dark green leaves and panicles of white flowers. The Jerusalem Sage (*Phlomis frutescens*), with its Sage-like leaves and whorls of large, golden-yellow blossoms, is the most showy, yellow-flowered shrub to be seen at present in the Kew collections. *Rosa Brunoniiana*, a rampant grower from the Himalayas, has large heads of pure white flowers, and is very conspicuous in the tall shrubs, amongst which it has been planted. For similar situations this is almost unsurpassed, and there is not much fear of its being crowded out.

**Hardy Herbaceous Plants.**—*Dolichnum casbmerianum* is a desirable perennial Larkspur; it is not a strong grower (scarcely attaining a height of 2 ft.), but its large light purple flowers are very pleasing. *Arenaria loricifolia*, one of the most easy plants to grow, is worthy a place in the front row of any flower border; its large flowers are so abundantly produced as to present the appearance of a sheet of white. *Spiraea pubescens* is a pretty, dwarf, herbaceous species from Siberia; it has large clusters of white flowers, and grows about 6 in. high. One of the most handsome of the evening Primroses is (*Oenothera marginata*, from the United States; it has very large white flowers, slightly tinted with rose; 9 in. is the full height to which this plant grows. *Scabiosa caucasica* is a fine Scabiosa, with pale blue flowers more than 2 in. across; the root leaves are quite entire, but those on the stems are much cut. The Blue Daisy of Morocco (*Bellis rotundifolia* var. *corculascens*), though hardly deserving to be called blue, is a pretty plant which was introduced to English gardens a few years ago during Sir J. Hooker's Moroccan expedition. It appears that in various parts of Morocco it is one of the commonest spring flowers, abounding in fields with a rich soil near Tangier, and occurring in great profusion by the watercourses of the valleys of the Greater Atlas at elevations of from 4000 ft. to 11,000 ft. *Edrianthus* (or *Wahlenbergia*) *Pumilio* is a charming Alpine recently introduced by Messrs. Backhouse; it forms a dense perennial tuft of small silvery leaves and sheets of large, purple, bell-shaped flowers; to grow it successfully it requires rather sunny chinks in calcareous rockwork. *Phytanum Scheuchzeri* is a pretty rampant which grows about 1 ft. high, and has blue flowers. *Solidago pumila*, a beautiful little Golden-rod, only attains a height of a few inches and is a mass of bloom. *Galax aphylla*, a perennial from the United States, has stalked, glossy, kidney-shaped leaves and dense spikes of pure white flowers on stems from 1 ft. to 1½ ft. in height. *Amsamia angustifolia* is an elegant North American Dogbane with narrow, Willow-like leaves and heads of very pretty pale blue flowers. *Eriogonum nubbellatum* has yellow flowers which are red in bud; the leafy portion sits close to the ground, but the flower-stalks are 1 ft. high. A Spanish *Digitalis* (*D. Thapsi*) with soft, rosy-red flowers, is a charming border plant, much dwarfier than the English Foxglove. *Hypicum ciliatum* is a compact, pretty perennial with small narrow leaves and showy yellow flowers. *Pentstemon Wrightii* var. *angustifolius* is a charming plant with rosy-pink flowers. *Kniphofia caulescens*, a striking species of sub-tropical aspect, approaches in habit some of the Cape Aloes; the flowers are deep blood-red when young, but after expansion a light yellow. *Sisyrinchium convolvulum* has densely-tufted, Grass-like leaves and bright yellow blossoms. *Ornithogalum narbonneense* has long-stalked, pure white flowers on stems from 1 ft. to 1½ ft. high. *Allium Macleanianum* is a beautiful and distinct Californian species with deep rose-coloured flowers. *Bloomeria aurea* and *Brodiea congesta* are very pretty bulbous plants, the former having umbels of golden-yellow blossoms, the latter heads of fine blue ones.

**Stove Plants.**—A Brazilian climber, *Ipomoea bonariensis*, is especially worth of mention; it has beautiful, rosy-red trumpet-shaped flowers, the inside of the tube being much deeper in colour. Two other tropical American climbers, which, however, require considerable space in which to develop and show their full beauty, are *Stigmaphyllon ciliatum* and *S. littorale*; both have handsome yellow flowers. Two of the most lovely tropical Water Lilies are *Nymphaea dentata*, from Sierra, Leone, with fine leaves and pure white flowers 8 in. in diameter, and the garden hybrid *N. Devoniana*,

a very free-flowering kind with leaves like those of the last-named and brilliant red blossoms.

**Orchids.**—*Cypripedium superbum*, a native of Java and Assam, is one of the best of the barbatum group; it has splendidly variegated leaves, remains a long time in bloom, is a free grower and of good habit. *C. Dayanum*, from Borneo, has large flowers, the sepals being white, with green veins, and the petals purplish, tinged with green. *Hartwegia purpurea*, from Guatemala, is a pleasing epiphyte with rather thick, fleshy, spotted leaves and long, thread-like curved flower-stems bearing numerous small purple flowers. *Cattleya Mendellii*, a magnificent species, the sepals white, tinged with rose, white petals, and a large, much waved, and crisp lip, richest purple in its broadest part, and yellow upwards. *Dendrobium chnummii* has wax-like flowers, pure white with the exception of the lip, which is marked with reddish-orange towards its base. *D. nodatum*, from Moulmein, has whitish sepals and petals, and a orange lip bordered with white, and bearing two crimson-purple blotches at its base. *Oncidium longipes* is a compact little species, attaining a height of about 6 in., and bearing a profusion of brown and yellow flowers. The Mexican *Epidendrum rariferum*—something like *E. nutans*—is a pretty plant with greenish sepals and petals, marked with rich purplish brown spots and a whitish lip.—†

## DARLINGTONIA CALIFORNICA FROM SEED.

This singular member of the so-called "carnivorous" class of plants ought now to be regarded as hardy, since it has withstood the last two winters unprotected in various parts of the country, and doubtless it would stand even more severe winters, seeing that it inhabits high elevations on the Sierra Nevada Mountains, where at times intense cold prevails. Nevertheless, should cultivators not feel inclined to risk it in the outdoor garden in consequence of its comparative rarity, they will, at all events, doubtless now discontinue coddling it in a high temperature. Plants of it which I have seen outside are very robust, with stout and very highly-coloured pitchers, whilst those under glass, in a more equable temperature, have uncoloured thin pitchers, far exceeding in length those that I have seen on native specimens, thus showing that the plant is not living under natural conditions. As I consider that I have been successful in its culture, perhaps a few remarks on my mode of procedure may be of interest. I prefer raising it from seed to investing in imported plants of it, which rarely live more than a year or two. Seeds can be obtained at a cheap rate from most seedsmen, or direct from any of the San Francisco firms. They should be sown in well-drained pans, filled to within 1 in. of the rim with a compost consisting of one part fine peat broken into pieces about 1 in. square, one part finely cut live Sphagnum Moss, half a part sharp silver sand, and half a part broken charcoal; a layer of finely-cut Moss should be laid on the top, and on this sow the seeds; then cover them with a flat piece of glass and keep the pans always moist. In about a month or six weeks they will germinate, and after the seed leaves have become fully developed, the young plants should be pricked off into pans about 1½ in. apart, using the same compost as before. The second season they should be potted in small pots, taking care not to injure the tender roots, and a layer of live Sphagnum should be placed on the surface, as it retains moisture and is a material in which the roots delight to creep. All the preceding operations will, of course, apply to cool frame culture, but the four-year-old seedlings should be gradually inured to the full rigour of the climate. A permanent place should be selected for them by the side of a stream, in an artificial bog or in any moist place, and they should be fully exposed to direct sunlight, but sheltered from the cold winds of early spring, when they are throwing up their young leaves. The plants will require frequent watering in dry seasons. When they have attained a large size, they have a tendency to develop side shoots, which, if taken off and potted, make by far the strongest plants in a comparatively short time. If culture under glass be preferred, the house or frame should be kept as cool as possible, but not shaded. W.

**Diplacus glutinosus.**—This, though an old plant, is not grown so much as it should be, considering how easily cultivated it is and the profuse manner in which it produces its orange, Mimulus-like blooms. It is easily propagated by means of cuttings made of the half-ripened shoots taken between April and August and inserted in sandy soil. When struck, it should be potted off in a compost of good fibry loam, peat, and sand; it may then be placed in a cool frame and kept close until started, when it should have abundance of air. In autumn it should be removed to a greenhouse, where it can be protected from frost. Thus treated, it should bloom well the following spring, and have the coolest end of the conservatory allotted to it, when it will produce a fine display all summer.—T. W. S.

## THE FLOWER GARDEN.

### GROUP OF YUCCAS.

IN the dawn of anything like real perception of the way in which to arrange vegetation in gardens, we have often tried to point out the disadvantages of dotting plants about so as to destroy all good effect. This dotting may be equally wrong in two ways—where it consists of all different plants or of many specimens of a few kinds. Thus, one who collects many kinds and dots them about singly may produce as bad an effect as one who selects and dots about favourite kinds everywhere. It is not well to follow any one plan for gardens generally, but we are convinced that grouping is much the most artistic and in all ways most satisfactory way. By this we mean irregular, but carefully considered, massing in one place. The illustration shows the effect of this as regards Yuccas and allied

remarks on the subject in reply to Mr. Groom; but as Mr. Fish has since (see p. 514) expressed his agreement with Mr. Groom "in all that relates to the importance of leaves," and has requested from me an explanation on certain points, I propose now to deal with the subject at somewhat greater length, for the special benefit of those who attach so much importance to the preservation of the leaves.

On Saturday, June 30, 1877, as related by me in *THE GARDEN* of October 20 (see p. 375), I lifted several clumps of the White Lily (*Lilium candidum*) when they were in full bloom, for the purpose of proving that this Lily was not an evergreen. Among the bulbs so lifted I found some interesting specimens, and as I was desirous of further examination, I placed them in a small basket in my tool-house, and shut down the lid, as I had to leave home on the Monday for six or seven weeks. The remainder of the bulbs taken up I re-planted on the same day, namely, June 30. Those that were re-planted succeeded so



A Group of Yuccas.

plants. It is equally applicable to every hardy plant worthy of a place in the garden. Even in the smallest places a carefully composed group of a favourite flower would afford a much more satisfactory effect than dotting the same number of plants at irregular intervals about the garden, while it would allow of a far greater variety in the aspects of vegetation.

### CUTTING DOWN LILIES JUST AFTER BLOOMING.

MR. GROOM says (see p. 252, March 23): "The only point to which I took exception was that of cutting down the flower-stems before the leaves had faded." . . . "If 'Dunedin' will illustrate the totally distinct character of Lily bulbs in such a manner as to prove that neither directly nor indirectly is the succeeding year's flower-stem affected by cutting down the leaves while they are yet green he will confer a boon on many cultivators, who up to the present time have attached great importance to retaining the foliage in health as long as possible." I have already (see p. 451, May 11) made some

well, that in the first week in May last they were among the most promising I had in the garden; so much so, indeed, that I decided on lifting one of them, from which to cut out a specimen for photographic illustration hereafter, which will be given in my next paper. As this is bringing us face to face with facts, will any one venture to say that the stem I cut off from the bulb in May last was in any way affected by the loss of the stem and leaves that were cut down on June 30 last year when the parent plant was in full bloom?

Mr. Baines remarked (see p. 349, Oct. 13, 1877), that at that time "All herbaceous plants should be removed or divided that require it, except such plants as the common white Lily, which will now be making active growth, and if the roots be disturbed, it will have the effect of wholly or partially preventing its flowering next year." Now many of us can bear witness to the correctness of this statement. But what of that? A great deal. In such cases the tufts of leaves which appear fresh and green above the ground fade and die through the checking of the roots; the bulbs also, instead of sending up

stems, die before the ensuing spring, there being no such thing as dormancy in the Lily. The seed-buds, however, which would have been liberated and vegetating during the middle of the previous summer would go on growing, though slowly at this time, drawing nourishment from the food which had been laid up in the parent bulb. On the return of spring, however, the seed-buds would then go on growing with great rapidity, in an increasing ratio, up to the blooming season, when they would be fully developed bulbs, having by this time, with the additional aid of their own roots, completed their first twelve months of existence. As yet, they would be incapable of sending up flower-bearing stems, but would be capable of doing so the second year, the first year being a blank, as Mr. Baines remarks, in consequence of the check to the roots of the bulbs and the death of their predecessors. This is no mere theory, but is in accordance with experimental facts. Then, what aid could these bulbs or their stems have had from any stem-leaves whatever? About the end of February, 1877, I procured some bulbs of *L. auratum* for the purposes of dissection. Among them was one which appeared to me to be in better condition than the others. I therefore planted it in a pot and placed it under a glazed verandah. During the latter part of the summer I placed it out-of-doors. In course of time it showed for bloom, but one night I found that the early frost had touched the leaves, and I brought it in again to its old place under the verandah. The leaves, however, I found had been severely injured and were turning yellow, while the flower-buds (nine in number) were grown like large Beau-pods. The leaves now began to drop off one after the other. The flowers, however, all opened fully and bloomed beautifully, measuring from tip to tip of the petals 11 in. and 12 in. Before the half of the flowers were done blooming, not a single leaf was left on the stem. By the time the last flower was beginning to fade the stem itself was getting yellow; so I cut away the greater part of it, and left the plant as it was in the pot during the rest of the winter. In the spring not one but two strong stems shot up, showing that the successional bulb had thriven, notwithstanding the loss of the leaves, and had liberated two germs, which had produced twin bulbs. I put them out-of-doors, and the stems this season are actually double the thickness of their predecessor, with a little offset growing beside them. How, then, could Mr. Groom's exception apply here when the leaves had all fallen before the parent plant had done blooming?

We have been considering whether the growth of the new bulbs or their stems can be affected by cutting down the stems of the parent plants immediately after they are done blooming. Let us now turn the tables, and ask: "Can the growth and blooming of the stems be affected by cutting off the bulbs?" I reply: It cannot. I have a bed of Lilies, consisting of *Lilium bulbiferum*, *candidum*, *croceum*, *longiflorum*, *pyrenaicum*, *speciosum*, and *umbellatum*, some of which have bloomed and others are in bloom, and there is not a bulb among them. How can this be? In taking up the bulbs in the beginning of May, for the purpose of making specimens for THE GARDEN, I cut off the stems about 2 in. above the bulbs, and these stems I planted out in a bed on the same day, the stems being from 1 ft. to 18 in. in length. I watered them thoroughly, and all continued to grow and bloom well, though not so long, of course, as if they had been feeding on the nutriment specially stored up for them. Almost all true Lilies have a tendency to throw out roots under certain circumstances, more or less, from the stems above the bulbs, and these would tend to keep the leaves green for a length of time without having the slightest connection with either the new or the old bulbs. These stems, without bulbs, that I planted out in the beginning of May have continued not only green, but have actually increased in growth and bloomed; and yet there are many cultivators who, up to the present time, have attached great importance to retaining the foliage in health as long as possible." Why? Because those who have gone before them have left it as a traditional relic that "the succeeding year's flower-stem is affected by cutting down the leaves while they are yet green." Green leaves on the old stems are, as a fact, no criterion whatever that those stems and leaves have any connection at the time with the new bulbs, or the stems within the new bulbs. If all that I have written fails to remove what I believe to be

erroneous impressions, let any one who is interested dig down near a clump of Lilies just as they have gone out of bloom, and carefully cut away a bulb, without in the least disturbing the stem, and then replace the soil again. He will find that the stem and the leaves will continue green quite as long as those that have not been moved; and if he will at once re-plant the bulb in congenial soil, he will find that next season it will bloom better and continue longer in bloom than those that have been left in the ground undisturbed.

I propose now to adduce some collateral evidence in support of what I have stated by touching lightly on the structure and functions of the roots, bulb, stem, leaves, and flowers.

**THE ROOTS.**—In growing downward the roots continually renew the tender tissue through which the absorption required to restore what is lost by evaporation or consumed in growth is principally effected. The idea that all the underground portion of a plant belongs to the roots is by no means correct. The roots give birth to no other organs, but themselves directly perform those functions which pertain to the relations of the plant with the soil; their ramifications bind the plant to the earth; their newly-formed extremities or rootlets imbibe nourishment from it. The roots lengthen by continued cell-multiplication mainly at their lower extremities, the parts once formed scarcely, if at all, elongating afterwards, the growth taking place continuously at the tips alone, so that the tips of the growing roots always consist of the most newly formed and active tissue. Hence the danger of disturbing active roots during the season of growth, as they cannot be removed from the soil, as Mr. Baines has remarked, without great injury to the plant, a most reprehensible practice on the part of those who transplant late in the season.

**THE BULB.**—Some Lily growers call the bulb "the root of the matter," but this is incorrect. The bulb is not the root. It is a permanently abbreviated stem clothed with scales, which are imperfect and thickened leaves. The new bulb does not send up a stem during the first summer, but elaborates what it receives from the roots into organic or nourishing matter, and stores it up for future use in the core and in the cells of the scales borne on the core, which enlarge or become more fleshy as the nourishing matter accumulates. When vegetation becomes active in the following spring the new stem and the successional bulbule within the new bulb, fed by this stock of nourishment, grow with great vigour, and the stem produces leaves and at last flowers. When the plant has continued in bloom for some time—longer or shorter, according to the quantity of nourishment stored up—the stock will then become exhausted, and, by using the microscope, it will be seen that the cells in the scales have become emptied of their contents and are now soft and flabby, the old roots being dead or dying. The scales then dry up, and the parent bulb entirely perishes, leaving it to the successional bulb to go through the same course the next season.

**THE STEM AND THE LEAVES.**—The aboveground functions are carried on not so much by the stem itself as by the organs which it bears, namely, the leaves. Hence, the production of leaves is one of the characteristics of the stem. It is essential to the plant that there should be evaporation from the leaves, as it is the only method by which its excessively dilute food can be concentrated. Some arrangement is therefore requisite that shall allow of sufficient exhalation from the leaves while the plant is freely supplied with moisture by the roots, but restrain it when the supply is deficient. It is clear, then, that the greatest demand is made upon the leaves at the very period when the supply through the roots is most likely to fail; for the summer's sun, which acts so powerfully on the leaves, at the same time parches the soil upon which the leaves, through the rootlets, depend for the moisture which they exhale. So long as their demands are promptly answered, all goes well. The greater the force of the sun's rays, the greater the speed at which the machinery of the plant is driven. But whenever the supply at the roots fails, the foliage begins to flag and droop, as is so often seen under a sultry meridian sun; and if the exhaustion proceeds beyond a certain point, the leaves inevitably wither and die. Some adaptation is therefore needed, analogous to a self-acting valve, which shall regulate the exhalation according to the supply. Such an office is actually fulfilled by the stomata, or breathing pores.

The number of these breathing-pores on a square inch of surface of a leaf of the White Lily is from 20,000 to 60,000 on the lower surface, and somewhere about 3000 on the upper surface. In this plant, and in all other true Lilies, they are so remarkably large compared with some other plants, that they may be discerned by a simple lens of 1-in. focus. Mr. Fish has remarked "that nothing has yet been proved by me to show that Lily leaves are of less moment to Lily bulbs than Potato haulm to Potatoes." I reply that there is no similarity whatever between the organic structure of a true Lily and that of a Potato—the same may be said of the Gladiolus, to which he refers—and, therefore, had it even struck me, no comparison could have been made one way or the other.

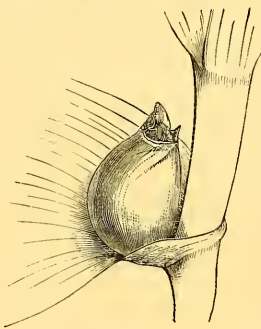
**THE FLOWERS.**—We now come to the flowering of the plant; and this, to Lily growers, is the most important point which we have to consider. Lilies begin to flower at a nearly determinate period for each species, which is dependent partly upon constitutional causes, and partly upon the requisite supply of nutritive matter in their system; the experience, therefore, of cultivators under glass—as recently noted in THE GARDEN—is very much calculated to mislead amateur cultivators in the open ground. The flowering of the Lily draws very largely upon the powers and nourishment of the plant, while—unlike the leaves—the flowers yield nothing in return. The food which the roots absorb, after having been digested and elaborated in the leaves, is all expended in the production of flower-buds and flowers, for as they seldom show for seed, unless in pots under glass, it is unnecessary here to take this point into consideration. Flowering is, in fact, an exhaustive process, drawing out to the last the whole of the nourishment that has been stored up in the cells of the scales, and consequently a most liberal supply of food is requisite to maintain the flowering for even a moderate time. The actual consumption of nourishment in flowering may be shown in a variety of ways; but without going into lengthened illustrations, which would be inconvenient at the present time, it may be stated as a positive fact that it is while flowering that the plant actually consumes the most; and when the flowers have all faded, it is a true sign that the nourishing powers of the leaves are gone; and as they now cease to perform their functions, nothing remains for the parent plant but to decay and die—and so it perishes.

Mr. Fish says: "The question that 'Dunedin' has failed to answer is, When does this vital connection between the new germ bud and the old Lily terminate?" It can hardly be said that I have failed when I have had no cause to allude to it. It is said by botanists, "That plants, like animals, are organised and living beings." This being so, part of the answer to Mr. Fish is found by studying the animal creation. The lamb at first will seldom venture to leave its parent; all the feeding it gets comes through her. By-and-by it ventures to taste the green herbage; the taste for stronger food gains upon it as its constitution grows stronger, until at last it ceases altogether to visit its parent. So it is with the new germ bulb or bulbule, which at this stage I prefer to call it. As the bulbule has no power of locomotion, it follows that its food must be near at hand. At the beginning, and until it has sent forth its roots into the soil, it must be nourished and grow by means of organised matter supplied by the parent. This supply is deposited in the cells of the fleshy core to which the bulbule is attached, and also in the cells of the scales, which, like miniature storehouses, are seated on and around the core. The ample store of nourishment thus provided enables the bulbule in the early spring to grow with remarkable vigour, and send down its roots through the core; for we know by experimental facts that the roots begin to protrude into the soil some five or six weeks before the parent plant begins to bloom. We know, also, by the same facts, that as soon as the bloom is over the supply from the parent bulb ceases, and that by this time the new bulb is well able to live and grow solely by the aid of its own roots. Knowing all this, namely, the time when the roots begin to protrude into the soil and the time when the supply of the parent ceases, I must leave it to Mr. Fish and other intelligent horticulturists, who are as well able as I am, to decide at what moment or time the connection between the new and the old terminates. The connection must cease when the supplies cease, but it may be terminated before that time, as experimental facts have proved.

DUNEDIN.

STEM-BULBS IN TULIPS.

We have received from Mrs. Passingham, of Milton, near Cambridge, a Tulip stem with a young bulb on it, of which the accompanying woodcut is a representation. Bulbs, as is well known, are usually underground or close to it; but occasionally buds in the axils of the upper leaves become transformed into bulbs, which is what has happened in this case. Instances



of similar growths, not only in Tulips, but also in other bulbous plants, are not uncommon.

OPEN-AIR VEGETATION IN MAY.\*

MAY commenced with fine dry weather and a west wind which changed to the east about the 7th, and continued more or less to blow from that quarter till the end of the month. Showers were frequent, but generally of short duration. Now and then some rough gales were experienced, which greatly damaged the young leaves of many trees. Occasional hot sunny blinks brought both foliage and blossoms of many trees forward rapidly. The following varieties came into bloom in the order here given:—

- |                               |                                  |
|-------------------------------|----------------------------------|
| May 2. Perfumed Cherry.       | May 30. Scarlet-flowering Thorn. |
| " 4. Gean tree                | " 21. Large-flowered Medlar.     |
| " 6. Double-flowering Cherry. | " 23. Common White Hawthorn.     |
| " 12. Purple Lilac.           | " 23. Bird Cherry.               |
| " 15. Scotch Laburnum.        | " 24. Yellow-flowering Pavia.    |
| " 18. White Lilac.            | " 27. Mountain Ash.              |
| " 19. Common Horse Chestnut.  |                                  |

Of the above the double-flowering Cherry has been remarkably fine. With the exception of the perfumed Cherry, double-flowering Cherry, and Gean, none here mentioned were in flower last year till June. The early flowering this season is probably owing to the fact that only 2° of frost were indicated during the whole month of May, while last year 36° of frost were registered. Although the early part of April was very frosty, no frost occurred after the 9th, which also accounts for the early flowering of certain trees. The scantiness of bloom, however, observed on some trees has evidently been caused by the immature state of the wood during the last two seasons. Some of the peculiarities now observed on ornamental and forest trees, as well as shrubs, are worthy of record. Rhododendron blooms have been particularly scarce this spring; Lilacs in general have produced but very few flowers, and the same may be said of the Scarlet Hawthorn, while some trees of the White Thorn have been tolerably floriferous. Blossoms on the English Laburnum are also scarce, as well as on some of the Scotch variety (Cytisus Laburnum alpinus). Some trees, however, which produced little or no flowers last season are quite covered with bloom. The Scotch Laburnum was in full flower last year on June 30; although the first flowers were noticed on May 15, it was not in perfection till May 28. Mountain Ash, although in flower, is very scanty, and the same may be said of many Service trees, kinds which annually produce flowers and fruit in abundance. The common Horse Chestnut showed its first flowers this year on May 19, but generally very poor, except some in very favourable situations. No flower-buds are observable on any of the Scarlet Horse Chestnuts, and but few on the Pavia flava as compared with former years. The Norway Maple has shown but little flower, and the common Sycamore, Elm, and other forest

\* Read by Mr. James MacNab before the Botanical Society of Edinburgh, June 13, 1878.

trees promise no better. The Gean, which was in full blossom on May 10, does not show much signs of producing fruit.

Many American trees, as usual, are late in coming into leaf, notwithstanding the recent open weather; this is particularly observable in the case of the Liquidambar, Tulip tree, scarlet American Oaks, deciduous Magnolias, *Ostrya virginica*, *Celtis occidentalis*, various *Robinias*, *Taxodium distichum*, and the *Catalpas*.

During May the thermometer was only once at or below freezing point, viz., on the 10th, when it indicated 2°. Since the year 1854 190° have been registered during the May month; the greatest amount was in 1877, when 36° were recorded; in 1863, 1864, 1866, and 1875 no frost was registered. The six lowest markings this year were on the mornings of the 10th, 20th, 21st, 25th, 26th, and 27th, when 30°, 36°, 35°, 36°, 36°, 35° were indicated, while the six highest were on the 1st, 4th, 7th, 15th, 16th, and 17th, when 47°, 48°, 47°, 48°, 48°, and 49° were indicated. The thirteen species of hardy herbaceous plants noticed in my report for May last year as showing no open flowers during that month have this year all been in bloom during their usual period. On the 31st of May 295 species of plants were counted in flower in the rock garden. The following is a list of some of the most conspicuous then in bloom:—

*Andromeda fastigiata*, *Anemone alpina*, *Arnebia echinoides*, *Anubria* (of which many varieties are now in bloom, the most conspicuous being *A. Hendersemi*), *Chlorogalum Browni* and *Leichtlini*, *Cyclobothra coerules*, *Daphne Cneorum*, *Darlingtonia californica*, *Draba triopsideata*, *Dryas Drummondii* and *otopetalata*, *Erigeron alpinum* and *Roylii*, *Erinus alpinus* and hispanicus, *Fragaria lucida*, *Fritillaria kantschobiana*, *Gentiana verna*, *Gemm coccoineum fl.-pl.*, *Hellephantemum* (the earliest and most conspicuous being *Bride*, *Royalty*, and *Queen of Spring*), *Helonias asphodeloides*, *Hippocrepis helvetica*, *Hutchinsonia alpina*, *Iberis corifolia*, *Iris cristata*, *Sedum buxifolium*, *Linaria alpina*, *Linnaea borealis* (American and Scotch), *Menziesia Drummondii* and *polifolia versicolor*, *Meconopsis aculeata hybrida* and *nepalensis*, *Myosotis alpestris*, *Narcissus triandrus albus*, *Pentstemon humilis* and *procerus*, *Pernettya angustifolia spinosa*, *Phlox Nelsoni* and *setacea violacea*, *Polemonium humile*, *Potentilla alpestris*, *dubia*, *lupinoides*, and *peduncularis*, *Primula capitata*, *cartusoides amena*, *luteola*, and *sikkimensis*, *Rhododendron lepidotum*, *Rubus arcticus*, *Saponaria ceymoides major*, *Sarothamnus scoparius pendulus*, *Saxifraga peltata* and *pyramidalis*, as well as a host of others, *Silene acaulis*, *Smilacina bifida*, *Symphandra Wanneri*, *Uvularia stellata*, *Veronica Guthriana* and *rupesstris*.

### SEEDLING COLUMBINES.

I was interested in reading a letter from Mr. Dodd, of Eton (see p. 515), concerning raising the species of *Aquilegia* from seed. Till then I almost fancied I had the enjoyment of that little farce to myself. It is very amusing to be taken round the garden and be shown quaint and often pretty varieties of the common Columbine bearing the names of the finest and most distinct species. While one may not be surprised at this in inexperienced growers of hardy plants, it is, however, rather unpleasant to see leading firms sending out new hybrids, seedlings that may have been noticed cropping up in gardens where the American species may have been grown, seedlings, moreover, which are of far inferior beauty to the species. Haylogicalness and the seedlings sent out by Messrs. Veitch belong to this class. Some recent correspondents of THE GARDEN who say they have flowered certain rare species would do well to ascertain that they really possess the species in question. What we want in *Aquilegia* is to procure the distinct species and keep them distinct, and not raise endless useless hybrids of far less beauty and value than many of the varieties of the common Columbines now in our gardens. AN HERBACEOUS MAN.

***Aquilegia chrysantha*.**—With me this is one of the finest Columbines among some hundreds in all stages of growth. Its spurs measure 2½ in. in length. I have about fifty plants of it all in fine bloom, and have been gathering their beautiful straw-coloured flowers for several weeks past. The plants vary in height from 3 ft. to 3 ft. 10 in., and will probably get higher yet. They have stood in their present position in an open border all the winter, and all come quite true from seed. In order to raise seedlings I find that the seed must be sown under glass, and the plants pricked off when large enough to handle. Some which I sowed in the open ground on a south border never germinated, not a single plant came up; whereas the same seed sown in a little heat grew freely. My plants of *A. chrysantha* have been greatly admired by all who have seen them, and their distinct colour, peculiar shape, and usefulness in the form of cut flowers make them quite acquisitions.—JOHN GARLAND, *Killerton, Ebezer*.

**Hardy Orchid Garden.**—The interesting account of hardy Orchids (see p. 535) has made me wonder whether I could make an

Orchid garden in a triangular piece of wood, where the trees are principally Oak, growing upon a soil of good Hazel loam. I have enclosed, at small distances from each other, a space for a wild garden and Fernery, and another for an American garden, the latter being partly formed from an old tract of peat, in which the Beg Myrtle found a happy home, but where, since being drained and cultivated, I now have American plants, Lilies, and *Cypripedium* spectabile growing. After reading the above-mentioned article, why, thought I, should there not be a third space taken from the old wood? Neither garden would be visible from the other, and woodland walks would connect them; and with a foundation of light earth and also peat to commence with, an Orchid garden would be most interesting. I wonder whether your correspondent would consider it very troublesome if I asked him to have the kindness to furnish me with a rough pencil sketch of what he thinks would be the best arrangement of an Orchid garden under similar circumstances. It would greatly assist an amateur in following his other very lucid descriptions.—M. L. W.

### NOTES AND QUESTIONS ON THE FLOWER GARDEN.

***Myosotis semperflorens*.**—Under this name a so-called new Forget-me-not has been put into commerce, but I incline to the belief that it is but the well-known semi-aquatic *M. palustris* under another designation. It is very robust and spreading, has stout hirsute stems, and flowers exactly resembling those of the wild kind. It thrives well in the open ground during the present moist weather, but at no time does it produce a good head of flower, or is it effective. No doubt it is worth growing by the side of tanks or ponds, but for beds or borders it is comparatively valueless.—A. D.

***Lilium Thunbergianum*.**—Surely there can scarcely be a more gorgeous pot or border plant at this season of the year than this richly-coloured Lily. Its flowers are so erect, of such a brilliant hue, and so abundantly produced, that a mass of it would be one of the most effective objects to be found in a garden. This Lily can be easily grown, and is rapidly propagated, young bulbs being produced freely. Mr. Hayes, of Edmonton, sends it in large quantities to market, and one is led to wonder what becomes of all the bulbs thus disposed of. Lilies are seldom found in gardens of the average kind, and Lily fanciers are few indeed compared with the mass of persons who profess to grow flowers. The old white *Lilium candidum* is, perhaps, the most common; then come the Tiger and Martagon Lilies, but these are still comparatively rare. Gardeners commonly grow the varieties of *Lilium lancifolium* and *auratum* in pots, and these not always successfully; but, still, at times they are found in good form. Both *Thunbergianum* and *longiflorum* are robust border kinds, and singularly effective, though so very distinct. They should be as eagerly sought for and as freely cultivated as *L. candidum* or other border kinds. Probably the Lily has materially suffered from too much coddling. Treat it as a hardy border plant, with good culture, and the majority of kinds will do well.—A. D.

***Coronilla iberica*.**—This pretty little plant is one of the brightest and most valuable in a very ornamental family. It is quite small and prostrate, and the bright yellow coronas comparatively large. It is a precious little rock plant, and does quite well on the margins of borders.

**Thrift as an Edging.**—Where Box does not succeed, this old garden favourite makes a neat and compact edging with a minimum amount of labour. It will grow in any soil, increases readily by division of the roots, and at this season, when covered with pretty heads of bloom, it adds greatly to the effect of a garden.—J. GHOSE.

***Pentstemon Wrighti angustifolius*.**—This variety, although not different from the type, except as regards its narrow leaves, is, nevertheless, a very pleasing addition to this beautiful genus. It is very floriferous, and its blossoms, which are of a magenta colour outside and of a lighter hue within, are borne on long branching racemes. It is a native of Texas, and was, I believe, introduced to cultivation by Mr. Thompson, of Ipswich.—W.

***Thalia dealbata*.**—Notwithstanding the remarks made at various times in reference to this noble aquatic not being hardy, we have noticed for the past three years a specimen planted in the shallow pool in the herbaceous ground at Kew, and totally unprotected in winter. It is now in a scarcely less thriving condition than specimens in the tropical heat of the stoves, considering the widely different circumstances under which each is placed.—A.

**The Lily of the Nile at Valencia.**—Through the kindness of Dr. Moore, we have been favoured with the perusal of a communication which he had from the Knight of Kerry with reference to the remarkable development of the Lily of the Nile (*Richardia atropurpurea*) at Valencia, that it has been growing almost wild for several years. So floriferous is it, that at times as many as 115 flowers have been counted on a single plant. As regards individual blooms, the Knight of Kerry states that he never before remembers seeing them so fine as they are this season. Of some individual flowers taken round the edge, the spathe measured 36 in.; longitudinally across the throat, 10½ in., and transversely, 8½ in.—"Irish Farmers' Gazette."

## TREES AND SHRUBS.

## THE WEeping BEECH.

AMONGST weeping trees, of which there are now many different varieties in cultivation, a full-grown Beech is one of the most striking and effective. In a young state it is perhaps less attractive than other weeping trees, and it is too often grafted on a short stem, on which its true pendent habit is not seen to the best advantage, but when worked on a tall clean stem and has attained mature age, a Weeping Beech is an object of great beauty, particularly so when in suitable positions and associated with trees of a light airy habit, such as the Birch and Willow. A Weeping Beech is one of the most persistent of weepers; its branches and even spray hang vertically one over the other in massive flakes or layers, giving it a distinct and singular appearance; and whether viewed in spring, when clothed with luxuriant pale green foliage, or in autumn, when it has assumed a warm brown colour, it forms a noble and picturesque



A Weeping Beech.

object in the landscape. It is perhaps seen to the best advantage when planted on the verge of a stream, pond, or lake; but on a steep sloping bank in pleasure grounds, where ample room is given it, or on a rocky eminence in a wild ornamental wood, it forms a telling feature of great interest. Weeping trees should, however, be planted sparingly and not near one another, and carefully selected and suitable sites must be chosen for them, or half their charms will be lost; when met at every turn or too often repeated, their interest and attraction are greatly diminished.

G. B.

## BRAMBLES AND BRIERS.

To the botanist the intricacies of the genera *Rubus* and *Rosa* are indeed beset with thorns. With a little pains, however, the gardener may select those forms best suited for his purpose, not troubling himself whether they are varieties, subspecies, or species. I propose describing those suited to the tangled thicket, or for clumps in the park or long-grassed wild garden, speaking mainly of our native forms.

**Rubus Chamæmoris** (The Cloudberry).—This grows wild in peaty moors of the north, and, being under 1 ft. in height, can only be grown on the outskirts of the thickets. Its large white flowers and delicious orange-yellow fruit, built up of a few large drupels, render it worthy of such a situation; but as the sexes are on different plants, care must be taken to procure fruiting plants and pollen-bearing ones.

**R. saxatilis**.—By the stony banks of streams from South Wales and West Gloucestershire northward may be found this bright little bramble, almost thornless, its barren stems 2 ft. or 3 ft. in length and trailing, whilst its insignificant flowers are borne erect on stems about 1 ft. high. Its leaves are a bright green, and its fruit a handsome scarlet. In wild gardens autumnal beauties must be considered as well as those of other seasons.

**R. Ideus** (The Raspberry).—A shrub by no means to be despised. Its tall erect canes look well amid other Brambles and Roses; its foliage is really beautiful; whilst the berries, red and golden, need no praise of mine.

**R. suberectus** (Anderson), **R. umbrosus** (Lees).—The first of the many forms of the common Bramble (*R. fruticosus*—L.) is most prevalent in the north. A sub-erect form, its barren shoots not rooting at their tips, its stem with very few prickles, no hairs or bristles, its leaves large and bright coloured, generally slightly hairy beneath. The flower is a good size, clear white, with the petals well-shaped and distinct, and the sepals white-edged, whilst the fruit consists of numerous claret or black drupels. The stem is round in section.

**R. rhamnifolius** (W. & N.).—A generally distributed form. Stem pentagonal, with few large prickles, no hairs or bristles, the barren shoots rooting at the tips, and so arching over in a manner suited to the sides rather than the centre of a clump; leaves often white and downy on the under surface; flower not so fine as in the last, the sepals not clearly white-edged; fruit large, black, and juicy.

**R. corylifolius** (Smith), **R. subulstris** (Lees).—Also general in England; has less decidedly angular stems, with more numerous, but much smaller and more slender, prickles than the last. The barren shoots root at the tips and lie almost prostrate, being, therefore, suitable for the outer ring of a clump. The leaf consists of five overlapping, hazel-like leaflets; the sepals are very downy, and the petals broadly egg-shaped, so forming a finer diec of white than *R. suberectus*. The fruit consists of a few large black drupels.

**R. cæsius** (the Dewberry).—A well-known and distinct prostrate form, with stems set with needle-like prickles, and covered with a glaucous bloom. The leaves are green on both surfaces; the flower is not striking; the sepals are downy, but the large drupels of the fruit, "shining dim—powdered with a downy blue," render this form well worthy of a place among the wild Anemones and Violets of the coppice, or outside the Bramble clump, which I hope may soon form part of many a garden.

**R. discolor** (W. & N.).—An abundant form, well known by its delicate pink flowers (as large as any British species) and downy stem set with strong, short, and stout prickles. The stem is roundish, arching, and rooting at the tip. The sepals are white covered with a thick down, and are always reflexed.

**R. leucostachys** (Smith), **R. vestitus** (Weihe), and **R. Leightonianus** (Bab.).—A common sub-prostrate form, with a pentagonal stem and fine panicle of flowers, often of a deep red. The prickles are large and tolerably numerous, and the whole stem is covered with spreading hairs, a few of which are sometimes round-headed or glandular. The name is taken from the dense white hairs on the stalk of the panicle, which may be compared, on a small scale, to that of the Horse Chestnut in its branching. The under surface of the leaf is often white. The flower is very regular and well-formed, the petals standing apart being narrow at the base, but, from their general outline, forming a complete ring of colour; whereas the petals of *R. discolor* represent ellipses with their long axes arranged radially. Those of *R. leucostachys* are ellipses with their short axes so disposed. This is, perhaps, our finest native Bramble.

**R. Sprengeli** (Weike), **R. Borreri** (Salter), and **R. rubicolor** (Bloxam).—A distinct but local form, with round, slender, trailing stems, with few hairs and pink flowers in a loose almost unbranched panicle, the stalk of which is downy with a few prickles on it. Suitable for situations where *R. discolor* or *R. leucostachys* would be too high-growing, but by no means so fine a form as either of those more common ones.

**R. Kehleri**.—A local form, perhaps worth growing for its fine trailing stems, which are sub-angular and covered with irregular, strongly-hooked prickles and numerous bristles. The leaves on the barren shoots consist of five leaflets, which do not overlap and are slightly downy. The flower is insignificant.

**R. glandulosus** (Bell), **R. Bellardi** (Weihe).—A form which might very probably improve under cultivation. The rounded, trailing stem is set with long, straight, awl-shaped prickles, bristles, and copious glandular hairs. The leaves of the barren shoots consist of three brightly-coloured leaflets, and the inflorescence is as large and as much branched as that of *R. leucostachys*, though the indi-

vidual blossoms are not so attractive. The flower-stalks and sepals are thickly bristled, and, though the petals are rather small, the sepals are very beautiful, ending in a leafy, tapering point.

Though, perhaps none of these Brambles are to be had at an ordinary nursery, the characters I have given are almost sufficient to enable any one to be his own collector, and we may hope to see some day free-growing Brambles, with luxuriant foliage and large double white and red blossoms, in every garden.

I need say little as to the foreign Brambles. *Rubus biflorus*, with its fine white stems and erect habit, is a white-flowered species from Western America, suitable for rocky banks in the sun. *R. nutkanaensis*, from Nootka Sound, California, is a splendid plant. Its fine, Raspberry-like foliage and large white blossoms may be seen in the flower-walk, Kensington Gardens. *R. odoratus*, another North American kind, with purplish blossoms, should be grown with it and *R. deliciosus*, that splendid Rocky Mountain species, which I hope soon to see as much of in many a garden as there is now in the Herbaraceous Garden at Kew. *R. spectabilis*, a dark purple-flowered species, also North American, is valuable as a spring-flowering plant, and *R. australis* should also be grown.

Next, as to British Roses, more showy, no doubt, than their cousins the Rubi.

*Rosa pimpinellifolia* (the Barnet Rose).—A small, erect, bushy shrub growing in dry places, especially on sand, under 4 ft. in height, crowded with straight prickles of various length, stiff bristles, and glandular hairs. Its leaves are small, and the flowers solitary, white, from 1 in. to 1½ in. in diameter; the fruit almost globular, and of a dark purple colour.

*R. Sabini* (Woods).—A common form, similar to *R. pimpinellifolia*, but having generally two or three blossoms together, the calyx tubes of which are bristly, and the fruits red, and therefore valuable in autumn, if mixed with the preceding form.

*R. gracilicens*.—A closely-allied form from Co. Antrim, has a smooth calyx tube and from three to six blossoms together.

*R. hibernica* (Smith). *R. pubescens* (Baker).—A form that ought to be prized by Englishmen, since, like very few of our natural productions, it is unknown on the Continent. It occurs in Ireland, the north of England and Scotland, and, though resembling *R. canina* in having stout curved prickles, its habit and other characters ally it more closely to the two preceding forms. It sometimes has as many as from four to twelve blossoms together, and plants having such a prolific tendency should be sought after.

*R. tomentosa*.—A large common form well worth growing. Its branches are long and arching, reaching even 8 ft. or 10 ft.; its prickles are all the same size, and generally, but not always, straight; its leaves consist of fewer and larger leaflets than the four preceding forms, and are very downy, whilst its globular fruit, covered with prickles, distinguishes it from *R. canina*.

*R. rubiginosa* (L.). *R. Eglanteria* (Woods). (Sweet Brier).—A well-known form, wild on the chalk downs of the southern counties, very sweet-scented, with a compact, erect habit, a few stout hooked prickles, intermixed with bristles and glandular hairs, and two or three flowers growing together on very bristly flower-stalks.

*R. micrantha* may be worth introducing in such a tangle as would smother *R. rubiginosa*, since, though it has a fainter odour, its branches are long and arching, so that it can hold its own in a struggle for existence.

*R. canina* (Dog-rose), so called, no doubt, from its not being fragrant, has been split up into some thirty varieties, between which there is little to choose, they all having their more prominent characters in common. They form large straggling bushes with long arching branches armed with stout hooked prickles, uniform in size. Their stems and leaves are generally smooth and inodorous; the styles of their blossoms are not united, and their fruit is rather odder than globular. Two closely allied varieties are noteworthy, viz. :—

*R. lutetiana* (Leman). *R. sericeolosa* (Woods).—Both have smooth leaves and flower-stalks, and in both the sepals fall off before the late ripening fruit changes its colour. *R. lutetiana* produces from one to four pink flowers from one stalk, each about 2 in. in diameter, and is a very common form; but *R. sericeolosa* produces as many as from ten to thirty, and is, therefore, highly desirable for our purposes. Another variety, *R. Reuteri* (Godet), the sepals of which do not fall until after the early ripening fruit has changed colour, is like *R. lutetiana*, but is valuable from the large bracts (as long as the peduncles), the stipules and the branches all turning red in autumn. It is common in the north of England.

*R. stylosa*, recorded from Sussex, is a tall bushy form with long arching branches, strong hooked prickles, leaves hairy all over their under surface, and from three to six white flowers in a cluster, having markedly divided sepals, pinnate, and the protruding styles united into a column.

*R. systia*.—A commoner form than the last, being frequent in Midland and Southern England; only differs from it in having hairs only on the nerves of the under surface of the leaf and usually pink flowers.

*R. Monsoniae*.—Another closely-allied form, from Herefordshire. Is a low-growing, erect bush, with very large red flowers, a shorter stylar column, and sub-globular orange-red fruit. It is obviously one of our most valuable varieties.

*R. arvensis* (L.). *R. repens* (Scopoli).—A common southern form; is a bush from 2 ft. to 3 ft. high, with purple, glaucous, trailing branches. Its prickles are often very large, its leaves quite smooth and glaucous on the under surface; its flowers white with a yellow throat and a purple calyx and the styles united.

For much of the nomenclature and technical characters of both the British Brambles and the British Roses I am indebted to the works of Mr. J. G. Baker, F.R.S.

Of foreign Roses I would mention *R. bracteata*, the large single white Macartney Rose from China; *R. Lyelli*, a double white Rose from the Himalayas; *R. punicea*, the Austrian scarlet, or rather orange, Brier; *R. pyrenaica*, *R. alpina*, and *R. rugosa* alba.

These Roses and Brambles with Honeysuckle and Clematis would make a medley as charming in autumn as in summer.

11, Burlington Road, Westbourne Park. G. S. BOULGER.

## CREEPERS.

THE Rev. Henry Ward Beecher is an enthusiastic gardener, and writes as follows concerning some of his experiences to the "Gardeners' Monthly":—

1. Every creeper, shrub, or tree that approaches the condition of evergreen is valuable for its winter beauty. Hall's Japan Honeysuckle is the most valuable of all the family of hardy Honeysuckles. It is hardy, luxuriant, a real ever-bloomer the summer through, of fine green leaf, and, except under long-continued severely cold weather, it is evergreen. Under my window is a plant of it spread upon the ground as green as in midsummer. *Lonicera flexuosa*, or Chinese, is near by, quite shrunk with cold, and will do no more till spring. If one can have but one, that one should be Hall's. If suffered to grow along the ground, it will root at almost every joint, and furnish abundance of new plants without trouble. I have enjoyed a method of treating Honeysuckles on the lawn, viz., putting about a vigorous root five or six stakes, say 4 ft. high, surrounding them with twine, about three hoops at equal distances, and allowing the plants to cover them. By the second year an altar of green will be formed, most comely to the eye. If *L. aurea reticulata* be used, it will give a splendid golden effect. Golden kinds should not be suffered to twine with others, as the appearance will be that of a sickly Vine mixed with a healthy one; but, kept separately, the effect is admirable. The *Lonicera fragrantissima* is a shrub that comes very near being evergreen. In sheltered places it will hold its leaves till after Christmas. At Peekskill, forty miles north of New York, on the flanks of the Highlands, it is yet (Jan. 4) in good condition, though it has passed through several severe freezings. Its perfume in spring is delicious.

2. Why has not the *Styrax* been brought into notice? It has gone through last winter, at Peekskill, without being harmed. There are few shrubs that can compare with it for beauty in its blooming season, and it ought to be in every garden. I can get it only by sending to England for it. It is finer than *Andromeda arbores*, which with me is not hardy enough to flourish, or I am not skilful enough to make it live, except as an invalid. I do not know the specific name of my *Styrax*, but I think it is *Styrax japonica*. There are several native species that deserve to be introduced to our nurseries, to say nothing of scores of other plants unknown and unobtainable now. I know the reply. Nurserymen cannot afford to cultivate stock for which there is no demand. True, in large quantities; but American nurseries have now reached a degree of development that will enable many of them to bring forward unknown plants and give them such publicity as shall create a demand.

Some agreement might be had by which one would fill out a special department, another a different one, so that out of six or eight nurseries a gentleman might secure what he wished. I cannot secure from any or all American nurseries the hardy Pines. Even *Pinus mitis*, so abundant in the fields, is a

stranger to most nurseries; but not to catalogues. Oh, no; the catalogues are all right, but orders come back unfulfilled in a manner that leads one to think that catalogues are copied from European lists, or are made up as fancy work.

3. Speaking of Conifers, much is written about transplanting. My experience is, that evergreens may be transplanted at any time of the year when the ground is open and workable. I do not lose the half of 1 per cent. of the hundreds that I annually move. If they are ripped up and jerked out of the ground, laid in the sun, and, worse yet, in the mud, until others have been slaughtered, and then hauled in an open cart, stuck into a cramped hole, lumps of soil thrown in and trodden down by one's feet, no wonder they die. It would be a shame if they did not. Take up the roots carefully, cover them from the light as you would your children's bodies, plant them in a larger hole than that which they have left; take time; press the roots as if you were combing your own hair for a party; see that they are not planted 1 in. deeper than they stood before moving, and then—mulch—mulch—mulch—them. After that you may whistle at summer droughts or winter freezings. I have had as good luck in orders from nurseries in September and October as in March or April. I lost some—I always do, for the most careful nurserymen are careless, judged by my standard. I had as lief transplant in July as in May, in November as in June. It only requires a little more care. In that murderous season, four or five years ago, I had planted many scores of Coniferous evergreens, but did not lose 1 per cent.—on the windy hills and sharp climate of Peekskill—and all because the plants were abundantly planted and abundantly mulched. Mulching, summer and winter, is supreme safety for ornamental trees and for fruit trees. I have saved a Pear orchard by a system of mulching in summer as well as in winter.

4. I mean to write you by-and-by of my mistakes and blunders; successes are all very well; everybody likes to narrate them. But there is great instruction in well-considered blunders; only, men are ashamed to relate them; and so much knowledge is lost. There is hardly a department of culture, esculent vegetables, ornamental trees, fruit trees, flowers, Vines, &c., &c., in which I have not been rich in mistakes. Ought they to die unrecorded?

#### NOTES AND QUESTIONS ON TREES AND SHRUBS.

**Privet Hedges.**—As a division between compartments in kitchen gardens or allotments there are few more serviceable hedges than those made of Privet kept cut down tolerably low, say to 3 ft. or 4 ft. They are much used in Suffolk, and if clipped early, say in the first week in June and again in August, they become densely furnished with young spray-like growth, and remain quite covered with green leaves the whole season, but if left uncut until the end of the summer, the whole of the undermost leaves are lost, and after cutting, a bare stubby aspect is the result, altogether spoiling the general appearance of the hedge.—J. Groom.

**Catalpa speciosa.**—About thirty years ago my brother and myself starting in the nursery business in this country, heard of a new and superior variety of Catalpa at Dayton, Ohio. We sent to Mr. Haines for seeds, from which we grew quite a number of trees. I do not know its earlier history or origin. We have grown this variety more or less ever since, always having it for sale, and never until quite lately finding any demand for it. Soon after our first trees began to bloom, Dr. Warder, then residing in Cincinnati, saw them, and named it *C. speciosa*, from the grand appearance of tree, foliage, and flowers. The tree is quite upright, nearly as much so as the Carolina Poplar, and a very rapid grower. The foliage and flowers are much larger than the common *C. bignonioides*. I have measured seed-pods 26 in. long and  $\frac{3}{4}$  in. in diameter. Along the streets of Dayton I have noticed both varieties side by side, and the difference in habit and growth is quite marked. Most of the Catalpa trees planted along the avenues in Indianapolis within fifteen years are *C. speciosa*, and I believe it is pretty well disseminated. The wonderful durability of the Catalpa timber should, and probably will, cause it to be largely planted.—(The Cultivator and Country Gentleman.)

**Laburnum Bloom** (see p. 569).—We notice that Mr. Groom refers to the scarcity of Laburnum bloom this season. In this district there is very little, and what there is poor. This also applies to the Hawthorn. The latter was very early this year, being in flower on the 15th of May.—BALLANTYNE & SON, Dalkeith.

—In this locality the bloom on the Laburnum has been most abundant, therefore I think the failure noted in Mr. Groom's case must be purely local. The Wistaria has also been singularly beautiful this season.—A. D., Bedford.

**Forests in Japan.**—The Japanese Government has just awakened to the necessity of preserving its forests, and stringent regulations have been passed, which shall not only hinder the too rapid destruction of the forests, but increase the area covered by woodlands.—"Nature."

## THE KITCHEN GARDEN.

### THE PRESERVATION OF MUSHROOMS.

THE oldest and most generally adopted method with Mushrooms is to dry them by natural or artificial heat. For this purpose a large gathering of Mushrooms, both large and small, is made during the height of the season. They are first cleaned and skinned, and the stumps are removed as if they were going to be cooked at once. They are then stirred up several times in boiling water, to which a little vinegar or Lemon-juice has been added to prevent the Mushrooms from turning black. Some say that perfectly plain water is to be preferred. In any case any admixture of salt should be scrupulously avoided, otherwise the dried Mushrooms will attract moisture from the atmosphere. The Mushrooms, on being taken out of the boiling water, are drained on a sieve, threaded on strings, and hung up festoon fashion in a well-ventilated shed or room. In favourable seasons and dry localities the preparation described above is sufficient, but in damp districts or during rainy weather the drying process should be completed in a slack oven, one, for instance, from which a batch of bread has just been drawn. This method of drying applies to all edible Mushrooms, such as the Boletus, the Morel, &c. All of them, however, lose much of their odour and flavour in the desiccating process, but they are still of a sufficiently good flavour to be of great use in the kitchen when the fresh Mushroom is not to be got. For use, the dried Mushrooms are first thrown into tepid water or milk until they are sufficiently swollen, after which they are treated like the fresh vegetable. For use as a condiment, the dried Mushroom must be reduced to powder. It is dried very quickly, and then grated on a very fine grater. The powder must be preserved in a well-corked bottle or jar. Equal proportions of powdered Mushrooms of different species, with a tenth or a twentieth of powdered truffles prepared in the same way, form a condiment which is greatly appreciated. The preservation of Mushrooms in oil or butter is a much more expensive process, but the Mushroom preserves a much larger proportion of its perfume and flavour than when simply dried. The best method is the following: The peeled Mushrooms, prepared as in the last receipt, are blanched in boiling water, and then drained on a sieve; they are then placed one by one in a wide-mouthed jar or bottle until it is full. Warm melted butter or pure Olive oil is then poured over them, and the whole is allowed to become perfectly cold, after which the mouth of the jar is tied over with an air-tight parchment or gutta-percha cover. The jars must be kept in a cool place, especially if we have used butter, which is very liable to turn rancid if kept in a warm place. The method of preserving Mushrooms by drying or by immersing them in oil or butter is specially adapted for households or where only small quantities are required, but for commercial purposes on a large scale the Appert process is always used. The Mushrooms and even their fragments are cleaned, peeled, and thrown for a few minutes into water slightly acidulated with vinegar. After they have been well drained, they are tossed in butter until they are half cooked, after which they are packed into wide-mouthed bottles. Every bottle is only three-quarters filled, closed with a good cork, and well tied down with string. The bottles are then placed in a cauldron full of cold water, the bottom of which is covered with a layer of straw or a straw mat, each bottle being surrounded by a packing of hay, in order to prevent breakage. The cauldron is then placed over the fire and allowed to boil for about six minutes, after which it is taken off and allowed to cool gently, and after that the mouths of the bottles are dipped into melted bottling wax.

The use of ketchup as a condiment has become much more frequent in French kitchens and at French tables of late years, more especially with boiled fish. The following is the French method of preparing it, which differs somewhat from that given by English authorities:—Take a kilogramme of very fresh cultivated Mushrooms, and after having carefully peeled them, cut them into very thin slices and strew a layer on the bottom of a deep dish or tureen; sprinkle the first layer with fine white salt, over this spread another layer of chopped Mushrooms and salt, and so on till the dish is full. On the top

of all strew a layer of fresh Walnut rind cut into small pieces. Allow the whole to macerate in a cool cellar for four or five days. When the whole mass has become nearly liquid, pass it through a cullender or a new piece of linen. Boil down the strained liquor to half its bulk, add its own weight of calf's-foot jelly, season with Alspice or white Pepper and Bay leaves, and boil down to the consistence of jelly. Pour into porcelain or stoneware jars, and keep in a cool place. LACHAUME.

### EARLY PEAS.

NUMEROUS are the expedients resorted to in order to hasten the growth of early Peas, there is no way, except growing the very dwarf sorts under glass, that has yet produced Peas in quantity more than a few days in advance of those sown in well-sheltered positions in November, and protected from mice, birds, and slugs—not a very easy task—for during the present season I have seen many crops that were sown at the most favourable season for ensuring rapid growth entirely spoiled by slugs, and that, too, in spite of many precautions taken for their security. Like Mr. Temple (see p. 563), I, however, see no reason for discarding the old system of making a sowing in November, but as a precaution against failure I have usually sown a good quantity during January on strips of turf cut 1 ft. long and 3 in. wide. These, turned Grass side downwards, are packed closely together on stout planks; the middle of each turf is then scooped out, and the Peas sown, and lightly covered with fine soil. A cool Vinery suits them admirably until the shoots are 2 in. or 3 in. high, when they should be transferred to cold pits and hardened off by exposure, so as to be fit for planting the first week in March. As the roots will be found hanging through the turves in quantities, wide drills should be drawn, and each turf should be carefully re-planted. The rows should then be staked at once, and light evergreen branches should be placed a short distance from each row, for the purpose of breaking the force of the rough winds that usually prevail at that season. On a south border, thus planted, Peas in quantity may be generally gathered about the last week in May. J. GROOM.

### ASPARAGUS ON SANDY SOILS.

THE interesting note from Mr. Studd (see p. 563) respecting Asparagus culture on almost barren sandhills recalls to my mind several instances of very old, but yet productive, beds somewhat similarly situated in this neighborhood, the produce of which is quite equal to the ordinary run of that grown in far richer soils. Therefore there does not appear any insuperable obstacle to the universal culture of Asparagus in this country, as when the soil is not naturally of a sufficiently open texture to suit the requirements of a plant that evidently delights in a loose, porous soil, the old plan of mixing sand, ashes, or shingle at once engenders a remedy that may be easily and nearly everywhere applied. From my own experience, I should say that the plants would prove longer lived in loose soil moderately manured than in highly enriched ground of closer texture, as I have observed, a greater percentage of plants go off during wet seasons under high culture than when growing under more natural conditions. Nevertheless, where the object is to get the finest growth possible, sufficient nutriment must exist in the soil, or be artificially supplied to it, in order to promote full development. A light deep loam resting on gravel, so as to insure perfect drainage, is a good soil for Asparagus. Thus planting, and a good long season of growth by discontinuing cutting early, and protection of the tops from being broken by wind-waving, would also be attended with good results. JAMES GROOM.

**Asparagus at Chester.**—We have recently seen samples of excellent Asparagus grown at Chester by Messrs. Francis and Arthur Dickson in some land of theirs that has been reclaimed from the sea. It is of a very light sandy description, and Messrs. Dickson state that it has been under cultivation for about 100 years. The 3 acres of it devoted to Asparagus are laid out in beds 4 ft. wide, and each bed contains three rows of plants, which stand about 6 in. or 8 in. apart in the row. The beds have been planted about ten years. Each winter the surface soil is drawn off them, and a good application of stable manure and potash salt is given to them; the soil which has previously been removed is then spread over the manure on the top of the bed, and no other cultivation is necessary beyond keeping down weeds. Cutting usually begins early in April and ends about the beginning of July. Last year forty-three heads weighed 8½ lb. To us this Asparagus seems different in flavor from any we have tasted, and it would be very interesting to taste it blanched as the London and Colchester growers blanch Asparagus.

### PLATE CXXXIII.

#### FRITILLARIA PUDICA.

Drawn by MRS. DUFFIELD.

THIS charming little plant was described long ago (1814) by Pursh, in his "Flora Americae Septentrionalis," as *Lilium* (♀) *pudicum*, with the remark that it appeared at first sight more related to *Fritillaria* than *Lilium*; and, as these genera are now defined, it is a true *Fritillaria*. In the colour of its flowers this species is variable, but the variety here depicted is the most showy one known. Pursh gives a figure of a pale yellow, taller variety, such as one would expect to find in half-shaded situations; and the late Andrew Murray found varieties in which the flowers were tinged with brown or wholly reddish. *F. pudica* is a native of the Rocky Mountains and the Sierra Nevada of California, where it grows in a dry, barren soil, and is one of the principal spring ornaments of the scanty flora. It is perfectly hardy, ascending to an elevation of from 5000 ft. to 6000 ft. or more. In many places it is exceedingly abundant, but it does not appear to have been introduced into Europe before Roez sent it to M. Max Leichlin, of Baden-Baden, about the year 1870. Two or three years later Mr. Murray brought it from Utah to this country. Among hardy dwarf bulbous plants it is undoubtedly one of the most valuable of recent acquisitions, surpassing even the *F. dasyphylla*. Another very beautiful dwarf *Fritillaria* is *F. armena*, of which two varieties—a yellow and a deep purple—are figured in the current number of the "Botanical Magazine." W. B. HEMSLEY.

[This is one of the most valuable hardy plants introduced to our gardens for many years. We look to its taking a similar place among yellow flowers to that of the Snowdrop among white ones. For the specimen from which our plate was prepared we are indebted to Messrs. Backhouse, of York.]

**Tropaeolum tricolorum.**—The addition of the name "Jarratti" to the long-shaped tubers of this *Tropaeolum* is absurd, as even round tubers will sometimes throw out kidney-shaped ones. All the forms are those of *T. tricolorum*, and in no way do the plants differ either in foliage or flowers. This plant is much harder than is generally believed. Some years ago it used to be grown in great abundance in the kitchen garden at Hurlingham House, Fulham, and I grow my plants here in a cold frame through the winter, planting the roots in the soil and allowing the bine to trail over some spray, as the production of tubers is my only object, and in this way they do better than in pots in the greenhouse. The tubers increase but slowly, as a rule, but sometimes they may be produced more rapidly by laying the young growth beneath the soil before allowing it to reach the supports.—A. D.

**New Method of Preserving Animal and Vegetable Food.**—Dr. Campbell Morfit has lately patented a process for preserving animal and vegetable alimentary products, which promises to be of great service. Dr. Morfit's investigations seem to prove that if gelatin is thoroughly diffused through an animal or vegetable substance and dried in and with it, all danger of decomposition is avoided. Some Lime-juice biscuits, which Dr. Morfit sent for trial, are perfectly good and sweet, although some of them are more than a year old, the peculiar flavour of the Lime-juice, so different from that of the Lemon, being thoroughly preserved. Dr. Morfit's process consists in getting rid of nearly the whole of the natural water contained in the substance and replacing it by gelatin. Plums, for instance, may be preserved by reducing them to pulp, mixing them with gelatin dissolved in water or their own juice, and beating the mixture so as to ensure thorough incorporation of the ingredients; the gelatinized juice is then poured into coolers. The biscuits sent contain 40 per cent. of pure Montserrat Lime-fruit juice, and have a refreshing acid flavour. They are made by mixing the gelatinized Lime-juice with the proper proportion of biscuit powder and baking. The process is, of course, capable of great extension, and if Dr. Morfit can give us biscuits tasting of the Pine-apple, Peach, Strawberry, and a dozen other fruits, he will have conferred a benefit on the community.—C. W. QUINN.

**Japanese Bamboo Shading.**—The best shading which we have noticed in use for hot-houses is one composed of very large Japanese mats formed of Bamboo. They are in use shading the houses of the New Plant and Bulb Company at Colchester. They are also efficient as a protection from hail, and very strong and lasting.



THE GOLDEN FRITILLARY. (FRITILLARIA AUREA.)



## ROSES.

**BUDDING.**—Roses will be in a condition for budding sooner this season than usual; in fact, in the south I noticed that some amateur growers began with standards and half-standards on Brier stocks the first week in the month. So far as my own practice goes, I have found it the best to perform the operation as early in the season as the buds and growth of the stocks would permit, or to defer it till considerably later on in the summer. The earliest-budded plants push their eyes and commence growth as soon as the buds have fairly taken, and in this way make good the first season. Those that are budded sufficiently late take, but the buds remain dormant until the spring; but if the budding be carried out in what may be termed mid-season, the buds, in place of starting into growth and having time to fairly mature the shoots they make, or, in the case of the later, remaining quite dormant through the winter, form shoots that have not time to get enough solidified before the autumn frosts are upon them, and in this way the tenderer kinds are liable to perish. This is more particularly the case in the northern parts of the kingdom. As to the stocks employed, only such at the present time can be used as have already been provided. The difference in opinion as to the superiority of Brier or Manetti evidently arises through the different effects that soils of various descriptions have upon these stocks. Where the soil is so light as to be naturally unsuitable for the free vigorous development of the Brier, Manetti is no doubt preferable, but where the land is of that strong heavy description congenial to growth, the ordinary Brier is in many ways to be preferred; consequently, those who have at hand a choice of stocks will do well to rely principally upon that which is found by experience to do the best in the immediate locality where the Roses are to be grown.

**REMOVAL OF SUCKERS.**—Constant attention should now be paid to the removal of suckers from Rose stocks. Where the plants have been allowed to remain for a considerable time without removal these suckers are usually a source of continual annoyance, especially in such stocks as support the weakest-growing varieties of Roses, as in their case the heads of the plants are not sufficient to draw the full quantity of sap which the roots provide, hence the disposition to break out into this underground growth. In the case of stronger-growing varieties, where the heads have been let to attain a large size, there is generally a less inclination to throw up suckers. Even where standard Roses are grown by the sides of walks with their roots under the turf, and where the suckers run underground for a considerable distance before appearing above the surface, it is always the best to trace them right to the base from where they proceed, removing the soil with a planting trowel or similar implement, so as to admit of this being done, in which case the operation will be effectual until fresh suckers are formed; whereas if the shoots are simply broken off at the point where they appear above ground they keep on repeatedly making fresh growth, which, so far as diverting the strength of the plant from its legitimate course the support of the head, involves a loss little less than if the suckers were not removed at all.

**THINNING OF THE BUDS AND REMOVAL OF DECAYED FLOWERS.**—Large Rose flowers, for filling vases, baskets, and the like, are now held in very much greater estimation than they used to be, consequently upon a taste acquired through the large perfect individual blooms that are seen at the exhibitions of Roses; but these large flowers can only be obtained by thinning the buds on the strong shoots, which alone are able to produce such; and where there is a disposition to sacrifice, to some extent, quantity to quality, the strong shoots should have the buds thinned, particularly where the plants are grown on their own roots and pegged down, under which system the later growths made from the base of the plants are generally very strong and calculated to produce large, fully-developed bloom. To assist the formation of young wood that will give a succession of flowers through the summer and autumn, the first blooms, immediately they decay, should have the seed vessels removed, which will greatly promote second growth. The time employed in this—where, as in most gardens, a great number of plants require attention at this season—can often

ill be spared, yet it is only by attending to such details that the best results are attainable, and a moderate number of plants, where they meet with sufficient care, will reward the cultivator better than much larger quantities when left to themselves. This has seldom been further exemplified than in the present season, when the Rose maggot, where not diligently sought for and destroyed, has effected such havoc, that five-sixths of the flowers are so deformed as not to be presentable for ordinary decorative purposes, although they may be fairly effective when seen on the plants from a distance.

**INSECTS.**—With a like object continual efforts should be made to keep down aphides, which, despite the long run of wet, showery weather, are yet more numerous than usual. Regular use of clean water without stint, applied with the springe and garden engine, will effect the object; their numbers may be reduced in the ordinary way by brushing with the fingers or the small sugar-tongs-shaped brushes, made for the purpose; but in thus crushing them on the buds the matter from their crushed bodies tends to injure the character of the flowers, unless they receive a good washing immediately after the insects are destroyed.

**MANURE WATER.**—In soil, where there is any deficiency of enriching elements in the shape of solid manure, either incorporated with it or laid on the surface in the shape of mulching, the ability to produce flowers later on will be very much increased by the application of manure water, which in the case of Roses, as other plants, is much quicker in its effects than through any other means by which manure can be applied. There is no time through the whole spring or summer when it can be used with so much advantage as the present, when there is a conjoint vigorous extension of both roots to absorb and shoots to assimilate it. To Roses on walls it will be especially beneficial, and in their case it hardly can be given in too large quantities. Roses in all positions will bear manure water applied stronger than most plants.

**INDOOR CLIMBING ROSES.**—Vigorous-growing varieties of Roses, especially such as *Maréchal Niel*, *Gloire de Dijon*, or *Lamarque*, that do not flower freely if pruned to any great extent before growth commences in the spring, will now, after the principal flowering is over, require attention; whilst the plants are young, and before they have filled the space which their heads are destined to occupy, they need not be much reduced, but when they have filled anything near all the room available, if cutting back is not carried out some time in the year they get crowded with useless, weak wood, little able to produce handsome, full-sized flowers. To avoid this, now that the spring blooming is over, a portion of the large, strong, old branches may be cut out near the point on the main stem from which they spring, leaving a stump, the latent eyes of which may be expected to immediately break into growth. These will form strong, vigorous branches, which will produce the best flowers next season. This removal of a portion of the old wood annually, to be replaced by new, may be carried to the extent of one-third or one-fourth the entire plant, which, so treated, will always contain a sufficient quantity of young, vigorous flowering growth, and will not attain a dimension beyond that which there is space for, and that profusion of weak, useless shoots that results from insufficient pruning will not exist. The plants at the same time should be thoroughly well washed, so as to free them from insects. If there is any mildew upon them, a liberal application of water impregnated with sulphur will be found useful. Where planted in inside borders, or in a position where the root space is confined, manure water, given so as to soak the whole mass of soil as far as the roots can extend, will be of the greatest possible use. This may with advantage be repeated from time to time for the next two months whenever the soil requires moisture. T. BAINES.

**Maréchal Niel.**—"B. A." asks (see p. 495) as to the nature of the cultivation given to my *Maréchal Niel* Roses, the flowers of which have been so good in colour. In truth, they thrive under a comparative absence of cultivation, as the dressing given is of the most meagre description. The plants are on their own roots; they are planted in a soil bed about 5 ft. across and 2½ ft. in depth, placed in the centre of a cool span-roofed house. One plant is trained to

the end wall and the other up a supporting column and then along wires at the top of the house. Both make moderate growth, and just now, after the blooms have been taken off, are pushing freely in all directions. There are no unusually vigorous shoots, and I do not desire to see them, as they are often the precursors of canker and decay. The bed is rather dry than otherwise, but when not occupied with seeds or other things (I have a crop of seedling Potatoes growing on it just now), I make a boy fork up the soil, and give a good soaking of water. At other times the surface is simply kept as moist as the plants growing upon it require. About once a year the surface is given a coat of manure, but the roots of the Roses can get but little of it. An aphid is rarely seen on either plant.—A. DEAN, *Belfont.*

#### RULES FOR JUDGING ROSES.

The Committee of the National Rose Society have been engaged in drawing up some rules for judging Roses at horticultural exhibitions, and as they are likely to be instructive to our readers, we subjoin them. In regard to the "Method of Judging," it is recommended that the judges first cast out all bad boxes, that is, those having blooms of inferior quality. Then the remainder are to be compared, and it is recommended that three judges work together in the case of Rose shows, and that each judge in turn shall count and designate the good blooms, the other two standing behind and stopping their colleague when they do not agree with him. In every difference of opinion as to what constitutes a good Rose, a majority of the judges shall decide, and the result of counting the good blooms shall form the decision ultimately reached. In estimating the points in a box of Roses, it is suggested they be recorded by means of "marks," and that these marks be allotted as follows:—"Three marks shall be given to every perfect bloom; two to one not quite so perfect; and one mark only to a moderately good one. One mark shall be taken off from the box for every case of decided badness. As some judges of Roses are apt to show a decided preference for Tea and Noisette kinds, it is recommended that they have no especial favour shown to them as such. Marks to be given for evenness, variety, and general arrangement of the boxes, at the rate of one mark for each of these especial excellences. As Roses are shown in boxes, it is set forth that the flowers must be judged as they are in the boxes at the time of inspection; no other consideration of any kind is admissible. Where stands are equal in respect to flowers, the judges shall proceed to consider the general evenness, variety, arrangement, and setting up, the boxes being placed side by side and in the same light for that purpose. The boxes should be of the regulated size and shape, and set out with Moss, unless otherwise specified. And as certain definitions are employed at Rose shows, they have been set forth as clearly as possible to prevent misapprehension. A bloom or truss should be taken to mean a Rose, with or without buds and foliage, as cut from the tree. As to what constitutes a bad Rose under this heading will be included all that have a faulty shape, confused centre, a faded colour, and which are either undersized or oversized to the extent of coarseness or overblooming. On the other hand, a good Rose must have form, size, brightness, substance, foliage, and be at the time in the most perfect phase of its possible beauty. Form will imply abundant petals of good substance, regularly and gracefully disposed within a circular and symmetrical outline. Brightness shall include freshness of colour, brilliancy, and purity.

**Bougainvilleas at Nice.**—In THE GARDEN (see p. 546) I find an article on Bougainvilleas. Having lately returned from Nice, where I spent the whole of last winter, I had several opportunities of seeing this beautiful plant, which in its habit and growth resembles the Wistaria. I should hardly imagine a stove house to be a suitable quarter for it. The first time I had ever seen it was at Monte Carlo, where there are three or four beautifully-trained specimens of it on a pigeon house. These plants were in good leaf in December, and were still so on the occasion of my last visit, the second week in May; during the latter part of January it appeared to me to be in its greatest perfection. That it will bear a moderate amount of frost is undoubted, for during the earlier part of January we had several frosts in succession, ice forming to about the thickness of a five-france piece, and I was informed that Bougainvilleas would stand from 5° to 10°. I purchased a small plant, the only one I could get, which I have planted at Chaville, and hope that it will make some little growth this summer (if we are to have any), so as to make it worth while to prolong its existence through the next winter with the aid of matting, &c. When established, the Bougainvilleas are rapid in their growth, a single plant covering a large space of wall in about two years.—W. ELLIS, 28, *Rue Bassano, Paris.*

## GARDENING FOR THE WEEK.

### Indoor Plant Department.

**Orchids.**—The different varieties of *Calanthe vestita* and the hybrid *C. Veitchii* will now be making active growth, and must be plentifully supplied with water, keeping the plants as near the glass as convenient. If grown in baskets or pots that can be suspended near the roof over the paths, in this way space can be economised, and they are in the best position for securing stout substantial foliage that will remain fresh and green upon the plants through the autumn and winter much longer than when grown under conditions that favour long growth at the expense of solidity. There are no more useful plants than this section of *Calanthes*, but, unless they are treated through the growing season in a way to impart vigour to the leaves, these often are so far decayed as to necessitate their being cut away when the plants are in bloom; and although the flowers in themselves are always handsome, they have a much better appearance, if even a portion of the leaves can be kept green and living, than when nothing is to be seen but the naked pseudo-bulbs and the flower-stems, and by treating them as recommended there is the additional advantage that the bulbs will attain so much larger size with a correspondingly increased ability to produce flowers.

**Broughtonia sanguinea.**—Although individually not so imposing in appearance as many Orchids of larger growth, still, on account of its colour (deep red), it is a growing of plants that to the extent of a dozen or more plants of a collection, the colour of the flowers contrasting so well with almost everything else. I have found it to succeed well on a block of wood or a piece of cork with a little Sphagnum attached. In this way, suspended from the roof, the plants occupy very little room, and they have a most telling effect when in flower, a consideration worth taking into account, but which is perhaps less studied in connection with the cultivation of Orchids than that of any other plants.

**Mesospindium sanguineum and vulcanicum.**—For the purpose of giving contrast in colour, these are also worthy of a place. Like the *Broughtonias*, they occupy little room, and their rosy-crimson flowers are comparatively large for the size of the plant. Coming into bloom, as they usually do, earlier than the highly coloured *Mastelias*, they are a similar offset on all light-coloured flowers that are near them, and, as they succeed in a cool or medium temperature, they can be grown where there is not the means for cultivating such as require strong heat. They do best in pots, in material like that which answers for *Oncidium* and *Dendrobium*.

**Cattleyas of the Mossin section.**—*C. Warneri*, *C. Skinneri*, and also the different forms of *C. intermedia*—where they require potting should be immediately attended to, as they go out of bloom before much or any growth commences. These, in common with all other Orchids, should never in any case be overpotting, yet they ought not to be allowed to remain in pots where the young growth extends beyond or outside the rim, as, when the roots which the young growth forms cannot take hold of the material within the pots, but, in place of this, grow to the outside, they meet with nothing to sustain them, and are in the worst position for being injured when the plants are moved about in the operation of cleaning, and the growth made under these conditions, instead of getting stronger, usually is smaller than that from which it proceeds, a state in Orchid growing which always, so far as possible, should be avoided, as the stronger the pseudo-bulbs of such plants as these get the greater disposition they have to break double, which is the most effectual way of increasing the size of the specimens, or permitting of division where this is desired. In moving them let it be effected with the least possible mutilation of the roots, which, if the plants are in a healthy vigorous condition, are sure to be actively at work. Do not, after potting, give more water for a short time than is absolutely necessary to keep the bulbs and leaves plump and fresh and to enable the buds to swell, as if the material in which the broken fibres of these plants are placed is made too wet they are very liable to rot, as they, more than most Orchids, are at all times impatient of much moisture.

**Lælias.**—The different forms of *L. purpurata*, *L. elegans*, *L. Schilleriana*, *L. Turneri*, &c., also should, where required, have immediate attention in potting as soon as they are out of flower; they, like the *Cattleyas*, commence growth directly the blooming is over. The potting and material in which they are grown, as also their general treatment, requires to be in every way similar to that recommended for the above-mentioned *Cattleyas*.

**Cattleya Trianae.**—These most beautiful winter-flowering plants should now be making considerable progress in their growth, and will require more water, but when grown in pots care must always be taken that the material is not made too wet, especially in houses where the plants, through any unavoidable cause, do not receive enough light, for it may be taken as an invariable rule that the most stout and sturdy growth they make, consequent upon plenty of light with enough air to sufficiently dry the atmosphere during the day, they will always bear more moisture at the root than when these conditions are wanting.

**Cattleya superba.**—As these commence growth they must be placed under conditions of more warmth than almost any of the others. The best position I have found for this difficult-to-manage plant, where not suspended near the roof, is immediately near the upright glass as the frost or end of the house where the East Indian plants are grown; here it receives somewhat less heat than those that occupy the more central part of the house, and also gets more air, a matter of equal importance to

this, one of the finest of the whole family, yet rarely seen in a state such as it can keep on improving for any considerable number of years.

**Dendrochilum filiforme and glumaceum**.—These elegant-flowered, compact-growing plants will mostly now have done blooming, and where it is deemed advisable to divide them, or they require larger pots, these should be supplied without delay. They succeed well in a mixture of equal parts fibrous peat and chopped Sphagnum, to which is added a liberal sprinkling of broken crocks and a little sand. The coolest end of an East Indian house will be found the most suitable place for them.

**Cyclopogon cristata**.—This most useful of all winter-flowering Orchids will now be pushing freely both root and leaf growth. It is a thirsty subject at the roots, requiring much more water than many plants. Anything approaching a dry condition of the soil, accidentally or otherwise, now, when growth is in full progress, is fatal to the bulbs ever attaining their wanted size, without which many will fail to produce flowers, and those that do bloom will bear them few in number. But though a moisture-loving subject at the roots, it cannot bear a stagnant atmosphere, nor too much heat.

**Cypripediums**.—*C. caudatum*, *C. Stonei*, *C. Fairrieanum*, *C. hirsutissimum*, *C. villosum*, *C. Schlimi*, *C. Lovii*, and the earliest-flowered variety of *C. barbatum*, as soon as done blooming, should at once be placed under conditions of heat and moisture that will assist them to push their growth up and get it completed before winter. *C. Schlimi* and *C. Fairrieanum* are somewhat shy growers, and generally succeed better with a little cooler treatment. All require plenty of water at the roots whilst growing. Any re-potting or division requisite through the crowns getting overcrowded should be carried out immediately the flowering is over.

**Dendrobium nobile**.—Where this serviceable Orchid is grown in quantities to give succession through the winter, portions of the plants should be pushed on into active growth at different times so as to complete their growth in succession, for though they may be retarded for almost an indefinite length of time, still it is better for the health of the specimens to let them come on into flower when they are ready than to grow the whole stock on at once, and have to resort to too long a drying ordeal for such as are wanted to bloom the last.

**Epidendrum cinnabarinum**.—This is a plant that, from its distinctly-coloured orange-red flowers and the length of time it lasts, deserves to be more generally grown than it is. From its very erect close habit of growth it requires much less pot room than many species, but, where potting is required, this should be done immediately the flowers are decayed. I have found it to succeed better with less Sphagnum added to the peat than most plants. Intermediate house temperature will suit it best; it likes plenty of light.—T. BAINE.

**Stoves**.—Ventilate, more or less, according to the state of the weather, and shade from strong sunshine. Keep the atmosphere moist by syringing not only the plants, but the stages and walls, and likewise by sprinkling the floor with water. Plants of *Euphorbia jacquiniiflora* must be kept growing, and also near the glass, so as to ripen the points of the shoots. Pot on young plants of *Sanchezia nobilis*, *Stenotaphrum Mocciniana* and *Ventensii*, *Pentas carnea*, *Linum trigynum*, *Monochatum ensiferum* and *Sericum multiflorum*, *Centradenia*, *Eranthemums*, and others, using a compost of loam, thoroughly-decomposed manure, and a little peat. Increase the stock for *Achimenes* by means of cuttings; *Gloxinias*, by using good and well-developed leaves as cuttings; the fine-leaved *Begonias* in the same way as *Gloxinias*, and also by placing a whole leaf flat on the surface of a pan filled with silver sand and peat, and surfaced with sand, affixing the leaf therein with pegs, cutting or breaking the ribs at intervals, and sprinkling some sand over the surface of the leaf; if kept damp and shaded, leaves treated in this way soon form buds at every break. The herbaceous kinds are best increased by means of cuttings. Keep *Epiphyllums* in a well growing temperature, and *Eucharis amazonica* in a moist stove. Keep the *Dracenas*, *Crotons*, *Ananassas*, and other fine-leaved plants near the glass, in order to bring out their colours, but preserve them from strong sunshine.

**Conservatories**.—Plants under glass are now growing vigorously, therefore cold draughts must be avoided as much as possible; there must, however, be plenty of ventilation, abundance of water, and shade given, and shade of some kind provided as a protection to plants in bloom, the weak of which soon becomes impaired if exposed to sunshine. Give weak manure water to cross-feeding plants, and from specimens planted out in borders, remove all superfluous shoots and suckers. *Fuchsias* trained to rafters require thinning, and *Clematisses* tying to trellises. Do not allow deciduous climbers to intertwine with evergreen ones, as they are apt to spoil the latter. Keep up a succession of *Hydrangeas*, zonal, show, and sweet-scented *Pelargoniums*, *Fuchsias*, *Coluses*, *Lobelias*, *Salvias*, *Cockscombs*, *Balsams*, *Schizanthuses*, and similar plants, and transfer to frames or the greenhouse such plants as have done flowering. Heaths and some other early-flowering hard-wooded plants may now be set out-of-doors on a bed of ashes.

**Greenhouse Plants**.—Old plants of *Azaranthus umbellatus* should have plenty of water and a sunny position. Plants of *Hebeclinium lanthum* should have been cut down after flowering, and should now be kept moderately dry for a time, unless it be necessary to force them early. Out in hard-wooded *Veronicas* that have done blooming, so as to encourage fresh growth. Keep plants of *Lisianthus Russellianus* in a warm, moist place, and re-pot them as often as they require it. Pot off seedlings of *Primula japonica* and keep them out-of-doors, where they form stronger

plants than if nursed under glass. Plants of *Kaloesantas* should now have some assistance in the way of stimulants, as should also *Liliums* that have formed their flower-buds, and some other soft-wooded plants. *Erythras* in pots should be grown in a cool and light house near the glass; they require plenty of water, and their main branches should have supports of some kind to keep them in proper position. *Bouvardias* that were cut back after flowering should now be making good wood; they must, therefore, be kept moist and warm for some time set. Persian *Cyclamens* should be kept in cool and shady frames, or against north walls; they should receive a little water during the summer months. *C. Coum* and similar kinds should be kept moderately dry, but not too much so. *Azaleas* that have done blooming and which have had their seed-pods picked off should be re-potted, if necessary, and put into a warm pit, where heat, moisture, and shade can be given them. *Camellias* also make good growth under similar conditions, as do also *Citrons* of various kinds. Pinching in should be practised freely until the plants have attained the form it is desired they should assume.

**Suspended Baskets**.—Remove any plants that appear to be exhausted and replenish with fresh material; rather, however, than lift out many of the plants, plant the basket afresh, retaining such as are in good condition. Ferns, *Selaginellas*, *Tradescantias*, *Begonia scandens*, variegated *Panicum*, *Asystasis*, *Achimenes*, some of the creeping *Ficuses*, &c., do well in baskets kept in stoves; and for conservatory and balcony baskets take Ivy-leaved and sweet-scented *Pelargoniums*, brilliantly-coloured *Lobelias* of the *Erius* section, *Petunias*, *Mosembryanthemums* of different sorts, *Tropeolums*, *Isoplepis gracilis*, *Gazania splendens*, *Lysimachia nummularia*, *Ivies*, *Musk*, *Convolvulus mauritanicus*, and many kinds of Ferns and *Selaginellas*.

#### Indoor Fruit Department.

**Pineas**.—Water abundantly and sprinkle the plants overhead either with a syringe or through a watering-pot rose. Remove all suckers, except such as are required for purposes of propagation. In the latter case they should be taken off and potted when strong enough. Plants ripening fruit should be kept rather dry, and, in order to keep them as long as possible in good condition, remove them to a cooler house.

**Vines**.—Fruit on late kinds should now be set and ready for thinning. As late Grapes are ripe at a date when they are subjected to damp, the berries should be thinned out more than is necessary in the case of Grapes that are to be eaten as soon as ripe. No rule, as regards distance between each berry, can be laid down, as the same variety does not swell equally everywhere; but most people are more apt to err in thinning too little than too much. Black *Alicantes* must be thinned as soon as the berries can be seen, for when left for a few days after this the bunches generally become a solid mass, which cannot be conveniently operated upon. *Lady Downes* should not be thinned so early, as many of the berries are imperfectly set, which, if left to form a bunch, come to nothing. The berries of the black *Lady Downes* are also liable to become more deformed than any other kind; and, to obtain them of a perfect and uniform shape when matured, the worst-looking must be removed. Scalding of the berries during the stoning period is an evil which this variety is very subject to, and, in those places where every means have failed to check it, the bunches should not be thinned so much at the present time as they will ultimately require, in order that there may be a reserve to take the place of those which may decay. Vines setting and swelling their fruit at an early stage should not be kept closer during the heat of the day than those colouring. They should, however, be shut up early in the afternoon, and a little air should be given in the evening and throughout the night. The atmosphere in houses where the fruit is ripe or ripening must not be kept too dry on hot days, or the foliage, which is always of much service, even after the fruit is cut, will be injured. To prevent this, damp the pathways and surface of the border at midday and in the afternoon when it seems necessary.

**Peaches and Nectarines**.—Where these have been gathered given the trees a good syringing, the borders a thorough watering, and continue a little dry until the wood becomes perfectly ripe. Give up syringing in cases in which the fruit is beginning to colour, but until then syringe daily; tie in and thin the shoots, and put aside any leaves that happen to overlap the fruit, so as to give it a chance of becoming well coloured.

**Figs**.—As soon as the first crop has been cleared off much the soil with manure, water freely, and maintain a warm, growing, moist atmosphere.

**Cucumbers and Melons**.—Give Cucumbers a good supply of manure water, stop laterals, and only retain as many fruits as the plants can well bear. Keep *Melons* ripening fruit rather dry, but water abundantly those swelling. Use tiles or slates for putting under the *Melons* if they are grown in frames. Prepare plants to take the place of those now ripening fruit, or after the fruit has been cut away cut down the old plants to two or three eyes of the stem; apply a dressing of fresh soil over the old material, give a thorough watering, and increase the temperature, when the plants will again start freely into growth.

#### Flower Garden.

After the flower and sub-tropical gardens have been furnished there will probably remain many odds and ends that will prove useful for the decoration of herbaceous and shrubbery borders, and which should now be planted in such positions in them as will set them off to most advantage. Peg down *Petunias*, *Verbenas*, old and "leggy" *Pelargoniums*, *Tropeolums*, &c., so as to render them as effective as possible. Broken

or small Beech pegs are excellent for this purpose. Have a stock of Lobelias in reserve to take the place of inferior kinds, which often appear where seedlings are used. Edgings of Cerastium should be gone over weekly and all flowers cut off with a pair of shears; flowering shoots should likewise be picked off all plants of the variegated *Polemonium cornutum*, golden *Feverfew*, variegated *Spiraea Ulmaria*, and other plants grown only for the beauty of their leaves. A good supply of reserve plants for future stock should never be secured—for instance, Centaureas kept in pots during the summer time are better for propagating from than plants lifted out of the soil. *Solanums*, *Wigandias*, and various other sub-tropical plants kept in pots during summer are also very useful for affording cuttings for the next season.

**Dahlias and Hollyhocks.**—As Dahlias advance in growth, see that they are kept regularly tied up. They should have three or four sticks to each plant, so as to keep them open and allow the sun and air to get to the centres. The practice of tying these plants up to a single stick is bad and unsightly; it causes them to run up tall, and affords little security against strong winds. To induce the plants to throw out strong side-shoots, pinch out the points of the leading growths. See that they are quite free from aphides, and, if any are detected, syringe with Tobacco water. Hollyhocks must be well secured to stout sticks as they increase in size, for if they get blown over it spoils them. They do not require the sticks so long as those sometimes used, unless grown in very exposed places, in which they should not be planted. If the sticks are 4 ft. out of the ground after being firmly driven down, they are high enough. Do not tie them so tightly as not to allow sufficient room for the stems to thicken. On the other hand, they must not be left so loose as to chafe with the wind against the supports.

**Herbaceous Plants.**—These being now in great beauty, a little extra care should be bestowed on them. Lift such *Hyacinths*, *Tulips*, and *Crocuses*, as interfere with them, and spread them out to dry without removing any of the leaves. Cut over the decaying stems of *Verbena* and similar early flowering plants. Gather seeds of *Scillas* as soon as they are ripe, and sow them at once. Plants that require support, apply strong stakes, but *Campanulas*, *Delphiniums*, *Penstemons*, *Antirrhinums*, *Pyrethrums*, and some others of a similar character look best when unsupported in that way. Transplant *Primulas* kept in pots on a shady border, where they should be kept clean and secure from slugs; *P. japonica* always grows better when planted out of doors than when grown in pots. A mulching of rotten manure, spent Hops, Cocoa-nut fibre, or leaf soil should be spread over the ground, and its appearance on the surface is objectionable, cover it with soil. *Phloxes* like plenty of nourishment, consequently a little manure water should now and then be given them. Everlasting Peas, wintered in pots, may now be planted out. *Viola cornuta* and other bedding *Pansies* should be kept well furnished with young shoots by occasionally cutting out the old ones, and the beauty of both English and fancy sorts will be greatly prolonged if they are grown in a moist and partially shaded situation. Train *Clematis* in such a way as they will look best. Such herbaceous plants as have been wintered in frames may now be planted out, but in the case of *Dodecatheons*, &c., intended still to be kept in pots, a shady position on a bed of ashes is best for them, and upon no conditions should they become at any time perfectly dry. Remove decaying flowers, except in cases in which seeds are to be sown. Transplant biennials and perennials, and as soon as they come into flower rectify the nomenclature of *Iris*es, *Lilies*, *Pyrethrums*, &c., the names of which are apt to get misplaced during the operation of transplantation. Double *Rockets*, which have bloomed profusely this season, should have their shoots layered—an operation which will soon induce the production of shoots in abundance; and these, when they have attained a length of 2 in. or 3 in., may be taken off and made into cuttings. *Pyrethrums* for late blooming, if cut down and allowed to grow afresh, will come into bloom during the later summer months. Hardy perennials generally, which bear division, may still be multiplied in that way; and, where that is not applicable, cuttings should be inserted as soon as possible, in order to ensure their becoming well established before winter. Hardy annuals for late blooming should be sown in shady spots to be transplanted however to the positions in which they are to flower. Seeds of *Brompton*, *Emperor*, and *Queen Stocks* should also now be sown for flowering next spring. Continue to prick off perennials as soon as they are ready for removal. Plants in pots will require plenty of water at this season; and specimens of such plants as *Phloxes*, *Paeonias*, *Pyrethrums*, &c., will need attention in the way of staking and removing dead blooms. If not already done, lose no time in plunging the stock of plants in store-pots in wood-ashes or sand.

#### Kitchen Garden.

*Asparagus* beds, now that cutting is over, will be much benefited by a good soaking of manure water; this, being a marine plant, enjoys salt, which, if it be added to the liquid at the rate of 2 oz. to a gallon, will materially assist *Asparagus* beds, especially such as have been long in bearing. Keep the beds quite free from weeds, which it is necessary in this case to remove by hand, as the use of the hoe would interfere with the plants. Beds that have been much out should, at the present time, be encouraged by every means to make good growth, for in this depends their ability to keep up, in years to come, their producing powers, both as regards quantity and quality, in a satisfactory state. *Asparagus* often gets worn out much sooner than it is otherwise would through an arising neglect after cutting has ceased. Advancing crops of *Carrots* should be looked over to see that they are not left too thick, especially the main sowing. Turnips also will require attention in this respect; there are few crops suffer so much as this if allowed to stand too close together, as when in this state they

run to leaf, forming bulbs that are not only small, but very poor in quality. Beet.—Thin the main crop before the plants get so large as to interfere with the growth. Coleworts.—Some seed should now be sown; these will be useful for planting thickly late in the season after other crops are cleared off. In respect to this vegetable it is necessary that amateurs should make sure that they get the seed true, and not some small kind of Cabbage which is sometimes substituted for it, as the Colewort will turn in its leaves and make useful heads when planted later than any variety of Cabbage; it also may be planted under fruit trees when these are not grown too close. Of course they will not produce anything like the crop they will in an open situation; nevertheless, what they do yield is so much gain, and they help to keep down weeds. Beans.—Where dwarf French Beans are held in particular estimation a few more may at once be sown; these should occupy a south border, under the shelter of a wall, where, by a slight additional protection from September frosts, they will frequently go on bearing longer than those grown in more open situations. Autumn-planted Cabbages that have been out and the stools left to produce a crop of Sprouts should, where the land is at all poor or of a light nature, have a good soaking with manure water, by which, in addition to thinning out the shoots to some two or three to each stool, they will make small useful heads, that will come in through the autumn. Keep the hoe going on all favourable occasions amongst advancing crops of every kind.

#### Extracts from my Diary.

**June 24.**—Sowing Snowball, Veitch's Red Globe, and American Strap-leaf Turnips. Planting out *Capsicums* in open spaces against south walls. Fodding *Balaams* and *Paeonias*. Giving early exhibition Celery a little earthing. Putting sticks to dwarf Peas. Hoeing and weeding shrubby borders, and putting sticks to all flowering plants that require it. Clearing off Spinach; manuring and getting the ground dug up ready for other crops. Layering Strawberries for forcing on pieces of turf 4 in. square, and also a large quantity, three in a bunch, on pieces 6 in. square for making new plantations.

**June 25.**—Sowing two rows each of the following sorts of Peas: Laxton's Omega, Ne Plus Ultra, and British Queen. Planting out *Borecole*, *Brussels Sprouts*, and late Broccoli. Putting in cuttings of choice sorts of *Pelargoniums*. Giving all newly-planted bedding material a good watering, and pegging down any plants that require that attention. Looking over Globe Artichokes, and cutting off all stems and heads not required for use. Looking over Cucumbers and Melons and stopping them. Watering all newly-laid Strawberry runners.

**June 26.**—Sowing Wheeler's Imperial and Carters' Heartwell Early Marrow Cabbage; also red and white Turnip Radishes. Planting out Lettuces and Endive. Potting on a batch of Queen Pine suckers. Cutting back Laurels encroaching on walks. Pegging down and stopping Vegetable Marrows. Thinning Turnips and giving them a good watering. Gathering Grove End Scarlet and Keen's Seedling Strawberries. Hoeing and weeding amongst all growing crops. Putting strings round Peas that are forcing their way through the sticks.

**June 27.**—Sowing Giant White Cos, the Favourite, and All the Year Round Lettuces. Planting out Celery and Cardoons. Picking flowers off and tying out Fuchsias for exhibition. Finish clipping all Box edgings. Looking over all cordon-trained Apple trees, tying down leaders, and loosening any that require it; also all young trees tied to stakes. Looking over all Vineries, tying down leaders, stopping the laterals, and giving the borders a good soaking of guano water inside and out.

**June 28.**—Sowing Frazer's Broad-leaved and Green Curled Endive; also Canadian Wonder Beans, Spinach, and Mustard and Cress. Stopping and nailing in Tomatoes. Thinning out Parsley and Spinach. Watering all newly-planted fruit trees. Putting loose ties round all young Raspberry canes, to protect them from the wind. Pinching back the breast wood of Cherry, Pear, and Plum trees and nailing in the leaders. Watering Pines and putting sticks to any that require it.

**June 29.**—Potting Stocks, Heliotropes, and Carnations. Putting first batch of *Chrysanthemums* into their flowering pots. Thinning out Lettuces and Endive; also late-sown Carrots. Nailing and tying in all Roses, Creepers, and Ivy on walls and trellis work. Clearing off another border of early Peas. Placing sticks round *Asparagus* beds to protect the young growths from wind. Watering all newly-planted Celery. Mowing and cleaning in the pleasure grounds and rolling down all gravel and Grass that require it. Fruit in use for dessert: Pines, Grapes, Melons, Peaches, Nectarines, Strawberries, Raspberries, and Cherries.—W. G. P., Dorset.

**Hardy Ferns and Scarlet Pelargoniums.**—One of the most effective combinations that I have seen for some time consists in inserting large specimens of *Vesuvius Pelargonium*, at irregular distances apart, on a bank covered with a luxuriant growth of hardy Ferns, the verdure of the latter forming an admirable groundwork for the brilliantly coloured *Pelargoniums*. Where the latter were not of sufficient stature to show well up above the Ferns, old tree stumps were inserted and covered with a large thick turf into which the *Pelargoniums* rooted freely, and by careful watering looked as if they would maintain a good display during the whole season.—JAMES GROOM.

GARDEN BOTANY.

(Continued from p. 581.)

MIXED INFLORESCENCES.—By mixed inflorescences is meant such as display both indefinite and definite branches in their composition. Thus the inflorescence of the Horse Chestnut (fig. 233) consists of a raceme of scorpioid cymes, which



Fig. 234.—*Chionanthus virginica*; raceme of dichotomous cymes.

is indefinite as to the number of cymes, whilst the cymes themselves belong to the definite type. In *Chionanthus virginica* (fig. 234) we have an example of an inflorescence consisting of a raceme of dichotomous cymes; in *Sparmannia*



Fig. 235.—Inflorescence of *Sparmannia africana*, an umbel of scorpioid contracted cymes.

*africana* (fig. 235) the contracted cymes are arranged in an umbellate manner; in *Datisca cannabina* (fig. 236) the inflorescence consists of a spike of contracted cymes; in *Vernonia centriflora* (fig. 237) the capitules are arranged in a branching, scorpioid cyme; and, finally, in the *Laurusinusus* (fig. 238) the dichotomous cymes are grouped in umbels. In each and all of these inflorescences there is a combination of the definite and indefinite types of branching.

ABNORMAL INFLORESCENCES.—By abnormal in this, as in all instances of its use in these paragraphs, is meant something unusual or out of the ordinary way; but there are two distinct significations to the word. As employed in this place it has a



Fig. 236.—Inflorescence of *Datisca cannabina*; contracted dichotomous cymes in a spike.

general application, that is to say, the inflorescences described are abnormal as regards plants generally, but not as regards each of the particular species. Branches, whether they bear leaves or flowers, usually arise in the axils of the leaves or bracts, and are mostly free from them; but in the Lime (fig. 239) the peduncle of the cyme of flowers is adnate, or adheres to the large bract, from the axil of which it proceeds. Sometimes the peduncle adheres to an ordinary leaf, and the flowers appear to spring from the centre of the leaf itself. *Erythrochiton hypophyllanthus* is a remarkable example of this kind of adhesion, the flowers being borne on the under surface of the leaf. In *Helwingia* (fig. 240), on the contrary, they appear on the



Fig. 237.—Inflorescence of *Vernonia centriflora*; flower-heads in scorpioid cymes.

upper surface. The leaf-like branches of *Butcher's Broom* (fig. 241) have been explained. As the leaf-like expansions are true branches, the abnormality of their bearing flowers is only apparent; as also in *Xylophylla* (fig. 242), in which they are

borne on the margin of the flattened branches. It not unfrequently happens that the peduncle of an inflorescence is adnate to the branch for some distance above the axil which gives it birth, and thus it appears to be an extra axillary production. In *Asclepias floribunda* (fig. 243) the peduncle adheres the length of one internode, hence it seems to spring



Fig. 238.—Inflorescence of *Laurustinus*; an umbel of dichotomous cymes.

from between the pair of leaves next above its real point of origin.

**UNUSUAL MODIFICATIONS OR COMBINATIONS OF BRACTS OR BRACTEOLÆ.**—The involucre (made up of bracts) of the *Compositæ* and *Umbellifera* has been explained under the definitions of the capitulum and the umbel, but the term is commonly employed to designate some other very different combinations of bracts, the nature of which it is important to know.

**THE CUPULE.**—There is a particular combination of bracts termed a cupule which invests the fruits of some of our most

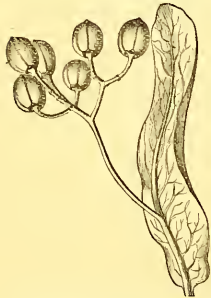


Fig. 239.—*Tilia europæa*; peduncle of cyme adnate to a leafy bract.



Fig. 240.—*Helwingia rusciflora*; bearing clusters of flowers on the leaves.

important forest trees which is likely to puzzle the beginner. Starting with the Acorn (fig. 244), the fruit of the Oak, the involucre consists of numerous very small bracts consolidated into a cup containing a single fruit. The cup of the Acorn in English Oaks is rarely more than half as long as the Acorn, but in some exotic species it almost completely encloses the Acorn. In the Hazel (fig. 245) the involucre consists of two

or three deeply cut leafy bracts covering at the base, and as long or longer in some varieties than the single fruit; and in the Beech (fig. 246) the bristly bracts of the involucre meet at



Fig. 241.—Flattened leaf-like branches of *Ruscus aculeatus*, bearing flowers in the centre.



Fig. 242.—Flattened branch of *Xylophilla obovata*, bearing flowers on the margin.

the edges and quite enclose the fruit, with the exception of a small aperture at the top. When the fruit is ripe the involucre separates into four valves and frees what look like two or three shining triangular seeds, but which in reality are separate fruits. The involucre of the Sweet Chestnut (fig. 247) is similar to that of the Beech, but very prickly, and it also contains two or three fruits.

**THE SPATHE.**—The spathe or large sheathing bract of the *Aroidæ* (*Arum*, *Anthurium*, &c.) has been referred to. Occasionally the spathe is double (fig. 248), but this is an abnormal



Fig. 243.—*Asclepias floribunda*; flowers in interfoliar cymes.

condition for the plant in question. The flowers of Palms are borne on a spadix, often very much branched and sometimes of enormous dimensions, enclosed in a spathe consisting of one or several valves.

**INVOLUCEL.**—This term is given by some botanists, as already mentioned, to the bracteoles or partial involucre of compound

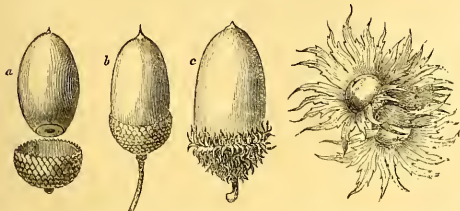


Fig. 244.—Fruits of Oak, with a cupulate involucre; a, fruit removed from cupule.

Fig. 245.—Fruits of Hazel, with large, lacerated involucre.

umbels. It is also applied to the cup-like involucre which encloses each separate flower in the capitules of the Dipsacæ

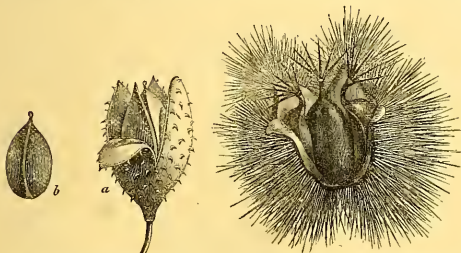


Fig. 246.—a, cupule or involucre of Beech, which contains two or three fruits; b, one of the fruits removed.

Fig. 247.—Fruits of Chestnut enclosed in a prickly cupule or involucre.

(Teasel, Scabious, &c.). It is one of the essential characters of this small family, and is easily seen in the Purple Scabious



Fig. 248.—Richardia ethiopia with a double spathe.

(fig. 249), where it is spread open, showing the fruit inside.

**THE EPICALYX.**—Immediately beneath the calyx of some flowers there is a kind of second calyx formed by the bracteoles.

It is called an epicalyx or involucre, or in descriptions the parts constituting it are called bracteoles. It is a common character of many genera of Malvaceæ (Malva, Althæa, Hibiscus, &c.) to have an epicalyx, and the number and degree of cohesion of the bracteoles afford generic distinctions. The Strawberry flower (figs. 250 and 251) has an epicalyx. Sometimes the bracteoles are entire, but usually more or less deeply cleft. Something of the same sort occurs in Dianthus (fig. 252), where the bracteoles cohere in opposite pairs.

**COLOUR OF BRACTS.**—Bracts and bracteoles are usually inconspicuous as regards colour, but in Bougainvillea, Poinsettia, and some other genera they are far larger and more brilliantly coloured than the flowers themselves. Many of the Bromeliaceæ, too, have very showy bracts, as also have some of the Salvias.

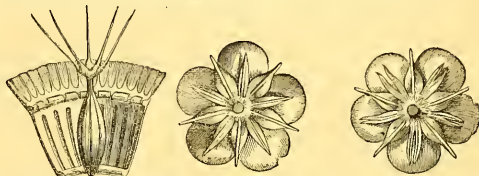


Fig. 249.—A separate fruit of *Strawberry* crowned with the calyx; the involucre cut down one side and spread open.

Fig. 250.—Flower of *Strawberry*, in which the bracteoles forming the epicalyx are deeply cleft.

Fig. 251.—Flower of *Strawberry*, in which the bracteoles forming the epicalyx are deeply cleft.

**GLUMES.**—The outer chaffy envelopes of the flowers of Grasses (figs. 253 and 254) are termed glumes, and the parts corresponding to the calyx and corolla of other plants are absent, or very small. Grass flowers are described and illustrated in a paragraph under the next section.



Fig. 252.—Flower of a *Dianthus*, showing the epicalyx of closely imbricating bracteoles.

Fig. 253.—Spikelet of *Rye*, with the glumes in position.

Fig. 254.—Spikelet of *Rye*, with the glumes separated at the base.

**The Flower.**

**THE COMPOSITION OR STRUCTURE OF THE FLOWER.**—Having examined the principal types of inflorescence, we may now advance a step further, and take the separate flowers constituting the inflorescences. As the various modifications of the flower afford most of the essential characters by which natural orders and genera are distinguished, it is of importance to become acquainted with their principal types. Leaves and inflorescences, and even stems, often vary very much in the same order and in the same genus, though in some cases one particular type of leaf, or arrangement of leaves, or kind of inflorescence, prevails throughout an order or genus. As we shall constantly have reason to speak of natural orders and genera and species, a general definition of what constitutes an order, &c., will render these allusions more intelligible. In the paragraphs relating to the seed, one of the characteristics of each of the two large classes of flowering plants—monocotyledons and dicotyledons—is pointed out; and in treating of leaves we incidentally mentioned the prevailing type of leaf of each of these two classes. Each of these classes includes a number of natural orders, sometimes called families. Under

the head devoted to a definition of the capitulum, it is noted that this kind of inflorescence prevails throughout the largest natural order—the Compositæ—in the vegetable kingdom. By this kind of inflorescence, associated with certain peculiarities in the structure of the flower, the order is characterised and its members distinguished from those of all other natural orders. Natural orders consist of few or many genera, each genus having the essential characters of the order in some of their numerous modifications. We may again refer to the paragraph on the capitulum and figs. 213—217 for some idea

perianth. The floral envelope of whatever kind, even when it consists of calyx and corolla, is really a perianth; but in practice this name is only given to the floral envelope when it is single, or the parts are similar in shape and colouring, in contradistinction to distinct calyx and corolla. This distinction



Fig. 255.—Dichlamydeous flower of Wallflower.



Fig. 256.—Dichlamydeous flower of Tobacco.

of generic characters. The form of the receptacle, the presence or absence of pales between the flowers, the bracts of the involucre, &c., &c., furnish characters upon which genera belonging to the natural order Compositæ are founded. Genera comprise one or more, often very many species, differing from each other in minor particulars. For example, the Apple and Pear are both species of the genus *Pyrus*; the former has corymbose flowers, and a more or less globular fruit, with a depression where the stalk is inserted, and the latter has subumbellate flowers, and a top-shaped fruit tapering towards the stalk end. Each of these species includes a number of varieties, dissimilar in shape, size, flavour, &c., though always preserving the essential characters of their species. But leaves and inflorescences of the same type occur in quite distinct natural orders, and therefore afford characters only of secondary value. A complete flower consists, as in the Buttercup

almost limits its application to the floral envelope of monocotyledons and such dicotyledons as have only a single envelope.

**DICHLAMYDEOUS FLOWERS.**—The flowers of all dicotyledonous plants having a distinct calyx and corolla, as the Wallflower (fig. 255) and Tobacco (fig. 256), are dichlamydeous.

**MONOCHLAMYDEOUS FLOWERS.**—When the floral envelope of the flowers of dicotyledonous plants is single, they are mono-



Fig. 261.—Hermaphrodite flower of Passiflora.

chlamydeous, as in Rhubarb, Daphne, Grevillea, and Aristolochia (fig. 257).

**ACHLAMYDEOUS FLOWERS.**—The flowers of some plants are entirely destitute of a perianth or achlamydeous, as the common Ash (fig. 258).

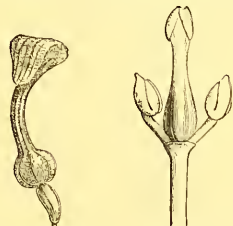


Fig. 257.—Monochlamydeous flower of *Aristolochia cle-matidis*.



Fig. 258.—An achlamydeous flower of the Ash.



Fig. 259.—Hermaphrodite flower of *Hypericum*.



Fig. 262.—Female flower of *Buxus sempervirens*.



Fig. 263.—Male flower of *Buxus sempervirens*.



Fig. 264.—A female flower of a Poplar removed from the catkin.

(figs. 14 and 15), of calyx, corolla, stamens, and pistil; but one or more of these organs, or sets of organs, is often absent, and then the flower is incomplete. The enlarged apex of the floral axis upon which the parts of the flower are inserted is termed the receptacle, which must not be confounded with the receptacle of flowers of an inflorescence. The calyx and corolla form together the floral envelope, and the stamens and pistil are the essential organs of reproduction. We have already mentioned (see *Tritelcia*, fig. 13) that when the parts of the floral envelope are similar in shape and colouring, it receives the name of

**HERMAPHRODITE AND UNISEXUAL FLOWERS.**—When a flower contains both fertile stamens and pistil, as in Ash, *Hypericum*, *Alchemilla*, and *Passiflora* (figs. 258 to 261), it is termed hermaphrodite; but frequently they are in separate flowers. When the stamens are wanting, or only rudimentary or barren, the flower is a female; when the pistil is wanting, or only rudimentary, the flower is a male (figs. 262 to 265). The

Cucumber, Melon, Hop, Hemp, and Red Bryony are familiar plants in which the sexes are thus separated. Both unisexual and hermaphrodite flowers may be destitute of perianth or monochlamydeons, or dichlamydeons (figs. 258 to 268). If the



Fig. 265.—A male flower of a Poplar removed from the catkin.



Fig. 266.—A male flower of a sinuous Willow and its subtending bract removed from the catkin.



Fig. 267.—A longitudinal section of the same.

male and female flowers be borne on the same plant, as in the Cucumber, Hazel (fig. 269) and Arum (fig. 270), the plant is monoecious; if they are borne on separate plants, as in *Acubata*,



Fig. 268.—A female flower of a Willow and its subtending bract removed from the catkin.

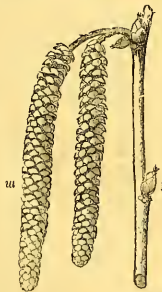


Fig. 269.—Branch of Hazel, bearing both male catkins (m) and female catkins (f).



Fig. 270.—A spadix of *Arum maculatum*, with male flowers (m) and female flowers (f).

*Garrya*, Hop, and Willow (figs. 271 and 272), the species is said to be dioecious. It is not unusual for a plant to bear male and female and hermaphrodite flowers intermixed, and then it



Fig. 271.—Female catkin of a Willow.



Fig. 272.—Male catkin of a Willow.

is polygamous. The Ash, Maple, and Asparagus are polygamous.

W. B. HEMSLEY.

THE exportation of Potatoes from North Germany to England last autumn and winter considerably exceeded, according to the "Farmer," that of any previous year. In Hull alone 91,351 tons were landed between October and the middle of May, of which 43,068 tons came from Hamburg and 32,890 from Stettin. Twenty-five per cent. of the Hamburg export were bought up by an agent in the South Liegnitz district, where, in consequence of his activity, the local price of Potatoes rose from ninepence to a shilling per cwt. above the average.

## THE INDOOR GARDEN.

### MEDINILLAS AND THEIR CULTURE.

MEDINILLAS rank amongst the finest of evergreen stove shrubs, alike handsome in foliage and flowers. The latter are arranged in gracefully drooping panicles, unlike anything else to which they can be compared, and the plants themselves are amongst the freest of free growers. They may be cultivated with success even by those who have not had much experience in plant growing; still, although deserving of general cultivation where sufficient room exists in which to grow them, they are hardly suitable for small houses, for, though their natural free disposition to flower is such that they will bloom in a small state, still the grand appearance possessed by a fully developed specimen cannot be realised in the shape of a small plant. Being indigenous to hot countries, it is useless attempting the cultivation of *Medinillas* where a sufficiently high temperature cannot be maintained. To do full justice to them, they require a good light house, where the growth, as it is formed, is of such a character as to promote the natural free development of flowers; for although they need a process of ripening the wood by means of dry treatment in autumn, still this will not bring out the full disposition to flower to the extent that results from the growth being made under the gradual solidifying process effected in a house under a maximum amount of light. Another great advantage arising from their being cultivated under the conditions here recommended is, that the wood produced is short jointed and the foliage comparatively small, a state that admits of the plants when in flower being much more profusely clothed with bloom than they otherwise would be.

Cuttings taken off in April, or as soon as young growth is produced and half ripened, strike readily inserted singly in 3-in. or 4-in. pots drained and half filled with finely-sifted sandy soil. The upper portion, which should be all sand, must be kept moist and covered, but not too closely, with a bell-glass. Cuttings thus put in in a night temperature of 70°, and proportionately higher in the daytime, will root in three weeks or a month; then gradually tilt the glasses and ultimately dispense with them altogether, inuring the plants by degrees to the ordinary atmosphere of the house. By the time they have made one pair of young leaves they will require more root room, and should have their points pinched out to cause them to break. *Medinillas* are free-rooting subjects, and will bear moving into pots 4 in. or 5 in. larger than those in which they are growing. They will succeed in either peat or loam, but I prefer the latter, though in it the foliage will not possess quite so much of the generally prized dark green tint that it will acquire in peat. This is, however, counterbalanced by the habit being made more sturdy and close. Through the summer they will bear as high a temperature as most stove plants receive—say 75° at night, and from 80° to 90° by day during sunny weather, syringing them freely at the time of closing the house in the afternoon, and giving plenty of water at the roots. In very bright weather they will require a thin shade for a few hours during the middle of the day, but on no account should they be subjected to the darkening process to which stove plants, collectively, have often to submit. An impression prevails that it is necessary to keep out a portion of the light; whereas all that is wanted is simply to break the sun's rays. *Medinillas* should, therefore, always be at that end of the stove wherein are placed such plants as require the least shading. Their natural habit is such as to require but little support; a stick to the centre shoot and one to each of the side branches will be quite sufficient. The shoots will very likely again require stopping at the end of July or beginning of August. It is necessary to attend to this in the first stages of the plant's existence, so as to furnish a sufficient number of shoots near the base. By the end of August shading should be dispensed with altogether. In the following month give more air and cease syringing overhead, which will gradually induce a state of rest. A night temperature of 60° through the winter will answer with a little more warmth during the day, and just sufficient water at the root to keep the soil from getting too dry. By the end of February the temperature should be raised 5° at night and 10° or 15° by day, with sun-heat. Commence syringing again as soon as the plants exhibit signs of growth, when they may be potted; a 6-in. or 8-in.

shift will not be too much if they are plentifully supplied with roots, at this time the loam may be used in a more lumpy state than hitherto. Put plenty of crocks in the bottom of the pots and secure them well from soil getting amongst them, as these plants, with their large amount of leaf surface, require a copious supply of water during the growing season. Owing to the natural disposition which they have to ramify, there will be, as a rule, no further necessity for stopping, except in the case of any shoots that are taking the lead too much. Raise the temperature as solar heat increases, keeping the plants up near the glass, and in syringing see that the water regularly reaches the whole of both upper and under surfaces of the leaves. Shade as before during the brightest portion of the day, and give the necessary support by sticks and ties to the branches, without which sometimes the weight of water in syringing will cause them to split off. Treat as in the preceding summer, dispensing with shade, and syringing as the sun's power begins to wane, together with the admission of more air.

Winter as before, giving no more water at the root than is requisite to keep the leaves plump. This dry condition of the soil is necessary to the free production of flowers, but it must not be carried so far as to cause the leaves to flag, or they will fall off prematurely. Again raise the temperature in spring, when the first efforts of the plants will be directed to the formation of flowers, which will make their appearance at the points of the branches. Whilst these are in course of development too much atmospheric moisture should be avoided, and it is not advisable to syringe them overhead, as any excess in this way frequently leads to the blooms falling off before they expand. The flowers will last for two or three weeks, during which time they have a grand appearance. After blooming any strong growths may be cut back, and as soon as shoot growth commences another shift of 2 in. or 3 in. should be given, getting away some of the old soil from the upper portion of the ball as far as it can be done without disturbance of the roots. Treat them generally as recommended during the preceding summer, giving manure water once a week, and their winter management should also be the same as before. It frequently happens that plants in the second and subsequent years of flowering bloom more profusely than during the first, as, in addition to the bunches at the points of the shoots, quantities of flowers are often emitted from the hard wood of the branches or main stem, in which state they have a most singular, yet beautiful appearance. *Medinilla* may be retained for years, so as to occupy a moderate space, by having their branches shortened freely after flowering, and in potting shaking out a portion of the old soil and replacing with new material, supplying the requirements of the roots by the liberal use of manure water in place of giving them inconveniently large pots.

*M. magnifica*, a native of Java, is a magnificent species. Its leaves measure from 10 in. to 12 in. long, and 7 in. or 8 in. broad. The flowers, which are produced in large, drooping, branching panicles, are of a rosy-pink colour, and the unopened buds are of the same shade, and are almost as handsome in the advancing stages as when expanded. *M. amabilis* is a native of Java, and may be said to be almost an exact counterpart of the preceding, except that the panicles are borne perfectly erect instead of pendulous. Though thus nearly alike, the contrast between the plants when in flower side by side is most remarkable, each enhancing the beauty of the other. *M. Sieboldi*, from Montmeim, is a handsome plant, but inferior in that respect to both the above. It has rosy-white flowers.

All the species of *Medinilla* are somewhat liable to the attacks of red spider, unless the syringing recommended in their cultivation is regularly attended to. Mealy bug and brown scale will also live upon them; for these, sponging the leaves and a strong application of insecticide in the case of old plants that, in cutting back, have been denuded of their foliage will be found the most effectual remedy.

T. BAINES.

*Cistus cypricus*.—I have growing against a somewhat shaded west wall in my forecourt garden a plant of the common Gum *Cistus* that in the course of three years has made a very fine growth, and during June and July blooms with great freedom. The flowers are

not very durable, but they are produced successively for a considerable period, and are objects of great beauty when fully expanded. The fine rosy-purple *Cistus creticus*, which I saw in full bloom in Mr. Parker's nursery at Tooting a few days ago, would make a capital companion for the common form, the flowers being nearly as large and bright, and effective in colour.—D.

#### WINTER AND AUTUMN PELARGONIUMS.

Now is the time to pot and push on plants for autumn and winter decoration, a time when the Pelargonium will be found among the most useful of subjects—I mean the zonals and similar sorts. The varieties now-a-days are almost too numerous to mention, but one cannot go wrong, when ordering such plants, to procure all shades of colour, combined with a free-flowering habit and good flowers. When well grown there are hardly any of the varieties inferior. Plants that have been struck this spring or last autumn will be in 6-in. and 7-in. pots respectively by this time—at least they should be—and they will need no further shift this season. Like other plants, they only begin to flower abundantly under glass late in the season when the pots are full of roots. During summer, when there is plenty of light and sunshine, they flower well when making their growth, but it is different when the short dull days arrive—they need the assistance then which is afforded by mature growth and a potful of roots. Pelargoniums are not particular as to soil, but they prefer good friable turfy loam to any other. If anything then is added it may be well-rotted cow manure or sand, according as the loam is light or heavy. The pots should be carefully drained, the compost should not be rammed in potting, and sufficient room should be left for watering,  $\frac{1}{2}$  in. at least. The plants should be grown on in a light airy greenhouse or pit, be copiously watered, and have as much air as possible day and night. Anything like forcing in the least must be avoided. During the summer the flowers should be picked off, but the practice must not be continued till too late in the season. We just like to have the flower-buds well up and the most forward expanded when the plants are needed in autumn, with, of course, plenty of buds showing and coming on. When the plants are in this condition they come on without forcing and the flowers last longer, but it is necessary, during the dull days of November and December, to give the plants a little heat, but no moisture, just to keep them growing apace. Cold and damp are the ruin of both the buds and flowers, and consequently it is necessary to be very careful in watering, as there is then little demand upon the roots by the leaves. J. S.

**Experiences with the Slug Pest.**—Slugs are assuming something of the character of a plague this season. Cultivators who have never known what it is to have losses in their crops to any extent from vermin cannot this year save even the most ordinary vegetables from these little depredators. Beet, Parsley, Parsnips, Carrots, and several other crops, which I never remember to have suffered from any cause before, are this season being started under the greatest difficulty. Raising them in boxes and planting them out seems to be the only alternative, for as soon as the young seedlings vegetate they are cleared off, notwithstanding all ordinary precautions to the contrary. We have tried as preventives ducks, fresh lime, red lead, soot, and sifted ashes. The first were allowed to run freely amongst Lettuces, Endive, and other crops during the winter, but as the Endive and Lettuces were gradually becoming smaller, we found that, besides searching diligently for animal food, they were also feasting on the hearts of the young plants. Batavian Endive, consisting of many hundreds, had all their hearts eaten out entirely, and every tender leaf was nibbled. They seemed, indeed, to like the flavour of this Endive more than that of any of the other crops. We found applications of lime to be useful, but lime soon becomes inert, and then the slugs creep over it uninjured; red lead and soot were also temporary preventives. Small ashes have been all along and are still the most useful barriers to slugs, though the battering rains which we have had have, to some extent, made them smooth enough to allow mischief to be done. A slight sprinkling acis as an effectual remedy, and a store of them should be kept ready for any emergency.—M. TEMPLE.

#### OBITUARY.

On the 10th inst. there died at Lyddington, near Uppingham, the Rev. B. H. Margetts, curate of that place, at the early age of thirty-one. He was an occasional contributor to THE GARDEN on matters relating to *Chrysanthemum*, of which he was an excellent cultivator and successful exhibitor at the shows of the Northamptonshire *Chrysanthemum* Society when curate of Finedon, Wellingborough. His favourite flower, however, was the *Auricula*, of which he grew a small and select collection; and at the *Auricula* show at the Crystal Palace in April last he was a successful exhibitor. D.

ANSWERS TO CORRESPONDENTS.

**Burning Bush.**—Is there such a plant as the Burning Bush? and what is its botanical name?—W. LIVINGSTON, *Ball's Bridge Nursery, Dublin.* [Burning Bush is an American name for *Euonymus atro-purpureus* and *E. americanus*; it is also sometimes applied in gardens to the Artillery plant (*Pilea serpyllifolia*.)]

**Double-spathed Arums.**—I have sent you a photograph of a sport on the flower of an Arum, which is at present in bloom in the conservatory of the Deaneary, Clogher, Co. Tyrone, Ireland, and I wish to know if such a sport is common.—B. [The photograph sent shows an example of *Richardia* (*Calla*) *ethiops*, with a double spathe, a not very uncommon occurrence in the case of this Arum. A similar case is illustrated this week under the head of "Garden Botany."]

**Large Roses.**—I send you a bloom of Paul Neron, which measures over 15 in. in circumference.—ANNIE TRAVELL. [Large and showy, but that is all that can be said in its favour, as it is faulty in shape and comparatively scentless.]

**Re-planting Old Asparagus Roots.**—"A." (see p. 683) could not follow a worse plan with his Asparagus than re-planting in any way the old roots. In such cases the best way to success is planting one-year-old plants in spring or early summer.—V.

**Vine Insects (H).**—I have carefully examined the portions of diseased Vine sent, and I can find no white spider nor any other living creature; in them, except one minute pale yellow thrip. The Vine appears to be in poor condition to produce such weak wood.—W. W. S.

**Maidenhair Ferns.**—What is the treatment of a Maidenhair Fern which is gradually decaying? I have tried heat and plenty of water, but they do not answer.—T. T. [Shake the soil from the roots and re-pot, not too deeply, in well-drained, light, turfy loam, leaf-mould, and silver sand, and place the plants in a moist, warm temperature.]

**Vine Leaf Excrecences (L).**—We cannot assign any cause for the holes in your Vine leaves; the little green excrecences on the back of them are the result of deficient ventilation and too much moisture in the atmosphere.

**Rose Blooms for Exhibition.**—What is the best way in which to prepare Rose blooms (cut) for exhibition? Would they be best cut the night before, or on the morning of the show.—H. [If there be little or no dew, roses may be cut on the morning of the show, but there is nothing so dangerous as cutting them during a heavy dew, as, unless the best blooms are marked on the previous evening, it is simply impossible to distinguish them; neither do they travel so well when cut wet. I generally commence cutting as soon as the sun has left the blooms, and have always found them, cut at that time, to retain their colour and freshness wonderfully well. A great deal of judgment is required in cutting Roses for exhibition, as some varieties must be cut much younger than others. Considerable experience and close attention to results can alone teach an exhibitor this.—R. B.]

**Names of Plants.**—Correspondents wishing plants to be named will oblige by complying with the following rules: To send the specimens of complete as possible, i.e., both stem, leaves, and flowers, and fruit, when possible. We cannot attempt to name plants from single leaves. To carefully pack them in gutta-percha tissue, or other impervious material which will prevent evaporation. Not to send varieties of popular flowers, such as *Euchias* or *Ponies*, which are best named by experienced growers of such plants, who have the means of comparison at hand. Not to send more than four plants or flowers at a time. Always to send, in addition to whatever pseudonyms or initials they may desire to use in the paper, their full name and address. To pre-pay all packages containing plants or flowers.—W. C.—The white and the ordinary form of *Dictamnus Fraxinella*, an old-fashioned border flower. *W. J. F.*—Potato-stem tubercurs; they are not uncommon, especially when anything arduous grows underground. *Glanschein*.—The leaf we cannot determine without knowing something of the flower. Many plants belonging to widely dissimilar Natural Orders have leaves the exact counterpart of the one sent. Is anything known of the country from which it comes? *Messrs. B.*—A well flowered specimen of *Ceanothus velutinus*. The other is a *Pittosporum*, probably *P. Mayi*. We have seen the same plant in various gardens both in the United Kingdom and in California, where it forms a tall pyramidal evergreen of great beauty. It was introduced here from New Zealand. *L.*—The parasite on the leaves sent is a *Puccinia*, probably *P. malvacearum*. *J. E.*—1. *Stellaria graminea*, 2. *Silene conica*, 3. *Stachys sylvatica*. *W. E. R. Clonnet*.—The Orchid is a species of *Rodriguezia*. You might try some of your seedling *Acacias* out of doors. *Dealtha* succeeds against a wall in some parts of England. *J. W. V.*—*Ceanothus rigidus*. *H. M.*—*Aster alpinus*. *Ceranium*, apparently *G. Endressii*; but it had fallen to pieces when it reached us.

**The Glastonbury Thorn.**—What is the true history of this Thorn? I am told that there is but one plant of it known, which is growing on a steep hill at Glastonbury, and that it has the mysterious property of coming into bud, leaf, and blossom from a perfectly dormant state in a single night, the particular night being Christmas Eve, and that on Christmas Day the tree is perfectly bare again. My informant vouches for the truth of it, having, he asserts, seen it himself.—R. L. TRANTON, *Beeston Fields, Notts.* [This remarkable Thorn, with which so many superstitious legends are connected, is merely a precocious variety of the common Hawthorn. Tradition says that the original

tree was the staff of Joseph of Arimathea, who came over to Britain, along with twelve companions, to found the first Christian Church in this island. As a proof of his mission he stuck his staff in the ground, which, after he had had a night's sleep, was found to be in leaf and flower in the morning. Joseph seemed to have inferred from this that it was an omen of good; so he made this his resting-place and built a chapel, after which it became by additions and improvements the magnificent Abbey of Glastonbury. Another tradition tells us that, until the time of Queen Elizabeth, the Glastonbury Thorn had two trunks, one of which was cut down by a zealous Puritan. It is said that in the time of Charles I. the remaining trunk was cut down, but a publican of the place, "out of pure devotion," as the writer has it, secured a slip, which, being set in his garden, flowered on December 25. There are still two venerable Hawthorns near the Abbey, which probably sprang from the veritable tree which blooms during mild winters early in the year. There is a tradition, I know, that this Thorn comes into leaf and flower on Christmas day, and that it withers the next day. This, of course, is pure superstition, for its blooming period is ruled by the weather. It is, nevertheless, an early-flowering variety, which, during unusually mild winters, has been known to be in blossom in January and February, and even as early as Christmas when the weather has been exceptionally mild, and growing. The Glastonbury Thorn is worth cultivating for the sake of its early blooming in mild seasons.—G. B.]

Questions.

**Sub-tropical Plants for Cornwall.**—I shall be glad to know if any of your readers have had experience with the following planted out of doors, viz., *Araucaria excelsa*, *Cycas revoluta*, *Cyathus excolata*, and *Dicksonia antarctica*? and whether there would be any chance of their withstanding the cold of our usually mild winters.—SANGUINA, *Cornwall*.

**Gas-heating and Inside Blinds.**—Would any of your readers inform me which is the best kind of gas-heating apparatus for a conservatory 15 ft. by 9 in., and rather high in proportion? I require it only of sufficient heating power to keep out frost. Also if I can use inside blinds with spring rollers; and, further, the most useful material for the blinds? I should like to place the boiler on the other side of a brick wall, so as to heat at the same time an adjoining room.—C.

**Barren Fruit Trees.**—Can any of your readers give me advice in the following case? My Pear trees blossom well, and so do Plums, but thirty or forty trees for eleven years never bear fruit, though I have been which fertilise the trees. They make much wood, my soil being in every way excellent.—T. B. B.

NOTES—VARIOUS.

**Fabiana imbricata.**—It is much to be regretted that this hardy shrub is not often met with than it is. It has been in great beauty here for some time past, and is just now past its best. Cuttings made of the firm young shoots, and put under a bell-glass in a cold pit or frame, soon form good plants. It does well in a south or south-east aspect in common garden soil. *Habro hamnis elegans* is also in bloom in the open air.—W. DIVINE, *Winton Maidstone*.

**Zygopetalum Sedeni.**—In the report of the Royal Botanic Society's Show (see p. 685) I notice a small error. Your reporter mentioned, amongst the first-class certificates obtained by Messrs. James Veitch & Sons, *Zygopetalum Lindleyi*; this ought to have been *Z. Sedeni*, a hybrid, obtained by Mr. Sedeni, the foreman (Orchid department of the firm), by crossing *Z. maxillare* with *Z. Mackayi*. Its petals and sepals are dark brown, and the labellum violet veined with white, and the flowers are beautifully scented. In habit and foliage it resembles *Z. Mackayi*, and is altogether a very good plant.—ERNEST BERGMAN, 69, *Farnborough Road, West Erompton*.

**Horticultural Education in Switzerland.**—The Canton of the Grey League first set (according to the "Farmer") the example in Switzerland of giving the inhabitants gratuitous instruction in the rational cultivation of vegetables. For this purpose teachers of approved merit travel from valley to valley of the canton during the winter months, and instruct classes of all ranks of society who may choose to attend their lectures in the theoretical part of the subject. In summer time the same teachers again go their rounds, and demonstrate practically the theoretical lessons enforced during the previous inclement season. Of the 95,000 inhabitants of the canton some thousands of all ages and classes have availed themselves of the opportunities thus afforded them since the establishment of the lectures in 1874. The good effects of this system are everywhere visible. In hundreds of places vegetables of many kinds and of excellent quality are now grown at altitudes where formerly no attempt at cultivation was ever dreamed of, and, where some notion of gardening may previously have existed, the various improvements since introduced have effected marvels of late years. The good example thus set by the Grey Leaguers was quickly followed by the Canton of Zürich, and last year Argau, Lucerne, and Berns heartily adopted the same system with a zeal which will doubtless bear fruit in due season.

## GARDEN ALLOTMENTS.

It is an undoubted fact that more than half the population of England are living deprived of pure air, of clear sunlight, and of the opportunity of tasting the pleasures derived from simple natural objects. The desire for them is not yet dead. I have known of people in the east of Manchester cultivating a Nettle in a back yard with the greatest care, as it was the only plant that would grow where they were forced to live. On holidays their case is no better, for the high moorlands which border the most thickly peopled parts of Lancashire are closed throughout the whole year by the successful shoddy manufacturers who have taken to game preserving. Real physical health is impossible, and moral health proportionately difficult. Education no doubt spreads a desire for natural beauty, but the satisfaction of that desire is beyond the power of the masses, whose minds and eyes we are cruelly endeavouring to open, so that they will be more conscious of wants which they may not satisfy. An educated man, unless living in a purely abstract world or absorbed wholly in his success in active life, must of necessity be miserable if forced to live in a hideous street of small brick houses, where nothing will grow and were sunlight never penetrates. A weekly tenant in such a place is scarcely likely to devote his mind to beautifying his home, or surrounding it with the simple marks of his industry and skill which render it a place he loves for its own sake. His leisure must almost of necessity be spent in the public-house, where his cost must be paid for at the expense of his health, his prospects, and his family. These are the evils which we are now forced to check unless our town population is to sink into utter misery and degradation, and our country districts are to be a desert, entered only for a month or two every year that the sacred birds which are their only inhabitants may be duly sacrificed at the appointed time. Where is the remedy to be found? If not in general legislation, we may perhaps look to local effort put forth either by co-operation among workmen themselves, by the benevolent wisdom of wealthy individuals, or by special action of municipal bodies who are acquainted with the wants and capabilities of the district whose affairs they administer. There are indications that if the course which would really conduce most to the benefit of the most thickly populated districts of England were once clearly recognised, and reasonable means for accomplishing the desired end were pointed out and generally known, societies or persons who would provide the necessary organisation would not be wanting.

The evils to be overcome are clear. First, it is obvious that it is impossible and probably undesirable for the majority of the poorer classes in England to obtain their sustenance from agriculture or even market gardening. It is possible that nearly half the population of the country will be dependent on the earnings of the head of the family to which they belong, derived from manufacturing or mining. Secondly, if any health of body, any feeling of patriotism, any enjoyment of the externals of home life are to be possible for this section of the people, the conditions under which they now live must be altered. How is the necessary alteration to be brought about? Already the suggestion of a solution of the difficulty has been indicated. More than thirty years ago William Howitt, in "Tait's Magazine," gave a glowing picture of some of the districts round his own town. He calculates that in 1835 about 420 acres of land near Nottingham were divided into small plots let as gardens at low rents, and furnishing a healthy and inexpensive means for about 5000 factory workmen and small tradesmen to occupy their leisure. Mr. Howitt speaks enthusiastically of the benefits and pleasure derived from this system by those who availed themselves of it. Even as a speculation on the part of the landowner it was then considered successful. It was to this system, so useful in his own town, that Mr. Howitt looked as capable of aiding most effectually the establishment of the ideal Christian state of which he dreamed. Thirty years, however, have made little change in this direction. The Nottingham gardens are slightly more numerous now than they were when William Howitt wrote, but their number has not increased in proportion to the growth of the town. The gardens, too, are less convenient than formerly, as the town has extended, and their distance from the factories and the homes of the workmen is greater than it was formerly. About 8000 allotments, varying in size from 200 square yards to 600 square yards, are now held by the town-people of Nottingham. Most of the tenants of these plots are engaged as workmen in the lace or hosiery factories, and have some distance to walk from their homes in the town to their gardens in the suburbs, as it is only in a few exceptional cases that cottages have been built on the allotments. In 1872 the average rent was about one halfpenny a square yard, so that until the plots are required for building the system is one eminently advantageous to the landlord, and would be still more so to any co-operative society of workmen who could venture together to buy larger plots and lay them out with a special view to their being used permanently as

gardens. At present the landlord does little besides mark out the plots and some sort of pathway to each. Even when the hours of labour were longer than they are at present, the privilege of possessing one of these gardens was highly prized by many, although much of the short space of daylight which remained after working hours was consumed in the walk from the factory to the cottage and from the cottage to the garden. Generally both flowers and vegetables are cultivated, and most of the tenants have some special hobby in horticulture, and each takes a particular pride in rearing the finest vegetables or flowers of the kind which accords with his own taste. In the summer months the gardens afford an attraction against which the public house cannot compete. The whole Sunday is often spent by a workman and his family in his garden, where some kind of summer-house is frequently built as a temporary shelter and adorned with flowers. From the testimony of those who have lived long in Nottingham, it seems that the system even on its present limited scale has done much to diminish drunkenness and improve the health of those who avail themselves of its advantages. It cannot be said, however, that the circumstances under which it has been at work are very favourable. The land is not exceptionally fertile and the rents are high. I have known a working gardener near Nottingham to pay £6 10s. for a small market garden for which he would probably not have paid more than £3 a little farther in the country, if the landlord would have let a small holding at all. The distance of the garden from the home is a second disadvantage of the most serious character, which would not affect the system if properly carried out and the cottages were placed on the allotments, or, if that were impossible, built in rows very near to lands which had been divided thus into gardens. Probably, too, it will be felt that as the hours of labour are now shorter than formerly, the need for such an employment as the cultivation of these gardens will be greater, and at the same time more opportunity will be given for carrying that cultivation to perfection and making it productive, even from a purely economical point of view. The diet of an English working man and his family would probably be more wholesome if it consisted to a larger extent of fresh vegetables. In the north of England at present fresh vegetables are considered a luxury, and not one of the staples of ordinary diet. If a workman, however, grew them himself, he would prize them more, use them with more care and greater pleasure, and possibly find that the cost of production was a little pleasant labour, which would be a healthy recreation, and a few pounds, which would otherwise have been unprofitably spent.

Attempts on a small scale to introduce the Nottingham system in other towns have at times been made, but suitable land near to the workmen's houses is generally too dear. If the plan is ever to work successfully, it must either be tried on a large scale or in some new place. Workmen change their habits and notions very slowly, and the change advocated is a very radical change. It is not merely an attempt to improve the dwellings of the working classes, but to make the artisan a food producer also, to break down to some extent the hard line of division between town life and country life. We are producing more coal, iron, and calico than we can sell, and the failure of a market means starvation for a whole district. It is time that an effort should be made to render our country more self-sufficient, and that workmen should have it within their power to produce some at least of the necessities of life for themselves. So many persons are engaged in the production of articles of mere luxury or of tools, and so few in using the tools, that articles of necessity are dear and luxuries cheap. So much thought has been spent in trying to manufacture as many things as possible, that the question, "What is the good of the article manufactured?" is seldom considered. All classes buy things because they happen to appear cheap rather than because they really want them. If in the theories of economists and in the practical activity of the nation it could be remembered that the real aim of the ceaseless industry of the nation is to provide food, health, and wise recreation for all classes of the people, according to their several stations, and not to produce as much as possible of every commodity which clever contrivances may find a sale for, the country would be infinitely happier, and free from the dangers which are every day becoming more threatening. At present the old sentence is only too true of us: "Ye have spent your money for that which is not bread, and your labour for that which satisfieth not."

ALFRED HOPKINSON, in "Fraser's Magazine."

**Potato Disease.**—This appeared in the garden here on the 12th inst., and since then it has spread considerably. The kinds first attacked were Porter's Excelsior and Alpha; Late Rose and Veitch's Ashleaf have followed. In cottage gardens in this neighbourhood the Potato crop is very luxuriant and strong this season, but the soil is completely saturated and chilled with so much wet and absence of sun; the disease is therefore likely to be destructive; unless we get a favourable change soon.—W. DRYER, Wierton, Maidstone.

## SOCIETIES AND EXHIBITIONS.

## ROYAL HORTICULTURAL SOCIETY.

JUNE 18.

By combining the Society's Rose show, which was held on this occasion, with that of the Pelargonium Society, and holding the usual fortnightly meeting on the same day, an attractive exhibition was the result. The chief features of interest were the noble groups of plants from Mr. John Wills, Messrs. Veitch, and Mr. B. S. Williams, and the large collections of Roses from Waltham, Cheshunt, Slough, and Salisbury.

**First-class Certificates.**—These were awarded as follows:—

**Lilium Hansonii** (G. F. Wilson).—A tall-growing species bearing a profusion of half-drooping, golden-yellow, medium-sized flowers having recurved petals spotted with dark crimson.

**Begonia Calypso** (J. Laing & Co.).—A dwarf-habited kind having erect spikes of partially-drooping, semi-double, pink blossoms, very floriferous, and highly ornamental.

**Dracena vivicans** (W. Bull).—An elegant decorative plant having long, narrow, graceful leaves of a glossy bronze colour, edged with bright rosy-crimson.

**Rose Countess of Rosebery** (Wm. Paul).—An English-raised Hybrid Perpetual with well-formed flowers of a rich rosy-crimson colour.

**Erica obbata expolita** (Rollisson & Sons).—A free-growing plant with large, white, waxy flowers borne freely in terminal clusters, and a great improvement on the type.

**Dactylis elegantissima aurea** (Cannell).—A free-growing ornamental Grass, beautifully striped with green and golden-yellow, suitable for baskets or borders.

**Clematis Viticella Earl of Beaconsfield** (Cripps & Son).—A free-flowering kind, having brilliant purple, well-formed blossoms of a striking and highly ornamental character.

**Rhododendron The Tocsin** (Noble).—A kind having noble trusses of large bright rose-coloured flowers with imbricated petals, the upper one being beautifully spotted with golden-yellow.

**Potentilla Prince Arthur** (E. & J. Perkins).—A variety of great beauty, with double lemon-coloured blossoms.

In connection with the Pelargonium Society first-class certificates were awarded to:—

**Pelargonium Insulaire** (Turner).—A fancy kind, having flowers with white centre, the petals being striped with claret and white, the top petals rich crimson.

**P. Titania** (Dr. Denny).—A zonal compact in habit, and bearing lively crimson blossoms, with clear white eye.

**P. Amethyst** (Turner).—A distinct show kind, the lower petals of which are purplish-magenta, traversed with dark markings, the upper petals being black edged with purple.

**P. Invincible** (E. B. Foster).—A large-flowered show kind, with bright crimson and maroon-coloured blossoms.

**P. Symmetry** (Foster).—A show variety with remarkably attractive pink and maroon blossoms.

**P. Dauntless** (Foster).—A show kind having flowers of a bright pink, the top petals being blotched with maroon.

**P. Marmion** (Foster).—A show variety, with well-formed pink flowers and white centre, the top petals being velvety-crimson.

**P. Criterion** (Foster).—A dark crimson show flower, with white centre, and very distinct.

**P. Janette** (Turner).—A fancy kind, with round flowers of rosy-crimson, the centre and edges of which are white.

**P. Placidum** (Turner).—A fancy kind, having bright rose-magenta flowers, with white edges and centre.

**P. Fanny Catlin** (Catlin).—A robust-growing kind of good habit, with dark zonal leaves, and large trusses of perfectly formed orange-salmon blossoms.

**P. Manfred** (Dr. Denny).—A good-habited kind, having finely-formed, smooth-petalled flowers, of a brilliant orange-scarlet colour.

**P. Sunbeam** (Dr. Denny).—A well-formed, bright scarlet-flowered zonal.

**P. Madonna** (Dr. Denny).—A zonal, with deep rose-coloured flowers, of great substance, and very attractive.

Messrs. Veitch & Sons showed a collection of new plants, consisting of *Begonias*, *Dipladema Crossiana*, a garden hybrid, having medium sized flowers, elegantly tinted with pink; *Oroton Hanburyanum*, a graceful-leaved kind, from the South Sea Islands, beautifully mottled with green, gold, rose, and crimson; *Davallia elata*, a showy Fern, with finely-cut bronze pinnae. From Messrs. Laing & Co. came several fine new *Begonias*. Mr. Bull contributed *Cœlogyne corymbosa* in good condition, also several new Palms, *Dracenas*, and a show *Pelargonium* named *Princess of Wales*, with beautiful striped, rose, purple and white flowers. Messrs. E. & J. Perkins, Leamington, sent a fine double *Petunia* named *Madame Van Merton* and several new *Potentillas*. From Messrs. Cripps & Son, Tunbridge Wells, came new *Clematises* and Mr. Cannell showed a fine basketful of *Dactylis elegantissima aurea*. Messrs. Wm. Paul & Sons sent blooms of English-raised seedling *Roses*, among which were several promising kinds, such as *Duchess of Bedford* and *Countess of Rosebery*. The Rev. A. Rawson, Bromley Common, contributed remarkable blooms of the hardy *Lady's-slipper*, *Cypripedium spectabile*, several fine *Lilies*, and a beautiful new seedling *Iris*. Mr. R. Dean sent fine blooms of a new strain of *Canterbury Bell*; they were large in size, and in some cases had double cups, while in colour they varied from cream to the deepest azure-blue.

**Fruit.**—An interesting exhibition of fruit trees in pots came from Mr. Rivers, Sawbridgeworth; it consisted of *Cherries*, *Peaches*, and *Nectarines*, all loaded with ripe fruit. Fine *James Veitch Strawberry* came from Mr. Lane, gardener to Lieut.-General Tyche, Pyrgie Park, Romford; and Mr. Hinds, Otterpool, sent good *Melons* and *Tomatoes*.

**Miscellaneous Collections of Plants.**—A group of *Orchids* and other plants from Mr. Roberts, gardener to Baron Rothchild, Gunnersbury, contained a plant of *Odontoglossum vexillarium* bearing more than a dozen graceful flower-spikes and from sixty to seventy handsome blossoms. This occupied a raised position in the centre of the tent, and was surrounded by *Palms* and *Ferns*, from amidst which, in form of a circle, sprang fine spikes of *Odontoglossum Alexandræ*. An attractive group of new and rare plants was contributed by Mr. Bull, Chelsea. In it were noticeable elegant plants of *Cruniglo recurvata variegata*, the white and green-leaved *Phyllanthus nivosa*, pansful of the brilliant *Pelargonium triumphans*, and well-grown examples of *Dracena Goldieana*. In a bank of plants of *Adiantum gracillimum* were inserted examples of *Odontoglossum vexillarium*, *O. Alexandræ*, finely-flowered *Masdevallia*, *Catleyas*, and the brilliant orange-scarlet *Epidendrum vitulinum*. Associated with these were also fine-leaved *Bortolonias*, *Lady's-slippers*, and similar plants. From Mr. Wills came the most attractive collection in the tent. It consisted of a background of *Giant Tree Ferns*, *Palms*, *Cordylines*, &c., under which, tastefully arranged, were *Liliums*, *Spiras*, and brilliantly-coloured *Dracenas*, &c.; the foreground, and of which sprang well-grown plants of the graceful *Cocos Weddelliana*, *Geonoms*, *Caladiums*, choice *Orchids*, *Water Lilies*, and *Gloxinias*. This group occupied altogether several hundred square feet of space. Mr. B. S. Williams had, as usual, an excellent collection, in which were well-grown *Pandanads*, fine-leaved *Crotons*, *Yucca aloifolia variegata*, new and attractive *Dracenas*, &c. Amongst these were arranged fine specimens of the *Flamingo* plant, *Amarylises*, *Fitcher* plants, well-flowered examples of *Dendrobium Benaonia*, and *Odontoglossum Alexandræ*; fine-leaved *Bortolonias*, new *Colouees*, and *Ferns*. Adjoining this group was a bank of tuberous-rooted *Begonias* from Messrs. Veitch & Sons, which was much admired; the plants were well grown and abundantly flowered, and were set off to advantage by being intermixed with *Ferns*, &c. The same exhibitors also contributed a collection of insectivorous plants, which were very interesting, also brightly-flowered *Gloxinias*, *Hydrangeas* *Thomas Hogg*, and fine potsful of *Blandfordia aurea*, backed up by *Acalypha Maccleana*, the leaves of which were unusually bright and well coloured. Messrs. Laing & Co., Forest Hill, showed an attractive group of plants, amongst which were well-grown examples of the graceful *Cruniglo recurvata variegata*, variegated *Pines*, finely-coloured *Colouees*, and a boxful of exquisite *Roses*. A beautifully-flowered plant of *Dendrobium Falconeri* came from Mr. Fisher, gardener to F. Williams, Esq., Balham. Messrs. Carter & Co. had a noble collection of *Palms*, *Pandanads*, *Dioffenbachias*, choice *Ferns*, &c. Messrs. Rollisson & Sons had an interesting group of *Cycads* and *Palms*, associated with which were specimens of the finely-coloured *Dracena salmonea*, the green-leaved *D. fragrans*, the graceful *Grevillea filicifolia*, and *Crotoms*. These were relieved by finely-flowered plants of *Cypripedium spectabile*, a brilliant blue-flowered *Iris*, *Anthuriums*, *Pimeleas*, *Ericas*, and a fine variety of *Dendrobium Falconeri*. Pyramidal plants of *Ivy-leaved Pelargoniums* came from the Society's gardens at Cliswick; also an extensive collection of

zonals and nosegay kinds. A group of miscellaneous plants was contributed by Messrs. Hooper & Co., Covent Garden; noticeable in it were finely-coloured examples of *Croton Hookeri*, *C. undulatum*, *Pandanus Veitchii*, and the bronze-leaved *Lantana rubra vera*. These were effectively edged with well-grown *Achimenes*, *Begonias*, *Gloxinias*, the pretty *Torenia Fournieri*, and similar plants. Mr. J. Marcham, Springfield Nursery, Isleworth, furnished single-flowered *Petunias*, many of which were unusually large and beautifully striped. Messrs. Hayes, Edmonton, contributed an excellent bank of *Liliums*, coloured-leaved and other *Fuchsias*, beautiful show and zonal *Pelargoniums*, intermixed with *Ferns*, *Calceolarias*, and similarly attractive plants. From Messrs. Cutbush & Sons came a collection of New Holland plants and *Heaths*, intermixed with *Palms*, *Ferns*, and *Aralias*, and edged with small-growing *Ferns* and beautiful panfuls of a *Pink* doubtfully named *Dianthus indicus nanus*. Mr. Bolter, Kenel New Town, sent a collection of miniature succulents. Mr. John Reeves, Acton, contributed a collection of decorative plants consisting of well-grown examples of *Lilium longiflorum*, *Hydrangeas*, fine-leaved *Crotons*, *Adiantum gracillimum*, *Fuchsias*, and show *Pelargoniums*. This group occupied one of the circular banks near the entrance to the tent, and, being backed up with *Palms*, *Cannas*, and other fine-leaved plants, had a fine effect. Messrs. Osborn & Sons showed miscellaneous plants, amongst which were finely-coloured *Crotons*, well-grown *Dracænas*, *Bertolonias*, *Pandanads*, *Ferns*, and *Palms*. From Messrs. F. & A. Smith, Dulwich, came show *Pelargoniums*, small *Ferns*, *Grevilleas*, *Palms*, *Yuccas*, and similar subjects. Messrs. Dick Radclyffe & Co. had miniature rockeries, fountains, &c., ornamented with *Ferns*, *Palms*, and other fine-leaved plants; also *Fern* cases and rustic stands filled with flowers for prominent positions on lawns. Mr. Cannell, Swanley, showed stands of brilliantly-coloured *Verbenas*, large both in truss and flower, and in some cases new in colour.

**Hardy Flowers.**—Messrs. Barr & Suggden exhibited an extensive and excellent collection of cut blooms of hardy herbaceous and bulbous plants arranged amongst British *Ferns*. The background consisted of masses of *Lilies* of the umbellatum type, the beautiful white *Gladioli Colvillei*, *Anthriscum Lilifolium*, finely-coloured Spanish *Iris*es and *Pæonies*, &c. The foreground was effectively furnished with flowers of *Tritonias*, *Ixias*, *Sparaxis*, good potfuls of *Allium neapolitanum*, *Alstromeria arnon*, and other choice flowers. The same exhibitor showed, on behalf of Dr. Wallace, a new *Freesia*, the flowers of which were as white as those of *F. odoratissima alba*. From Mr. Parker, Tooting, also came an attractive collection of cut blooms of hardy herbaceous and bulbous plants, among which were noticeable good examples of the white *Martagon Lily*, choice *Iris*es, finely-flowered branches of *Tropeolum polyphyllum*, richly coloured spikes of *Delphinium magnificum* and *formosum*, *Verbascum Chaxii*, and several finely-coloured varieties of *Tradescantia virginica*. With these were associated double *Potentillas* and *Pyrethrums*, a beautiful *Dianthus* named *D. hybridus floribundus*, unusually large spikes of *Orchis foliosa*, and improved *Foxgloves*. In front of this group were stands containing magnificent blossoms of *Pæonies*, among which were especially noticeable *Decandolle*, a very large conical double flower of a rich rose colour; *Eugene Verdier*, a silky white semi-double flower, with deeply imbricated petals slightly tinted with pink; *Madame Furtado*, a rosy-pink; *Mons. Rousselon*, of very double creamy-white colour; and *Gloire de Douai*, rich magenta, the centre consisting of showy golden stamens.

**Roses.**—These were shown in far greater numbers and in much better condition than might have been expected, considering the backwardness of the season. In the class for forty-eight blooms, Messrs. Keynes & Co., Salisbury, had the best blossoms, which were remarkable both as regards size and colour. Among the most prominent kinds were the pink-coloured *Edward Morren*, fine conical blooms of *Marie Baumann*, the rich, dark velvet-crimson *Duke of Edinburgh*, *Exposition de Brie*, the salmon-coloured *Mlle. Eugénie Verdier*, and the finest blooms of *General Jacquemont* which we have ever seen. In the same class Messrs. Paul & Sons, Cheshunt, had remarkable examples of *Sultan of Zanzibar*, *Madame Hippolyte Jamain*, *Duke of Edinburgh*, and *Mons. Gabriel Fournier*. Mr. Turner, Slough, had good blooms of *Victor Verdier*, *Miss Hassard*, *Souvenir d'un Ami*, and the dark-coloured *Horace Vernet*. In the class for twenty-four single trusses, Messrs. Paul & Son, Cheshunt, had the best collection. It contained excellent blooms of *Madame Victor Verdier*, *Souvenir d'Almaison*, and *Miss Hassard*; and Mr. Turner had fine blooms of *La France*, *Louis Van Houtte*, *François Michelin*, and *Magna Charta*. Fine boxfuls were also shown by Mr. George Cooling, Bath. Mr. Hollingworth had excellent *Tea* and *Noisette* kinds, consisting of *Madame Villermoz*, *Marie Van Houtte*, *Devoniensis*, and the pure white *Madame Bravy*. In other classes, Messrs. Keynes & Co. showed a remarkably fine collection of well-

formed, brightly-coloured blossoms, among which were noticeable grand blooms of *La France*, *Charles Lefebvre*, the rich rosy-crimson *Marie Baumann*, the dark maroon *Louis Van Houtte*, and the brilliant *Duke of Wellington*; *Madame Charles Wood* and *Duke of Edinburgh* were also very fine. Messrs. Paul & Sons, the Old Nurseries, Cheshunt, had very fine blooms of *Sultan of Zanzibar*, *Abel Grand*, *Duchess de Valombrosa*, *Charles Lefebvre*, and *La France*. In a collection from Messrs. Curtis & Co., Torquay, were excellent blooms of the pink *Madame Nachury*, *Madame Lecharme*, and *Duchess of Wellington*. Mr. George, Cooling, Bath, showed well-coloured examples of *Marséchal Niel*. Mr. Hollingworth, Turkey Court, Maidstone, had well-formed blossoms of *Beauty of Waltham*, *Fishes Holmes*, the white *Jobnine Malton*, and *Captain Christy*. Messrs. Wm. Paul & Sons, Waltham Cross, contributed an extensive collection, in which, in addition to large and fine blooms of the best hybrid kinds, were numerous sorts of old-fashioned *Roses*, consisting of the white and pink *Damask*, *Harrison's yellow*, the striped *Gallica Perle des Panachees*, the beautiful white hybrid *Damask Madame Plantier*, and *Moss Roses*. The latter were represented by the pink *Prolific*, the common *Moss* grown so largely for market, and several white and rose-coloured varieties. Among other *Roses* were fine examples of *Senateur Vaise*, the scarlet *Charles Turner*, the deep rose *Magna Charta* and the white *Boule de Nègre*. Mr. W. Rumsey, Waltham Cross, had small, but finely-coloured blossoms of some of the best kinds in cultivation.

**Pelargoniums.**—These, both zonal, show, and fancy kinds, were shown in fairly large numbers, and their bright colours imparted a wonderfully gay appearance to the exhibition. In the class for six large-flowered show *Pelargoniums* Mr. James, Isleworth, showed well-grown plants of the dark crimson *Scottish Chief*, the lively rosy-pink *Isabella*, and *Magnificent*. Mr. Charles Turner, Slough, furnished an extensive collection of show varieties, among which were conspicuous *Virgin Queen*, white with purple blotches on the upper petals; *Prince Leopold*, brilliant crimson top, petals maroon; *Gipsy*, a wonderful dark variety; *Cicely*, bright salmon with crimson top petals; *Vesuvius*, brilliant scarlet, with purple-shaded centre, the upper petals being marked with dark maroon; one of the most attractive kinds in the show. The best *Fancies* also came from Mr. James, who had profusely flowered plants of *Mrs. Alfred Wigan*, the *Shah*, and *Princess Tack*. Mr. Weir, gardener to *Mrs. Hodgson*, Hampstead, had smaller plants of *Lady Carington* and *Duchess of Somerset*. Messrs. Hayes, of Edmonton, had a collection of attractive and valuable kinds for market purposes. Among them the best were *Digby Grande*, *Duchess of Bedford*, *Magenta Queen*, *Dr. Masters*, and a beautiful imbricated white-flowered kind named *Bridal Bouquet*; the same firm had also new kinds named *Sultana* and *Prince of Orange*, both well worth growing. *Mons. V. Lemoine*, Nancy, sent several attractive new kinds, which, however, were unnamed. Among seedling show varieties from Mr. Turner were several attractive kinds; *Captivation* was a bright orange-scarlet; *Amethyst* dark purplish-crimson. In a collection of seedlings from Mr. E. B. Foster, Thunderser was an attractive brilliant crimson flower of good form. *Red Gauntlet*, *Invincible*, and *Magician* were also well worth adding to good collections. Mr. Brown, Hendon, sent a bank of beautifully grown plants of show *Pelargoniums*, which were much admired on account of their dwarf habit, and their abundance of healthy green foliage and bright and varied flowers.

Zonals were admirably shown, in the shape of large specimens, by Mr. Catlin, gardener to *Mrs. Lemitte*, Finchley. In the florists' class, the best plants were *Ellen* (salmon), *Agnes Emily* (flesh colour), *Oneida* (scarlet), *Heather Bell* (rose); and in the decorative class the best were *Rebecca* (scarlet), *Rev. Atkinson* (crimson), *Charles Burrows* (pinkish-salmon), and *Mrs. Turner* (rose). In the class for eighteen plants of any class (zonal), the same exhibitor had well-bloomed examples of *Lizzie Brooks* (scarlet). The best four zonals (decorative class), not yet in commerce, came from Mr. Catlin; they consisted of *Nancy Lee* (salmon), *John Tullett* (scarlet), *Edith Mary* (orange), and *Fanny Catlin* (orange-salmon); and the best of the florist class came from Dr. Denny, who had *Scarlet Sunbeam*, *Manfred*, *Madonna*, *Coreggio*, and other beautiful kinds. Mr. Cannell, Swanley, exhibited a collection of cut blooms of zonals, among which were good examples of Dr. Denny, the brilliant crimson *H. Jacoby*, the pink-coloured *Mrs. Keeley*, and the large scarlet *Mrs. Newdegate*. Among doubles were *Victor Lemoine*, *J. Sommen*, *E. Louth*, and *Montesquieu*, all excellent kinds. A good collection also came from Mr. Burley, Brentwood. Mr. Catlin had good plants of *Wonderful* (double scarlet), *Neomis* (pink), and *Eugene Bandouin* (deep rose).

Messrs. Carter & Co. showed a collection of hardy annuals, which proved a source of interest to many.

[For a list of the prizes awarded on the occasion, see our advertisement columns.]

No. 345.]

SATURDAY, JUNE 29, 1878.

[Vol. XIII.]

"This is an art  
Which does mend Nature: change it rather: but  
THE ART ITSELF IS NATURE."—*Shakespeare.*

**Sub-tropical Plants in Cornwall.**—In answer to "Sanguinea" (see p. 609), I beg to say that in the year 1849 or 1849 I planted a good plant of *Araucaria excelsa* in the open air at Tregothnan. It lived for three years, but, although well protected, died the fourth; that year the winter was an unusually severe one. *Cycas revoluta* I have more than once tried out in Cornwall, but failed to grow it for more than one or two years. *Cyathea excelsa* I have never tried; I have heard, however, of its being grown out in Cornwall near the sea. *Dicksonia antarctica* was grown in the open air at Pencarrow by the late Sir William Molesworth, but I ascertained last year that it was dead. Mr. Jones, however, had, I believe, planted some others out which were living. I have myself tried this Tree Fern, but found that an unusually severe winter killed it. I recently saw at Mount Charles, near Truro, three plants of *Dicksonia antarctica* out-of-doors doing well, and was told that one plant had been out three winters. There are places in Cornwall close to the sea on the south coast where all the plants named above grow well and are not killed, owing to the Gulf Stream; but elsewhere I have never known these plants stand the severe winters we have at times in Cornwall.—J. T. BOSCAWEN.

— I fear "Sanguinea" will not succeed with *Araucaria excelsa* out-of-doors, as I fancy it was well tried at Tregothnan some twenty-five years ago, and, with all the protection afforded, the results were anything but satisfactory. I believe "Sanguinea" is not in a position to give it a more favourable chance, as both places are familiar to me. *Dicksonia antarctica* will do very well in many positions which he can offer it, and very possibly *Cyathea excelsa* may do equally well, but I fear *Cycas revoluta* cannot succeed.—S. GARLAND.

**Leptospermum bullatum Hardy in Kent.**—This New Zealand shrub, generally found in catalogues amongst greenhouse plants, having resisted the effects of the winters of 1875, 1876, and 1877 in our nursery here, planted out in a Pinetum, the soil of which is a cold, stiff clay, I think may be now claimed as a gain to us in the class of hardy evergreen flowering shrubs, and it is in this point of view I wish to bring it before your readers. The genus, of which there are at least fifteen or sixteen species, all natives of New Zealand, New Holland, and Tasmania, receives its name, according to Lindley, from the extreme tenuity of its seed. Most of the species are sub-shrubs, but one or two attain to large-sized trees. The natives call it *Mannk*, and the shrub itself is used by them, and also by the settlers, largely for firewood, and containing, as it does, so large an amount of essential oil in its leaves, stems, and berries, it can be used for fire-lighting immediately after it is cut. The arborescent variety is used for turnery purposes, the wood being very hard and agreeably fragrant; and it is also employed for stuffing mattresses or beds, a purpose for which its elasticity and agreeable fragrance well fit it. But it is as an addition to our ornamental flowering shrubs I wish to bring it under notice, and all who have seen the plant in our Pinetum here agree with me that, when covered with its unique and pretty white flowers, supported on the extremely slender branches, it is very elegant, and worthy of far greater attention than it has hitherto received.—T. BUNYARD, *Rose Nursery, Ashford.*

**Double-flowering Sweet Brier.**—I send you some out blooms of my double-flowering Sweet Brier which, after much time and trouble, I have succeeded in bringing to its present state; you will see that an exceedingly pretty Rose is joined the scent of the Sweet Brier. Both the plant and its bloom are now in perfection.—JOSEPH BANNISTER, *Hillside Nursery, Ventnor, I.V.*

**Abutilon Lady of the Lake.**—Owing to the improvements lately effected in this useful genus of plants we have now colours hitherto unknown in it. Under the above name we have a kind the habit of growth of which is dwarf and stocky. Its leaves are of a pleasing shade of green, whilst its well-formed, large blossoms are of a clear pink colour. We lately saw a number of plants of it in Messrs. Osborn & Sons' nursery at Fulham; it is without doubt the best kind in its way which has yet been raised.

**American Columbine.**—We have received fine blooms of some of the larger Columbines, including the handsome *Aquilegia chrysantha* and *corallina*, from the Rev. Mr. Ewbank, of Hyde, with the view of showing that these plants, true to name, thrive freely with

him. The large and handsome *A. chrysantha* would appear to be the finest of the easily-grown Columbines; it seems more disposed to become a true perennial in some of our cold soils than the Californian or Canadian Columbines.

**Chrysanthemum arcticum.**—This beautiful and rare Alpine is now in flower with me; it is not more than 6 in. in height, is very floriferous, and its blossoms, which are about 1½ in. across, are of a pale rose colour. It appears to delight in a fully exposed place on a rockery in a compost of strong loam and grit. It is a native of Siberia.—W.

**Alatroemeria hæmantha.**—This charming species is now in flower in the Kew collection. It is distinguished from the other kinds in cultivation by its dwarf habit, which seldom exceeds 1 ft., and by the ciliated margins of the leaves. Its blossoms are borne freely on short flower-stems, and are of a deep rose colour, with the two posterior divisions marked with chocolate-coloured stripes on a yellow ground. It is a native of Chili, and was introduced about fifty years ago, but is still rare in cultivation. There is a faithful illustration of it in the 2nd vol. of Sweet's "British Flower Garden."—A.

**Phyllocactus grandis.**—Though an old friend, I have been unusually well pleased with this plant this season, producing, as it has done, such grand creamy-white blossoms, much resembling those of the night-flowering Cereus. Like, it too, it opens its blossoms in the evening, but they continue expanded for about two days. It is in every way an excellent plant, and one which is not particular as to the position in which it is grown. A plant of it in an 8-in. pot is bearing eighteen flowers, each about 12 in. in length, and very sweet-scented.—J. CROUCHER, *Sudbury House, Hammersmith.*

**Gardeners' Benevolent Institution Dinner.**—This takes place next Wednesday, under the presidency of Mr. Marnock. A most successful and pleasant meeting is expected on this occasion. We shall be glad to receive subscriptions to this excellent institution, which has so many claims on the sympathy of all who derive pleasure from gardens.

**London International Horticultural Exhibition.**—This exhibition is now definitely fixed for 1880. The "International" Committee (Sir D. Cooper, Bart., chairman), appointed a short time since to make the necessary arrangements for holding the show, met Lord Aberdeen and some members of the Council of the Royal Horticultural and Royal Botanic Societies on Tuesday last in conference, when, in view of the present depression in trade, the counter-attraction of the Royal Agricultural Society's show in 1879, and the fact of the Antwerp show falling also in 1879, it was decided by a large majority that the London show should be deferred till 1880, the committee in the meanwhile to take such preliminary steps in reference to securing a suitable site as might seem desirable, with a view to more energetic action in the ensuing spring. Mr. T. Moore is honorary secretary for the exhibition; and Dr. Masters was appointed honorary secretary for the congress which it is proposed to hold, as before, in connection with the show.

**Hardy Flowers at St. John's Wood.**—Seedling and named Larkspurs are exceedingly gay just now in the Wellington Road Nursery; some of their flower-spikes have attained a height of 8 ft. or more, and well show the advantage gained by planting in masses. *Lychnis Bungeana* also bears fine coral-coloured, smooth, round blossoms as large as a crown piece; and the beautiful *Gladiolus Colvillei* and its white variety are very attractive, as are also the stately white-flowered spikes of *Ornithogalum pyramidale*. Plants of *Delphinium cashmerianum* are furnished with a profusion of blue nodding flowers, and in a bed of the *Centaura Cyanus*, the flowers of which are just now so extensively used in bouquets in Covent Garden, we noticed a beautiful delicate pink variety, which, if it keeps constant, will be very useful. Improved kinds of *Potentilla* may likewise now be found in full flower here, some of the blossoms being almost as large as those of a *Quelder* Rose, and beautifully striped with gold and crimson. The Japanese *Veronica Hendersoni* is just coming into bloom; it grows about 2 ft. high, and bears large branching heads of blue blossoms. *Rodgersia polyphylla*, just going out of flower, is also well worth culture on account of the beauty of its foliage alone.

**Plants in Flower at Colchester.**—Our beds of *Lilium Szovitzianum*, numbering several thousands, have been a grand sight the last fortnight; on some stalks we have counted twenty large yellow bells; but the heat of the present week is beginning to spoil their beauty. *Lilium Martagon album*, *L. dalmaticum*, and *L. Hansonii* are now out, and form a striking contrast. The last named Lily, *L. Hansonii*, we had over from Japan in the winter of 1869-70, and offered three bulbs of it for sale at Stevens', one of which was purchased by Mr. Wilson, another by Mr. Barr, and the third by Mr. Bull. No one then knew what it was, but our drawings showed it to

be a yellow-flowering Martagon, and it was described to us as one of the first Lilies to flower in Japan. Till this year we have never succeeded in flowering it. It is a perfectly distinct kind. Lillium Browni is now out in full beauty. *L. japonicum* Colchesteri will not be in bloom for another month. All those who have seen the two plants growing side by side have at once declared that they are totally distinct. The graceful, tall-growing *L. columbianum* and *L. parvum*, with several of the Thunbergian group, notably Alice Wilson and Prince of Orange, are now out. Amongst the Irises the English Xephons are noticeable for their beauty; a pretty and quaint little Australian terrestrial Orchid, *Diris lilacina*, is now out. It is of a purplish-lilac tint, and each flower has two long tails. We do not think it has been before flowered in this country. *Freesia refracta* alba is most charming, rather larger and more erect than *F. Leichtlini*, but it has the most delightful concentrated perfume of Primroses possible. *Cypripedium spectabile* is unusually well coloured this year.—A. W.

**Escallonia Phillipiana** is the name of a new white flowered species now in bloom and both distinct and pretty. The flowers are open like those of a Hawthorn, not tubular, clear white, and produced in abundance. It seems to be quite hardy, and may be seen in Messrs. Veitch's Coombe Wood Nurseries.

**Coarse French Forcing Beans.**—A correspondent writes to complain of the flavour, or rather the absence of fresh and agreeable flavour, in the large, fat, and coarse Kidney Beans now obtainable in our markets, and which have been the rule in them for many weeks past. He thinks the culture of such, a step in the wrong direction.

**Orchis latifolia.**—There is a very fine showy variety of this now at Kew. We believe Dr. Moore has observed and collected certain very fine varieties of this plant, which should be looked after by cultivators.

**Almerian Grapes.**—The Phylloxera has found its way into the Vineyards in Almeria, and is causing serious damage. This may serve to check, to some extent, the exportation of the green, insipid Grapes which are sold in London at nearly every season of the year. Should their price become increased, some inducement may be offered to English growers to further extend Grape culture at home; there is no good reason why English Grapes should not be obtainable at a price as reasonable as that paid for Almerian produce.

**Gunnera manicata.**—This fine plant may now be seen in a thoroughly developed state in the Pine-apple Nursery of Messrs. E. G. Henderson & Son. Near it is a specimen of the older *G. scabra*, so that the two species can be conveniently compared. *G. manicata* has a rounder, smoother leaf, and seems to grow quite as large as the old kind. Both are fine plants for the picturesque garden, especially where there is moist and deep soil.

**Premium for a Report on Insects.**—We observe, that the Highland and Agricultural Society have offered a premium of £ 20 for a report "on the insects which prey upon agricultural plants, the diseases occasioned by them, and the best means of prevention." The report to be lodged by November 1 next, and is to be accompanied, when practicable, by specimens of the insects themselves.

**Todea superba.**—Judging by a fine batch of this graceful Fern in the Pine-apple Nursery, it is quite possible to grow it without the great shade that is usually given it. Here the sun often shines on it, and yet it seems to thrive without flinching. It is of course kept very moist, and watered overhead twice a day.

**The Mulberry in London.**—It is worth noting that the Mulberry is one of the trees that do well in London, and even in its central districts. We noticed a fine specimen of it, in an enclosed court in the West Central District the other day, and we have seen fruit of it from trees growing in the garden belonging to the Charter-house. There is no need to add that it is one of the most beautiful of trees, though perhaps people may as well be reminded of the fact, as comparatively few seem to be planted now-a-days.

**Orchids at Chelsea.**—There is now a good display of Orchids in Messrs. Veitch & Sons' nursery at Chelsea. Large plants of *Aerides Lobbi*, virens, and Warneri are furnished with massive racemes of blossom. *Vanda Parishii* is finely in flower; also the curious *V. teres*; *Cattleya Mendellii*, and Warneri are unusually well-flowered, and a fine variety of *Madeoallia Harrayna* is also remarkably attractive. The miniature Japanese *Angreorum falcatum* bears abundance of small wax-like white blossoms, which are agreeably scented. *Angulos uniflora*, also finely in bloom, has flowers large in size and of the purest white, delicately tinted with rose. *Zygopetalum Sedeni*, a hybrid raised in the Chelsea Nursery by Mr. Seden, bears several spikes of finely-coloured flowers, and the beautiful cinnamon-

coloured *Saccolabium carvifolium* is well furnished with handsome spikes of flowers. To these may be added *Disa grandiflora*, *Dendrobium Devonianum*, *D. Jamesianum*, and *D. Bensoniæ*; together with a fine display of *Lady's-sippers*.—H. S.

**Mutisia decurrens.**—This showy and curious plant is about to flower against a wall in the Pine-apple Nursery. We do not see why suburban gardens should not more frequently afford a home for interesting plants of this sort. The shade and shelter in such small gardens, often suit such plants as this, the Flame Nasturtium (*Tropaeolum speciosum*) and the hardy climbing *Lygodium*, a North American Fern. Such plants would scramble through *Rhododendrons* and other choice shrubs, and thrive well in the soil usually given to these.

**The Mammillarias and Echinocacti** in Mr. Peacock's collection, at Sadbury House, Hammersmith, are, we learn, now finely in flower.

**Two Good Hardy Orchids.**—The most conspicuous pair of hardy terrestrial Orchids in flower at the present date are *Orchis foliosa*, always welcome on account of its easy culture, and *Cypripedium spectabile*, a well-known kind, which is highly prized on account of its delicate rose-colored labellum and pure white sepals and petals. Both have fine, striking foliage, and succeed well under the same conditions, viz., a partially-shaded, moist border of peat and leaf-mould, and they are best left to grow undisturbed.—J. G.

**Spargax pulcherrima** in Ireland.—Those who know this plant and its varieties will be interested to hear of the way in which it thrives in Ireland in Mr. Gumbleton's garden at Queenstown. The tufts grow about 6 ft. high, and from these are gracefully suspended in profusion the lovely bells which make this one of the most beautiful of all hardy plants.

**Funkias as Edging Plants.**—The bold and striking foliage of some of the strongest, plain-leaved section of Funkias renders them very effective as edging plants for large beds, while the several kinds that have variegated foliage, such as *F. undulata* medio-variegata, make fine beds or masses, or are suitable for edgings in smaller arrangements. As flowering plants, too, they ought not to be disregarded, and as pot plants they may be usefully employed during the early part of the year. They are not fastidious as to soil; on the contrary, they will grow well in almost any kind of material. Funkias constitute a class of plants that are calculated to reduce the demand for tender exotics that require the protection of glass for nine months of the year, and they are equally effective.—J. G.

**Planting at Kew.**—We observe with pleasure that a great number of trees and shrubs—new, rare, or otherwise interesting—have been planted in the pleasure grounds at Kew. Such planting is very much more important than any work that can possibly be done in glass houses, which has long absorbed so much attention at Kew. The arrangement of these trees and shrubs is not all that could be desired—the masses being stiff and formal in many cases, and the trees very closely placed in certain avenues (*Horse Chestnuts*, for example, about 12 ft. apart)—but to have a really good collection of trees and shrubs, and to have every obtainable species and variety of woody plants hardy in our climate represented would be a great boon to the country.

**Names of Plants.**—Correspondents wishing plants to be named will oblige by complying with the following rules: To send the specimen as complete as possible, i.e., both stem, leaves, and flowers, and fruit, where possible. We cannot attempt to name plants from single leaves. To carefully pack them in gutta-percha tissue or other impervious material which will prevent exsiccation. Not to send varieties of popular flowers, such as *Fuchsias* or *Panicles*, which are best named by experienced growers of such plants, who have the means of comparison at hand. Not to send more than four plants or flowers at a time. Always to send, in addition to whatever pseudonyms or initials they may desire to use in the paper, their full name and address. To pre-pay all packages containing plants or flowers.—J. K.—1. *Vanda limbalis* (rare). 2. *Dendrobium navissimum*. 3. *Dendrobium* (too imperfect for recognition). *W. R.*—1. *Polystichum aculeatum*. 2. *Lastrea filix-mas*. 3. *L. dilatata*. 4. *Athyrium filix-femina* Fieldii: *H. P.*—*Betonica grandiflora*, a free-growing and showy perennial excellent for the wild garden. *W. A.*—It is *Stanhopea insignis*. *G. C. C.*—Seed pods of *Honesty* (*Linaria hians*).

**Re-planting Old Asparagus Roots.**—I do not think that planting old Asparagus roots is such a very bad plan as it is represented to be (see p. 609). I have re-planted Asparagus roots of more than twenty years of age, and the results answered my expectations.—J. M.

—I hope "A." will not give up his trial of old Asparagus roots under "V."s' advice, as I have been told by an old gardener who knew what old Asparagus meant, that some of the finest he ever cut was from old roots which he had replanted, in order to see if it could not be done.—S. GARDNER.

\* \* \* Owing to our Index occupying so much space, a variety of communications are delayed till next week.

## THE FLOWER GARDEN.

### HARDY PLANTS FOR CASCADES, &c.

In the few gardens where pretty cascades are seen, advantage is not always taken to group near them suitable plants. Evergreen herbs and evergreen trailers and bushes are here particularly desirable, because, as a cascade is an object that strikes the eye at all times, so its vegetation should be such as does not lose its charms in winter or any other season. In addition to dwarf shrubs, there are numbers of herbs which lend themselves well to such situations, particularly the large-leaved Saxifrages, *Cornus canadensis*, *Dryas octopetala*, *Epigaea repens*, *Gaultheria procumbens*, *Genista prostrata*, *Iberis* (evergreen kinds), *Linnæa borealis*, *Polygonum vacinifolium*, *Salix lanata*, *Vaccinium macrocarpum*, *Arenaria balearica* (to creep over stones), *Aubrietia* in variety, *Campanula hederacea*, *Convolvulus Soldanella*, *Phlox* (dwarf kinds in variety), *Saponaria*



*ocymoides*, *Saxifrages* in great variety, *Selaginella denticulata*, *Sibthorpia europæa*, *Arabis alba*, *Arbutus Uva-ursi*, and *Lysimachia Nummularia*.

### NOTES ON HARDY PLANTS.

A WALK through Mr. Parker's nursery, Tooting, during the month of June is sure to bring under one's notice many things in the way of hardy plants of a particularly interesting character. There is something in the fine, light, sandy loam—one, however, that does not succumb to drought, as it might naturally be supposed it would do—that appears to suit the circumstances of the plants which flourish in it most satisfactorily. A fortnight ago an opportunity was afforded to look over the plants, and the following were noted as most desirable subjects to cultivate. Let us mention *Phlox ovata Livistona* first; it is about 12 in. in height, erect growing, something resembling *P. verna*, and bearing numerous trusses of rosy-purple flowers. Mr. Barron also has this in fine condition on the new rockwork at Chiswick, where it does remarkably well. *Æthionema grandiflorum* has a rather straggling growth, but makes a capital rock plant, bearing many clusters of lovely pink flowers, changing to white. *Menziesia polifolia bicolor* well deserves attention; it has a dwarf spreading growth, and bears white and reddish-magenta flowers. What a pleasing plant *Silene quadridentata* is, with its dwarf growth and pretty snowy-white flowers produced with great freedom! *Phyteuma comosum* is a rare and somewhat remarkable plant, found growing in the vertical fissures of limestone cliffs; it reaches a height of about 9 in., and bears purplish-blue flowers of large size. Quite a different plant is found in *Linum narbonneuse*, with its erect growth and numerous flower-stems loaded with pale blue blossoms; this should find a place in every border suited to its well-being. The double form of *Geum coccineum* is a capital plant remarkable for its brilliancy of colour, but

with a rather spreading growth. *Ranunculus acris* fl.-pl. is another useful plant with golden-yellow flowers, which make a conspicuous feature in a raised border. The *Lavateras* are really imposing border plants, because they form such dense bushes of flowers. Mr. Parker has the old red and white, and a newer form of the red, which is of a much deeper colour, and therefore much more showy. The two last originated as sports from the former. The *Thalictrum* are perhaps more deserving of cultivation for the elegant character of their foliage than for their flowers. They make fine border plants. *T. aquilegiforme* has trusses of white flowers; and *P. purpureum* lavender-purple. *Erigeron purpureum* is a fine plant growing some 2 ft. in height, and bearing rosy-purple flowers; it is very free and pretty. *Lychnis viscaria splendens* is another taking plant, very pretty, and bearing rosy-pink flowers. Those who have a liking for species of *Pentstemon* will be much pleased with *P. gracilis*; it has a somewhat spare growth, and bright bluetubular flowers edged with white. The pretty *Fuchsia thymifolia* was growing in the border among hardy plants; it appears to be a larger form of *T. microphylla*, and Mr. Parker said it had been flowering all through the winter in a cold frame. One of the varieties of *Dianthus hybridus*, named *floribundus* well deserves the name, for plants of it are blooming with great freedom, and it well merits a place in gardens because it is so valuable to cut from. *Veronica Teucrium* is another capital plant, growing about 18 in. in height and throwing up numerous spikes of bright blue flowers. Then there is the pretty *Dicentra eximia*, with charming red flowers, very free, and blooming continuously for a long time. The yellow-flowered prostrate *Tropæolum polyphyllum* was very effective in several parts of the nursery, growing strongly and throwing up a large number of flowers. The white *Veronica gentianoides* is a most valuable garden plant, as it flowers early and with great freedom; well-established clumps produce a large number of spikes of bloom. What showy masses the *Tradescantias* make! Mr. Parker has quite large masses of them. There are *T. virginica* and *virginica alba*; *rubra*, reddish-purple; *rubra pleno*, very good; and a few more besides. The various *Geraniums*, also, make good and showy clumps, *armenum* in particular being a very vigorous and handsome species, with fine magenta-purple flowers. Then there is the singularly beautiful *Lithospermum petraeum*, enjoying the seclusion of a cool frame, and with it were the delicate blue trailing *Omphalodes Luciliae*, *Iberis gibraltaria*, and the charming *Androsace lanuginosa*, very dwarf, and having pretty pale pink flowers. *Cyananthus lobatus*, with its large, pale bluish-purple, *Campanula*-like flowers, is another most desirable subject, very pretty indeed; and *Delphinium nudicaule* is so dwarf, bright, and free, and so distinct, as to prove welcome in every garden. How fine and even imposing the red and white *Faxinellas* are, and what excellent subjects for the background of a mixed border! *Trollius japonicus* fl.-pl. has fine, deep orange, double flowers; and the yellow-flowered *Coronilla iberica*, with its spreading growth, is well adapted for rockwork. Another allusion to the *Geraniums* is necessary for the purpose of calling attention to the pretty *G. lancasteriense*, the white flowers being pencilled with pink lines; and *G. dabricurum* has striking pale bluish-purple blossoms. Lastly come some of the pretty dwarf *Dianthus*es, and the following were especially striking, viz., *suavis*, *arenarius*, *cœsius*, and the curiously fringed *corizus*. These want to be grown in pots with some pieces of limestone mingled with the soil, and, with a little attention, they can scarcely fail to do well, and become sources of great pleasure to those who cultivate them. D.

**Hardy Flowers at Gunnersbury Park.**—A long wide border here is devoted to a well-named collection of choice, hardy, herbaceous plants. This is decidedly a step in the right direction, as it illustrates the floral wealth of temperate climes, and serves the purpose of bringing young cultivators into direct contact with hardy flowers, which otherwise could be seen only at a few nurseries or in the gardens of amateurs, for it is but too evident that the idea of herbaceous borders in the minds of the majority of young cultivators is associated with such subjects as *Ring* Flags, straggling *Michaelmas* Daisies, or uncouth *Aaron's Rods*. Besides such borders as these, which occupy comparatively but little space in a large garden, serve

a useful purpose in affording cut flowers at a season when indoor flowers are somewhat scarce. I therefore hope that the example set at Gunnersbury will be followed both in large and small gardens, that all rubbish may be discarded from herbaceous borders, and that ere long it will be the new fashion to have "old-fashioned" borders stocked with a selection from the host of beautiful hardy flowers which have of late years been introduced to cultivation.—VISITOR.

#### GRAVEYARD GARDENS.

ALTHOUGH "S." (see p. 558) is perfectly right in his condemnation of the bedding system in graveyards, yet I see no reason why the beds ought to remain so many bare spaces the greater part of the year, since to have a garden as beautiful in spring as it is in summer is about as easy as it is to have a good patch of early Cabbages. However, instead of cutting up the turf into ugly contortions under the name of flower beds, it is far better to have borders and clumps of shrubs judiciously planted and intermixed with suitable flowers. In making a selection of trees and shrubs for graveyard decoration the architecture of the building—be it a church or chapel, or both—ought to receive consideration. Where there is a spire, tall, tapering trees ought to be planted, and for this purpose I know of nothing so suitable as the Irish Yew. Let me not, however, be understood to say that this is the only suitable plant. By no means. Among other evergreens we have the Lawson Cypress, and others of that type, Biotas and Arbor-vitæ, and amongst deciduous trees the Poplars. In association with a building having a tower I would plant something more bush-shaped, as the common Yew, and its congenere Taxus adpressa, common Laurel, Bay, and other evergreens, the number of which is legion. Amongst deciduous trees I would use Weeping Willows, Elms, and Ash; while to give variety I would plant the Copper Beech and other ornamental-foliaged trees. What seems strange to me is the almost universal absence of flowering trees and shrubs in graveyards. Why not introduce the Laburnum, Lilac, Ribes sanguineum, and its white variety, the Laurustinus, various kinds of Berberis, particularly B. Darwini, and Rhododendrons? These would produce a good effect without being too public-parade like. The trees just named, judiciously planted with regard to size, whether in borders or clumps, or intermixed with flowers of suitable sorts, such as Wallflowers, Forget-me-nots, and other spring flowering subjects, could not well fail to give satisfaction. As to the church or other buildings, I see no reason why they should not receive their quota of the gardener's art. Why not cover our churches and cemetery chapels with Ivies, Pyracantha, Cotoneasters, Virginian Creeper, Clomatises, Roses, and Honeysuckles? What could be more interesting than an old church porch covered with Clematis Jackmanni and C. montana, intermingled with the old pink China Rose? or at the entrance of a cemetery to find the superintendent's cottage enveloped in similar drapery? On the whole, I see no good reason why our graveyards generally should not be turned into places of quiet beauty and repose instead of being, as they generally are, dreary wastes. If the authorities would do something towards keeping up the general tidiness and good appearance of the place, the keeping of individual graves would doubtless become much more universal than it now is. "S." says many shrubs and trees died through being planted late in the spring, but more die through bad management both at the time of planting and afterwards. It is generally thought that anyone can plant a tree, but such is not the case; and by employing practical men for such work, the results would, as a rule, be more satisfactory. Many of the trees are also often misplaced owing to their being planted in what one might term the "architectural style," that is so that they may not hide the dull, gray-looking stone of the mason. This is obviously a mistake, as the building, seen through a delicate, ever-moving tracery of foliage, has a much better effect than it otherwise would have. The question of graveyard gardening is one on which a good deal might be said, but from any point of view the system of making our graveyards beautiful with Nature's choicest subjects has advantages which cannot be gainsaid. T. NEDDALE.

**Tree Ferns Out-of-doors in Ireland.**—The increasing interest which is generally apparent about Ferns for ornament out-of-doors, as well as under glass, suggests the mention of *Dicksonia antarctica*, which thrives all the year round outside in some parts of Ireland without artificial covering. We see Tree Ferns out in summer in Battersea Park and elsewhere, in sheltered nooks, and as if enjoying the prospect of making permanent their temporary abodes. Last summer, a newly imported stem of this *Dicksonia*, about 4 ft. long, and with a few (and but few) freshly-grown fronds, was planted in a well-chosen spot, open above, but surrounded with trees and shrubs, Camellias, &c., not many miles from Dublin. At the end of May I saw it, with the fronds of last year's growth, crowned by more

than a dozen new ones, which seemed to luxuriate in the subdued light and moist atmosphere of a lovely spring day. In the autumn of 1874 I also noticed at Fota, in Co. Cork, well sheltered by Bamboos, in what is called the Bamboo Island, two young plants of the same Fern, which had thriven there for above two years. The Bamboos, I understand, have all died, whilst the Ferns continue to prosper, and are now luxuriant. Other species, and other genera of various character and habit, are undergoing trial in different parts of Ireland, but neither so many, nor of so different kinds, as Nature invites us to enjoy.—JOHN ADAIR, *Dublin*.

#### NOTES AND QUESTIONS ON THE FLOWER GARDEN.

**Yellow Irises.**—Two excellent and true yellow species of Iris are now in flower, I. Monnierii and I. aurea, the first being the largest. Both seem to belong to the group that thrives best in moist earth, or near water.

**Helianthemum rugosum.**—A very beautiful low bush bears this name at Kew, where it is now sparkling with many rich yellow flowers with black centres. It is neat and interesting in habit from a curious difference in the growth and hue of the flowering and non-flowering shoots. This plant is a real treasure for the rock garden, or for stony or chalky banks in the wild garden.

**New Ageratum.**—Two new Ageratum have recently been put into trade, the Queen and Cupid. The first named can hardly be termed an acquisition, as it has a tall habit of growth, and the flowers are of a dull, pale, mauve tint. Cupid, on the other hand, does seem to be of considerable value, as in that not only are the trusses of flowers larger, but the colour is much deeper than is seen in any other kind. It has a dwarf compact habit, dwarfer even than that of Countess of Stair, but the latter throws up its trusses on rather longer stalks, and is altogether the best kind for cutting from. Both kinds are interesting grown in pots. The deeper tint found in Cupid fully justifies the belief that a real blue Ageratum may doubtless eventually be found.—A. D.

**Seedling Pentstemons.**—A large bed of seedling Pentstemons here is just now so gay and beautiful that it is difficult to withhold a strong expression of admiration for this most useful, hardy border plant. No hardy perennial seeds more freely, none are more easily raised from seed, and here at once are conditions of success in culture that merit the attention of all who have gardens. Those who prefer the beautiful to the mere botanical will find in a bed of seedling Pentstemons raised from any good strain (and it ought to be difficult to get a bad strain just now) much variety in colour, and such grand spikes of flowers as will be productive of great satisfaction. During the past few years the named kinds of the Pentstemon have almost disappeared, for the simple reason that seedlings are as good as the parents, and therefore it is useless to propagate by cuttings, and at considerable trouble, sorts that can be almost duplicated from any packet of seeds. Having got some of the latter that is good, sow in a box or pan in a frame or greenhouse during the month of April, and when the seedlings are a few inches in height plant them out in the borders (if to be grown in them) or in a mass in a bed. No matter in what position they may be they are gay, but if a bed can be devoted to them to flower the next year instead of scarlet Pelargoniums, the grower will find, I have every reason to believe, that the sacrifice (if sacrifice it be) has been more than amply repaid.—A. D.

**Hybrid Columbines.**—"An Herbaaceous Man" alludes to these (see p. 594) as being chance hybrids. He also says that it is best to procure distinct species, and to keep them distinct. Now, in regard to the first accusation, that the seedlings raised by me, and to which first-class certificates were awarded both by the Floral Committee of the Royal Horticultural Society and by the judges at one of the Royal Botanic Society's Shows, the hybrids were not chance seedlings, but were raised by crossing distinct species to obtain definite results, which more than justified my expectations; the flowers have been seen by the public, and have been much admired. The second assertion is a matter of opinion, and it is to be hoped that very few admirers of flowers are of the same mind as "An Herbaaceous Man." It is to the intelligent crossing of distinct species of Orchids that we owe such grand plants as *Cattleya exoniensis*, *Cypripedium Harrisonianum*, *Calanthe Veitchii*, &c. Was it wrong in Mr. Dominy to attempt crossing the species of Orchids? and did Messrs. Veitch do wrong in sending them out? There are some, myself included, who believe that *Calanthe Veitchii* is one of our most useful flowering stove plants, either for cutting from or for decorative purposes in winter, and *Cattleya exoniensis* is one of the best Orchids in existence. Messrs. Veitch will be long remembered for their hybrid Orchids, and the new *Aquilegias* will bring no disgrace on that firm.—J. DOUGLAS.

ROSES.

BORDERS OF ROSES.

AMONG the various ways of making the Rose much less objectionable as regards its mode of growth and habit in gardens, one of the best is that of making fringes of them round masses of flowering shrubs and the like. In such positions Roses should be pegged down, and in that way, instead of naked and far from ornamental stems, we have the graceful foliage of the Roses springing directly from the turf. The flowering shoots of the current year that spring from the pegged-down shoots are, of course, free, and, when laden with flowers, toss about gracefully, the growth from Roses on their own roots treated thus being vigorous and the foliage ample. In all cases the Roses should be trained so near the edge that when in full growth they may conceal the dug surface and appear to spring from the turf. Such borders need not be mere lines, but might be allowed to spread into little bays here and there; and they might also be agreeably varied with suitable kinds. Such might well replace many of the stiff ribbon borders round shrubberies made up of any common bedding plants that happen to



A Border of Roses.

be at hand. These are as short-lived as ugly, and have to be renewed yearly, whereas fringes of Roses, once well planted, would last for years with ordinary care.

ROSES AND ROSE STOCKS.

WILD BRIERS are nearly always fit for budding before (except by severely pinching back and thereby often losing the best shoots) the buds are sufficiently developed. The difficulty is that the bark, especially in a dry season after the month of June, does not rise; this can be remedied by the constant use of water, liquid manure being preferable. As to dormant buds, I find that the red spider quile relieves me of the trouble of planting those stocks out, though if one does escape it is an advantage. As for soil interfering with choice of Brier or Manetti, provided the climate be good, the soil can, at a small cost, be made, and the wild Rose is not very particular in that respect. As to the removal of suckers, nothing need be said, nor upon removal of Manetti shoots; both are nearly fatal under any circumstances, and the idea of budding a sucker is absurd. The only difference of opinion as to thinning of buds must lie in a nutshell. Does the grower wish to exhibit for a prize, or to ornament his drawing-room? the excision must, in the latter case, be used with discretion, for the second flowering does not always come to much in dry seasons. Aphides do great injury; the worm in the bud often puts in an appearance; lightning blasts; disease in the leaf is as common as in the Potato; casualties happen. As to removal of decayed or spent blossoms, every plant ceases to produce as soon as seed begins to ripen; as to the removal of all decayed foliage it does injury to the parent plant, though of value to the manure heap when well rotted; as to insects, my gardener keeps a small machine by which he dusts his flowers with some preparation that causes insecticide. Even Tobacco water does not quite improve the health of the green aphid or the bug on the Pelargonium. As regards manure water, I have

this year made a three-hogshead tank to receive the drainings from my cow house, and I am convinced by the use of it in a diluted state, say half-and-half to either fruit or flowers, I gain more than is possible from guano, and run no risk. As to climbing Roses, Gloire de Dijon and Lamarque in good positions do best out-of-doors; Marechal Niel cannot be relied on. With Mr. Baines' idea of pruning my Tea Roses I cannot agree; the only times a knife should be used is to remove dead wood or too luxuriant growth; for many, such as improved Devonensis, die back from the out. Of the two or three dozen new Roses I have this year bought, none can rival Boule de Neige, Madame Victor Verdier, the Empress of India, and perhaps Henri Lafayette. In spite of a bad spring, from cold and rain causing great blight, those Roses which I have named are good.

EUGENE E. P. LEGGE.

**Rosa rugosa.**—It would, I imagine, be folly to speak of a single Rose, after the manner of our Wild Dog Rose, as a beautiful object, when the acme of perfection is to get everything as large and double as possible. Nevertheless, my own opinion is that *Rosa rugosa* is a most lovely object on a bank, its large, dark green pinnate, glossy foliage, and flowers of a bright rosy crimson being quite unique in their way. *Rugosa alba* and *rugosa fl.-pl.* form good companions to the type; and, in addition to the lovely summer effect which they produce, their beauty is enhanced in autumn by clusters of large red berries.—J. GROOM.

**Marechal Niel Rose.**—A small misprint in my remarks upon this Rose inserted last week (see p. 599) makes the point urged so dissimilar, that I wish to correct it. In the paragraph in question I am made to say, "Make a boy fork it up." What should have been said was, "Make a bay and then fork it up," by which I meant to convey the fact that the water given to the plants was no mere surface soaking, but a thorough flooding. The surface-soil was drawn off to form a bank all round the margin, and then about twenty pails of water were poured into the bay. Such a body of water as this would doubtless get well to the roots.—A. D.

CHURCH DECORATION IN CALIFORNIA.

You may like one or two bits out of the subjoined letter, from a lady in San Francisco, which was sent me this morning to read:—"San Francisco, April 25, 1878. Easter morn was very bright and sunny. We went to early service. The church was most beautifully decorated. They do this much more all over America than we have been accustomed to, except in High Churches, and the Advent Church is not High. The decorations were confined to the chancel, except a beautiful large cross of Galla Lilies (Arms) in front of the organ loft. The font, which is placed in a corner on the right side of the chancel was crowned with a pyramid of flowers. In the opposite corner was a large cross of white and pink Roses. On the Communion Table were choice bouquets, the centre one in the form of a cross. In front of the table was a beautiful device, a cross of pure white flowers, before which was placed a large Fern, so that you saw the cross through the graceful green fronds. The reading desk, lectern, and pulpit, or rather preaching desk, were all wreathed with exquisite flowers. The Communion Table was prepared for the Sacrament, and lovely flower wreaths bordered the white cloth. The rails were adorned with the Galla Lily; there must have been several thousand blossoms. But I must return to Easter Day, for I wish to tell you of the Sunday-school festival in the evening. The children carried banners with mottoes, and the head of each class carried some emblem: First, a crown in beautiful flowers; second, an open Bible; third, a Bible and lantern (the latter of flowers and the candle lighted); fourth, a shield; fifth, a lighthouse (of flowers); sixth, a harp (of flowers); seventh, a sickle and sheaf; eighth, a star (of flowers); and, ninth, a cross of bright flowers with a dove resting on it. A large cross was placed in the chancel, and each class carried beautiful flower wreaths which were hung on the cross until it was quite covered, and then the principal class brought a splendid crown of flowers, which was placed on the top. All this was new to us, and, I believe, gives intense delight to the children. Most of the churches here are decked with flowers every Sunday." O. M. B.

**The Official Rhubarb.**—*Rheum officinale* should be noted by all who desire bold and striking effects from hardy plants. It is the most effective hardy plant as regards foliage that has been introduced for many years. All the old Rhubarbs are insignificant beside it. It produces a fine effect early in the year.

## NOTES FROM KEW.

**Hardy Shrubs.**—Amongst Escalloniae now in flower the finest are *E. pterocladon*, from West Patagonia, a compact-growing bush, with small leaves, and *Epacris*-like spikes of fragrant white flowers; *E. peppigiana*, or, as it is sometimes called, *E. rubra*, a very graceful and beautiful plant from Chili, the red flowers being very numerous; and *E. Ingrami*, a variety of the last named, and a more robust grower, with larger leaves and flowers; as a bush among other shrubs in the open ground it seems, however, to be less charming than the type. *Philadelphus speciosus*, a North American shrub, has large ivory-white flowers, about 3 in. in diameter; the scent which characterises so strongly the common *Syringa* of gardens; *I. coronarius* (a native of Europe), being absent from its North American relative. *Zenobia speciosa*, and its variety *pulverulenta*, are handsome shrubs, with large, *Andromeda*-like flowers; the former has large, light-green leaves, the latter smaller, greyish-green ones. *Spiraea betulifolia* merits mention as one of the prettiest of all the shrubby *Spiraeas*; it grows to a height of about 2 ft., and the heads of fine rosy-red flowers are very pleasing. *Wistaria frutescens*, as well as the last named plant (a native of North America), has pretty flowers, darker in colour, and borne in shorter, denser racemes than those of the Chinese plant, *W. sinensis*.

**Greenhouse Plants.**—*Anralta* furnishes the only greenhouse shrubs we note this week. *Oxylobium Callistachys*, a fine leguminous bush with short, dense spikes of deep orange-yellow flowers, is a good-habited and useful plant. *Calothamnus quadrifidus*, a member of the *Myrtle* family, produces its scarlet flowers from the old wood; the long, narrow, almost needle-shaped leaves are fringed with fine hairs. *Callioma serratifolia* has pretty leaves and dense globular heads of whitish flowers with long filaments of the same colour. *Zephyranthes carinata*, from Mexico, a dwarf bulbous *Amaryllid*, with narrow leaves and large pink blossoms borne singly on the flower-stems, is the prettiest of the family at present in flower at Kew, excluding those previously noted.

**Hardy Herbaceous Plants.**—*Cephalaria Balanœ* is a very distinct *Teaselwort*, with Elder-like leaves and heads of straw-coloured flowers, the row of outer florets being very large. Three of the prettiest of the Evening Primroses are (*Knothera pumila*, *C. rosea*, and *C. glauca*, all North American kinds. The first grows about 12 in. high, has narrow little leaves and small bright yellow flowers; the second grows to about the same height as the last and has rose-coloured blossoms; while the third (18 in. high) has large yellow flowers. *Gillenia trifoliata*, a *Spiraea*-like member of the *Rose* family, grows about 3 ft. high, and the flowers have long red calyxes and pure white corollas. *Lobelia littoralis*, a native of New Zealand, is a charming rock plant when allowed to grow in a somewhat damp place; the little branches creep along close to the ground and the white flowers are about as large as those of the white bedding *Lobelias* which have sprung from the South African *L. Erinus*. *Lindelia spectabilis*, a handsome Himalayan perennial with deep blue flowers, is an ally of *Anchusa* and *Omphalodes*; the branches grow about 2 ft. in length, and are somewhat prostrate, not erect. The new *Pentstemon Clevelandii* has small magenta flowers, but is much inferior to many other species in point of beauty. *Baptisia leucophœa* and *B. australis* are beautiful *Lupin*-like perennials from the United States; the first named, which is of comparatively recent introduction, and which was figured in the "Botanical Magazine" a few years ago, has white flowers, the latter deep blue ones. Either for pot culture or for the open border, few members of the *Iris* family surpass in beauty the lovely little Cape bulb, *Romulea* (or *Trichosoma*) *speciosa*; it is of dwarf habit, in that respect resembling the *Crocuses*, and has large, rich carmine, yellow-centred flowers. *Orthosanthus multiflorus*, from Australia, is a very desirable border plant; it has long grassy leaves, and flower-stems 2 ft. high, bearing numerous very pleasing blue blossoms. *Sisyrinchium californicum* is a beautiful species with bright yellow flowers, in size and shade much resembling those of *S. convolutum*, noticed last week. *Homeria collina* var. *ciliata* and *Morphixia paniculata* are two charming Cape bulbs, the first with salmon-coloured flowers, the second with long-tubed, pale salmon, star-shaped blossoms. *Gladiolus Colvillei* also is a splendid plant, the large flowers being pure white, with the exception of a greenish stripe on each of the three lower divisions. *Zygadenus Nuttallii* and *Z. canadensis* have flowers very similar in size and colour, whitish, with a blotch of green at the base of each segment; the first-named attains a height of 3 ft., the other only about half that height. *Milla laxa*, a Californian bulb, has heads of finely-coloured flowers, purple, with a darker stripe to each division.—†

Brems have built their nests and brought forth young during the present season in a tuft of *Hepatica* in Mr. Wilson's garden at Heatherbank, and in an *Aubretia* at Mr. Ware's at Tottenham.

## THE KITCHEN GARDEN.

## TOMATOES TRIED AT CHISWICK.

THE following received First-class Certificates:—

## 1.—Fruit Red.

**Little Gem** (Bliss & Sons).—Fruit similar to the *Round Red*, borne on large clusters very profusely, the later fruit larger, more flattened, and obtusely angular. Plant of dwarf but free growth, the leaves of a light green. Ripens early. A profuse bearer and first-class hardy sort.

**Criterion** (Carter).—Synonym—New Improved (Viok).—Fruit of large size, ovate, perfectly smooth. Colour deep carmine, of excellent quality and very distinct. Plant of strong vigorous growth. Leaves slightly curled. A profuse bearing sort, the fruit borne in large clusters. Ripens early and freely. A novel and most distinct variety.

**Large Red** (Vilmorin & Co.).—Fruit very large, broad, flattened, somewhat corrugated, of a bright red colour. Plant of dwarf free growth. Leaves narrow, slightly curled. A most profuse bearer, the fruit produced in very large clusters. A larger and somewhat later form of Orangefield. Excellent.

**Hathaway's Excelsior**.—Synonyms—Cook's Favourite (Bliss & Sons); Red Apple (Vilmorin); Charter Oak (Veitch).—Fruit large, round, quite smooth and even, or seldom corrugated. Plant of remarkably free growth. Leaves deeply out, deep green in colour, and seldom curled. A free and most abundant bearer. Mid season. One of the best Tomatoes grown.

**Trophy** (Veitch, Carter, Wheeler).—Fruit very large, broad, flat, deeply ribbed or corrugated. Plant of dwarf robust growth. Leaves deeply cut, dark green. A wonderfully profuse bearer, but very late in ripening. A splendid sort for cultivation in heat, but, except in warm seasons, worthless in open air.

## 2.—Fruit Yellow.

**Green Gage** (Carter & Co.).—Fruit of medium size, roundish, of smooth even surface, not corrugated, of a fine clear orange-yellow colour. Plant of free growth. Leaves slightly curled. A very profuse bearer, the fruit produced freely in large clusters. Ripens early. The best yellow Tomato.

**Radish Pods.**—Although these are commonly used in mixed pickles, it is rare that they enter into the ordinary pickling concerns of the domestic household. At this one might well marvel, as they are singularly pleasant eating even in a raw state, and might be well mistaken for crisp young Radishes, as they have the flavour and gentle stimulating heat of that root when in its young state. The seed pods of the long white Californian kind are peculiarly good, and would make, if served up when young, a useful adjunct to the breakfast or tea table. To have these in abundance at this time of the year need of this Radish should be sown in a drill about the middle of September, and the plants will get large enough to stand the winter well. In good ground the produce of pods in the spring will be so considerable that it may with frequent gatherings be extended over several weeks, whilst the plants will need *Pea* sticks or cords for their support. In picking nothing further is necessary than to strip off the points of the pods, and then treat them as *Gherkins*, *Onions*, or other subjects are prepared. To get good roots of the white Californian Radish, seed should be sown at midsummer, as it will then be found that large fleshy roots for winter consumption can be had in abundance. Grown quickly, it is very crisp and pleasant, and makes a capital winter salad.—A. D.

**Mulgedium Plumieri** as a Wilderness Plant.—This is a little-known, somewhat gigantic Composite, having when young somewhat the appearance of a *Sonchus*. Its leaves are sea-green in colour, and have a broad midrib, runcinate at the lower part, something after the way of a *Lactuca* or *Leontodon*, often attaining as much as 4 ft. in length. The flower-stems grow from 7 ft. to 8 ft. high, and bear very large, racemose panicles of blue flowers. A great portion of the stem is leafy, the foliage becoming smaller as it ascends. Altogether a very stately plant and well suited for wild, bushy places. It is, I believe, a biennial, but when once planted it will take care of itself.—THOS. WILLIAMS, *Ormskirk*.

**Lobelia littoralis.**—A delicate little creeping white *Lobelia*, a native of New Zealand, is now in flower at Kew, and promises to prove an interesting plant for Alpine collections.

## TREES AND SHRUBS.

## OLD OLIVE TREES.

In the neighbourhood of Beaulieu may be seen an Olive tree which as far back as 1515 was already noted for its extreme age. Its trunk measures 12½ metres in circumference at the base, and more than 6½ metres at a height of 40 in. above the ground. This tree, called "Pignole," is the only one that survived the terrible hurricane of 1516, since which time it has yielded on an average about 100 kilogrammes of oil a year, and sometimes, in good seasons, as much as 150 kilogrammes. Still more celebrated are some trees growing in the Garden of Olives at Jerusalem. They are eight in number, measure about six metres in circumference, and, according to Bové, must be at least twenty centuries old. On the banks of Lake



Old Olive Grove.

Trasimeno, too, there are other veterans, some of which may doubtless have witnessed the expedition of Hannibal.

## THE COPPER BEECH.

TREES are undoubtedly far too often planted haphazard. Little regard is paid to their grouping, even if a thought is given to soil or to the danger of overcrowding. The consequence is that we have many well-grown specimen trees, whilst we seldom see an effective tree group. Beautiful in itself, no tree can more readily have its beauty enhanced by judicious arrangement than the Copper Beech. I have no more pleasing recollection of a sense of colour than one of the sun shining on a well-shaped tree of this species, on which hopped an escaped canary. In happy proximity to this same tree was a Laburnum, and this is a much-to-be-commended coupling. The homely white clusters of the Snowball tree (*Viburnum Opulus*) have their beauty much intensified by a background of Copper Beeches, adding richness to their own bright green foliage, as a velvet mount sets off the grace of a Wedgwood plaque, and if it be not gilding refined gold, I may even add that the queen of the woods herself, the Silver Birch, seems to have an added glory even from a copper frame. For a neighbouring large tree nothing can surpass the common green Beech, simply on account of its spring-tide verdure. Near at hand may also be with advantage the delicate foliage and grandeur of Violet bunches—like Grapes of Eschol—of *Wistaria sinensis*; and it is to be hoped that we may soon have this splendid plant growing as a perfect standard, as Mr. Meehan describes it to be in his Transatlantic gardens. As accompanying underwood, I will only mention the Broom, the Furze (double), and the Bracken; and I mention so many bright flowers because, though bright enough in itself in sunshine, sunshine is unfortunately so rare in England, that there might otherwise be a danger of my favourites being malignèd as sombre. It occurs to me that few herbaceous plants would benefit more from the proximity of such a background in a landscape than a bed of many-hued Irises, whose abundant glaucous foliage might, under other circumstances, have too pallid an effect.

Speaking of the Copper Beech reminds me of that little knock tree, or rather, let us say, shrub, the Copper Hazel. Neat in habit and iron in constitution, it is, in my opinion, an admirable variation on the Holly, Laurel, and Hornbeam fences one sees often enough. Pleading as these latter are, variety is so also, and I never remember seeing but one hedgerow of Copper Hazel. How would our tall white and crimson Foxglove spires, which I often see standing in all the magnificence of one of our finest British plants against a Laurel fence in a garden at Ealing, look in front of such a hedgerow? or what say you to a group of Ferns, *Polypodium Dryopteris* and *calcareum*, with *Orchis latifolia* and *Cypripedium spectabile*, such as we have now by the rockery at Kew? G. S. BOULGER.

11, Burlington Road, Westbourne Park.

## THE RHODODENDRONS AT COBHAM PARK, KENT.

I SHALL not attempt to describe the magnificent effect produced by the thousands of Rhododendrons in the woods and pleasure grounds at Cobham, the impression created by which, when once seen, is not easily effaced from the mind. They are growing in the natural soil, which seems to be composed of a deep bed of peat or vegetable soil, the accumulations of ages. I have seen the Rhododendron at home (*ie.*, naturalised in the woods) in many places; I have seen gorgeous displays of these and kindred shrubs in the large nurseries devoted to their culture, as well as the unique exhibitions of new and choice varieties at the Royal Botanic Gardens, Regent's Park; but I never remember to have seen greater luxuriance of growth and redundancy of blossom than was presented at Cobham a short time back. Much of this exuberance of growth is no doubt due to the shelter imparted by the proximity of trees of larger growth, and this green framework, if I may so term it, tends to set off and bring into greater prominence the matchless beauty of the Rhododendrons. And all this sylvan beauty, accompanied, as it is, by the music of innumerable feathered songsters, is freely and liberally thrown open to the public by its owner, the Earl of Darnley. On the day of my visit the roads and woods were thickly lined with excursionists, and on the previous Sunday 2500 people visited this unique flower show. The late Canon Kingsley said in one of his works that his thoughts and feelings were often more reverent and devotional in the woods than they were in church. The late Charles Dickens, who, during the later portion of his life, resided in this neighbourhood, speaks in one of his letters of the Rhododendrons of Cobham Park as one of the sights of the district. In the private grounds, most delightfully situated, surrounded by waving foliage, stands the Swiss Châlet in which the great author loved to write, and which was removed and re-erected here after his death. It is a two-storied building, of elaborate and elegant workmanship, bearing in all its details the impress of a cultivated mind. Dickens, referring to it in one of his letters, says:—"My room is up among the branches of the trees, and the birds and the butterflies fly in and out, and the green branches shoot in at the open windows, and the lights and shadows of the clouds come and go with the rest of the company." And all this is equally true of it now, for the site has been most happily chosen. I have, I fear, wandered somewhat from the Rhododendrons, but the Swiss Châlet naturally calls up Gad's Hill Place, and in the long vista of years that are past a still greater name than Dickens was associated with this neighbourhood, for Shakespeare must have been familiar with it, as his references to Gad's Hill and the old inn at Rochester in *King Henry the Fourth* abundantly prove. In connection with the Rhododendrons at Cobham the only subject for regret is that they are all, or at least nearly all, confined to the varieties of ponticum. If a few groups of brighter and better varieties were introduced here and there, not only would a great present advantage be gained, but the future effect upon the character of the seedlings that are continually springing up and establishing themselves would be beneficial, even if the fertilisation of the flowers were left altogether to insect agency. There are hundreds of ancient woods in the country where old trees are only sparsely scattered about that might be immensely improved, by planting Rhododendrons, both in appearance and also for sheltering game and rabbits or hares seldom bark

this shrub, although in severe winters few other plants escape. It has been said that in any neighbourhood where the common Foxglove abounds in the hedges and on the banks by the wayside that there the *Rhododendron* may be safely planted; but given a good deep soil, enriched, if necessary, with leaf-mould, plenty of shelter, and partial shade—such as is usually to be found in almost any old wood—and the *Rhododendron* will thrive and flower well. A soil containing an excess of lime is not suitable, nor yet a very dry soil, as *Rhododendrons* are moisture-loving plants; and any one planting them in these woods should have the ground trenched up deeply, burying any old turf, leaf-mould, or vegetable matter that happens to be comestable, and after the planting is done some attention should be given to them for a few years to keep down weeds and rubbish, and maintain a loose, healthy, friable surface over their roots. A few of the choicer hybrids should be planted along with the ponticums in order to furnish a greater range of colour and to improve the character of any seedlings that may hereafter be produced. E. HOBDAY.

#### METHODS OF MEASURING THE HEIGHTS OF TREES.

FIRST. To measure the height of an object by means of two poles: The one pole should be at least double the length of the other. Fix the long pole perpendicularly at any convenient distance from the tree or object; then, taking the short pole, move backwards till the top of the two poles and the top of the tree coincide. Then as the difference in height of the two poles is to the distance between them, so is the height of the object to the distance from the object to the pole at the level of the observer. SECOND. To measure the height of an object by means of its shadow: Fix a pole in the ground in a vertical position, and in as level a situation as possible. Measure the length of the shadow of the pole, likewise the shadow of the object; then, as the height of the pole is to its shadow, so is the height of the object to its shadow. THIRD. To measure height by means of a triangle: Dress a piece of board exactly square, and not less than 6 in. on the side; divide the square with the saw diagonally, from corner to corner. This transforms the square into two right-angled triangles, either of which may be used for ascertaining the height of any object. For convenience the triangle may be fixed to a staff or stake. One side of the triangle should be kept perpendicular, the other horizontal, which is easily done by means of a small plummet. In making an observation with the instruments look along the sloping side and move backwards or forwards till the sloping side coincides with the top of the object, the distance from the observer to the object being equal to its height. The part of the tree or object below the level of the observer's eye must be added to the observed height, which gives the full height of the object. FOURTH. A 2-ft. rule, with a small level fixed in one of the limbs, and the circumference of the joint divided into degrees, is a convenient instrument for measuring the angle or dip of rock formations, height of trees, and various other purposes. To measure the height of a tree, the rule is opened till the limbs stand at an angle of 45°. The limb with a fixed level is held horizontally. Then move backwards or forwards till the sloping side of the rule coincides with the top of the object, the height of which is equal to the distance of the object from the observer, as in the last method. FIFTH. An optical instrument, termed "the Apomecometer," was produced in 1869 by the well-known instrument maker, Mr. W. F. Stanley, the invention of Mr. R. Millar. The instrument is founded on the same principles as those which govern the sextant. It is 1½ in. long, and 1 in. wide at the broadest part, and ½ in. thick, and weighs little more than 1 oz. Mr. Millar says, "I never went astray with me during six months' travel on the Continent, though I invariably kept it in my pocket, where it required no small amount of knocking about." I may here remark that in measuring the height of an object by means of the "apomecometer," or by means of any fixed angle, the observer requires to be at a distance equal to the height of the object to be measured. For isolated objects this is no inconvenience, but in the case of measuring the height of a tree in a forest or plantation is a very different thing. In nine cases out of ten the observer would find that at a distance equal to the height of a tree to be measured some intervening tree or object would be in the way of his vision. Therefore, in order to obviate the difficulties referred to, I may here state that I have constructed a simple instrument for measuring the height of trees or any object at any convenient distance, no calculation being required. Paradoxical as it may appear, the height of the object is measured before the observation is taken.—J. KAY, Forester, *Bute Estate, Rothesay*, in "Gardeners' Record."

**Seaside Shrubs.**—The following may just now be seen at Weymouth, close to the beach, in full bloom, and bidding defiance to the saline withering breezes, viz., *Escallonia macrantha*, *Cistus ladaniferus* (Gum Cistus), and *Medicago arborea*. The last forms a pretty hedge from 3 ft. to 4 ft. high, covered with showy, deep yellow blossoms, toned down with an intermixture of that fine feathery seaside plant *Tamarix gallica*. Gum Cistus bushes flourish beautifully; they are covered with flower-buds, and as only a few unfold every day, a succession of large showy white flowers will be kept up for several weeks to come. This is one of those good old-fashioned shrubs that are not seen half so often as they should be. Its flowers, seen amidst the dark green foliage, are conspicuous and striking, even at some distance off. *Escallonia macrantha* does well as a shrubby plant; its handsome foliage looks thick and glossy, and its red, waxy-like flowers give to it a rich appearance. *Escallonia Ingrami* is another good variety that should be planted plentifully near the sea; its foliage is not so large and showy as that of *E. macrantha*, but it is a far more profuse and persistent bloomer; it keeps up a succession nearly all summer and sometimes even into autumn, whereas the flowering season of the former is comparatively of short duration. The foliage of *E. Ingrami*, too, has a strong aromatic scent.—G. B.

**The Willows of Babylon.**—Prof. Asa Gray, commenting on an article by Prof. Northrop in the "Boston Journal of Chemistry," says: "Prof. Northrop may safely venture the assertion that this tree 'is now commoner in almost every country than in its native habitat, near Babylon;' for it is probable that it never grew there at all. Although it has over and over been said, up to within a few years, that there can be little doubt that the trees upon which the captives of Israel hung their harps belonged to the species named *Salix babylonica*, yet the hardness of this tree, betokening a colder climate, should have awakened suspicion. And it is now, on good evidence, concluded that this tree is a native of China or Japan, and that, although it may have been brought across the country to Persia and Assyria, in comparatively modern times, it was not there in the days of the captivity. The Willows which Bochart refers to as abounding on the Euphrates are probably the same as those mentioned by the Rev. Mr. Porter, who found there only a low shrubby species. Upon the ancestors of these Willows the Jews could have suspended only the diminutive harps which are nowadays associated with their names. The trees referred to in the noble psalm, and called Willows, were probably Poplars (*Populus euphratica*)." 

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#### NOTES AND QUESTIONS ON TREES AND SHRUBS.

**Asara microphylla.**—A good hardy shrub is worth a score of the choicest tender exotics. This shrub, introduced by Messrs. Veitch, is not only a good hardy one, but it also possesses a beauty of form quite apart from anything else that we know of. Usually our evergreens are close and formal in outline. This breaks into the most charmingly diversified surface; in fact, established bushes of it, as well as the branchlets, remind one of some beautiful glossy Ferns.

**Acer circinatum.**—This Californian Maple is very distinct from all other varieties; its foliage is nearly round and cut into nine lobes, but not so deeply as to destroy the outline. Its leaves are pale green, and when newly opened yellowish-green. This tree, when planted near A. Schwedeler, forms a pleasing and charming contrast, as regards foliage, both in form and colour.—G. B.

**Concreting Wounds in Trees.**—We find the following note under "Botany in the Academy": "It is said that the Board of Works intends to plug with concrete the wounds of the old trees in Hyde Park." This would be amusing if it were not sad to think of what must become of the sylvan beauty of our parks when such ideas are printed in "leading" and scientific journals.

**Shrubs in Flower at Newry.**—*Adenocarpus frankenoides* is now covered with lovely yellow flowers; *Ozothamnus rosmarinifolius* in a few days will be perfectly beautiful, literally masses of snow; and *Leptospermum bullatum* is also very fine on a wall, a condition in which it has been for near two months.—F. SMITH.

**Ascent of the Sap in Trees.**—M. Böhm's theory offers perhaps a more satisfactory explanation of this phenomenon than any that have hitherto been published. It is based, like the osmotic theory, on the cellular structure of all sap-conducting plants, and it attributes an important rôle to the elasticity of the cells. "When the surface-cells of a plant," says M. Böhm, "have lost a portion of their water through evaporation, they are somewhat compressed by the air-pressure. Like elastic bladders, however, they tend to take their original form. This of course is only possible by their drawing in either air or water from without. Since, however, moist membranes are little penetrable by air, the cells draw from cells further in a portion of their liquid contents. These again borrow from their neighbours further down, which contain more water, and so on, either to the extreme root-cells, or to those parts of the stem which are supplied with water from below through root-pressure."

## THE INDOOR GARDEN.

### CAMPANULAS FOR BASKETS.

CAMPANULA FRAGILIS, as will be seen by a glance at the accompanying woodcut, makes a most charming basket plant. We hardly know one of the many lovely plants belonging to the genus Campanula, which excels the present species in beauty. In its native haunts—Italy, and one or two other countries of South Europe—it hangs over limestone cliffs, and forms quite a sheet of soft blue blossoms. In the open border in this country it does not live long; the cold, damp winters soon kill it. As a frame plant, however, or grown in baskets for greenhouse or conservatory decoration, it is one of the most charming objects imaginable. In habit it is dense and compact, and the very numerous, delicate blue flowers (which are more expanded and star-like than those of most Campanulas), combined with the bright green of the foliage, render this a very desirable plant, and worthy of general cultivation. It delights in a well-drained, open loam, to which must be added



Hanging Basket full of Campanulas.

a little decayed leaf-mould and a few broken pieces of limestone. Not much water is required, except during the growing season, and a full exposure to light is necessary if perfect success be aimed at.

*Campanula garganica*, another South European species, is also a pretty plant, but, not making such long shoots as the last, it is only suitable for smaller baskets. The flowers, which are smaller and more bell-shaped than those of *C. fragilis*, are most freely produced, and are somewhat similar in colour. *C. muralis* also deserves mention; in general habit it is somewhat like *C. garganica*, but the flowers are rather deeper in colour. N.

*Croton mutabile*.—As its name implies, this species assumes innumerable variations of character. The leaves in some instances are lanceolate, entire, from 12 in. to 15 in. in length and 1½ in. broad; in others they are interrupted about 6 in. from the base, and are enlarged towards the apex into a broad, cup-like termination, which is continued with a thread-like midrib for 2 in. or 3 in., when a second leaflet is formed, varying in size from 1 in. to 2 in. in length, having a peltate base, the midrib being continued from the upper surface in a

spiral twist. The ground colour of the leaf is dark green, beautifully marbled with various shades of yellow and pink in the young state, which, as the leaf becomes matured, assume bright shades of magenta and orange. It is a plant admirably adapted for table decoration.—B. S. WILLIAMS, *Holloway*.

### ORCHIDS AND FILMY FERNS IN THE YORK NURSERIES.

THE first house which I entered contained Mexican plants principally. Its roof is glazed with Hartley's rough plate glass, and is never shaded. Here I found *Odontoglossum* well elevated up to the glass, and with much more air admitted than most people give. The plants were, however, in good health; even the usually warmer grown *Odontoglossum citrosum* was in the finest condition. One of by no means the strongest plants had as many as thirty-three flowers on a spike; it was the rose-coloured form, and *Cattleya maxima*, *Laelia superbiens*, and *Oncidium Rogersi*, were equally good. *Laelia anceps* and *L. autumnalis* were also growing freely. Those who require to have their Orchids always deep green looking, both as regards bulbs and leaves, might say the growths made here are not to their liking, but there is no mistake in the way in which they flower, increase in size, and keep on in healthy vigour. *Pleiones*, in the same house, do equally well, and *Vanda Cathcarti* looks quite at home; as does also *Epidendrum nemorale*, which has flowers not unlike *Barkeria spectabilis*. In the next division, similar in size to the preceding house, are the *Cattleyas*, &c. Here all that require ordinary treatment are to be found along with *Vanda teres*, *Dendrobium Wardianum*, *D. Cambridgeanum*, *Coleogyne barbata*, and *Dendrobium Falconeri*. This last is kept through the winter at a temperature only a little above freezing in severe weather. *Cattleya Gigas* and *C. Aclandii* were remarkable for the progress made by imported plants. The singular *Coryanthes macrantha*, which is seldom seen in bloom, was just coming into flower. In another span-roofed house was a quantity of *Bolles*, *Aerides*, *Cypripediums*—young thriving stock. A plant of *Stephanotis* grown along over the path bears a fruit that has been on it eighteen months and not yet at maturity. Another house, similar to the last, is mainly filled with *Odontoglossum* vexillarium, consisting of about 400 plants, on which were some 200 spikes of flower; amongst them it would be a difficult matter to find two exactly alike, although there is not one that can be termed indifferent. The extremes of heat kept within so far as possible in this house are 55° in winter and 70° during summer. *O. Phalaenopsis* does well so treated. The true *Trichopilia fragrans*, one of the sweetest of winter-flowering Orchids, was growing in this house; as was also *Bollea celestis*. Here, too, was the singular old *Maxillaria venusta* with eight blooms from a single bulb; it is an elegant flower for bouquets. In a lean-to house with a north aspect, the occupants are mostly *Odontoglossum Bluntii*, *O. Pescatorei*, *O. triumphans*, and *Masdevallias*; the grotesque *M. Chimera*, was represented by a number of stout, vigorous plants, some of which were in flower.

Of Filmy Ferns this establishment has long been celebrated for its unique collection. In the department devoted to the warmer section was a grand example of *Trichomanes Luschathianum*, 4 ft. high, *T. auriculatum*, the transparency of which is like nothing else in the vegetable kingdom; *T. meifolium*, besides which for ethereal elegance, the most beautiful of the *Todeas* is far in the rear. In a cavern-like, underground house—which, by the way, is a treat to enter on a hot day—was a charming display of Ferns all turned out into interstices between the rocks. Pot-grown plants are insignificant in comparison with these. Of *Trichomanes radicans*, one mass has covered a space quite 12 ft. across. *Hymenophyllum cruentum*, another gem, is in the most perfect condition. *Hymenophyllum demissum* measures 10 ft. over, and *Hymenophyllum candiculatum* is one of the most elegant drooping plants in existence. *Trichomanes exsectum*, from the dripping roofs of underground caverns in Chili, necessarily likes a dark situation. *Trichomanes radicans dilatatum* is in form almost like *Lycopodium africanum*. *Hymenophyllum pectinatum* is another little gem, and *H. attenuatum* is distinct and beautiful. These are only a few of the plants which a hurried visit of an hour altogether permitted me to notice. This house teems with beautiful forms of these fairy-like Ferns. It is a horse-shoe-shaped niche, from 8 ft. to 12 ft. deep, varying in width from 4 ft. to 8 ft., and covered almost on the ground level with large slabs of rough plate glass. It can be just slightly warmed in the winter during severe frost. There are some half-dozen specimens of *Chamaerops Fortunei* planted about the ground some fourteen years ago; they have never been protected, and do not suffer in the least. A handsome pair near Messrs. Backhouses' offices are now finely in flower. T. BAINES.

## IVY-LEAVED PELARGONIUMS.

ONE of the most interesting features of the Pelargonium show was one that perhaps did not attract one-half the attention which it deserved, viz., the collection of Ivy-leaved Pelargoniums from Chiswick. All the plants were well and carefully grown and in an excellent stage of development. What a wealth of double forms of the Ivy-leaf Pelargonium met the eye, and for these, we are mainly indebted to M. Victor Lemoine, of Nancy, and M. Jean Sisley, of Lyons. Mr. Barron had grown all the trailing or climbing types in a way calculated to show off their qualities to the best advantage by adopting the conical form. The largest and freest flowering plants were two years old and had not been cut back. The plan adopted is to grow them strongly into size, and when they begin to get a little pot-bound they put forth their blossoms. The double forms were flowering as freely as could be expected, quite freely enough to give them a claim to be regarded as very useful decorative plants, and they must prove useful to cut from, for the flowers are large and of good shape, and borne on long stiff stems. The next thing to do is to endeavour to vary, and especially to intensify the colours. The prevailing tints are blush, delicate pink, the softest lilac, and a just sufficient dash of purple to make one heartily desire a greater depth of it. The darkest coloured double Ivy-leaf I take to be *Elfrida*, which has flowers perhaps as fully double as others, excepting perhaps those of A. F. Barron, one of Victor Lemoine's latest seedlings; this has flowers of a delicate lilac-blush tint, the blossoms very fine, and fully double; König Albert has very pretty rosy Lilac flowers, with small dark blotches, and is very good and double; Lucie Lemoine is a little loose, but pretty, the colour of the flowers blush, flushed with delicate pink; it is a variety well worth growing for its charming delicacy of tint. *Mdlle. Adrienne Barat* is a little deeper in colour, but more fully double than the preceding, but quite distinct enough to make a variety. *Sarah Bernhart* is a double form of the ordinary white Ivy-leaf, double, very pretty and good. Next comes *La France*, which is also very pretty, and something like A. F. Barron, but with more distinct markings, and rather more colour in the centre, but not so double. *Madame Perle* is of a pinkish-lilac tint, very delicate, pretty, and fully double. *Madame Emille Gallé*, delicate blush, with slight purple markings, is a little thin in the flower, but very pretty and distinct. The most fully double of all the new forms is A. F. Barron, one of the latest of M. Victor Lemoine's seedlings.

When we come to examine the single-flowered, Ivy-leaved Pelargoniums, we are at once face to face with two distinct types; one of these is the old trailing Ivy-leaf, the single counterpart of the foregoing, with their olive-green, leathery, downy leaves, and the hybrid Ivy-leaf forms, that have the habit of growth of the zonal section. While the former are fitted for hanging baskets, trellises, &c., and for training in cone-shaped and pyramidal forms, the latter can be grown as flat or bushy specimens similar to the zonals. Let us take the old Ivy-leaf first. The best of the varieties—that is, having the broadest petals and the largest flowers—are *pictum*, bright blush tinted with lilac, very good; *album grandiflorum*, blush; *Innocence*, flesh-coloured, petals good; *Angelo*, the very best, bright pinkish-lilac, the upper petals pencilled with crimson-purple lines; *Captive*, which appears to be the same as *Innocence*; *Fairy Belle*, pallidum, and *petatum elegans*, pale lilac, very pretty; *Duchess of Edinburgh*, deep pinkish-blush, very pretty indeed; and the variegated *L'Elegance*, which is in all probability the variegated form of *album grandiflorum*.

Turning now to the hybrid Ivy-leaved varieties, it must be admitted that the two which lead the way in point of time, viz., *Willis* and *Willis roseum*, are yet able to hold their own, and probably there is nothing superior to the last named. *St. George* is of a pale rosy-magenta colour, very pretty, and of fine shape, and is one of the best; *Gem of the Season* has a fine habit, the colour of the flowers pink, dashed with salmon-orange, and is very pretty; *Argus*, pale magenta, very pretty and of excellent habit; *Favonius*, very rich deep magenta, dashed with crimson, very fine in colour, but with small flowers, but a decided gain in point of hue; *Alice Lee*, deep bright magenta, good; *pseudo-zonale*, orange-salmon, attractive in colour, but with loose flowers, a variety of Continental origin; *Dr. Schomburger*, pale magenta with orange-salmon centre, very good; *Camballo*, the petals pinkish-magenta, with a kind of pink flame up the centre, and rather more colour in the top petals, very pretty and distinct; *Gem*, delicate lilac suffused with pink, very pretty and good, and of capital habit; *Bridal Wreath*, pure white, with slight purple lines on the upper petals, very pretty and good—sharing with *Willis roseum* the highest honours in this interesting class—and excellent in habit; lastly, there is the variegated *Duchess of Edinburgh* with pale pink flowers and very free, and as it comes from France under the name of *variegatum*, it is, perhaps, not an English sport or seedling, as some have supposed.

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## PLATE CXXXIV.

## TWO NEW PELARGONIUMS.

Drawn by Mrs. E. M. Wood.

THE annexed plate represents two seedlings raised by the Rev. A. Rawson, of Bromley. The lower one, named *Queen of Stripes*, is a seedling from an old variety called *Mrs. Newman*. The upper one, the *Maid of Kent*, is from the well-known variety *Empress*, upon which it is a great improvement. The trusses are large and often as round as a ball, the fringed petals giving it a beautiful appearance. It is extremely floriferous, and the habit dwarf, like that of its parent. Mr. Rawson states that he has had nine trusses of bloom on a small plant. Apart from its beauty, it will make a valuable sort for market purposes. The *Queen of Stripes* speaks for itself, its drawback being that occasionally it throws up a truss of plain flowers, a defect to be guarded against by using poor soil. Fortunately the first truss came striped, or it would inevitably have been discarded. Frequent use of it for hybridising has produced nothing of any value, a result which has also occurred in the case of *Queen Victoria*, *Beauty of Oxtou*, and others, when used for breeding purposes. The aim should be to get the rosy flake on a pure white ground, like *Claribel*, and this will, no doubt, some day be accomplished. The *Queen of Stripes* is in the hands of Messrs. Henderson, of the Fine-apple nurseries; the *Maid of Kent* is not in commerce.

## CYCLAMENS IN THE WILD GARDEN.

This little sketch of *Cyclamens wild* in Grass was from a group allowed to run wild in this way in Mr. Barr's trial ground at



Tooting. Right bravely they held their way among the Grass and weeds, and carpeted the ground with their glossy leaves, and flowered freely in winter and early spring. Although mostly a South European, North African, and Western Asiatic family, various species grow on the hills, and they are, with very few exceptions, thoroughly hardy. There should be no difficulty in naturalising *Cyclamens* in copses and half shady places, where the surface vegetation is not too rank. We believe they would grow in many of the places for which people so often seek for "plants that will grow under trees." The Mossy floor of many a grove where Grass will not grow may be enamelled with the Ivy-leaved *Cyclamen*, with *C. europæum*, *C. vernum*, and, in fact, most of the species and varieties, with the exception of the Persian *Cyclamen*, which we do know not to be hardy everywhere.

**Thalictrums for the Wild Garden.**—Those who are fond of cultivating almost all kinds of plants with which they may meet most find it very advantageous to have what may be called the rough or wild garden as a kind of receptacle for plants which they do not like to discard, but which are totally unfit for a well-ordered garden—plants that seem determined to grow in their own way, and which, if inadvertently introduced into a garden will bring a person to repentance, such as the *Budweed* and its varieties and many of the *Campanulas*, such as *Rapunculus*. The *Thalictrums* are handsome plants, but many of them, such as our native *T. flavum*, are great pests; many of them, such as *spicuosum*, *aquilegiaefolium*, *glaucom*, and *purpurascens* are very stately plants. These will grow anywhere,



TWO NEW PELARCONIUMS



and open spots in woods are just the places for them. Many of them delight in growing amongst stones, rocks, &c., such as *T. minus*. To say nothing of their yellow, feathery, inflorescence, the foliage of many of them is simply elegant, almost rivaling that of some of the *Aralias*.—THOMAS WILLIAMS, *Ormskirck*.

## PROPAGATING.

**COPROSMA BAUERIANA VARIEGATA.**—This is considered by some to be a difficult plant to increase; but that is only the case when cuttings taken in autumn from plants out of doors are employed. When put in, the leaves often drop off in a few days, and the cuttings frequently never make a start. The best way is to take them in March from plants that have been kept in the greenhouse since the previous October. Make the cuttings as shown in the annexed illustration, and insert them not too thickly in cutting pots, well drained and filled with finely-sifted soil, consisting of yellow loam, peat, and sand in equal parts. Fasten them well in, give a good watering with a fine-roset watering-pot, and plunge the pots half-way up in a brisk bottom-heat, but do not cover them with glasses or lights; shade with sheets of paper during midday sunshine, and they will emit roots freely, and will be ready for potting off in about six weeks. Cuttings taken off outdoor plants in autumn should be treated in the same way as far as soil and mode of preparation are concerned. When ready they should



Cutting of *Coprosma Baueriana variegata*.

be put into a half-spent manure bed, over which the lights should be kept close for the first fortnight, and water should be given very sparingly until they are rooted. After that they may be removed to the greenhouse and wintered in their cutting pots. H. H.

## GARDENING FOR THE WEEK.

### Flower Garden.

**Re-potting Auriculas.**—I have usually done this early in May, and have even sometimes made a start the last week in April, but it is now the third week in June, and not a plant has yet been re-potted. Perforce we will have an opportunity of testing late potting this year, sorely against our will. The plants are certainly looking well, and are forming good crowns, as well as producing a goodly number of offsets. They have required a little attention in the way of picking off withered leaves, and stirring the surface soil in the pots a little. A celebrated grower told me quite recently that July and August were the best months in which to pot Auriculas, and the reason he gave was this: that the offsets were formed by that time, and that the operation of re-potting afforded an excellent opportunity to remove them. It is very desirable to attend to the offsets. I try to get them off close to the stem, and, if possible, with a little bit of root attached to them. I pot these small offsets in very small pots, and place them at once in hand-lights, from which the air is very nearly excluded. The lights should also be put in a shady place.

**Carnations and Picotees.**—When I last wrote about these they were progressing favourably. Since then, however, dull wet weather and cold nights have sadly crippled the more delicate sorts, and only a change to warmer and more genial weather will bring out in all their beauty the more robust varieties. Tying the spindles to sticks, disbudbing, and destroying green fly have been the work for the last week or two. Arrangements must now be made to get a place ready in which to bloom the plants. The best is a light airy greenhouse; ours is span-roofed, and it answers admirably. There must of necessity be movable shading to place over the glass when the sun's rays are too powerful. Those who have not a house to spare, may have some spare glass-lights from frames not in use. A light railing may be erected high enough to clear the heads of bloom; on this the lights may be placed, and, as a further protection from cutting winds and

driving rains, some shading may be nailed round the sides. If any of the flowers are likely to burst the calyx, a strip of matting should be tied round it.

**Pinks.**—These are all planted in beds, and the season seems exactly to suit them, as we never had a finer bloom, and all the flowers are well laced. The object of the Pink grower is to get good, regular plants into the flowers, where size and quality are nothing. It is very desirable to get the plants into their flowering quarters, say, by the end of October. Just previous to writing this I was looking over a good collection, and was much disappointed to see that not half of the varieties were laced, and rightly conjectured that the plants were not put out into the bed until the spring. If the plants are strong and healthy not one of them will suffer in the winter, but if, through any untoward accident, any of them should die, it is easy to keep a reserve from which to draw, in order to fill up their places. Like the Carnation and Picotee, those flowers that are too full for the calyx can be tied in the same way. See that the beds are quite free from weeds, and that all the flowers are tied to neat sticks.

**Gladioli.**—These are looking well so far, but will flower late; what they want now is plenty of heat. If hot, dry weather should set in, I would immediately manure the beds with rotten manure, and apply water freely if thought needful. It is also necessary to place sticks to the plants in the earliest stages of the spikes, as the broad leaves are much set on by gales of wind, and if the roots get loosened the plants soon fall over.

**Tulips.**—The roots of these ought to be lifted at once and stored in a dry place until planting time. Regular Tulip growers have drawers fitted with boxes divided into compartments, into which each variety is placed and numbered. I simply lift the roots and clean them, placing each variety in a small flower-pot, which is stored in a dry loft, and thus managed they keep in good condition until planting time. Before this is published I hope to have ours stored, as the foliage is quite dead.

**Pansies.**—This has been a glorious season for Pansies. We have a bed of seedlings 60 ft. long, the plants in which have bloomed continuously since March, and each plant has at present from twenty to fifty flowers fully expanded upon it. The bed has been no trouble to us, as the plants have fully covered the surface, quite choking any weeds that dared to appear above ground. To all who do not care to incur the expense of cultivating named sorts I recommend seedlings. If the seeds be obtained from the best flowers a large proportion of the produce will be as good as the parents.—J. DOUGLAS.

### Indoor Plant Department.

**Stoves.**—Gloxinias now full of flower will be appreciated by an occasional application of manure water. Keep them near the glass, so as to induce a stout, robust habit, without which the blooms are soft and useless. A shelf over the paths is a good situation for these plants. Achimenes in pots and baskets should have their stems supported by small sticks neatly tied thereto. It is not good practice to give all the plants an equal amount of shade. Allamandas, Bougainvillias, Ixoras, and Dipladenias will succeed better with much more sun than many plants will bear; consequently they should be placed at the warmest end of the house, and only receive a slight protection from the sun in the middle of the day. Climbing plants that are grown in pots and upon trellises should, when they have set a good crop of flowers, be trained over the trellises, but not too closely. Subjects of the above character that are grown permanently as roof climbers should not be allowed to go too long without training, or they become an impenetrable thicket of shoots, and necessitate much cutting away. Do not allow plants grown for this purpose to become too much crowded, or they suffer themselves, and injure everything grown under them.

**Greenhouses and Conservatories.**—Every means should now be employed to prolong the blooming of such plants as are at present in flower in greenhouses and conservatories, as well as to encourage such as are progressing for that kind of decoration. Owing to the greater number of conservatories being usually much loftier than ordinary houses for plant growing, a much greater surface is exposed to the action of the sun; consequently, the atmosphere is much drier, so much so, indeed, during the long summer days, as to make short work of the greater number of blooming plants available at this season. The borders that usually exist for climbers should be kept as moist as is consistent with the well-being of the plants growing in them; the moisture given off from them will, in some measure, counteract the dryness of the atmosphere, and on available occasions, especially early in the mornings and in the evenings, water should be applied under the stages, where such exist, and on the tables, yet not so plentifully as to occasion the unsightly inconvenience of wet paths to walk upon. Moisture applied in this way has not only the effect of benefiting the blooming plants, but tends to keep down red spider, which generally has a particularly genial feeding ground on conservatory climbers. The latter should have forcible applications of water from the syringe or from the garden engine occasionally. This should be necessary in all cases movable should be used not only for the roof, but for the sides of the house next the sun, if the house be lofty. Assist by all necessary attention *Fuchsias*, *Liliums*, *Amarantus*, *Balsams*, *Pelargoniums*, *Vallotas*, *Cassia corymbosa* (yellow), *Witensia corymbosa* (blue), two plants of easy culture, but not nearly so often met with as they deserve. *Achimenes*, *Genera Cooperi* and *Docklaeri*, *Tydeas*, and *Gloxinias* should be properly and carefully hardened by giving them plenty of light and placing them near where air is admitted in the stove before

their introduction to the conservatory, where they should be placed in such a position as to be so far removed from draughts as possible; by such means such plants may be made to last in good condition for a considerable time; and it is necessary to employ plants of this description during the next two months, when there is a greater scarcity of blooming subjects for conservatory decoration than at any other time during the year. And when to all autumn and winter-blooming plants, the first batch of Hydrangeas should now be potted, using pure peat and sand for a portion, and loam and sand for the rest of the stock; by this means, in all probability, both the blue and pink colours will be secured. Attend well to indoor Ferns in the way of water, especially such as have filled their pots with roots; any inattention to this matter results in the destruction of that healthy green appearance of the foliage which is the most prominent characteristic of well-grown plants. Do not maintain a higher temperature than is necessary for healthy development, such being the usual necessity of the conservatory to its endurance if required for cutting. Keep down insects by repeated light fumigations in preference to performing that operation seldom and severely. Azaleas should now be making active growth, which should be encouraged by syringings overhead every afternoon, shutting up early, and keeping the plants thoroughly free from their two great enemies, thrips and red spider. Plants that require re-potting, if their roots are active, should be shifted at once, using nothing but good peat and sufficient sand to keep the soil sweet. Hard-wooded plants that have been potted some time, and that are growing freely, should now be no longer shaded in bright weather; but, on the contrary, should be fully exposed to the sun, throwing water liberally about under the stages amongst the pots, so as to counteract drying influences. Young stock that was potted early, and that is growing vigorously, may be benefited by a further shift. Some growers of Heaths re-pot such as require it about this time, when the plants have done flowering; but it is much better to defer the operation until the autumn, when the weather gets cooler. Pick off all seed-pods, if seed is not wanted, as soon as the flowers are decayed, as the production of seed greatly exhausts the energies of plants.

**Asters and Stocks.**—Successional plants of these may be planted out, and by pits and in batches the bloom may be kept up further in the season. Asters, especially, are so useful for cutting that it is desirable to have them as late as they can be had.

#### Indoor Fruit Department.

If not very carefully looked after now, red spider will quickly multiply, for no kind of weather is more favourable to its increase than that which usually occurs in June and July. Dryness at the root often assists its development more than dryness in the atmosphere, and Vines on light soils are more liable to be affected than those in moist, stiff loam. It is, however, bad management to allow the pest to develop from excessive dryness; and unprotected outside borders, filled with roots, must be well watered, for, where the bottom rests on plenty of drainage, the soil here will quickly get red hot. Where roots are not required and, on the other hand, the surface of the border may receive a coating to the depth of 6 in. or more of this material in a moist state; and the soil may then be forked over and laid rough, water being applied plentifully after the manure has been laid on. This may be done with advantage to all Vines bearing fruit, excepting those upon which it is ripe, or nearly so. When the soil is somewhat exhausted, the manure is of assistance in perfecting the crop, especially where it is at all excessive. All young Vines, planted at any time this season, will have their roots very near the surface. The slightest check in any form will be injurious to them for years to come. Pot Vines intended to supply the earliest fruit next spring should now be widened out, and placed in a position where they will be fully exposed to the sun throughout the greatest part of the day. It must not be thought, because the growth of the Vines is perfected, that insects may do as they like, for to neglect them now is to undo what has already been done. On very hot days it is often necessary to water Vines having their pots well filled with roots twice or three times a day. The foliage should never be allowed to flag for want of water.

When the Grapes are all cut in the earliest houses, every attention should be paid to getting the wood ripened thoroughly, and trying to get the Vines into a state of rest by taking the lights off when it can be done, or exposing them to the air as much as possible. Give abundance of air night and day, and gentle fire-heat in dull weather to Grapes in late Vineries. All Grapes intended to be kept late in bottles of water should be well thinned, and, if possible, got thoroughly coloured and ripened by the end of September. As Peach houses are cleared of fruit, give the trees a good syringing to clear them of dust collected when the fruit was ripening. In houses where the lights can be taken off, it is a good practice to expose the trees to the air, as they will make firmer wood and buds under its influence for next year's forcing. In the late houses syringing the trees and sprinkling the paths once or twice a day will all help to keep up a moist atmosphere and to keep down red spider and aphid. The stopping and thinning of the shoots of Fig trees bearing the second crop must now be attended to. Keep a moist atmosphere by frequent syringings and sprinkling the paths with water to keep down red spider. Still maintain a steady bottom-heat to Melons by means of flues or hot-water pipes if in houses or pits. Mulch the surface of the beds with well-fermented horse manure, the same as for a Mushroom bed, and keep this well watered till the fruit begins to ripen. Melons when swelling require plenty of water at the roots, not dribbles on the surface, but a good soaking to reach the bottom roots. Sow seed now for the autumn supply of fruit, and if the plants are to be grown in pits heated with hot-water pipes, the supply of late fruit will be more certain than when grown

in manure frames. This is a good time for setting and marking the fruit of any good sort of Cucumber that it is desirable to keep for seed. Some grow their plants in large pots to seed from, and after carefully fertilising the flowers, leave only from three to four fruit on a plant. By this mode success is more certain as to getting plenty of seed true to the sort than by trusting to fruit from plants exhausted by cropping.

#### Hardy Fruit.

**Peaches and Nectarines.**—Go over these, and if the fruit is still too thick remove more, as also superfluous shoots, but on no account take away too much leaf, for, in the season, this is worse in its effects upon the trees than the opposite extreme of neglecting to disbud them. Continue to use the garden engine or syringe regularly two or three times a week, wetting the undersides of the leaves. If this is attended to little injury will be done by thrips and red spider, the worst enemies these fruits are affected by, and which not only materially injure the present crop but weaken the trees, thereby seriously affecting them in after years. These fruits will be benefited by mulching the ground with half-rotten manure. This is easily applied where the borders are not cropped with anything over the roots. Where Strawberries are grown on a Peach border the mulching they have received will assist to keep the soil moist.

#### Kitchen Garden.

Keep the hoe at work amongst bush fruits, so as to destroy weeds as they appear. It sometimes happens that there is negligence in this respect, under the impression that the bushes do not suffer from the presence of any ordinary vegetable weeding. As far as immediate effects go, this may be the case, but, wherever they are allowed to grow, they exhaust the soil much more than ordinary cultivated plants do; and to let any part of a garden become foul is simply a direct waste of the manure used, of which even bush fruit stands in need, although not to the same extent as vegetables. It is well to observe that if any portion of their garden, however small, be allowed to become a nursery for weeds, the seeds will be scattered by the winds in all directions, and will cause endless trouble afterwards, whilst the pleasure derived from the appearance alone of an orderly well-kept garden is worth consideration, and all the care that can be bestowed upon it. A clean garden, where every operation is carried out as soon as it requires attention, takes much less labour in the aggregate than one where things are continually behind; and in the operation of weeding this is more than usually apparent. It frequently happens that at the time of preparing the ground there may have been a scarcity of manure, of which some crops have not received a sufficient quantity. Where this has been the case, make up the deficiency by the timely application of liquid manure. This should take place at the middle stages of growth, after the plants have taken a fair hold of the soil and are growing away freely, and when strength will be imparted at the time it is most required. It is, however, necessary to be cautious in the use of manure water; it must not be applied too strong, for plants, unlike animals, have not the power of rejecting the food that is given them, which, in a liquid state, goes direct to the roots, and is of necessity absorbed by them, even if their destruction be the result. If manure of a solid character—such for instance, as that of fowls in a crude state, or guano that is lumpy and insufficiently broken—be dug into the soil, the case is somewhat different; the roots will not enter it, but will run in other directions to escape, as it were, the dangerous diet set before them. A little reflection upon the nature of the particular plant to which manure water is to be applied will, in a great measure, be a safe guide as to the strength of the solution it is able to bear. As a rule, rampant-growing subjects will stand a much stronger mixture than will weak growers—Rhubarb, for instance, being benefited by it at a strength that would injure Peas. Runner Beans may receive it stronger than the weaker-growing dwarf varieties; but, in all cases, it is better to be on the safe side and rather make the solution too weak than too strong.

**Parsley.**—A late Parsley should now be sown on well-prepared rich ground; sow in rows 15 in. apart. This will not be disposed to run to seed so soon in the spring as that which was put in earlier. Thin out the early-sown plants, leaving them 9 in. or 10 in. asunder. If this is attended to in time there will be little to fear from canker at the root, which usually occurs when the plants are overcrowded. Where Parsley is given sufficient room it can be kept through the winter with half the trouble and much greater certainty than where it is starved and weakly.

**Seakale.**—Seakale can be grown either from pieces of the whipcord-like roots, cut in lengths of 6 in. or 8 in., which is the best method, or from seed sown early in April. If, by the latter method, the seeds are, as usual, put in four or six together, in rows at intervals of 1½ ft. apart in the rows, and a like distance between rows, they will require to be thinned to a single plant in each place, and the ground between should be kept well hoed, so as to destroy weeds. By this method, in good, deep, well-enriched soil, a portion of the plants will be strong enough for taking up to force during the coming winter, the weaker ones being allowed to remain for another year. The great advantage in growing Seakale from root cuttings is that the plants have the start of those grown from seed, the greater part making strong roots the first summer. Nearly all that are allowed to stand a second season will throw up flowers, which must be cut away, or they completely prevent the growth of the strong crowns; and under any treatment, these plants that have so thrown up a flower-stem are not so good as they otherwise would be; even when cut out as soon as it makes its appearance it causes the root to form several crowns, which are individually weaker, and not so good for forcing as a plant with a single strong crown. The old system of growing Seakale in rows 3 ft.

apart, the plant being the same distance asunder in the rows, and forcing it in the bed under pots made for the purpose and covered with leaves or ground it occupies, the cost of pots, and the amount of labour, involved. Forced in this way, it also often has an earthy taste. In the cultivation of this vegetable it should be remembered that it is a marine plant, and, like its congeners, is fond of moisture and manure of a saline character. Those who reside on the coast cannot do better than dig into the soil, where it is grown, plenty of rotten sea-weed; where this is not at hand a good dressing of refuse salt—4 oz. or 6 oz. to the square yard—applied through the growing season, but not so as absolutely to touch the plants, will be found highly beneficial to the crop.

#### Extracts from my Diary.

**July 1.**—Sowing Canadian Wonder and Long-podded Negro French Beans. Pricking off *Violas*. Planting out Ten-week Stocks and *Asters*. Thinning out Spinach and Turnips. Stopping and nailing in Tomatoes. Taking up an early border of Ash-leaf Kidney Potatoes and spreading them out in the sun to ripen well for early crops next season. Levelling flower borders and looking over carpet bedding. Mulching Morello Cherries and watering them. Gathering Strawberries for preserving. Watering all Celery and Cauliflower plants.

**July 2.**—Sowing Early Horn Carrots and red and white Turnip Radishes. Potting off herbaceous Calceolarias, Primulas, and Cinerarias. Mulching late Peas with rotten manure and well watering them. Thinning out Chicory, Dandelion, Salads, and Scorzono. Planting out Lettuces and Endive; also Marjoram and Sweet Basil. Watering all newly-planted Broccoli and Brussels Sprouts. Taking nets off early Cherries and putting them over Currant bushes to protect them from birds. Turning over gravel walks where covered with Moss in pleasure grounds to give them a fresh appearance.

**July 3.**—Sowing All the Year Round, the Favourite, and Carters' Giant White Cos Lettuces; also Green-curl'd and Batavian Endive. Potting first batch of Strawberries for forcing. Planting out Celery and Cardoons. Giving Asparagus beds a light dressing of salt. Mulching and watering Peach trees on walls. Staking Peas and getting them earthed up. Watering Pines all through and putting sticks to any that require it. Thinning Early Horn Carrots. Sticking Peas and getting them earthed up.

**July 4.**—Sowing Omega and Ne Plus Ultra Peas. Potting on small plants of *Dracenas* and *Pandanus Veitchii* for table use. Planting out Cauliflowers and late Broccoli. Giving early Celery a little earthing, also first planted Leeks. Gathering Raspberries for preserving. Clearing off Cauliflower stamps, mauling the ground, and getting it dug up ready for other crops. Looking over Cucumbers and Melons, stopping them, and giving them a little earthing where required. Nailing and tying the leaders of Peach trees. Watering all Tomatoes, and mulching them with rotten manure.

**July 5.**—Sowing late crop of Broad Beans and Mignonette for autumn flowering. Putting in cuttings of choice *Pelargoniums*. Potting on Balsams. Gathering Apricots for bottling. Drawing drills for Turnips, and well watering them previous to sowing. Renovating linings round all manure frames. Looking over *Victories*, tying down leaders, and stopping the laterals where required. Nailing in leading shoots on Apricot and Plum trees. Giving Peach trees in early house a good washing with soft soap, sulphur, and Quassia-chin water, to keep down insects. Hoing amongst Gooseberries and Currants.

**July 6.**—Sowing Early Snowball and American Strap-leaf Turnips. Planting out a four-light pit with Tender and True Cucumbers. Sticking late sown Scarlet Runner Beans. Forking and Dutch-hoing amongst all growing crops. Gathering Laxton's Unique Peas for seed. Salting walks to keep down weeds. Turning manure, and mixing it with salt and soot. Watering all the newly-laid Strawberry Runners. Mowing and cleaning up the pleasure grounds, and rolling down gravel and turf that require it. Fit in use for dessert: Pines, Grapes, Melons, Figs, Peaches, Nectarines, Strawberries, Raspberries, and Cherries.—W. G. P., *Dorset*.

**Vesper's Insect-destroying Powder.**—This has effectually cleared our kitchen of cockroaches and black beetles, and we recommend it to all similarly plagued. It is perfectly harmless to human beings and domestic animals, and is clean and inoffensive in use, which is more than can be said of some of the evil-smelling compounds we have lately been trying. Unless we are mistaken, it is a preparation of Pyrethrum roseum, or Russian Tansy—a plant which is well known abroad for its deadly effect on insects, but which, when grown in England, loses its properties. Whether our surmise be correct or not, the value of the powder is beyond question. Having disposed of the beetles, it occurred to us to try it on some Rose trees badly infested with green fly. We applied it liberally—until the trees looked as if it had been raising Scotch snuff—and awaited the result. One of the heavy downpours we have been favoured with recently came down in the night, and in the morning the trees were clear alike of powder and green fly, and the latter had not been seen since. We are assured that it is equally efficacious with ants, fleas, and other tormentors of the tribe, and have little doubt that such is the case.—"English Mechanic."

## SOCIETIES AND EXHIBITIONS.

### ALEXANDRA PALACE ROSE SHOW.

JUNE 22.

THE exhibits on this occasion were arranged in the Concert Room, a capital place for a Rose show, which was, however, not so good as usual, owing, we understand, to a heavy thunderstorm which occurred in some districts a few days previous to the show, and which destroyed the blooms. Such Roses as were shown, however, were considered to be very good. The principal collections came from Waltham, Chesnut, Salisbury, and Devon. Messrs. Paul & Son furnished banks of miniature Roses in pots, which attracted much attention on account of their dwarf and healthy character and the profusion and quality of their blossoms; plants not more than 6 in. or 8 in. high bore from five to seven well-formed, handsome flowers.

**Nurserymen's Classes.**—In the class for seventy-two blooms there were four competitors, the most successful one being Messrs. Paul & Son, the Old Nurseries, Chesnut, who had excellent blooms of Duchesse de Vallombrosa, the dark crimson-coloured Sultan of Zanzibar, Mrs. Charles Wood, the beautiful flesh-coloured Mlle. Eugénie Verdier, and the maroon-crimson-purple-shaded Duke of Edinburgh. With these were associated the white Madame Lacharme, the bluish Madame H. Jamain, the Tea Rose Devoniensis and Madame Villermoz, and the scarlet bloom of Madame Prosper Mangier and H. Ledechaux gave colour to the collection, which was in every respect a good one. Messrs. Keynes & Co., Salisbury, had also a good collection, in which the best blooms were Madame Villermoz, Beauty of Waltham Sir Garnet Wolsley, Horace Verret, and Alfred Colomb. In other collections were admirable blooms of Marie Baumann, Countess of Oxford, Mons. E. Y. Teas, Madame H. Jamain, and Xavier Olibo. In the class for forty-eight Roses, five blooms each, there were only two exhibitors. The best collection, which came from Messrs. Keynes & Co., contained fairly good examples of Sir Garnet Wolsley, Marquis de Castellane, the dark crimson Lord Macaulay, the bluish Captain Christy, and the dark maroon Horace Verret. In Messrs. Paul & Son's collection were good blooms of the crimson Camille Bernardin, Duchesse de Vallombrosa, and finely-coloured examples of the scarlet Alfred Colomb. The best twenty-four Hybrid Perpetuals came from Messrs. Cranston & Co., King's Acre, Hereford, who had good even blooms of Marie Baumann, the velvety-maroon Prince Camille de Rohan, the bluish M. de St. Amand, and Louis Van Houtte. Messrs. Paul & Son showed in the same class well-formed blooms of the bright pink Madame Therosa Levst, Sultan of Zanzibar, and Madame Lacharme. In other collections, the most noticeable were Madame Marie Rody, Star of Waltham, Countess of Oxford, and small, but well-formed, highly-coloured examples of Fisher Holmes. In the class for twenty-four Roses, single blooms, the best came from Messrs. Cranston & Co., in whose stand were perfect blooms of Charles Lefebvre, the dark crimson Exposition de Brie, Madame de Castellane, and Marquis Bernardin. These were shown off to the best advantage by being associated with good blooms of such light kinds as La France, the Tea Souvenir de Elise, and Souvenir de la Malmaison. In the same class, Messrs. Curtis, Sanford, & Co., Torquay, had fine blooms of the white, pink-flushed Madame Hippolyte Jamain, the deep rosy-pink François Michelin, highly-coloured examples of General Jacqueminot, Dupuy Jamain, and Mons. Gabriel Fournier. Selecting from other stands were good blooms of Eugénie Levst, Duke of Edinburgh, Devoniensis, and Marguerite Brasseur. The best twelve single trusses of Tea-scented and Noisette Roses came from Messrs. Mitchell & Son, Uckfield, who had fine examples of Souvenir d'un Ami, the beautiful silky-white, bright pink-flushed Josephine Walton, the beautiful lemon-yellow Bliza Savage, and Comte de Paris. Messrs. Paul & Son had good blooms of the white Niphotos, Catherine Marnet, the deep rosy-magenta Chesnut Hybrid, and the golden Perle de Lyons. The best in other collections were alba roses, Devoniensis and its climbing variety, Madame Caroline Kuster, and the pure white Marie Guillot.

**Amateurs' Classes.**—In the class for forty-eight single trusses, the best came from Mr. Baker, Heavitree, Exeter, who had exquisite blooms of Marie Baumann, the bright pink Madame de Diesbach, the white pink-tinted Marquis de Montemar, Mons. E. Y. Teas; to these may be added the maroon-crimson Auguste Neumann, the pinkish-salmon Marguerite de St. Amand, and Madame Victor Verdier. Conspicuous in other collections in the same class were examples of the creamy-violet-tinted Marie Van Houtte, Marquis de Castellane, Abel Grand, and Madame Cass. Wood. In the class for thirty-six blooms, Mr. L. J. Curtis, Chatteris, had the best collection, the most prominent kind in it being, the scarlet-purple-shaded Thomas Mills and Marie Rody, the dark-maroon Jean Chirpin, and the pink Miss Hassard. Mr. Baker, who had the next best group, showed good

blooms of Marie Baumann, Mdls. Eugenie Verdier, and Charles Lefebvre. The best blooms in other collections were Countess of Oxford, Comte de Paris, Fisher Holmes, and Madame Chas. Wood. The best twenty-four single trusses came from Mr. Gravelly, Cowfold, Sussex, who had good blooms of Rubens, Senateur Vaisse, and the purplish-crimson Maréchal Vaillant. The best twenty-four Roses three trusses of each, came from Mr. Hollingworth, Turkey Court, Maidstone, who had amongst others Duke of Edinburgh, white Comte de Paris, and Dr. Andre. Mr. Davies, Wilton, Wilts, had good examples of Senateur Vaisse, and small but well formed examples of Louis Van Houtte. In the class for twelve single trusses there were eleven exhibitors. The best blooms came from Mr. Edwards, Stisted Rectory, Braintree, and M. Ridout, the best in the two collections were Marquis de Castellane, Charles Lefebvre, Marie Baumann, rose-scarlet Thomas Mills, Niphetos, Maréchal Niel, finely-coloured Senateur Verdier, pink Charlea Lefebvre, large rosy-crimson Madame Victor Verdier, Ami Madame Theresa Levet, and the bright rose Countess of Oxford. Mr. Wakely, Church House, Rainham, had beautiful blooms of Duke of Wellington, Xavier Olivot, the magenta Hippolyte Jamin, Prince de Porcia, Jules Margottin, and very fine blooms of Captain Christy and Paul Nercin. In the class for twelve Tea-scented Roses, Mr. Hollingworth had five half-expanded blooms of Madame Villermoz, the creamy-white Perle de Jardins, and the white Madame Bissy. Mr. Rueshmore, gardener, Tendring Hall, Stoke, Colchester, had good examples of Rubens and the flesh-coloured Bougère; other collections contained good buds of Adam (a flesh-coloured kind), climbing Devonensis, the rosy-tipped Homer, and the salmon-fleshed President.

**Open Classes.**—In the class for twelve Roses of 1876-77-78, Messrs. Paul & Son, Cheshunt, showed the dark crimson-purple-edged Robert Marnock, the rosy-crimson Mdls. Marie Louise Vernet, large blooms of Gabriel Fournier, Mrs. Laxton, and Oxonian. Messrs. Curtis, Sanford, & Co. had the dark maroon Jean Lisbaud, Madame Prosper Sangier, and Magns Charta. In other collections the best were Abel Carrière, Triomphe de France, and Mrs. Baker. For six trusses of any Rose, Messrs. Paul & Son had the best, the kind being Mrs. Laxton, which was globular in shape and bright rosy-crimson in colour. Mr. Piper, nurseryman, Uckfield, had good examples of Duke of Connaught, a fine Rose of a rich bright velvety crimson and perfect in shape, and Mons. Gabriel Fournier, a good show Rose, conical in form, and of a deep rosy-crimson colour, was exhibited in good condition. Mr. Cooling, Bath, sent twelve of the largest blooms of Maréchal Niel, perhaps ever exhibited; they were fine in colour and perfect in shape. Messrs. Paul & Son showed twelve fine trusses of La France, as did also Messrs. Keynes, English-trained Roses were well shown by Messrs. Paul & Son, who had Duke of Edinburgh, the bright pink and carmine Magns Charta, Miss Poole, Devonensis, and John Stuart Mill. With these were also Charles Darwin, the cherry-rose-coloured Annie Laxton, the white globular-shaped Miss Ingram, and the fine double clear rose-coloured Marchioness of Exeter.

A first-class certificate was awarded to Rose Dr. Hogg (Paul & Son), a magenta-coloured flower of fine form, and quite distinct from any other Rose with which we are acquainted.

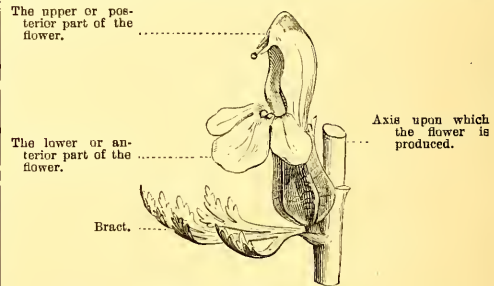
Fine blooms of Marie Baumann were shown by Messrs. Paul & Son and Messrs. Keynes & Co. Mr. Rumsey, Waltham, contributed stands of Tea Rose buds useful for bouquet making, which were much admired on account of their varied forms and rich colours.

Messrs. W. Paul & Son, Waltham Cross, showed an extensive collection consisting of new English-raised seedling Roses. One, named Countess of Rosebery, promises to be a grand Rose of a fiery rosy-scarlet colour, good in form, and well worth a place in any collection. Duchess of Bedford is also a kind likely to become popular; it is darker in colour than the one just alluded to. From the same firm also came a large mixed collection, consisting of Tea and Moss Roses and Hybrid Perpetuals, among which were noticeable magnificent blooms of Duke of Edinburgh, Duke of Wellington, Fisher Holmes, Marie Baumann, and Gabriel Fournier. Mr. Cannell, Swanley, sent fine boxes of Verberas and Pelargoniums. Mr. Ware, Hale Farm Nurseries, Tettenham, exhibited a fine collection of Pansies and Violas, also Pinks and Picotees, among the latter of which may be mentioned P. Newmarket, a beautiful deep rose-coloured variety, previously alluded to in THE GARDEN, and which is likely to be valuable for forcing for market as well as for general decorative purposes. Pink Derby Day is a beautiful double purple flower edged with rose; P. Early Blosk has a beautiful delicate pink flower with imbricated petals; and a white kind named Lady Blanche is smooth petalled and well worth notice. Show Pinks, with smooth white petals edged with deep rose, magenta, and crimson, were also shown in good form. Mrs. Hodgkins exhibited an interesting collection of skeleton flowers and Ferns, which were much admired.

## GARDEN BOTANY.

(Continued from p. 607.)

**THE POSITION OF THE FLOWER IN RELATION TO THE AXIS FROM WHICH IT SPRINGS.**—The part of a flower facing the axis which gives it birth is the posterior or upper side, and that facing the bract or leaf the anterior. Often the anterior and posterior halves of a flower are very different, whilst a section through the median plane, that is, vertically through the middle of the flower in the direction of the mother axis, would give two halves, each similar to the other reversed (fig. 273). The position of the parts of a flower with regard to each other and the main axis affords important characters. For instance, in the Leguminosæ (Pea, Bean, Vetch, &c.) the odd sepal (of five forming the calyx) is anterior, whereas in the Rosaceæ (Apple, Rose, Cherry, &c.) the odd sepal is posterior, or next to the axis. Usually in dicotyledonous plants the sepals constituting the calyx form a whorl; in other words, they all spring from the same horizontal plane; the petals are also whorled, and the stamens, and the carpels forming the pistil are arranged in one or more whorls. In some cases the sepals or petals are in two or more whorls, as in the Mæragriaceæ and Cruciferae, where the calyx consists of four sepals in two whorls of opposite or decussate pairs. The arrangement of some of the parts of the flower of Magnolia, Nymphaea, &c., is spiral. When the number of sepals, petals, stamens, and carpels is the same, the petals are usually alternate with the sepals, the stamens alternate with the petals, and the carpels alternate with

Fig. 273.—Flower of *Pedicularis palustris*.

the stamens; but the greatest diversity exists in the position of the parts of one whorl in relation to those of another, and likewise in the numbers of parts in the different whorls. It is not difficult to express the structure of a flower in words, but it is now becoming a common practice to show diagrammatically the number and position of the parts of a flower, whether it be of a particular species, or the typical arrangement of a given natural order or genus.

**CONSTRUCTION OF FLORAL DIAGRAMS.**—A floral diagram is a horizontal projection or plan of the disposition and number of the parts of a flower. All the diagrams employed to illustrate these paragraphs are real projections of the parts as they exist in the flowers, and must be distinguished from the theoretical diagrams to be found in some books. The latter are constructed upon a general typical plan, and indicate the places of suppressed parts as well as those actually developed, thus representing an imaginary rather than a real condition of things. After studying the structure of a number of different flowers the student will be better able to comprehend what is meant by suppression of parts and a theoretical diagram. Common flowers, in most instances, are chosen for illustration, and we here urge upon the learner the desirability of procuring and examining as many of them as possible, because the most carefully-worded definitions illustrated by accurate figures sometimes fail to convey exactly what is intended. Moreover it adds to the interest of the study to have the living plants before one, and many little points left unexplained by the teacher explain themselves. We would also repeat that, although there is a certain order in Nature, there is no such

thing as mathematical precision, and the student must be prepared to find all sorts of deviations from the general rules laid down here; but these deviations are themselves restricted within certain limits. Let us now examine a flower of *Crasula lactea*, or some other species (fig. 274), and a diagram of it (fig. 275). The mother axis of the flower is indicated by the small circle above the diagram, the bract from the axil of

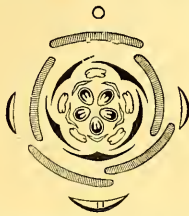


Fig. 274.—A flower of *Crasula lactea*. Fig. 275.—Diagram of the flower of *Crasula lactea*.

which the flower proceeds below, and two lateral bracts are shown, one to the right and the other to the left of the flower. The parts of the flower are represented by conventional signs, explained under fig. 278. The signs are somewhat slightly modified to indicate certain characters in a flower. Thus, on



Fig. 276.—Diagram of Strawberry flower. Fig. 277.—Diagram of *Pedicularis*.

comparing the diagram of *Crasula* with those of the Strawberry flower and *Pedicularis* (figs. 276 and 277), it will be seen that we have in the former some suggestion of the thick, fleshy sepals, and of the thick petals with a keel running down the middle inside. Besides the sepals, petals, stamens, and

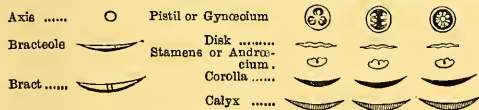


Fig. 278.—Explanation of the parts of a floral diagram.

carpels, another whorl of organs is represented in the diagram of *Crasula*. To this is given the collective name of disk, and it may consist of a continuous ring or of separate bodies, as in *Crasula*. Some of the more striking forms of the disk are described in a succeeding paragraph.



Fig. 279.—Section of a flower of *Crasula lactea*; the two halves alike.

**SYMMETRICAL AND UNSYMMETRICAL FLOWERS.**—When the parts of each whorl of a flower are equal in number, as in *Crasula*, the flower is symmetrical, as it also is if the members of the androecium or gynoecium exceed in number the sepals and petals, or *vice versa*, providing always that the excess is a

multiple of the smaller number. But when the numbers of the different parts are unequal, and are not multiples, the flower is unsymmetrical, as in *Pedicularis* (fig. 277), where there are five sepals, five petals, four stamens, and two carpels forming the pistil. Some botanists attach a somewhat different meaning to these terms, and any flower that can be cut vertically in two halves which are alike (as in fig. 279) is called symmetrical. The direction in which the flower must be cut for the halves to be alike is its symmetrical plane; but in some flowers no symmetrical plane exists, on account of the unsymmetrical insertion of the parts. *Canna* (fig. 280) is an



Fig. 280.—Section of a flower of *Canna*; the two halves unlike.

example of a flower which it is impossible to divide into halves which shall be alike.

W. B. HEMSLEY.

**Eradicating Sorrel.**—The presence of this may be credited to the existence of too much acid in the soil. This undue sourness arises from an excess of moisture in the soil, from too frequent freezings and thawings, which kill out other crops in winter, and probably from other causes. The remedies, if it arises from excessive moisture, are, in the first place, to give thorough drainage, and then the application of alkalies, which will neutralise acid and make the soil sweet and productive of sweet herbage. Sixty years ago, much of the land, especially in orchards in our vicinity, was scourged with a vile sour weed known as "Yellow Johnswort." The acid principle in it was so strong, that animals feeding among it in rainy weather, or when the dew was on, were sure to be afflicted with sore noses in consequence of coming in contact with it when wet. Thorough tillage, with the application of plaster and Clover stocking, runs it out, and at present it is rare to see it in the most minute quantities. Lime and ashes are excellent neutralisers. This I have found by experience. Some years ago I had a piece of land overrun with wild Wormwood. The next year I put spring Wheat on the ground, and from a limekiln near by drew a load of refuse lime, which probably contained some ashes, and spread on the surface of a portion of the Wheat after the last harrowing at the rate of twelve loads to the acre. The result was, not only an increase of the Wheat crop where the lime was applied, but the ground was left free of the Wormwood and all foul weeds, while in other portions of the ground it continued to grow in wild luxuriance. The result of these experiments taught me, that for soils producing sour weeds like Sorrel, or wild Wormwood, &c., the first remedy is thorough tillage—a full exposure of the soil to the atmosphere—and the application of alkaline substances to neutralise what acid remains in the soil, and to convert it into plant food.—W. B., in "The Cultivator and Country Gentleman."

**Dried Fruits.**—Here in Germany, especially in the country, most families lay up a store of dried Apple slices for winter. Any Apples, those that fall or are blown down, are peeled, any bruised or grubby spots cut away, then cut into slices and strung on a thread by help of a thick needle. This fustoon is hung in the sun, or in wet weather on the kitchen ceiling or walls. Mushroom-rooms are done in the same way, and if used in hashes, stews, &c., impart a most excellent flavour. Pears may be treated in the same fashion as Apples. Bilberries and Plums are also dried. These require daily turning.—N. STARR, in "English Mechanic."

## ORCHIDS.

**AERIDES.**—The kinds of *Aerides* that require the highest temperature in which to grow, such as *A. maculosum* and its still finer variety *Schröderi*, the different forms of *A. virens*, and also the varieties of *A. odoratum*, with *A. Lobbi* and *A. Larpentæ*, as soon as they have done flowering should, if any require potting, either on the score of insufficient root-room, or if there be any doubts of the *Sphagnum* below the surface having become so far decomposed as to retain too much moisture in a way not conducive to the health of the roots, be at once attended to. It sometimes happens that, through repeated top-dressings, the material near the surface is fresh and sweet, whilst that lower down in the pots gets into the state described, in which case the plants by no means should be allowed to remain through the season undisturbed, as the heat and moisture to which for some months now they will require to be regularly subjected will tend to still further decompose the *Sphagnum*. In all cases use it in a fresh, healthy state, or, at all events, such as has not been allowed to lay together for a long enough time before being used as to render it incapable of lasting as long as it ought to do; for these, like other Orchids, should never be subjected to the root disturbance inseparable from re-potting oftener than is absolutely necessary. See that the crocks used in all cases are perfectly clean and free from all green vegetable matter. In removing the plants from the pots use all the care possible so as to break the roots that adhere to the sides no more than unavoidable. In potting press the material in firmly, and stake sufficiently to support the plants in an erect position. Previous to potting they should be gone carefully over, so as to effect a thorough cleaning, especially if there is any scale upon them, particularly the white species, which not only establishes itself on both upper and under sides of the leaves and down in the axils, where it is most difficult to get to, but also on the roots that are out of the potting material. Where ever so little of it exists, the opportunity should be taken of the plants being turned out to make a thorough riddance. Nothing is so good as an ordinary tooth-brush for cleaning the roots. After potting they should at once be placed at the warmest end of the growing house, and kept well up to the light. Do not crowd them too close together, nor place them so that the tallest plants will obstruct the light from those that are shorter. If the house is so constructed that the stage or table on which they stand is far away from the glass, loose shelves on inverted pots high enough to elevate them sufficiently should be brought into requisition. The kinds of *Aerides* that will do with a somewhat lower temperature, such as *A. affine roseum*, *A. crispum*, *A. cylindricum*, *A. rubrum*, and *A. Fieldingi*, should be treated in like manner as to potting, &c., but ought to occupy the coolest end of the house, having an equally light position. The beautiful *A. Fieldingi* is especially liable to that most fatal disease, spot, if grown under conditions of too much heat and moisture, with insufficient light and air. The sweet-scented *Aerides suavissimum* and *A. quinquevulnerum*, which generally flower later in the season, should be encouraged to make growth similarly to those which have already bloomed.

**SACCOLABIUMS.**—Most of these now done flowering should be treated like the earliest-flowered *Aerides*, according as they may require it. It is a general remark amongst Orchid growers that these distinct, handsome, and valuable plants are not nearly so well grown as they once were; many of the species, such as *S. ampullacea* and the varieties of *S. Blumei*, *S. præmorsum*, *S. retusum*, and the forms of *S. guttatum*, will need as strong a heat as any Orchids in cultivation, but if grown as they require in a high temperature, and stood where they receive an insufficiency of light, they soon get spotted and unhealthy. The best position which I have found for these, which are collectively dwarf-habited plants, is, if grown in pots, near the front upright glass, shading them no more than is necessary. If grown in baskets composed of wire or wood, there will be no difficulty in getting them sufficiently close to the light; if suspended over the paths near the roof they will be in the best possible situation, and as these are amongst the most costly of the Orchid family, it is well to so far consider them, and give them the best place in the house.

**PHALÆNOIDS.**—*P. amabilis*, *P. grandiflora*, *P. rosea*, and *P. Luddemanniana* will, in many cases, have completed flowering; and where grown on blocks, baskets, or pots, should, if they require it, be placed on fresh ones; or if the whole of the material in which they are growing has become far decomposed, it should be replaced. The roots of these also are very susceptible of injury in removal, and the greatest care ought to be taken in separating them from whatever they have clung to. When on blocks, use no more wire than is absolutely necessary to keep them in their position until the roots lay hold of the wood themselves, using as much *Sphagnum* as will retain the requisite moisture and furnish support to them. These free-flowering, highly-esteemed plants should likewise have a good situation afforded them in the house. They will succeed far the best when hung up near the glass, as here they not only are placed under the most suitable conditions for making thick stout leaves capable of enduring their wanted length of time, but they are also the furthest out of the reach of the insect pests, such as slugs and cockroaches, which, despite the greatest watchfulness, usually exist in most Orchid houses to a greater or lesser extent.

**PHAIUS.**—These stately plants are frequently discarded by Orchid growers on the plea of their being of a coarse habit of growth; yet where cut flowers of an enduring character are required for filling vases and large stands, they are very effective; and when well managed, so as to preserve their leaves in a healthy state, they form most imposing objects when in bloom in Orchid houses, or moderately warm conservatories, for which latter, from their considerable size and the fact of the flowers lasting in good condition on the plants for several weeks, they are especially adapted. I am now speaking more particularly of the species *P. Wallichii*, *P. grandifolius*, and *P. maculatus*, and not of the nearly allied or synonymous *Thunias*, which, being from hotter parts of the world, require considerably more heat both to grow and to preserve them in a healthy state when in flower. *P. grandifolius* is a Chinese plant; the other two from the cooler regions of India. The temperature of an intermediate house suits them the best, with more air than the generality of Orchids receive. With ordinary treatment, they will now have finished flowering and be about to commence growth. These plants are often allowed to suffer through insufficient pot room, for which there is not the reasonable excuse that there is with many Orchids, whose growth during the first season after removal is often a good deal interfered with through the operation, as the roots of *Phaius* do not adhere to the pots to anything near such an extent as do the epiphytal species; consequently they can be turned out without the fibres being much mutilated. When division becomes necessary the plants should be turned out of the pots, the whole of the soil being carefully shook away and the roots completely disentangled. In this way the crowns or pseudo-bulbs can be separated with little or no injury to the roots. They are best divided into portions consisting of the last and two or three preceding years' growths, putting two, three, or four such pieces in pots from 8 in. to 10 in. in diameter, according to the size of the plants required; from 2 in. to 3 in. of crocks in the bottoms of the pots will be sufficient, laying over these a little *Sphagnum*. I have found them succeed the best in good, yellow, turfy loam, to which has been added as much sand as would be considered necessary for ordinary stove or greenhouse plants that thrive in a loamy soil. A handful of moderate-sized crocks or broken charcoal intermixed with the soil will be an advantage; put moderately firm and keep the divided pieces well to the centres of the pots, as they soon make growth towards the outsides. Do not give much water until the roots have had time to get into motion, when they must receive a liberal quantity. The great thing with these plants is to give them a good, light position, where they will get a fair amount of air daily in mild weather with just sufficient shade during bright sunshine to keep the foliage from scorching. In this way the leaf-growth made will be of a thick leathery texture, not attaining near the objectionable size that it does when treated with too much shade, heat, and moisture. The foliage, under the conditions I have advised, will always be found less subject to decay at the points, which is a great disfigurement to the plants when in flower.

T. BAINES.

## ANSWERS TO CORRESPONDENTS.

**Mushrooms in Pastures.**—Can Mushrooms be made to grow in a new permanent pasture just laid down in Grass by introducing spawn? and if so, how ought I to proceed?—J. M. [Yes, doubtless. The spawn should be broken into pieces about the size of a hantam's egg and dibbled in at once; say a piece at intervals of 4 ft. or 5 ft. all over the dried portion of the pasture.—W. W. H.]

**Mildewed Grapes.**—My Grapes are badly mildewed and I have cut the bunches off. Have I done right?—V. *Brenford*. [Yes; they would never have ripened; and it is better to get the Vines in order by next year to bear good Grapes than to ruin them this season with bad ones.—S.]

**Mulberries.**—Wishing to make a plantation of Mulberry trees, I should be much obliged if you could tell me the best way to set about it; I mean how to raise the plants myself, when to sow the seed, or plant the cuttings as the case may be.—R. [It is too late in the season to do anything towards a Mulberry plantation. You could sow the seed in February, or plant young trees in October or November; the latter is the quickest mode and that generally adopted. As the White Mulberry (*Morus alba*) and its varieties are the best for silk culture, you had better procure three to four-year-old plants for your plantation. Seed may be got from the New Plant and Bulb Company, Colchester, who supply everything requisite for silk culture in Great Britain and her Colonies.—A. W.]

**Small Strawberries.**—I have Keen's seedling Strawberries, which always bear a profusion of fine blossoms, but the berries turn out small. What is the cause of it? Should I thin the berries? The stalks are long. The soil is sandy, but good. Is there a better sort to grow? and what kind? I want to keep to one good kind only.—H. S. [I fear you have not got the true "Keen's Seedling," for though occasionally it fails to set, or is what gardeners terra "blind," it never fails to produce good fruit. If you must grow this variety, obtain a fresh stock and plant on fresh ground. Taking all points into consideration, Vicomtesse Héribert de Thury is the best Strawberry in cultivation, and next to that is President; try these against Keen's Seedling.—W. W.]

**The Tamarix in French Gardens.**—I have lately been over some of the French gardens, and I saw a plant I do not remember ever having seen in England covered with small pink flowers; they called it Tamarix. I never saw so pretty a shrub. I suppose it would not grow in English pleasure grounds.—O. M. B. [The Tamarix does well in England, but is little planted, though so elegant in habit and form. The one commonly grown with us is less ornamental than the one grown about Paris, and which bears the name of T. indica. Cut down annually, this throws up long, vigorous, feathery shoots, which are as beautiful as they are wholly distinct from anything else grown in gardens. As is well known, these plants thrive by the sea-shore on the south coast. The fact that they do so well in Paris proves that the vicinity of the sea is not a necessity to their culture. They are a family that any one interested in improving our collections of hardy ornamental shrubs might take up with great advantage.—En.]

**Genetyllis fuchsoides.**—I. I recently bought a large plant of this in full flower. My gardener a month ago cut off the flowers, as he said the plant was delicate. He then potted it and put it into a close hot greenhouse to make it grow; but, instead of growing, it died. Being a New Holland plant, should he not have put it into a cold pit or cool shady greenhouse, or even out on a north border to make it grow? Kindly say who is right; also, is the treatment which the gardener adopted in the case of this plant suitable for hard-wooded Heath?—C. S. K. [Had the plant not been delicate, the treatment would have answered; but, being in an unhealthy state, it succumbed to the warmth and moisture, to which may be added probably dryness at the roots; a light airy greenhouse is the best place for hard-wooded Heaths.—S.]

## Questions.

**Viola altaica.**—Can any of your readers inform me where I can obtain this plant true? or if it be in cultivation?—V.

**Trees Killed by Field Mice.**—Can you help me? I have been endeavouring for several years to raise young trees in a situation exposed to the ravages of rabbits and to the blasts of a cutting sea wind. By dint of the greatest care and constant re-planting I was beginning to get up a very creditable show when a new enemy appeared. He is the field mouse. During the last winter he has most effectually spared me the trouble of thinning by eating off—2 in. or 3 in. below the ground—about 30 per cent. of my plants, generally selecting those of about 1 in. in diameter. I should have been in doubt as to the depredator, the "cut" being as clean as if done with a sharp knife, but for the teeth marks, which are perceptible on close examination, and from seeing the great number of mice and their holes in the plantation. This mouse does no mischief in the summer time, having no doubt plenty of his natural food, but I

fully expect him to favour me again during the autumn and winter, and I should be glad, with someone's help, to try a return match with him.—R. F.

## HEADING DOWN WEAKLY PLANTS.

I AM not an advocate for the indiscriminate and undue use of the knife; but in the case of weakly plants, with long, thin, naked stems, amputation is often necessary. Hundreds of instances might be given where the simple process of cutting off a plant's head has been the means of prolonging its life, and enabling it to attain to a much higher state of development than would have been possible if it had been compelled to draw its supplies through the old narrow channel; and, of course, the treatment that opens up a new life to the stem and branches of a plant calls for and encourages renewed activity at the roots, and so every part of the plant feels the impetus of the new outlet, and the stimulus imparted by increased activity in the circulation. The best time to head down any plant that may require it is just before the flow of the sap commences in spring. If bleeding takes place, the wound must be cauterised, or be coated with some kind of styptic. The liquid substance called knotting by painters is a very simple remedy in most cases, and easily applied; and wherever there is a likelihood of this being required, it should be applied at the time the wood is freshly made, and not deferred till the sap begins to exude, or it will be more difficult to stop it. Some judgment is necessary in selecting the subjects to be operated on, as the measure of cutting off a plant's head is a drastic one, and should only be applied to very young plants to strengthen their base, or to old sluggish specimens whose channels of communication and circulation have lost their elasticity. In either of these cases heading down will be beneficial. The Clematis or Wistaria on the wall or trellis will start with renewed vigour after being cut back. The old Grape Vine will, by the same process, be brought into a more active state of existence; and the same means will in like manner invariably produce like results, always provided the necessity for its application exists. No one, of course, would expect to gain anything by heading down a plant in vigorous health, and much harm might be done thereby. E. HOBDAV.

**Note from the Royal Academy.**—In the picture by W. J. Mueckley, No. 117, in the second room, entitled in the catalogue "The Night-blowing Stock," there is evident, to any horticulturist who may take the trouble to examine it, a curious series of errors resulting from ignorance of the most ordinary nomenclature of common garden flowers, which should not exist in any one who attempts to paint them, or exhibits his portraits of them in public. In the first place, there is no such plant as the Night-blowing Stock, that which approaches nearest to that description being *Mathiola tristis*, the Night-scented Stock, which, though its blossoms are fully expanded during the daytime, does not begin to exhale its delicious perfume till the close of the day, and continues to do so during the night. Next, the picture in question does not contain any representation of this plant, the flowers portrayed therein being those of the common double white Rocket, the large single orange-scarlet Poppy, and some purple flowers whose identity it is difficult accurately to determine. Hence, then, the singularly inappropriate title?—"Field."

**Skeleton Leaves.**—At a recent meeting of the Scientific Committee of the Royal Horticultural Society, Mrs. Cussons, of Southport, exhibited some skeleton leaves, and along with them sent the following note:—"For the dissection of leaves I find the process of maceration too long and tedious, to say nothing of the uncertainty as to the results; I have therefore adopted the use of alkali in saturated solution, the specimens to be introduced while the liquid is heated to the boiling point. The time of immersion to be regulated by the character of the various leaves, and the nature of the epidermis to be removed. When the specimen is freed from epidermis and cellular tissue, it must be subjected to the action of chlorine to destroy the colouring matter. The introduction of peroxide of hydrogen serves not only to render the lace-like specimens purer in colour, but also preserves it. In destroying the colouring matter in Ferns this also is invaluable; added to the chlorine, it gives a solidity to the bleached fronds, and appears to equalise the action of the chlorine. For skeletonising capsules the slow process of maceration by steeping in rain-water is alone available—a moderate heat may be applied to hasten the process, but alkali is useless. The only known flower which can be dissected is the *Hydrangea japonica*. The fibrous nature of the petals renders it easy to skeletonise in the perfect truss in which it grows. Skeletonised leaves and capsules appear to gain in the process a toughness and durability not possessed by them in their natural state."

## THE FRUIT GARDEN.

### APPLES ON THE PARADISE STOCK.

ONE of the greatest drawbacks to the planting of abundance of fruit trees has been the erroneous idea that many years must elapse before any fruit would repay the labours of the planter. If any one needs the fallacy of this impression to be proved beyond a doubt, more especially as regards that king of hardy fruits, the Apple, I would recommend a visit to be made at once to the principal nursery grounds round London in which fruit trees are made a speciality, and the most approved system of culture adopted to ensure early fruitfulness, combined with a dwarf habit of growth to fit the trees for positions where large, wide-spreading branches would not be admissible. A few days since I saw at Messrs. Veitch & Sons' Fruit Tree Nursery, Southfields, Fulham, several very large breadths of all the best free-bearing kinds, both early and late, so loaded with fruit as to need considerable thinning—Lord Suffield, Keswick Codlin, Cellini, and Hawthornden being already quite large enough for culinary purposes. I need scarcely remark that in a season like the present, when Gooseberries are, as a rule, a thin crop, early Apples will prove a welcome addition to the list of culinary fruits. The Paradise Stock appears effectually to moderate over-luxuriance of wood-growth, and to concentrate the energies of the tree on fruit and fruit-buds. I need scarcely enumerate the advantages of planting this class of fruits in gardens of all kinds, more especially in those of limited extent. Even a good selection of kinds for various seasons may be accommodated in the smallest of gardens, for, if kept closely spurred in they may be planted as closely as Gooseberry or Currant bushes and kept down to nearly the same size. A row of trees as a background to central flower borders, or as an avenue through the kitchen garden, would prove a profitable investment. The flowers in spring and fruits in summer and autumn would hold their own against any ribbon border in existence. Abundance of wholesome fruits would be secured from positions that are in many instances producing nothing. There is no good reason why we need import such quantities of hardy fruits as we do, as I feel confident that all our wants might be supplied at home, and amongst the first considerations of consumers should be to see if they cannot at least partially supply their own wants. A few dwarf Apple trees on the true Paradise Stock as single specimens on Grass or as centres to beds might be tried in even the smallest of gardens.

J. GROOM.

**The Frogmore Golden Peach.**—This handsome Peach, as its name implies, originated in the Royal Gardens, Frogmore, a few years ago, and is the result of a cross between the Bellegarde Peach and Pitmaston Orange Nectarine, from which latter parent it inherits its yellow flesh. The fruit is of the medium size. It is evenly shaped, having a shallow suture, and is but slightly indented at the crown. The skin is of a dark brownish-red when fully exposed to the sun, fading off to a golden yellow when shaded. The flesh is tender, fine-grained, and of a yellow hue, except near the stone, where it is tinged with red. It parts freely from the stone,

and is of good quality, with a fine Peach flavour. The trees are of a free and healthy habit, and not at all subject to mildew. It belongs to the section producing large flowers, and is provided with smooth leaves, having globose glands. The flowers are of a deep pink colour, so that when in blossom the tree forms an object quite worthy of admiration.—"Florist."

### THE APPLE CROP.

APPLE trees generally are again this year fruiting so indifferently, and from many the early fruit has dropped so much, that I fear it will be found at gathering time that not more than a very moderate quantity has been left to store. In my ground here I have a row of over sixty trees, chiefly of bush growth, and including fifty sorts. It is, therefore, a matter of interest in such an uncertain season as the present to go over these, and note what kinds are carrying fruit and what are not. As all the trees are fully exposed to the winds and frosts, all have the same opportunities and the same dangers to share; and when I find that not more than a dozen trees have anything like a crop, and but a few more carry just a sprinkling, I cannot but conclude that, great as the opportunity may have been, the dangers have undoubtedly been greater, as few of the trees did not bloom freely in the spring. The first fact that presents itself is this, that the less robust kinds are the only free fruiters, whilst the coarse growers have few or none. Had all the trees been of the dozen good-fruited kinds only I should have had a large crop. The sorts in good fruit are the Hawthornden, Lord Suffield, Mother Apple, Cellini, Holland Pippin, King of the Pippins, Sturmer Pippin, Downton Pippin, Warner's King, Winter Peach, Petworth Nonpareil, and the Seraphoffe Apple, a kind that nearly resembles King of the Pippins, but is smaller, handsomer, and of richer flavour. Nearly all of these kinds are free fruiters, that is to say, they do not expend their strength in riotous shoots, that have to be cut away from year to year, but rather produce good fruit spurs and well-seasoned woody shoots that will be properly fruitful in years to come. The result thus seen would serve to show that the early frosts were not responsible for all the present deficiency of Apples, but that much was due to the excessive and unfruitful vigour of the trees engendered by a previous free-growing season. All of my trees are on the Crab stock, and this is found to suit only the weak-growing kinds. If all the coarse sorts were on the Paradise stock, no doubt these would be fruiting as freely as are their weaker brethren. Some sorts even on the Crab stock do not make quite such a robust growth as could be desired, and therefore it might be worth trying in their case the process of double grafting, working first, say, Blenheim Orange, and then on that the weaker kind. As a reverse case, it may be worth a trial, whether, by first working some weak kind, such as Hawthornden or Downton Pippin, on the Crab stock, and then Blenheim Orange, Reinette du Canada, and others on to these, it would be possible to reduce the tendency to make wood and induce early fruitfulness. This is a subject well worthy the attention of fruit growers, and I trust that some one will give us their experience in the matter.

A. D.

**Apricots in Covent Garden.**—Large quantities of Apricots from Spain are now sold by auction in Covent Garden Market; they are of medium size and of better quality than they were last year.

END OF VOL. XIII.









