The English flower garden of hardy and half-hardy plants / by W. Thompson ; with ninety-three figures, beautifully coloured from nature.

Contributors

Thompson, William, floriculturist.

Publication/Creation

London : Simpkin, Marshall, and co., 1855.

Persistent URL

https://wellcomecollection.org/works/rz2mwzy4

License and attribution

This work has been identified as being free of known restrictions under copyright law, including all related and neighbouring rights and is being made available under the Creative Commons, Public Domain Mark.

You can copy, modify, distribute and perform the work, even for commercial purposes, without asking permission.

Wellcome Collection
183 Euston Road
London NW1 2BE UK
T +44 (0)20 7611 8722
E library@wellcomecollection.org
https://wellcomecollection.org

THE ENGLISH FLOWER GARDEN

lips dlps

In my dear Wife's
29 July 1857.
In remembrance of our Wedding day
29 July 1846
from her fond Husband.
Geo: Stevens.

22900342486

Med
K5402

To Miss Jacob from
W. G. Channey in
memory of her friend
M. L. Heron
25 June 1874


Cabinet
Portrait.
CHANCELLOR. PHOTO.
REGISTERED.
LOWER SACKVILLE ST. DUBLIN.



1 *Pharbitis Learii* – 2 *Tropæolum umbellatum*

THE

English Flower Garden,

OF

HARDY AND HALF-HARDY PLANTS.

BY W. THOMPSON.

'God made the flowers to beautify
The earth, and cheer man's careful mood;
And he is happiest who has power
To gather wisdom from a flower,
And wake his heart in every hour
To pleasant gratitude.' WORDSWORTH.

With Ninety-three Figures, beautifully Coloured from Nature.

LONDON:
SIMPKIN, MARSHALL, AND CO., STATIONERS' HALL COURT.
MDCCCLV.

24227

WELLCOME INSTITUTE LIBRARY
Coll. wellMOmec
Call No. QK

PREFACE.

In the following pages an attempt has been made to figure and describe some of the most interesting hardy plants. With the necessary historical and cultural details, it has been the aim of the writer to mingle such allusions to the most attractive features in their œconomy as might serve to establish those associations which, to an intelligent mind, constitute the greatest charm of the Flower Garden; while, in place of mere empirical directions, he has referred, as opportunity offered, to those leading principles involved in horticultural operations, which are applicable to classes, as well as to individual plants. Much miscellaneous interesting matter, connected with Botany and Gardening, will be found interspersed throughout the work; and, with regard to the figures, it is believed that, while in the fidelity of delineation and colouring they are inferior to none published, the reduction in size, which in the case of many of them has been found necessary, so far from being a disadvantage, is but a guarantee against the exaggeration so commonly met with in similar works.



Oxalis Cernua.



Unique Pelargonium.



Torenia Asiatica.



Dicbyfra Spectabilis.



Ribes Albidum.

THE

ENGLISH FLOWER GARDEN.

OXALIS CERNUA.

Drooping Wood-sorrel.

Class—DECANDRIA. *Order*—PENTAGYNIA. *Natural Order*—OXALIDACEÆ.

In the very pretty genus *Oxalis*, we have an extensive assemblage of plants of so interesting a character, that it cannot but excite surprise that of more than one hundred species known to Botanists, so few should be seen in general cultivation. The habit of the whole is remarkably neat and dwarf, their colours comprise nearly every imaginable shade, and the simplicity of their culture is such, that the veriest novice can hardly fail in their successful treatment. A few only of the species are perfectly hardy, but a considerable number may be grown in the open borders during the summer and autumn; of many, however, the flowers are produced at so early a season of the year, that they are chiefly cultivated in pots, for which all of them are admirably suited; and it is from this section of the genus that our illustration is taken.

The *O. cernua* possesses, in a high degree, the qualifications we have attributed to the whole genus; its flowers are of the purest yellow, of a delicious jessamine-like fragrance, and produced in greater abundance than in any other species of our acquaintance. On a bright sunny morning, a pot of this plant will present up to noon a perfect blaze of beauty; but, as in the case of the rest of the genus, its flowers remain closed in cloudy weather, or where no direct sunshine penetrates.

As in most of the other species, the root is a small bulb, from which arises a very short underground stem or stipe, to which the leaf-stalks are articulated, The leaflets, sprinkled with russet brown spots, are so broadly heart-shaped that they may be termed two-lobed, which, with its many-flowered umbel, serves to distinguish it among the stemless species. While young, the leaflets are, at the approach of evening, folded back against the petiole, expanding with the return of the morning light; but the older leaves appear to lose gradually this sensibility to the solar radiations, and remain folded under all circumstances.

The umbel of flowers, consisting of eight to twelve blossoms, sometimes more, is supported on a smooth peduncle, or, to speak more correctly, scape, six or eight inches long; and as each bulb throws up at least half-a-dozen scapes in succession, the flowering season of the plant may be fairly said to extend over a period of two months.

Cultivation.—After blooming, the plants should be exposed in a sunny corner, out of doors, water being gradually withheld. By degrees the leaves will assume a yellow tint, and finally fall off; and in this condition the pots containing the bulbs should be placed aside, and kept perfectly dry until the season arrives for repotting them. If the ball of earth be now examined, a strong fibre may be traced from the surface-bulb quite to the bottom of the pot, and usually terminated by a cluster of young bulbs each of the size of a nut. A pot, planted originally with three bulbs, will often contain, after flowering, a dozen or more full-sized roots; so that abundant facilities are offered for its propagation. At the base of the old bulb, which perishes, and also upon the short stipe proceeding from it, small offsets are often produced; but they are too minute to be available for the ready increase of the plant. At the end of September, about which time the roots will begin to grow, they may be repotted in sandy loam, with a little peat or leaf-mould, planting them, if large, singly, in a four-inch pot, about an inch below the surface; but it is preferable to place from three to five or six bulbs in one of rather larger diameter, a good drainage of pot-sherds or fragments of charcoal being indispensable. If the weather is mild, the pots may remain in a warm nook out of doors, due precaution being taken to protect the plants from those pests of the gardener, slugs, snails, and worms; but on the approach of frosts, they should be removed either to a cold frame, or, in the absence of this, to a cool window of south aspect, where plenty of air can be admitted in mild weather. A dry hot atmosphere is injurious to the plant, it should therefore be grown at a comparatively low temperature, and be removed to the sitting room only when about to flower. If potted at the period named, it usually begins to blossom about the end of March, but this depends in some degree on the temperature in which it has been kept. If the roots were preserved in a dry state until January or February, we think it highly probable that they might be planted in the open borders with the protection of a hand-light, and would then flower in May and June, but without this covering it would be imprudent to risk the bulbs. The treatment of all the winter and spring flowering species may be assimilated to that of the *O. cernua.*

Our plant is not a recent introduction, having been brought, as long since as the year 1767, from the Cape of Good Hope, of which country nearly one-half the species are natives. It was purchased by us as *O. flava*, which is, however, a species of a very different character, with digitate leaves, and one-flowered peduncles. The trivial name of the plant is by no means distinctive, for there

are many species the flowers of which droop before expansion; nor is the term more applicable to the leaves.

The genus derives its name from the Greek word *oxys*, sour or sharp, in allusion to the acid properties of many of the species, due to the presence in their tissues of oxalic acid, usually combined with potash. It is scarcely necessary for us to observe in these days of diffused chemical knowledge, that the potash is the only constituent of the combination thus formed (termed by chemists the bin-oxalate of potash) that is derived from the soil, the oxalic acid being elaborated in the plant through the agency of the carbonic acid of the atmosphere, that grand store-house from which are drawn the elements of every vegetable product. Formerly the expressed juice of the *Oxalis acetosella* was employed in the preparation of this salt—the *salts of sorrel* of commerce—but the resources of modern science have long since led to the substitution of more certain and cheaper methods of procuring it.

Nor is the genus *Oxalis* the only one in which this acid occurs, for it is constantly present in the common sorrel, *Rumex acetosa*, in the roots of the gentian family, and also in some species of *Saponaria;* in combination with lime, it exists in the rhubarb stalks; and in several kinds of lichen, such as *Parmelia* and *Variolaria*, the oxalate of lime is so abundant, that it forms a hard skeleton or crust. Humble as are these lichens, they are extremely interesting, from the important part they are made to perform in the economy of nature. They are found chiefly on granitic or volcanic rocks, the surface of which, by the combined influence of the atmosphere, and the oxalic acid they contain, they assist in slowly disintegrating, preparing by their decay the means of support for a higher order of vegetation, and thus affording a striking illustration of the truth that, in the laboratory of nature, the mightiest results are often produced by the most insignificant means.

We hope before long to introduce one or two other beautiful species of this genus to the notice of our readers, and we shall therefore reserve till then any remarks on the structure of the Order.

PELARGÓNIUM QUERCÍFOLIUM,

Var. Rollisson's 'Unique.'

Oak-leaved Geranium.

Linnean Class—MONADELPHIA. *Order*—HEPTANDRIA. *Natural Order*—GERANIACEÆ.

NEARLY twenty years have passed away since this plant was raised by Messrs. Rollisson of Tooting, and although, in that interval of time, many thousand seedling Pelargoniums have been 'brought out,' but few equal, and still fewer

surpass it, in the inimitable richness of its purple-crimson colour, and the long period during which its large trusses of flowers are produced.

We have been obligingly informed by the eminent Florists referred to, that this variety is a hybrid between the old *Pelargonium Daveyanum*, and one of the varieties of the still older *P. quercifolium*, or Oak-leaved Geranium, as it is commonly termed; so that, although its connection with that plant is somewhat remote, it has, nevertheless—to borrow an expression sometimes employed in speaking of objects belonging to the animal kingdom—a few drops of the original sap circulating in its vessels; and we have therefore, in the absence of a better scientific name, ventured to class it as one of the varieties of that venerable species.

The plants composing the section of the genus to which *Unique* belongs, are remarkable, with some exceptions, less for the beauty of their flowers, than for their peculiar scented foliage; as in the well known nutmeg-scented Geranium, *P. fragrans;* the rose-scented *P. capitatum;* the citron-scented *P. gratum;* and the plant figured might, with great propriety, be termed the pepper-scented Geranium, for its foliage possesses a distinct, but, unless when rubbed, by no means obtrusive odour of that rather plebeian condiment. Nor is the variety of forms assumed by the foliage of this class less remarkable than their scent. As the flowers of orchidaceous plants are said to burlesque almost every object in the animated kingdom of nature, so among the species of Pelargonium to which we refer, may be found imitations of nearly every imaginable variety of foliage occurring in orders and genera of the most dissimilar habit and structure; from the linear to the orbicular; from the entire undivided leaf to that cut into the finest capillary segments, all may here find a representative; this section of the genus presenting in this respect a striking contrast to the uniform shape of the foliage of the commoner varieties. Many of these older species have been, however, so completely driven out of cultivation by the popular taste for the Florists' hybrid Pelargoniums, that but few of them are now attainable, and these are chiefly to be found on the cottager's window. The probability that they may be made available for originating by hybridizing a new class of Geraniums, combining the large flowers of the common varieties with the more elegant and scented foliage of the original species, has, however, recently drawn attention to them, and we have no doubt that many interesting results will speedily follow.

The treatment of the varieties usually grown as window plants is so well known, that our remarks on the management of *Unique* need not be very extended. Like the other Geraniums, it is increased by cuttings, which do not root, however, with the same facility as those of the Scarlet and Florist sections. They may be taken at almost any period of the spring and summer months; but where a hot-bed is at command the spring is to be preferred, as the young plants may then

be expected to flower the same season. They are best taken off immediately below the third or fourth joint from the extremity of the branch, and after having the base cut close to the joint with a sharp knife, and the lowest leaves removed, should be planted round the sides of a pot filled with sandy loam, well drained, or else inserted in a stratum of soil superposed upon the hot-bed. They will require to be shaded for some days and will root more quickly if covered with a bell-glass to check evaporation from the leaves.

In the summer months, a simple method of propagation may be followed; the cuttings may then be planted under a hand-light in a shaded border, where they will root without further attention than an occasional watering when the soil becomes dry; if, however, after the *callus* is formed at the base of the cuttings, which will probably be in about three weeks from the time of planting, they are dug up and transferred to a slight hot-bed, the rooting process will then proceed with some rapidity; and if each cutting is potted separately in a small pot, they will suffer no injury by being disturbed after roots are protruded. A large hot-bed is by no means necessary; in the warmer months of the year, three or four barrowfuls of stable manure will be amply sufficient for cuttings of this or any other plant, and a good hand-light may be substituted for the frame and sash usually employed.

The suckers which are generally thrown up close to the stem of old specimens are available for propagation; they should be removed with a piece of the root attached. There is another method by which the plant may be increased, which involves much less trouble than those already suggested. Specimens which have been suffered to remain unpruned generally assume an awkward leggy appearance; if these are turned out into the borders in May, the stems can be readily pegged down, and their lower portions buried in the soil, leaving only the green upper extremities exposed; if one of the buried joints be notched, roots will be protruded during the summer, and in autumn, when the plant is dug up, these rooted branches may be separated.

The *Unique*, and its varieties, prefer a stronger soil than that in which the Geraniums are usually grown; good fibrous loam, with a little leaf mould, suits them well, but they will do in any soil not too sandy; rooted cuttings when first potted off should, however, have a more porous material. For bedding purposes, plants at least one year old should be employed, smaller specimens struck the same season being much less effective.

Besides the crimson *Unique* now figured, there are several other varieties differing chiefly in the colour of their flowers; they are best known among the trade by the several names of purple, lilac, scarlet, and white *Unique;* all of them are beautiful plants, and the last especially deserves mention for its novel tint.

DIELÝTRA SPECTÁBILIS.

Moutan Dielytra.

Class—Diadelphia. *Order*—Hexandria. *Natural Order*—Fumariaceæ.

Few of our readers who are acquainted with this plant will, we imagine, be disposed to differ from us, if we venture to pronounce it not only the handsomest of its Order —the Fumeworts—but even of all spring-flowering herbaceous plants. Its elegant pale green foliage, recalling on a smaller scale that of the Tree Pæony or Moutan, a resemblance to which its English name alludes, the singular beauty of its large rosy flowers, and their highly curious structure, all combine to make it one of the most interesting acquisitions which our hardy perennials have received for the last half-century. Its claims on the Horticultural world are further strengthened by the fact, that, although a hardy border plant, it is equally adapted for the greenhouse or window, in either of which situation it may be had in flower at a very early period of the year; and it is therefore not surprising that it should have been welcomed by all classes of Florists with enthusiasm.

It is by far the most robust of the species yet introduced, attaining in good soil the height of two feet or more, and an established specimen will often cover a square yard of ground. Although termed a spring flower, it does not, however, when treated as a hardy plant, bloom before June, and continues in flower up to the month of August. The racemes of flowers are very numerously produced, and consist usually, in the terminal ones, of from ten to fifteen blossoms, though for convenience sake only a few are shown in our figure, where they are also much reduced in size, each blossom measuring an inch and half in length and one in breadth. The form of the flower is so striking as at once to arrest the attention of the observer; the two outer petals are inflated at their base, and in the earlier stages of their growth cohere by the tips, but are finally reflexed, exhibiting the two inner petals in a beak-like form which encloses the stamens and style. The two sepals are very minute, and falling off at an early stage, will be found only on the immature buds at the extremity of the racemes.

When grown in the open border, it will be advisable to plant it in soil only moderately retentive; for, although there can be no doubt that it is quite hardy, it will be prudent to guard against the evils resulting from too great a degree of moisture in the soil. In sandy loam it would be perfectly safe, but the plant would perhaps be less robust in its habit, and produce fewer flowers. When cultivated in wet soils, much risk may be obviated by protecting the roots in winter with some impervious covering; in the absence of any thing more suitable, an ordinary

flower-pot may be employed for this purpose. We are by no means friendly to the indiscriminate use of supports in the flower-garden, but the stems of the Fumeworts being somewhat brittle and succulent—and our present illustration is no exception—it will be desirable to secure the principal stalk of the plant to a slight rod, which, if not too long and obtrusive, can be employed without in any degree detracting from its graceful mode of growth. A partially shaded situation will be by no means objectionable.

When grown as a window-plant, it produces its flowers a month or two earlier than when exposed to the rude changes of an English spring. In cultivating it with this view, the plant after flowering should be allowed to remain out-doors during the summer and autumn, until the stems have died down and the fleshy roots become dormant, when, at the approach of winter, the pot may be removed to the window of a cool room, the soil being kept in a slightly moistened condition. While dormant, and during the first stages of its growth, it might be placed in a fire-warmed apartment, though we do *not* recommend such a course; but when the plant has made some progress, and the leaves are fully expanded, the dry atmosphere of a heated room would be prejudicial to its health, and the pores of its delicate foliage become choked with dust; if kept at a rather low temperature, its flowers will continue in perfection for a considerable period.

For a strong plant, a pot of not less than six or eight inches diameter is desirable, and the soil may be a rich loam, such as would be produced by the gradual decay of turf from an old pasture; or in the absence of this, any good garden soil, mixing it, when deficient in vegetable matter, with a little peat or leaf mould, and when too sandy, with a portion of good loam; for we have not to fear the effects of frost as in the open border.

The directions we have given for its growth in pots apply only to those cases in which no other accommodation is available than that afforded by a window; but where there is the convenience of a cold frame, an accessary we should be glad to find in every garden even of the smallest extent, the plant will, as a matter of course, be allowed to winter there, and need only be removed to the window when the flowers are partially developed.

The plant may be readily increased by careful division of the roots in early spring, or by cuttings taken off at a joint, and struck in white sand under a hand glass. From their succulent nature, some care is necessary to prevent the cuttings from damping off; and to avoid this the glass must be wiped every day, and removed at the earliest period after they have emitted roots. In the summer they will succeed planted in a shady border under a small hand-light.

Seeds are occasionally produced which may be sown in a pot of light soil as soon as ripe; in which case, it will be advisable to protect the young plants during the first winter, or the sowing may be deferred until the following spring, when the

plants would, if raised early in the year, acquire sufficient strength to bear exposure in the open air in the ensuing winter.

Few gardens are without some species of *Fumaria* or *Corydalis*, two genera closely allied to that which our illustration belongs; and it may, therefore, not be altogether uninteresting if we notice the principal points of difference between them and the present genus. Both differ from *Dielytra*, in having but *one* petal spurred; and the three genera are further distinguished from each other by the seed vessel; this in *Fumaria* is a *one*-seeded indehiscent nut, and in *Corydalis* and *Dielytra*, a *many*-seeded pod opening by two valves, which in *Corydalis* is more compressed than in the last mentioned genus. The genus *Dielytra* (*Gr. dis*, two, and *elytron*, a pouch or purse) is no named, in allusion to the inflation of the two outer petals at their base; in some botanical works the name is erroneously given as *Diclytra*. Eight other species are recorded, *bracteosa*, *Canadensis*, *cucullariâ*, *eximia*, *formosa*, *speciosa* and *tenuifolia* from North America, and *lachenaliæflora* from Siberia. The whole of these, with the exception of *eximia* and *formosa*, are very rare, if even they are in cultivation in this country, which we are inclined to doubt; *formosa* is an old inhabitant of our gardens of some interest, although much smaller in all its parts than *spectabilis*; *eximia* is somewhat less common, but is more desirable.

Our plant appears to have been known to Linnæus under the name of *Fumaria spectabilis*, but it is only since its introduction into England in 1846 from the North of China, by the London Horticultural Society, through the medium of their collector Mr. Fortune, that it has come into cultivation in this country.

RÍBES ALBÍDUM.

White-flowered Currant.

Class—PENTANDRIA. *Order*—MONOGYNIA. *Natural Order*—GROSSULACEÆ.

THIS plant is a variety of the red-flowered currant, *Ribes sanguineum*, a shrub now found in every garden of the smallest pretensions, and was raised from seed about nine years since, in the gardens of Admiral Sir David Milne, Inveresk, near Musselburgh.

From the perfectly hardy character of the parent species and all its varieties, the ease with which they are propagated, and the beauty of their pendant flowers, which enliven the garden at a period when but few shrubs are in blossom, they are well deserving the place they occupy in the public esteem. The variety *albidum*, as well

as *sanguineum*, varies in the colour of its flowers according to the soil in which it is grown, being palest in sandy soils; but it is probable that much of the differences observable in distinct specimens, may arise from the natural tendency of the plant to variation when raised from seed. The best varieties are slender-stemmed, and quite deciduous, but we have seen a specimen with a coarse arborescent stem, dense foliage, almost evergreen, and flowers of far less ornamental a character, followed by prodigious crops of insipid black berries.

They will thrive in almost any soil, but succeed best in such as is moderately rich and moist, the natural habitat of the species *sanguineum* being often in the neighbourhood of the Californian streams. Cuttings of the ripened years' wood, taken off in autumn, and treated as those of the common gooseberry, will root readily in a sheltered border.

With the exception of the equally interesting *Ribes aureum*, or golden-flowered gooseberry, the plant now figured, with its sister varieties, are the only members of the Ribes family commonly found in cultivation, which, considering the beauty of many of the remaining species, is a matter of surprise. Among those less known, we may mention the elegant *Ribes speciosum*, with red flowers and long projecting stamens; the *R. cereum*, or wax-leaved currant, with roundish glandular leaves, covered with a thin layer of a wax-like substance; the *R. punctatum*, from Chili, with dotted leaves, and greenish yellow flowers, borne in erect racemes; and handsomer still, the snowy-flowered gooseberry, *R. niveum*, with flowers of the purest white, and berries of a deep rich purple colour, which, unlike those of the other flowering-species, are of an agreeable flavour, and, according to Dr. Lindley, 'when ripe, make delicious tarts, and would probably form an excellent means of improving the common gooseberry, by hybridizing.'

All who have ever gathered a gooseberry—and who has not?—have, we do not doubt, heartily wished the bushes thornless, but they would scarcely prefer the habit of another of the family, *Ribes Menziesii*, published by Sir James Smith under the appropriate name of *R. ferox*, which he describes as 'a very remarkable species, whose branches are thickly covered with tawny setaceous prickles, about a quarter of an inch in length, and armed under each bud with three very strong and pungent ones, an inch long, having sometimes lesser reflexed prickles at their base;' and what is worse, the *young berries* are 'covered with prominent glandular bristles, which harden, as the fruit advances, into stiff sharp spines, so that whatever its flavour may be, it seems perfectly inaccessible in the common way of eating gooseberries.' Another species, *R. cynosbati*, the dog-bramble gooseberry, a native of Canada, has also prickly fruit.

Nearly all the Ribes grown as ornamental shrubs are natives of the North American Continent; one or two, however, are found only in South America, and a few in Siberia, Hungary, and other parts of Europe.

TORÉNIA ASIÁTICA.

Asiatic Torenia.

Class—DIDYNAMIA. *Order*—ANGIOSPERMA. *Natural Order*—SCROPHULARIACEÆ.

THIS lovely plant, when first introduced, was supposed to require stove treatment; and had this proved to be the case, the present number of our little work would have been deprived of one of its most attractive features. Fortunately for us, although the plant undoubtedly needs a warm atmosphere in the winter season, it will, during the summer months, bear a considerable reduction of temperature below that originally believed to be necessary for its healthy condition, growing luxuriantly in the green-house, or the window of an ordinary apartment, and, under certain conditions, in the open air.

As its specific name implies, it is a native of Asia, 'growing throughout Bengal, in Amboyna, Ceylon, Merqui, Chittagong, Sylhet, on the Madras Peninsula, and it is also widely diffused in alpine regions.' By some writers it is said to be an annual plant; but as it may certainly be preserved, in a proper temperature, one or two winters at least, this designation can hardly be correct; though it may be raised from seeds, and treated as an annual.

Its pale-green serrated foliage is not devoid of interest, but its chief attraction resides in its charming violet flowers, which are produced profusely through the summer months up to a very late period; they are of that peculiar rich velvety tint which the pencil of the most skilful artist is inadequate to imitate successfully, (for 'who can paint like nature?') especially in the two lateral lobes of the corolla, where it is most intense; after the flower has been some days expanded, it loses a little of its depth, particularly if exposed to strong sunshine.

The young Botanist will be interested in observing the stamens, which, as in nearly all the Figworts—to which Order our plant belongs—are didynamous, or in two pairs, one of which is considerably longer than the other; in both pairs, the filaments are so curved as to bring into contact the one-celled anthers, which adhere closely to each other; and at the base of the two longest stamens will be found an appendage, differing but in length from the filament itself, and which is one of the distinguishing marks of the genus *Torenia*. The stigma is divided into two flat lobes or lips, as in the different species of *Mimulus*, and exhibits the same curious sensibility to touch, closing when irritated, as is seen in that genus; this fact appears to have hitherto escaped the notice of Botanists. Many of the Figworts have round stems, but in *Torenia* it is four-angled.

It is of the easiest possible propagation, cuttings two or three inches long, planted under a glass in a pot of light, moist soil, and placed upon a warm window, rooting with even greater readiness than the well known *Cuphea platycentra*, which is one of the quickest-rooting plants with which we are acquainted. The plant affects a vegetable soil, and will do well in a mixture of peat or leaf-mould and sandy loam, with well-drained pots of moderate size.

When grown as a window plant, it is best trained upon a flat trellis, which, from its rapid growth, it will speedily cover; and to induce its lateral extension, the extremity of the shoots should be frequently pinched off; or the pot may be suspended, and the branches allowed to trail downwards, in which position the elegant habit of the plant, combined with its lovely blossoms, renders it a highly interesting object. We are inclined to believe that, during the summer months, this plant may be cultivated as successfully at an ordinary window as in the best green-house, as it will there enjoy a greater amount of shade, and the duration of the flowers be proportionately prolonged.

We have hinted at the possibility of its employment as a bedding-plant, but we are unable to offer any observations as the result of personal experience. It has been stated, apparently on good authority, that the plant will endure the open air in our climate in summer, and in the southern counties it might probably succeed, but we doubt whether the experiment would be successful far north of London. We intend to test the matter fully during the present season, and in the meantime, we advise such of our readers as may feel disposed to try the experiment for themselves, to adopt the following precautions. Let the plant be one of moderate size that has been grown at a *low* temperature; let the soil be such as the plant naturally delights in, as where this is too tenacious, no success can be reasonably anticipated; and lastly, ensure a certain amount of shade, by selecting a warm corner of the garden in which the sun does not shine during the entire day.

When the tropical character of its native regions is considered, it will excite no surprise that it should require some care for its preservation during the cold months of our winter; but we think that, in an apartment in which the temperature does not descend much below 50°, no difficulty will be found in keeping it alive, provided that it is not too frequently watered.

The genus *Torenia* commemorates the name of Olof Toren, a Swedish Botanist of some eminence. About six other species have been introduced, one of which *T. scabra*, a plant well known to gardeners, may be cultivated as a half-hardy annual. *T. concolor*, introduced a year or two before *Asiatica*, is an interesting species, the flowers of which are entirely of a deep blueish purple, and coming from Hong Kong, it is rather more hardy than the plant we have figured.

THE MICROSCOPE AND THE FLOWER GARDEN.

The flower garden is but too often valued merely as an ornamental adjunct to our dwellings; sometimes for the more obvious beauties of its individual treasures which delight the eye by the elegance of their forms, the brilliancy of their varied hues, or enchant the senses by their delicious odours; or, it may be, for the healthful exercise afforded by the different manual operations connected with gardening; but in how few instances are the inhabitants of the parterre regarded as so many sources of the highest moral and intellectual gratification.

We might point out, for example, the numerous pleasurable associations arising from a knowledge of their natural habitats; their various uses in the arts, manufactures, and the science of medicine; the opportunities they present for the exercise of the observant faculties, and above all, the delightful lessons afforded by their structure and œconomy of God's wisdom in creation, and of His love to man.

In the case of many plants, these are sufficiently evident even to the unassisted eye, 'that he who runs, may read,' but the minuter details of organization are not generally discernible without the aid of that wonderful instrument which has done so much to reveal the secrets of vegetable and animal life. In the following brief and simple outline, we have endeavoured to indicate how easily the microscope may be made available for amassing a store of the most interesting botanical facts; but the field is so vast, that we can do little more on the present occasion than place the reader on its verge, whence he may catch a distant glimpse of the teeming wonders which will offer themselves to his observation as he advances.

The too general disregard of this valuable auxiliary of modern science, seems chiefly attributable to the commonly received opinion, that the microscope is not only an expensive instrument, but that it demands much time, attention, and nice manipulation. And if the compound microscope be employed, these are certainly conditions which must be fulfilled; there is however but little necessity, except in very minute investigations, to make use of the high magnifying powers with which we are thus furnished. For all ordinary purposes, the well-known Stanhope Lens, which is one of the cheapest and most powerful single microscopes that has yet been proposed, is sufficient; and it is to this simple instrument that reference will alone be made in the course of our observations.

But before directing our attention to the graceful and richly adorned occupants of the parterre, we may be permitted to take a hurried glance at one of those verdant patches which, delighting in the shade, are to be observed upon almost every garden wall, and which, regardless alike of the nipping frosts of winter,

and the withering droughts of summer, represent the humble, numerous, and very interesting tribe of flowerless plants—the *Musci* or Mosses. We will select then, as a familiar type of it, a single specimen from the minute and almost countless organisms which compose the 'mantling mass of mossy verdure'; this miniature plant being appropriately named, from its general habitat, the Wall Tortula, or *Tortula muralis*. It presents to our notice a hair-like stem, growing from a tuft of light green, oblong, carinated leaves, the nerve or midrib of each of which terminates in a lengthened, colourless, transparent point; the stem itself being surmounted by a green or brown oval body, called the *theca* or *sporangium*, which is the part more especially deserving of microscopic examination. If the plant be in a growing state, this little urn is covered with a green conical lid or *calyptra*, upon removing which, another peak-like cap or hood makes its appearance, the latter, called the *operculum*, closing the mouth of the *sporangium*. Beneath this, we discern in a mature specimen a number of very beautiful spirally-twisted hairs, arising just within, and surrounding the orifice of the *theca*. This fringe of hairs, although not an universal, is a very general characteristic of the Moss Tribe; and it is a remarkable fact, that in all the species furnished with it, the number of teeth which it includes is either 4, or a multiple of 4, that is, 4, 8, 16, 32, or 64. In the Genus *Tortula*, for instance, to which our little plant belongs, there may be counted thirty-two teeth in the *peristome*. The office performed by the teeth has not yet been fully ascertained, although, as Dr. Lindley observes, it 'seems to be connected with the dispersion of the spores.' These spores or germs are contained in a delicate bag or membrane, which encloses the *columella*, or central column of the *theca*, and are discharged and scattered when the latter arrives at maturity.

Such are a few of the interesting features presented to the microscopic observer by one of the humblest Orders of the vegetable kingdom; each individual belonging to these minute and wide-spread forms bearing ample testimony to the truthful spirit of the beautiful lines addressed by the unfortunate Mungo Park to a little Moss which he beheld growing amidst one of the dreary wastes of Africa:

'Oh! lovely plant, what care, what power,
In thy fair structure are displayed,
By Him who reared thee to this hour,
Within the forest's lonely shade.'

If from this digression we now turn to that division of the vegetable kingdom to the illustration of which our little work is more especially devoted, viz. the Flowering plants, we shall find proofs equally striking and interesting with those already adduced, of the most admirable contrivance and design.

Professing them to write only for those unacquainted with botanical science, and the use of the microscope, we will select for examination a plant belonging to the well defined Natural Order or tribe, *Compositæ*, or compound flowers, of which the

French Marigold *(Tagetes patula)* may be taken as a common and instructive example. It will be observed that within the dark green cup which forms the exterior whorl *(involucrum)* of the flower-head, there are several florets having a broad yellow strap-shaped expansion striped with brown, these constituting what are called the ray of the flower-head. The little tube in which each terminates encloses a slender forked body, the style, which is well seen with the microscope, as are also the minute hairs *(calyx)* that encircle the base of the tube. But the parts of the flower-head more particularly to be noticed, are the florets which are within the ray, and which are termed collectively the disk. Upon removing one of these florets, we observe the two beautiful *stigmas*, or terminations of a central column or *style*, this being enclosed in a little cylinder, which our microscope shows to be formed of five oblong bodies or *anthers*, united together by their edges, and which contain the fertilizing granules called pollen. The style arises from the summit of a small oblong capsule termed the ovary, in which, upon opening it, we find a single erect ovule or young seed, and crowning the ovary are a few serrated hairs or scales resembling those of the ray florets.

In many plants of the same Order this appendage or pappus is an extremely beautiful microscopic object. That of the Dandelion is well known, and also the hairy or feathery crowns which adorn the seeds of the familiar genera, *Gnaphalium*, *Antennaria*, and *Helichrysum*. In the elegant genus *Zinnia*, the pappus presents two erect awns; and in the common *Kaulfussia amelloides*, that of the ray florets is so divided as to assume the appearance of a fringe. The genus *Valeriana*, the type of the allied tribe *Valerianaceæ*, is likewise noticeable for having the hairs of the pappus at first rolled inwards; but as the seed ripens they expand, and assist in wafting the fruit.

Such, with certain modifications which we need not stop to describe, is the structure of every compound or composite flower, the whole Order being at once recognizable by any one acquainted only with a single plant belonging to it. We may now take a more general view of some of the modifications which the organs of the flowering plants assume.

The anthers of many plants are highly attractive, both from the variations in their forms, and the different mode in which they open to allow the pollen to escape. In the Oleander, the anther terminates at its apex in a long feathery prolongation, and is divided at its base into two lobes, which diverge so as to present an arrow-like appearance. In *Gaultheria procumbens*, a North American shrub, each of the pointed anther lobes is divided in two horns, the entire anther thus having a four-forked aspect. *Erythræa aggregata*, a pretty little plant of the Gentian family, presents us with a curious example of the twisted anther; in *Commelina cœlestis* the three barren stamens have a highly singular form, differing greatly from the fertile ones; and in *Rhexia*, a North American genus of Melastomaceous plants, one

or two species of which are sometimes found in English gardens, the anthers are bent in a very unusual manner, and have a small spur at their base.

In the majority of cases the pollen is discharged by longitudinal openings, but in the Heath Order—to which belong the Azaleas, Rhododendrons, and Ericas of our gardens—the anthers open by pores generally situated at the apex. In the Barberries, each lobe opens by a valve, which rolls up from the base to the apex, while in some of the Laurel tribe there are two such separating valves for each anther-lobe, or four in all.

If from the anthers themselves we pass to their contents, we shall find ourselves transported to a fairy land, peopled with objects of the most elegant and interesting forms; and although the pollen dust of some flowers is extremely minute, and requires a high power for examination, yet, with a good Stanhope lens, we shall be able to advance considerably into this enchanting region.

Among the more remarkable forms assumed by the pollen grains, we may name those of the Passion-flower, Ipomæas, Sun-flower, Chicory, and Evening Primrose. In the first named plant the grains are nearly globular, covered with an elegant network, and opening by several *opercula* or lids, to allow the protrusion of the pollen tubes. In the Ipomæas and Sunflower, the grains are also spherical, but are studded with spine-like processes, and in the Chicory the granules are polyhedral, having as many as fourteen facets. In *Ænothera* they are three-cornered, and are united to each other by extremely delicate threads. As additional and interesting illustrations, we may also direct attention to the pollen of the *Campanula, Phlox, Fuchsia globosa, Pentstemon, Lychnis Chalcedonica*, Tulip, Guernsey Lily, and Marvel of Peru: indeed, in nearly every plant these fertilizing atoms offer something more or less striking and beautiful to the eye of the microscopic beholder.

The central column or style and stigma of most plants will amply repay the trouble of microscopic examination. What a beautiful object it presents, for instance, in the Crocus, Gladiolus, Periwinkle, *Plumbago Larpentæ*, in the Violet Tribe, and in the common Aster! In the last named plant, the style is terminated by two processes or horns, covered with hairs, the stigma itself being on the inner side of the fork, where it may be easily seen by the aid of the lens. The Asteroid section of the Composite flowers, and indeed most of the plants of the Order, are remarkable for their long style, which projects far above the anthers; and were it not for the collecting hairs, as they are termed by Botanists, by which its branches are crowned, and which, during their development, carry up the pollen, and retain it until the stigma is fit for its reception, it is difficult to imagine how the young ovules could be fertilized. Here too, we may remark that, as in the majority of Composite plants, the surface of the pollen grains is covered with the minute points or asperities so strikingly displayed by the Sunflower, their collection and retention by the hairs of the style is consequently the more efficiently secured. Another

peculiarity worthy of notice in most of the *Compositæ*, is the incurved form assumed by the expanded branches of the style; the pollen being thus protected, as beneath a pent-house, from those injurious influences, such as excess of rain or dew, extreme heat or cold, which might otherwise impair, if not destroy, its fecundating power. How admirably does Nature provide against every emergency!

The hairs of many plants equally claim observation, some being forked, others toothed or branched, and a few beaded, of which those at the base of the stamens of the common Spiderwort (*Tradescantia*) are an interesting example. Although apparently very humble organs, hairs for the most part perform an important office in the vegetable economy; the absorption of fluid by the leaves being, in a great degree, effected by their agency; and they are further supposed to act as so many conducting points upon the electricity of the surrounding atmosphere.

Few objects are more beautiful than the delicate spiral threads, which are easily seen in the foot stalks of most leaves by gently breaking them across, and then carefully, and to a slight extent, separating the parts. The leaves of the Pelargoniums, Strawberry, Vine and Asparagus, furnish interesting examples of this curious structure. The spiral fibres are not always confined to the leaves and stem, being sometimes found investing the seed, as in the genera *Salvia* and *Collomia*. To view them with the microscope, it is only necessary to cut off a small portion of the outer coat or testa of the seed, and to place this in a drop of water on a piece of glass, when it will immediately be seen to throw out vast numbers of these curious bodies in every direction.

The *stomata*, or breathing pores, may also be seen in many leaves with the aid of a good Stanhope Lens, particularly those belonging to monocotyledonous plants, such as the Lily, Daffodil, Iris, Gladiolus, Orchis, etc.; it being only necessary to strip off a small portion of the cuticle, by passing a sharp knife just beneath the under surface of the leaf, and to place the transparent film thus obtained upon the less convex side of the lens (the proper mode, too, we may hint of viewing pollen), when by transmitted light the numerous and very beautiful oval and circular bodies referred to are readily distinguishable.

In concluding these brief and desultory microscopic illustrations—designed only, we are anxious to observe, for the uninitiated reader—we may be permitted to remind him that, in the vegetable as in the animal kingdom, every structure, however minute or humble it may appear, constitutes a link in the great chain of creation,

'All being parts of one stupendous whole';

and that in the formation and sustension of the minutest vegetable atoms, the wisdom, power and beneficence of the Great Creator are as fully displayed, as in the majestic laws which guide and sustain the planetary spheres.



Habrothamnus fasciculatus



Calochortus venustus



Grammanthes gentianoides



Pentstemon speciosum



Tropæolum speciosum

HABROTHAMNUS FASCICULATUS,

Fascicled Habrothamnus.

Linnean Class—PENTANDRIA. *Order*—MONOGYNIA. *Natural Order*—SOLANACEÆ.

ALTHOUGH not the handsomest species of the genus, the *Habrothamnus fasciculatus* is well worthy a place in every garden where a suitable situation for it can be found. The plant has been unfairly condemned by some growers, doubtless from their ignorance of its proper treatment; but we are satisfied that all who admit it into their collections and give it a fair trial, will not readily discard it.

In its native country, Mexico, it is an evergreen, and in the conservatory or greenhouse it retains this character; but when grown fully exposed in our climate, it sheds its leaves, or, at least, all but those at the extremities of the shoots.

The foliage partakes of the coarseness so common among plants of the order; but this is amply compensated for by the abundance with which its numerous clusters of orange-scarlet tubular blossoms are produced. The young shoots are clothed with a short reddish pubescence, by which it is distinguished from *H. corymbosus;* but the partially ripened wood retains but little of this woolliness.

It is almost too robust a plant for pot cultivation; but where sufficient room can be afforded, it will flower freely; and as a proof of this, we may remark, that the specimen from which our drawing was made was grown in an eight-inch pot. Although, therefore, there can be no doubt that it is seen to the greatest advantage against a wall, yet for the benefit of those who may desire to cultivate it in a pot, we subjoin the best mode of treatment.

In order to obtain handsome specimens of the plant, some care is necessary in its early management, or the stems are apt to become leggy, in consequence of its natural disposition to grow erect without producing branches. In whatever situation it is grown, the plant invariably throws up strong suckers or shoots close to the old stems, and by availing ourselves of this habit, we may, by proceeding *ab initio*, control its growth, and, in this instance at least, improve upon nature.

Supposing that a plant has been obtained in the condition we have referred to, it will be advisable to cut away the previous year's wood, and, in fact, *all* but the young shoots just mentioned. These, when about six or eight inches high, must be 'stopped,' or, in other words, the tip of the shoot must be pinched off, which will induce the production of lateral branches; and as this stopping will probably give a temporary check to the growth of the plant, it will be better to

keep it on a warm window until these side shoots have made some progress, supplying it with an abundance of water, as it is under all circumstances a gross feeder. As soon as the lateral branches are a few inches long, the plant should be repotted into a large pot, using a good loam with a third of leaf mould, peat, or thoroughly rotten manure, and about mid-summer let it be placed out of doors in a shady place; or it may be plunged into the borders, which will effectually preserve the roots from the scorching influence of the sun's rays; but in this case, a tile must be placed beneath the pot, or the roots will penetrate into the soil beneath, and render its removal difficult.

It is highly important to observe, that the shoots must on no account be 'stopped' late in the season, as the flowers are produced at the extremities of the year's growth; and if the plant were pruned in, as a fuschia or geranium, the embryo crop of blossoms would infallibly be lost. We imagine that it is from want of attention to this circumstance that so many persons have conceived a prejudice against this plant not otherwise to be accounted for.

By the end of the summer the pot will have become filled with roots, and if it is not well exposed to the sun's influence, it will be advisable to remove it to a sunny aspect to ripen the shoots, where it may remain during the autumnal season. If the wood be well matured it will bear, with impunity, a temperature a few degrees below freezing; but as it will, if thus exposed, be liable to lose its leaves, it will be desirable to remove it out of the reach of frost, not necessarily to a window, where it would be but little ornament during the mid-winter season, but to any convenient place, such as an attic, a cellar, or even to a warm shed or outhouse; in no case, however, must it be allowed to become dry, or the foliage will fall.

Towards the latter end of February, or the beginning of March, when the vegetative powers of the plant give signs of renewed activity, it may be removed to the window where it is intended to bloom, and the copious display of flowers which will ensue in the following spring months will, we doubt not, fully justify our commendations.

In its subsequent treatment we do not wish to be understood as advising the removal of the old stems every season; they might be allowed to remain two years, provided sufficient root-room could be afforded it; but to succeed with older plants, a pot of such large dimensions would be requisite, that it is far better, either to follow the plan here recommended, or to raise young plants every season from cuttings, which strike very readily, under a hand-glass, in the borders during the summer, and if taken off early in the season, would flower the following spring.

Planted in the open ground it will attain twice the height of those in pots, and form altogether a more striking object. It is not, however, sufficiently hardy to be grown as a standard, or bush, though were it otherwise, we imagine that with

proper training it would, in either of these shapes, present a very handsome appearance. It is best planted against a south wall, where it will succeed admirably during the warmest part of the year, but will require a little care during the winter season, or rather, at the transition from winter to spring; for it is at this period that the plant commences its growth, and the latent flower-buds develop themselves, and we have, consequently, more to apprehend than in those months when the plant, in common with most of the other members of the vegetable world, is at rest. Trained against the north side of a wall, it would be excited into activity some weeks later; but on the other hand, in such a situation, the shoots would certainly be less matured by the autumnal sun, and therefore less able to resist the effects of a low temperature. Even in the most favourable aspects it will be desirable not only to protect the stems by matting, or, if possible, some waterproof material, but also to cover the roots with a bushel of coal ashes, which are everywhere procurable. With these precautions the plant will live through our ordinary winters; but we dare not undertake to affirm that it will pass unscathed through those of a severer character. It is increased, however, with such readiness, and its growth is so rapid, that it will be an easy matter in such cases to replace the plant by a cutting preserved in a pot through the winter.

It has been advised, to dig up the plant in the autumn and re-pot it, turning it out again in April; and, while the plant is young, this may be done, but as it will in two or three years attain the height of five or six feet, and cover a considerable space with its shoots, it would be an operation of some little difficulty, and we do not recommend its adoption except in the case of young plants.

There are, we believe, three other species in cultivation, in addition to that under consideration, viz. *H. corymbosus*, said to be hardier than the present subject, with flowers of a deep rosy tint, and smooth stems and foliage; *H. elegans*, with smaller flowers of a dull rose colour; and *H. Schottii*, a species or variety with which we are acquainted by name only—all of them natives of the more temperate parts of Mexico, and introduced within the last few years.

The generic name, *Habrothamnus*, is derived from two Greek words, *Habros*, beautiful or splendid, and *thamnos*, a shrub, terms which are, no doubt, equally applicable to hundreds of plants in cultivation; but the number of exotic introductions has been during the last twenty years so great, that it is by no means easy to select designations which are, in all respects, appropriate.

CALOCHÓRTUS VENÚSTUS,

Spotted-flowered Calochortus.

Linnean Class—HEXANDRIA. *Order*—MONOGYNIA. *Natural Order*—LILIACEÆ.

THIS strikingly beautiful bulbous plant was introduced into England nearly twenty years since, long enough, one would have supposed, to have made it a common ornament of our gardens; it is, on the contrary, so rare, that it is only through the obliging courtesy of Mr. H. Groom, of Clapham Rise, whose magnificent Tulip-beds have deservedly gained for him a world-wide reputation, that we are enabled to present our readers with a figure of it.

This rarity can scarcely be attributed to its susceptibility to cold, as this species, with several of the others, is a native of Northern California, where the winters are not much less severe than in England, and the changes of temperature even more trying than in our proverbially fickle climate; we must, therefore, seek for other causes for its partial, and we hope only temporary, disappearance from cultivation. The common Tiger-flower, *Tigridia pavonia*, although brought from intertropical Mexico, is nevertheless so easily grown and increased among us, that good, flowering bulbs may be bought for two or three shillings a dozen, about half the present price of a single plant of the Calochortus.

Like the Tiger-flower, they are very impatient of wet in the winter season, and it is doubtless to the combined effects of cold and moisture at this period, and from want of protection from the autumnal rains, by which the maturation of the bulbs is hindered, that so many of them have perished.

Although brought from a climate where frost is by no means unknown, it is not advisable to risk them in the open air during the winter months; or, if the experiment is tried, it should be only where the soil is sandy, and the bulb at least six inches below the surface, and covered with a large pan or pot to preserve the soil in as dry a state as possible.

Where there is the convenience of a frame to place over the bulbs, they may safely be left in the ground all the year, the protection being of course removed as soon as all danger from spring frosts has ceased.

When this plan cannot be adopted, as the bulbs generally begin to grow before it would be prudent to plant them in the open ground, it will be better to pot them about the middle or end of February, in a soil composed of sandy loam, with a little leaf mould, placing a little sand under and around each bulb, which should

be planted about three inches deep, and an ample drainage of broken crocks must be provided.

The pot must be kept from frost, and if the compost be moderately damp when used, but little or no water will be requisite until the leaves have made their appearance above the soil.

In April the pot may be plunged into the borders, or the entire ball of earth may be turned out, if care be taken not to disturb the roots. In following the former plan, we have the advantage of being able to remove the plant from the ground as soon as the flowering season is past, and thus protect it from rain to any desired extent. When planted without the pot, the bulbs should on no account be dug up before the foliage has decayed; where this does not take place so quickly as is desirable, it may be greatly assisted by covering or screening the plant from atmospheric moisture.

When removed from the soil the bulbs should be dried in the shade, and carefully preserved from damp and frost until the return of spring. Those bulbs which may have been planted in a pot, will, however, be best kept in it during the winter, the soil being allowed to become entirely dry after the decay of the stems and foliage.

Each bulb produces one or two stems about eighteen inches or two feet high, with linear pointed leaves, fewer in number than in most of the other species. The flowers, two on each stem, are produced about mid-summer, and, unlike those of the *Tigridia* we have more than once referred to, remain expanded several days; and from the beautiful manner in which the petals are spotted with crimson and yellow stains upon a pure white ground, present, when fully open, a truly magnificent appearance. The petals of all the species are curiously bearded, either at the base, or a short distance above it, as in the case of the species represented in our plate.

The genus comprises four or five other species, all very handsome plants, although the one we have figured is certainly the most remarkable. The flowers of *Calochortus luteus*, which is rather hardier than the others, are yellow, beautifully spotted with brown; those of *C. macrocarpus*, purple; of *C. splendens*, lilac; and of *C. nitidus*, purple; but we have never met with any account of this last-named species, and we therefore imagine that it has not yet been introduced to this country. They are all increased by offsets, and also by seed, which must be sown as soon as ripe. Three of the species, *C. barbatus*, *C. venustus*, and *C. luteus*, are in the possession of Mr. Groom, as well as seedling varieties of *luteus* raised by this gentleman.

The generic designation, *Calochortus*, like so many other botanical terms, is derived from the Greek, and is compounded of *kalos*, beautiful, and *chortos*, grass.

Well defined as are the leading characters of most of the natural orders or

families into which botanists, for convenience sake, have divided the vegetable kingdom, there are few of them which are not by some of their genera connected with other orders, so that, however dissimilar many of these families may at first sight appear, they all, in reality, merge into each other by almost imperceptible gradations, and form parts of one harmonious whole.

Illustrations of this truth may be readily found in the natural order, the lily-tribe, to which the genus *Calochortus* belongs. In this order, the outer whorl of floral leaves, or sepals as they are termed, are of the same colour and substance as the inner whorl, or petals, being, in other words, petaloid; and, in fact, they resemble each other so closely, that in certain genera it is difficult to distinguish them.

But in the genus under consideration, there is a departure from the type of the order, the three sepals being green and leafy, and altogether different in their appearance to the three petals, approaching in this particular the Spider-wort tribe, *Commelinaceæ*, although in other respects it agrees with the characteristics of the order in which it is placed.

Most, if not all, of the species we possess were sent to the London Horticultural Society from California by poor Douglass, whose untimely end botanists of every land will not soon cease to deplore.

PENSTÉMON SPECIÓSUM.

Showy Penstemon.

Linnean Class—DIDYNAMIA. *Order*—ANGIOSPERMA. *Natural Order*—SCROPHULARIACEÆ.

WERE we so unfortunate as to be compelled to limit our collection of plants to two genera, we think we should, without hesitation, select for one of these the *Penstemons*, and for the other, the *Salvias*.

The genus *Penstemon*, although it scarcely includes so many species, and plants of such varied tints, as are comprised in the sage family, can nevertheless boast of a considerable and increasing number, nearly all of which are plants of a highly ornamental character.

The most prevalent colour of the genus is red or scarlet; there are, however, a few species with blue flowers, of which the plant now figured may be regarded as the oldest, if not the best.

The *P. speciosum* grows about two feet high, and produces its beautiful deep blue

flowers during two or three months of the summer; being generally in blossom by mid-summer or soon after, and remaining in flower until the end of August, or the beginning of September. It is far less common than it deserves to be, and this is perhaps owing to the fact that is is not strictly speaking a perennial, as is usually supposed, for it generally dies at the end of the second flowering season, and consequently requires to be kept up by seeds or cuttings. The seed should be sown as soon as ripe, in pots or pans of sandy loam, and the young plants, which will soon make their appearance, must be preserved from frost during the succeeding winter, in a cold frame. Where this convenience is not at hand, the seedlings must be kept on a window; when this is impracticable, it will be better to defer sowing the seeds until the following March, although, in all probability, but a moiety of them will then vegetate. When potted off in the spring, the seedlings will require a rich soil, kept porous by sand, or very sandy loam, and it will be advisable to protect them, after potting, by any available means from the chilling spring frosts.

At the season when bedding plants are turned out of their winter quarters, the *Penstemon speciosum* may also be planted in the situation where it is designed to bloom the following year, though the plants will take no harm, but rather benefit from being kept in a cold frame until autumn, provided they are, as occasion requires, shifted into larger pots, and daily supplied with air and water.

Where sufficient space can be spared, they will be found very suitable plants for a bed, or a clump of them may be planted together in the mixt flower border; and in either situation they will, when in bloom, form a highly pleasing contrast to the numerous flowers of scarlet hue with which the flower garden abounds in the summer season. Plants with blossoms of clear, unambiguous blue, are not so numerous as could be wished, for there is no colour, we think, on which the eye rests with greater satisfaction than on 'Heaven's own tint.'

We must not neglect to observe, that although the *P. speciosum* is a native of the bleak Oregon territory, it requires, notwithstanding, to be guarded from excessive moisture during the winter season. This may be partially accomplished by covering the earth, in the immediate neighbourhood of the roots, with dry fern, and also by planting the specimens in soil well drained, and of an open sandy texture, supplying any deficiency of vegetable matter by a top-dressing of thoroughly rotten manure in the spring, to be afterwards dug in.

If the plant, after flowering the first season, be allowed to ripen its seed, it is generally so much exhausted by the operation, that it seldom blooms well the second year; but if cut down immediately after the first production of flowers is over, it 'breaks' for the next season. It may be increased by cuttings or slips, taken off in summer and planted in the shade, as well as by seeds, which it ripens freely.

There are several other very showy blue Penstemons, not to mention those of a purple tint, such as the now common *P. gentianoides*, which may frequently be met with seven or eight feet high.

The *P. azureum* is an interesting species of a compact habit, and dark blue flowers; *P. ovatum* has blossoms of a blueish tint, though there are varieties sold for ovatum, and which agree with it in habit and foliage, but which have not blue flowers. *P. Dicksonii*, called also *Chelone Dicksonii*, is a fine plant, at present very rare, as is also a species raised by Mr. Leeds of Manchester, and named by him *P. Gordonii*, in compliment to Mr. Gordon, who collected it in the valley of the Platte River, on the eastern side of the Rocky Mountains.

With the new *P. cyananthus*, said to be the finest of the blue species, we close the list.

The genus Penstemon, or as it is sometimes written Pentstemon, is thus named from *pente*, five, and *stemon* a stamen, in allusion to the fifth stamen peculiar to these plants. Nearly all the *Scrophulariaceæ*, or figworts, have the stamens in two pairs, or *didynamous*, as it is termed, and in this respect the Penstemons agree with the other genera of the order. But they possess also a fifth sterile filament, which is usually longer than the other four, and bearded at its upper end, by which they are distinguished from all the other plants of the order, except those included in the genus *Chelone*, which, by some botanists, is regarded only as a section of the present genus.

TROPÆOLUM SPECIÓSUM,

Showy Indian-Cress.

Linnean Class—OCTANDRIA. *Order*—MONOGYNIA. *Natural Order*—TROPÆOLACEÆ.

THE genus *Tropæolum* bids fair to become in time one of considerable extent, as not a year now elapses in which several additions are not made to it. The curious structure of their showy flowers, and the freeness with which they are produced by most of the species, has rendered them general favourites; and from their extensive range throughout South America, being found from Venezuela to the most southern part of Chili, generally at a considerable distance above the level of the sea, species may be selected, suited to every class of cultivators, from the possessors of a greenhouse or conservatory to those whose floral domain is limited

to a few square yards of 'mother earth,' or, it may be, to a few pots upon a window-sill.

The *Tropæolum speciosum* is a perennial plant and well adapted for cultivation in the open border during the summer months; we wish we could add, that it was quite hardy, but although, unfortunately, this is not the case, there is but little doubt that it will bear mild winters, such as that of 1850-51.

The roots are not tuberous, as in the case of *T. tricolor* and some others, but long and fleshy, like those of the bell-bine; when planted in the open ground a border by a south wall will be found the most suitable situation for it; it flourishes most in a compost of turfy loam, peat, and sand roughly mixed, but will do very well in any good garden soil, where these ingredients are not easily attainable. It is not advisable to plant it in a rich, manured border, as this would result in the production of foliage, at the expense of the flowers.

When the plant is grown in a pot, or preserved in one through the cold season, the stems usually make their appearance about February or March, according to the temperature at which it has been kept, but if allowed to remain in the borders during winter, and covered with a handlight (over which a thick matting should be thrown in severe weather), they will begin to grow in April, and, as long as there is any danger of frost, the hand-light must be allowed to remain. In May, however, all covering may be removed, and with the genial temperature common to this month, the plant will make rapid progress, and speedily reach the height of five or six feet.

As it is a climber, some provision must, of course, be made for supporting its feeble stems; and for this purpose, we know of nothing more suitable than a flat trellis composed of narrow splines placed diagonally across each other, the side pieces being of something rather more substantial. The lower ends of the two upright pieces should be well charred, which will retard their decay when thrust into the ground, and, if to this precaution, we add that of well painting the whole of the trellis, it will then last for years. Instead of placing the frame in immediate contact with the wall, we would advise that it be maintained at a distance of an inch or so, which may be easily accomplished by interposing a spline, or portions of one between the wall and the two side pieces of the trellis. The plant forms an elegant object trained against a verandah, and a striking effect may be produced by associating with it young plants of the annual *T. aduncum* (also called *canariense* or *peregrinum*). The small wire globes and trellises may be employed for specimens grown in pots, but they are quite unsuited to the plant when cultivated in the open borders, where it attains a much larger size.

The bright carmine-tinted flowers appear in June, and are produced in succession for at least two months. The plant ripens its fruit very freely, and from the seeds thus produced, it may be readily increased, as well as by dividing the roots in spring.

From the ease with which this species may be cultivated and increased, we

anticipate that it will soon be commonly grown; and we certainly know of few summer-flowering plants that more deserve the little care requisite for its management.

We may remark, incidentally, that many of the species of *Tropæolum* are hardier than is commonly supposed; the *T. tricolor*, in particular, flourishes in the open air in summer; that is, when planted, as we have recommended this species to be, rather deeply in the open ground, and well protected from frost and damp in winter, by a heap of dry ashes, over which a hand glass or large flower pot is placed. It will then grow prodigiously in the summer months, so as to be scarcely recognizable by those who have been accustomed to see it only in pots.

The genus *Tropæolum* is remarkable for several peculiarities which are worthy a passing notice. Most of the species are plants of a twining habit, with delicate, smooth stems, the footstalks of the leaves acting as tendrils, and twisting themselves round anything within their reach. The leaves are peltate, with radiating ribs, either entire as in the common nasturtium *T. majus;* lobed, as in the pretty annual *T. peregrinum*, popularly known as the canary flower; and cut up nearly to the base into six or seven segments or leaflets, as in the present species, and *T. tricolor*. *T. polyphyllum* has often ten leaflets.

The calyx, or outer floral envelope, which, in most plants, is green and leafy, is, in this family, more or less coloured, and similar in its substance to the petals, forming, in many of the species, the most conspicuous portion of the flower. It is in all the plants of the genus, terminated by a prolongation or spur, the length of which varies considerably in the different species. Thus in the present plant, in *T. tricolor*, *T. Jarrattii*, and *T. Deckerianum*, it is long and slender; whilst, in *T. azureum*, *T. tuberosum*, *T. polyphyllum*, and *T. brachyceras*, it is much shorter and more blunt.

In the petals there is a considerable variation in size, from the small yellow segments projecting from the calyx of *T. tricolor*, to the more showy ones of *T. azureum*, and of the common nasturtium, *T. majus*. In *T. speciosum*, it will be observed that the two upper petals are of a different shape to the three lower ones, and are quite sessile, the others being attached to the interior of the calyx by a very slender stalk or claw.

All the plants of the order are remarkable for a certain degree of pungency, similar to that existing in many genera of the Cabbage tribe, or *Cruciferæ*, as the Cress, Mustard and Radish. This stimulating property is most observable in the green fleshy fruit, but it pervades the entire plant. Dr. Candolle has remarked that the identity of this principle in the two orders is attested by a curious fact, viz., that the caterpillar of the cabbage-butterfly feeds exclusively upon Cruciferous plants and the *Tropæolums*.

The common annual, *Limnanthes Douglassii*, has the same pungent taste, and the

Order *Limnanthaceæ*, to which it belongs, is indeed associated by botanists very closely with the *Tropæolum* tribe. Lindley even includes it in that family, though we think there are several points of difference between them. It is curious that, in these three orders, *Cruciferæ*, *Tropæolaceæ*, and *Limnanthaceæ*, the same acrid, antiscorbutic principle should be found to exist, and we believe it occurs in no other tribes of the vegetable kingdom.

We have already had occasion to remark under the head of *Calochortus*, that most of the Natural Orders include within their limits plants which present anomalies in their structure, and possess points of agreement with other orders nearly related to them; and of this truth our present illustration offers another example.

The Nasturtium tribe, of which the genus *Tropæolum* is the type and chief component, is characterized by Botanists, among other marks of distinction, by the absence of stipules, or small leaf-like appendages at the foot of the leaf-stalk, of which good examples may be seen in the Rose, Geranium, Passion-flower, and many others.

A reference to our plate will render evident that, in the case of *Tropæolum speciosum*, this distinction does not hold good; for at the base of the petiole will be seen a fringe-like stipule, which, we believe, is peculiar to the present species, and by which the order is connected with the Geranium family, with which it has other important points of agreement, though to the uninitiated reader the resemblance between the plants of the two orders may be very slight indeed.

The exact number of species now in cultivation of the genus *Tropæolum* we are unable to give, but it certainly exceeds twenty. One of the most remarkable of the newly-introduced species, is *T. Deckerianum*, sent from Venezuela to the Botanic Garden, Berlin. The flowers have 'a scarlet spur two inches long, tipped with green, green hairy sepals, five, intensely blue, wedge-shaped, toothed, short petals, and stamens of the same colour. It may be grown out of doors in summer, or may be kept in a pot and trained like other small species of the genus.' *

The word *Tropæolum* is derived from *tropæum* a trophy, from the resemblance of the leaf (of *T. minus* and *T. majus*, the species first introduced) to a buckler, and of the flower to an empty helmet, of which trophies were formed.

It may be, perhaps, necessary to observe that our drawing was made from the depending extremity of one of the shoots of the plant from which it was taken, and from its small size gives but a faint idea of the beauty of the whole plant when in flower.

* Van Houttes. *Flore des Serres*, quoted in Paxton's Flower Garden, No. 2.

GRAMMÁNTHES GENTÍANOIDES.

Gentian-like Grammanthes.

Linnean Class—PENTANDRIA. *Order*—PENTAGYNIA. *Natural Order*—CRASSULACEÆ.

THE House-leek tribe includes within its limits so few plants which are not perennial, that the present subject, an annual, has some claim to be regarded as a novelty.

The *Grammanthes gentianoides* is a native of the Cape of Good Hope, and is, we believe, a recent introduction. It grows but a few inches high, and has smooth, rather brittle stems, and blunt, fleshy leaves, like those of most Crassulaceous plants. The flowers are of an orange-yellow tint, in terminal clusters, each with five petals, five stamens, and five distinct styles and carpels. The last feature is so eminently characteristic of the plants of this order, that, taken in conjunction with their succulent habit, it affords an easy method of distinguishing them from all other tribes.

The blossoms are remarkable for a dark stain at the base of each lobe of the corolla, and which being continued along the middle of each petal towards its extremity, partially divides the ground colour, so as to give it an appearance which has been not inaptly compared to that of the letter V; and it is in allusion to this circumstance that the genus has been named, from *gramma*, a letter, and *anthos*, a flower.

It is well known that succulents will flourish in a very small amount of soil, and that of the poorest description, and this peculiarity must be borne in mind in the cultivation of the *Grammanthes*. It requires to be sown in spring, in pots of sandy soil, and placed in a moderate hotbed until the young plants are an inch or two high, when, if very thickly placed, they may be transferred to wider pots, but otherwise they may remain in the seed-pot until the weather is sufficiently mild to permit of their removal to the borders. From their limited growth, single specimens of the plant produce but little effect; it is therefore advisable to plant them in patches as large as the supply of plants will admit of, and where the soil is not very sandy, it must be removed to the depth of three or four inches, its place being supplied by the poorest material that can be obtained; as a further precaution against excess of moisture a thin tile may be placed beneath this stratum of earth, and the surface of the ground covered with small pebbles.

The plant is, however, better suited to the rockery than for the border, as in wet seasons it is liable to rot, notwithstanding any precaution that may be taken.

It must be remembered that in the dry climate of the Cape, but little rain falls during several months of the year, and that the aridity both of the atmosphere and

soil, is further augmented by a temperature considerably higher than that we enjoy in this country. Upon rock-work the plant is certainly less exposed to the evils arising from a rich soil; but the atmospheric humidity not uncommon with us even in the summer season is not so easily guarded against. The nearest approximation to the native climate of the *Grammanthes* would perhaps, be found in the greenhouse or a warm south window, where we have found it succeed very well. In any case, however, the blossoms will only expand in bright weather, a rather unusual circumstance with Crassulaceous plants.

The least attentive observer cannot fail to be struck, in a survey of the vegetable kingdom, with the wonderful adaptation of the various organs of the different tribes of plants to the situations in which they are usually found.

If we at this time confine our observations to the leaves of plants, we find that those species which are natives of moist climates or soils, and which consequently imbibe by their roots a considerable amount of fluid, are furnished with leaves, the cuticle of which is set with innumerable pores or *stomata*, as they are termed in botanical parlance, through which the redundant juices of the plant are exhaled into the atmosphere whence they were originally derived; whilst in those plants which are parasitical, like the misletoe, or which are natives of the sandy districts of warm climates, as in the case of many of those comprised in the orders *Crassulaceæ* and *Cactaceæ* these breathing apertures are in direct proportion to the small volume of root-nutriment absorbed by the plant, and are therefore few in number. Of these plants, Lindley has well observed that 'soil is to them a something to keep them stationary, rather than a source of nutriment,' which is obtained chiefly from the surrounding atmosphere. For not only does the peculiar structure of their cuticle enable them to retain for a lengthened period their fluid contents; but they appear to possess the faculty of absorbing, through its agency, the heavy dews, by which, in tropical climates, the absence of the rain of more temperate regions, is supplied.

HARDY PERENNIALS.

The practice now so extensively adopted of filling entire compartments of the flower garden, during summer, with plants not long since regarded as occupants of the greenhouse exclusively, has no doubt imparted to the parterre a brilliancy not hitherto attainable.

We have no objections to urge against planting in masses, or as it is usually termed the 'bedding' system; on the contrary, we freely admit that very striking effects are thus produced, and where the extent of ground permits it, we see no

reason why every variety of plant employed for ornamental purposes, whether annual, or perennial, should not be disposed in clumps or beds. But it is obvious that for gardens of small extent, this system of planting is entirely inappropriate, unless, indeed, one could be content with a very few distinct species, which very rarely happens.

The preservation, too, of bedding plants during the winter months, at least of those of a tender character, involves some little trouble, and propagated, as many of them are, by cuttings every season, single specimens are far too small to produce any effect in the mixed flower border, or in beds of miscellaneous subjects.

These remarks apply more particularly to those greenhouse plants, such as Cupheas, Bouvardias, Lantanas, &c., lately recommended for bedding out; but a large proportion of the plants used for this purpose we claim as hardy perennials, for such they really are. These have long been with us the most favourite section of the plants cultivated in the flower-garden, and it has always appeared to us a matter of regret that so many of the older perennials should have been pushed aside for subjects whose novelty constituted their sole claim to favour.

We do not, by any means, affirm that it is desirable to exclude all plants incapable of supporting without injury an English winter, but we have no hesitation in saying that the number of hardy subjects is now so great, that no difficulty whatever would be found in filling with them a garden of large extent, without the assistance of any plants requiring winter protection, or only so much as could be easily afforded without removing them from the soil.

We have no doubt that a brief reference to the best of these perennials will be acceptable to those amateurs who, although ardent lovers of Flora's beauties, have too little time at their disposal to give the requisite attention to the more tender class of plants.

If we begin with Ranunculaceous plants, we shall find in this order a considerable number of really interesting subjects; and in proof of which, it is only necessary to name the Aquilegias, Delphiniums and Clematis. Of these three genera, there are many species besides those commonly cultivated.

The *Aquilegia alpina* has really noble flowers, and the species *leptoceras*, *jucunda*, *glandulosa*, *glauca*, and *fragrans* (the two last with pale yellow blossoms), are highly ornamental.

Among the Delphiniums, are some of the stateliest of herbaceous plants, and their intense azure flowers are not exceeded in beauty by the rarest exotic.

The sweet scented *Clematis flammula* is common in gardens, but there are many fine species quite as easy of cultivation; such are *cærulea*, *viticella*, and its double-variety, *austriaca*, *americana* (verticillaris) and *crispa;* to which may be added the new *indivisa lobata*, a remarkable species from New Zealand, and said to be nearly hardy These are climbers, but there are a few species of more restricted growth, of which *tubulosa*, *erecta*, and *integrifolia* are the most worthy of cultivation.

In the Poppy tribe one plant, at least, deserves attention, the *Argemone grandiflora*, which, from its fine white flowers, and purple and blue stigmas, forms a conspicuous object in the summer and autumn.

The genus Viola contains a considerable number of North American species of interest, such as *pedata*, *lanceolata*, and *eriocarpa*, and we are surprised that they are not oftener seen among the dwarfer occupants of the border.

Among Cruciferous plants, if we except the wall-flower and different varieties of stocks, there are not many worth cultivation; but the pretty calabrian *Arabis rosea*, and *A. verna* deserve a place on account of their early flowers.

The Dianthus tribe *Caryophylleæ*, needs no recommendation, including, as it does, some of our most esteemed florist flowers; not a fiftieth part, however, of the plants comprised in this order are in general cultivation, which is the more to be regretted, as the whole of them are perfectly hardy, of dwarf habit, and abundant flowerers. Such are the *Dianthus Fischeri*, *latifolius*, *giganteus*, *libanotis*, *lusitanicus*, *Balbisii*, and *Carthusianorum*; the *Saponaria ocymoides*, and *glutinosa*; *Gypsophila paniculata*, *perfoliata*; *Silene imbriata*, *stellata*, *livida*, and *speciosa*; and *Lychnis fulgens*, *coronata*, and *Bungeana*.

The flax family is chiefly represented in our gardens by the old *Linum flavum*, a very gay little evergreen plant, and quite hardy; but the genus contains at least twenty other species equally deserving of notice, among which we may mention the *L. monogynum*, white; *arboreum*, *maritimum*, and *campanulatum*, yellow; *suffruticosum*, and *tenuifolium*, pink; *narbonense*, *austriacum*, *alpinum*, *montanum*, and *hirsutum*, blue; and lastly, *ascyrifolium* with very handsome large blue and white blossoms.

A few of the hardy species of Geranium and Erodium are sufficiently showy to be admitted into the mixed border; of the first genus, *anemonefolium*, *ibericum*, *argenteum*, and *macrorhizum*, are the best; and of the Erodiums, *serotinum*, *hymenodes*, *crassifolium* and *Reichardii*.

The Mallows-tribe includes some highly ornamental subjects. The *Hibiscus*, *roseus*, and *H. Moscheutos*, although commonly supposed to be only half-hardy, will succeed in moist situations, and when in flower, nothing finer can be imagined than these two plants. The North American genus *Nuttallia* is but little known, although all the species are eminently worthy of cultivation, and easily procured; the best are *pedata*, *digitata*, *papaver*, and *cerasiformis*, all of which are quite hardy.

(To be continued.)

ON A NEW BELL-GLASS FOR CUTTINGS.

At a season of the year when cuttings of most plants will succeed with but little trouble, some notice of an improved bell-glass that we have devised, may not be unacceptable to our readers.

A majority of the plants usually cultivated in the open garden or window will, in favourable seasons and situations, strike without the aid of any covering, although there are few which will not emit roots sooner when protected, than when exposed to those agencies by which transpiration is accelerated.

Cuttings taken in a young state, before any of the fibres have become woody, will generally require the aid of a bell-glass, whilst, if allowed to remain upon the parent plant until this change has partially taken place, they will succeed without such protection. There are many plants, however, which will protrude roots only in the herbaceous state, and for which a cutting-glass is at all times indispensable. For these purposes it is not unusual to employ any glass vessel, incapacitated for further domestic service; and for all ordinary horticultural uses, these are as effectual as any thing that could be devised, especially if care be taken to wipe the interior of the glass frequently, to prevent the air contained in it from becoming too damp. It not unfrequently happens, however, that from various causes, this precaution is neglected, and the cuttings 'damp off,' a circumstance of frequent occurrence with amateur gardeners, and not altogether unknown to professional ones.

With a view to obviate this objection to the ordinary bell-glass, we have devised one with *a porous* top, of well hardened plaster of Paris, from the permeability of which the accumulation of moisture within the glass, is effectually prevented.

If a simple cylinder of glass, open at both ends, could be obtained, nothing would be easier than its conversion to the purpose we have proposed. It would suffice to mix a little plaster of Paris with water, to the consistency of cream, and to pour it into the cylinder, which should be placed upon a perfectly flat surface, to the depth of two or three-eighths of an inch; when upon the solidification of the plaster, one end of the cylinder would be thus closed with a material permeable both to air and moisture, and if well dried before use, of considerable permanence. These cylinders could certainly be constructed at a very small cost, and instead of plaster, any kind of porous material might be employed to close the end; coarse unglazed earthenware would have a great superiority over the plaster in point of durability.

Of the great advantage that would arise from the employment of a glass constructed on the principle now pointed out, we entertain not the smallest doubt, and can only hope, that these hints may induce some manufacturer to turn his attention to the subject.



Potentilla Menziesii.



Alstræmeria Van Houttei.



Thunbergia alata alba.



Clematis cærulea.



Martynia fragrans.

POTENTILLA MENZIESII.

Menzies' Cinquefoil.

Class—ICOSANDRIA. *Order*—POLYGYNIA. *Natural Order*—ROSACEÆ.

THE Order *Rosaceæ*, to which the genus *Potentilla* belongs, may be regarded as one of the most important of the vegetable kingdom; for it includes within its limit not only some of the handsomest of our garden flowers, but also comprehends all the most valuable of the fruits of the temperate regions, such as the apple and pear, and the different varieties of the peach, plum, apricot and cherry. Leaving aside, as foreign to our present purpose, the fruit-bearing genera, we may claim for the Potentillas a high rank among the ornamental plants of the Order.

Of the hundred and fifty species and varieties known, all, with scarcely any exceptions, are interesting plants, and a considerable number of them are indeed scarcely second in beauty to the Rose. Most of the highly coloured varieties now so common in gardens are hybrids, the flowers of the wild species, which, as we have just remarked, are very numerous, being, with a very few exceptions, yellow or white.

Among the species may be cited, as worthy of cultivation, *P. Thomasii*, from Italy; *P. insignis*, from the north of India; *P. glandulosa*, from California; *P. mollissima*, from the south of Europe; *P. grandiflora*, from Siberia; *P. splendens*, from Nepaul, all with yellow flowers; *P. atrosanguinea* and *P. formosa*, both also from Nepaul, the former species with deep crimson, and the latter with rose-coloured blossoms. These two plants are not only interesting from their intrinsic beauty, but also from their being the parents of a numerous progeny of hybrids, some of which are now to be found in every garden. Of the best of these varieties we may mention *Russelliana*, one of the oldest and best; *Hopwoodiana*, *Mackayana*, *McNabiana*, *Loddigesii*, *Garneriana*, *Plantii*, *Bainesiana*, *Smoutii*, *Menziesii*, now figured; and lastly, *Antwerpensis*, a new variety, with brilliant orange flowers, produced from May to November, and which, being semi-double, do not close at evening, as is the case with the other plants of the genus.

All the species and varieties we have enumerated are perfectly hardy, and of the easiest cultivation, though it cannot be said that they will flourish in any description of soil. They succeed best in a good rich earth of some depth, and require, in summer, a plentiful supply of water, especially about the time the flower stems are thrown up. We have never seen the Potentillas grown in beds, but we think that such an arrangement would be exceedingly interesting, if a proper selection of plants

were made. For the centre of the bed one of the shrubby species, such as *fruticosa* or *floribunda*, both with yellow flowers and growing about four feet high, would be well adapted; and around these might be grouped the erect-growing herbaceous species and varieties, reserving the trailers, of which there is a fair sprinkling, for the outer circle.

They are all readily increased by dividing the roots early in autumn, which we prefer to spring, and as these descend to a considerable depth, care must be taken that the fibres are not broken. Many of the species ripen seeds, from which new varieties may often be raised, and all the seedlings would flower the second season after sowing, a few probably the first year, if the sowing was effected early, and the plants forwarded in every way. A wide field is here open to the amateur Florist, and, with a little care and attention, he could scarcely fail to originate some valuable additions to this ornamental family.

There is an allied genus of which a few species are occasionally found in gardens, and which fully equal in beauty the Potentillas we have named; we allude to the Geums. They are distinguished from the Cinquefoils by their lyrate leaves, reflexed calyx when in fruit, and, more particularly, by the style of the numerous little granular seed-vessels being jointed. *Geum coccineum* (the *G. Quellyon* or *Chilense* of some authors) is an extremely handsome plant.

The properties both of *Potentilla* and *Geum*, as well as of *Tormentilla*, another allied genus, are very similar. Many of the species of the three genera are astringent and aromatic, and all are perfectly innocuous. The common *Potentilla anserina*, or Silver Weed, has been used by tanners; and *P. reptans*, another English species, was formerly employed as a febrifuge.

The generic term, Potentilla, is derived by some authors from *potens*, powerful, or *potentia*, power, in allusion to the medicinal properties of the species; but as these are undoubtedly very weak, we incline to agree with those who consider the reference to be to the Latin diminutive, signifying little power.

The popular designation, Cinquefoil, alludes to the arrangement of the leaflets, which are often in fives, but by no means exclusively so; for many of the species, including *Menziesii*, have ternate foliage, and it is not rare to find on the same plants leaves composed of segments, varying from three to six in number; a few of the species have even pinnate leaves.

The *Potentilla Menziesii* is one of the finest varieties we have yet seen of the same tint; in good rich loam the blossoms are often nearly two inches in diameter, and their rich orange scarlet hue is very remarkable. There are newer varieties which pass for being superior, but we doubt if it is exceeded in size or brilliancy by any of its class. This plant, with the yellow *P. insignis* and the striped *P. Smoutii*, would form a nice selection for a small garden; to which may be added *Hopwoodiana* and *Garneriana*, all of them, including *Menziesii*, may be had for a

very moderate sum. We may here observe, that when seed is desired, it should be saved only from the first flowers which open, these being invariably the finest; the subsequent blossoms should be removed as soon as faded.

ALSTRŒMÉRIA VAN HOÚTTEII.

Van Houtte's Alstrœmeria.

Linnean Class—HEXANDRIA. *Order*—MONOGYNIA. *Natural Order*—AMARYLLIDACEÆ.

THE beauty of the flowers of the genus *Alstrœmeria* renders them eminently worthy of a place among our illustrations, and we do not know that we can select for our first example of this family, a more interesting species than that bearing the name of the well-known Florist of Ghent.

A few of the Alstrœmerias are rather tender, and can only be successfully cultivated in the stove; but the majority are either quite hardy, or need at most only a covering of leaves or fern in severe weather.

The *A. Van Houtteii* may be said to belong to the hardiest section of the genus; the early shoots are sometimes cut by spring frosts, but the roots appear capable of resisting almost any amount of cold. It is somewhat doubtful whether this plant has a claim to be considered a distinct species; we believe it was originally raised by M. Van Houtte, from seeds imported from Chili; but the species appear to hybridize so freely, that this circumstance is not altogether conclusive of its distinct chaaracter. The flowers vary considerably in their tint, some of the specimens producing blossoms much darker than those of our figure. The so-called Chilian Alströmerias are, we believe, identical with the present plant; though, as the greater number of the species are natives of Chili, it appears objectionable to apply the term exclusively to one species or variety.

The *A. Van Houtteii* is of the easiest cultivation, requiring only to be planted in moderately rich soil of a sandy texture, where it will flourish for years with but little attention. It grows about two feet high, and the roots will, when two or three years old, produce several stems, each terminated by an umbel of from eight to twelve blossoms, which expand in July and August.

The plant will not succeed in stiff loam, and, therefore, when the soil of the borders is of this character, an artificial compost must be prepared of sandy loam, rotten manure, and leaf-mould or peat. It will be advisable to plant the roots at a

depth of at least four or six inches, they will then be not only less liable to injury from severe frost, but will also suffer less from drought in summer. In dry weather, during their growth, they will require a frequent supply of water, and when in flower the stems, being somewhat feeble, must be supported by neat sticks.

After flowering, if seeds are desired, the plant must still be freely watered, or the seed-vessels will wither; and this remark applies equally to many other plants, which it is but too common to neglect, when they will no longer repay us for our attention by their beauty. With the precaution just noted, the plant will ripen abundance of seed, by which it may be easily increased. If sown as soon as ripe, the seeds vegetate readily, especially when aided by a little bottom heat; but unless the young plants can be kept in a growing state through the winter by preserving them in a greenhouse, it will be advisable to defer sowing until spring, as the young tubers would, in all probability, shrivel and perish, if allowed to become dry, and, from their immature condition, they would scarcely survive an exposure to the vicissitudes of our winter. In any case, a light sandy soil, with a small admixture of vegetable matter, is to be preferred for raising the plants, and, as the seeds are rather large, they may be covered with half an inch of earth. When sown in spring, and forwarded on a hot-bed, a few of the seedlings will, perhaps, flower the same season; but, in general, the tubers will not produce blossoms until the second year.

The plant may also be propagated by dividing the tubers, which increase freely; but we do not recommend that this be done too frequently, as a large clump of the plant is far more effective than single specimens.

It may, if desired, be cultivated in large pots, but will then require dividing every season, or the long, white, fleshy roots will so coil round and fill up the bottom of the pot, that it will be impossible to remove them without injury. The better to accomplish this, a disc of tile or slate should be placed at the bottom of the pot before placing in it the ordinary fragments employed to ensure drainage; and when it is desired to turn out the tubers, this may then be easily effected by pushing up the tile by applying the finger to the orifice at the under surface of the pot.

The *Amaryllids*, to which order the Alstrœmerias belong, bear a general resemblance to the Lily-worts, but are very readily distinguished by their *inferior* ovary or seed-vessel.

The whole of the species of *Alstrœmeria* are remarkable for their *resupinate* leaves, the footstalks being twisted so that the upper surface of the leaf is downwards; and in the case of the present species, another circumstance, of more easy explanation, is worthy of note. The stamens, it will be observed from our figure, are most of them considerably longer than the style; and in order therefore, that the fertilization of the ovules may be effected, the filaments are, at a certain stage of their

growth, curved upwards and inwards, so as to bring the pollen of the anthers into close contiguity with the three-cleft stigma.

In addition to the species now described, we would recommend as exceedingly interesting and showy plants, the *Alstrœmeria Simsii*, with scarlet and orange flowers, and nearly as hardy as our present subject; *A. Hookerii*, rose; *tricolor*, white, yellow, and purple; *bicolor*, white and yellow; *nemorosa*, red and yellow; *aurea* or *aurantiaca*, orange spotted; *hæmantha* crimson; *magnifica*, red, white, and green; and *psittacina*, crimson spotted. The species with twining stems are now removed to the genus *Bomarea*, and are equally deserving of cultivation with the true Alstrœmerias. *Bomarea acutifolia* and *B. hirtella* are two of the best known species, and in favourable situations will both attain the height of eight feet, or even more; *B. edulis* will also succeed in the open air in summer, and flowers for a long period.

The Alstrœmerias are found chiefly on the slopes of the Chilian and Peruvian Andes; but the two species of *Bomarea* above named are, we believe, natives of the temperate parts of Mexico.

The genus *Alstrœmeria* is named in commemoration of Baron Claudius Alströmer, a Swede, and contemporary of the immortal Linnæus.

CLÉMATIS CÆRÚLEA.

Violet Virgin's Bower.

Linnean Class—POLYANDRIA. *Order*—POLYGYNIA. *Natural Order*—RANUNCULACEÆ.

THERE appears to be some confusion with regard to the name of this plant, which is the *C. azurea grandiflora* of several of the London Florists; but it certainly agrees with the description and figure of *cærulea* given in the Supplement to Loudon's *Encyclopædia of Plants*. It is the *C. cærulea grandiflora* of the Horticultural Society's Catalogue. The true *Clematis azurea* is a very different plant to that we now figure, the segments of the flower of that species being only four in number, and the blossom bearing a general resemblance to that of the more recent *C. tubulosa*, which is, however, their only point of agreement, for the habits of these two species are altogether dissimilar.

The *C. cærulea*, our illustration, was introduced from Japan in 1836, and has some affinity with the *C. florida*, and its variety, *bicolor*, or, as it is sometimes called,

Sieboldtii, from the same country, differing from it chiefly in the colour of the flowers and in the shortness of the peduncle, which in *florida* is much longer, and more slender than in *cærulea*. The habit of growth is however similar, and, like *florida*, our plant is better suited to culture in pots than in the open ground, though it is sufficiently hardy to bear complete exposure. It succeeds very well, however, against a trellis, and requires a good retentive loam, in which its growth is of a more robust character than in soils of a sandy nature. It may be readily propagated by layers or seeds, which should be sown as soon as ripe in a shady place, and the seedlings afterwards potted separately, and preserved from frost while young. The appearance of the plant may be improved by occasionally cutting it down nearly to the ground, as the stems frequently become naked towards the bottom. This is also the best way of treating it when grown as a window plant.

Several of the more free-growing species of Clematis are old favourites in our gardens, particularly the *C. flammula*, or white sweet-scented, which is of so rapid a growth that in a single season it will cover an arbour or trellis of some extent; and the purple *C. viticella*, a still older species, which, when well managed, is one of the most elegant and ornamental of hardy climbers. Among other interesting species worth cultivating are the *C. crispa*, recently introduced from North America, with pale fragrant blossoms; *C. graveolens*, from Chinese Tartary, with yellow flowers; *C. montana*, and its variety, *grandiflora*; *C. cirrhosa*, an evergreen species from Spain, with whitish blossoms, produced very early in the spring; *C. Hendersonii*, with flowers of a fine violet blue, one of the most desirable of the genus; and *C. austriaca*, *C. sibirica*, and *C. verticillaris*, three species formerly known under the name *Atragene*, but now united to *Clematis*. Perhaps the most showy species yet introduced is the *C. indivisa*, variety, *lobata*, with pure white blossoms, three inches across, and bright red anthers. In its native climate, New Zealand, it quite festoons the trees for fifteen or twenty feet from the ground, with its dense foliage and large panicles of flowers. It is said to require a green-house, a statement we shall regret to see confirmed. Certain it is that some of the plants introduced into England from New Zealand require with us but little protection, unless in very severe weather; for example, *Linum monogynum*, *Clianthus puniceus*, and *Plagianthus divaricatus*. Facilities will, however, soon be afforded for testing this statement by experience; and should the plant prove capable of living in the open air in this country, we shall take the earliest opportunity of giving our readers a figure of this strikingly beautiful species.

There are, in addition to the above, two or three species of more restricted habit. The best are *tubulosa*, a recent introduction from China; *erecta*, and *angustifolia*, both from Austria, with white blossoms; *ochroleuca*, from North America, with pale yellow flowers; and *integrifolia*, a native of Hungary, one of the earliest species introduced to this country. These are most of them easy of attainment, and well deserve a place in the mixed border.

The genus *Clematis* is remarkable for containing the only shrubby plants known in the order *Ranunculaceæ*, the other genera, if we except the Moutan Pæony, and *Xanthorhiza*, being all herbaceous. It is further to be noticed, that the corolla is absent in all the species, but the calyx is so highly developed, that the flowers of most are as specious as in those genera possessing both an outer and inner floral envelope. This absence of petals is not confined to the present genus, it occurs also in *Anemone, Caltha,* and some of the Ranunculuses; and in *Thalictrum,* or Meadow-Rue, some species of which are often seen in shrubberies, both calyx and corolla are wanting, which does not, however, prevent the numerous yellowish stamens from making a showy appearance.

The long feathery awns by which the ripe seed-vessels are terminated, is another prominent characteristic of this genus. They are of considerable length in our subject, *cærulea,* but are more developed in the native species, *C. vitalba,* or Travellers' Joy, so common in the hedges of the chalky district, though it is by no means confined to those localties. These downy prolongations without doubt aid in effecting the dispersion of the fruit, as in the case of the pappus of composite plants.

The acrid, caustic properties of many of the species of *Ranunculus* is well known. and they are shared, to a considerable extent, by several of the *Clematis* family, particularly by *flammula* and *erecta,* the bruised leaves of which are said to have been used by beggars for forming artificial ulcers.

The generic designation, *Clematis,* is derived from *klema,* a twig, or tendril; in allusion to the climbing habit of most of the species.

MARTÝNIA FRÁGRANS.

Sweet-scented Martynia.

Linnean Class—DIDYNAMIA. *Order*—ANGIOSPERMA. *Natural Order*—BIGNONIACEÆ.

THIS very handsome annual, although no longer a novelty, is not, we suspect, cultivated so much as it ought to be. Its large purple crimson flowers are produced so freely in the latter summer months, and, if we except the first stage of its growth, so little trouble is involved in its management, that we are surprised that it is not more generally seen.

The one difficulty to which we allude arises from the thickness of the integument

of the seed, which enables it to set at defiance, for a considerable period, those influences under which most other germs speedily unfold themselves. The seeds have been known to remain in the ground six months before vegetating; and we have no doubt, in a dry situation, a much longer time might elapse, and the seed, nevertheless, continue perfectly sound.

This little knot is, however, very easily cut, for by the removal of the horny coating of the seed it may be made to germinate in a fortnight or three weeks. It may be urged that such a proceeding is altogether unnatural; but it is not more so than the hundred other contrivances by which art is made to minister to nature in the various horticultural operations. In its native country, Mexico, the seeds of the plant, in all probability, fall from the capsule as soon as ripe, being at once buried in the ground, and therefore protected from the desiccating influences which harden the gathered seed.

The peeling must be carefully performed; and the more easily to accomplish it, the seed should be soaked in warm water for an hour previously; this will have the effect of softening the almost woody testa, which may then be readily cut away with a sharp knife, great caution being employed to preserve the cotyledons from injury. We have sometimes soaked the seed, after the removal of the shell, in tepid water or milk, before sowing, and we have fancied that its germination was thereby hastened; but the precaution is probably unnecessary. The seed is best sown at an early period of the spring, upon a good hot-bed, in moderately rich vegetable soil; and the young plants should be transferred separately to small pots, as soon as they are large enough to handle without injury, and again placed in the hot-bed.

Their after management depends on the situation to which they are destined. The plant is often grown as a tender annual; in which case it may be treated exactly as the Balsam, that is, retained in the hot-bed, and shifted into larger pots successively until the plant is a foot or eighteen inches high, when it may be removed to the window; but although it will thus attain a larger size, it is better treated as a half-hardy plant for the decoration of the borders, where its growth is more robust, and its flowers of a much deeper tint.

When grown for this purpose, the young seedlings should, at the earliest period, be accustomed to a free supply of air, and removed to a cold frame some weeks before planting out, in order that the plant may be gradually inured to the temperature of the external atmosphere.

Where this convenience is not at hand, the gradual change can be effected in another way. At the end of May, the plants may be turned out into the place prepared for them, and a hand light placed over them, which should be kept close for a day or two, and afterwards air should be admitted gradually, until by the middle of June the glass may be removed altogether. The plant requires a rich

light earth for its growth, and a free supply of water; from the large size of its leaves it will be advisable to screen it from the action of high winds, by planting it in a somewhat sheltered situation; and its habit being succulent, it will be further desirable to support it by a neat stick. The fragrant flowers are produced for two months in succession, generally from the end of June to the end of August, or even later.

According to a statement of Mr. Weaver of Winchester College, in the *Cottage Gardener*, the seed will vegetate in the open ground; and as a considerable amount of trouble would be thus saved, the experiment is well worthy of trial. We fancy that it would, in this case, be better sown in pots of earth than in the open ground, as the seed might then be put in at a very early period, and be kept from frost in a cold frame, or even on a window. If the seeds were not sown in the borders until April, the plant would hardly be able to ripen its capsules before the setting in of the autumnal frosts.

The flowers merit an examination not only for their beauty, but also for their interesting structure; and, indeed, what plant exists from which some pleasurable instruction may not be gained? The blossoms, which are terminal and axillary, are furnished each with two bracts, or leafy appendages, situated immediately beneath the true calyx, this latter being divided at its border into five nearly equal segments. Within the inflated throat of the corolla will be found four stamens, in two pairs, of which one is longer than the other, and also the rudiment of a fifth stamen; the two cells of the anthers are united by a *connective*, which is extended beyond the cells, and terminated by a curious gland. The large black seeds are enclosed in a two-valved capsule, which is remarkable for being prolonged anteriorly into a beak or horn, whence this and the other species are known in France by the name of *Cornarets*; this beak is most conspicuous in *M. proboscidea*, *M. Craniolaria*, and the present species, in all which it is so largely developed, that the plants when in fruit present a highly curious appearance.

The genus includes six other known species, in addition to *fragrans* now figured; *Craniolaria*, with spotted white flowers; *proboscidea*, light blue; *longiflora*, pale purple; *diandra*, red; *lutea*, yellow; and *angularis*, a recent introduction, (though we are not sure this last is not a mere synonyme of *diandria*, which is the *M. angulosa* of Lamarck; the similarity of name, is, at least, too striking to be overlooked;) all annuals, and, with the exception of *longiflora*, which is from the Cape of Good Hope, all natives of tropical America. All the species may be treated as half-hardy annuals, as directed for *fragrans*; the whole of them are interesting, and should be grown once at least; *lutea* produces a fine effect when in flower.

The section *Pedalieæ* of the *Bignoniacaæ*, in which the genus *Martynia* with several others is included, is by some Botanists regarded as a distinct Order; but by Lindley, than whom we can scarcely have a safer guide, the differences between the

true Bignoniads and the Pedalieæ are not considered sufficiently important to justify this separation, the chief distinctions being in the herbaceous character and wingless seeds of the latter.

The *Bignoniaceæ* are remarkable, in general, for the great beauty of their flowers; but the Order being almost exclusively tropical, only a few of the shrubby and arborescent genera will endure the open air in our climate. Among these are the noble *Catalpa*, with its fine foliage, and large erect racemes of spotted white flowers; the two allied genera, *Eccremocarpus* and *Calampelis*, the species of which are often mistaken for each other, and the well known orange Trumpet-flower, *Tecoma radicans*, formerly classed with the Bignonias. The species of *Sesamum*, or Oily-Grain, so remarkable for the large quantity of bland oil contained in the seeds, also belong to this Order.

The genus *Martynia* was so named by Willdenow, in honour of John Martyn, Professor of Botany at the University of Cambridge, author of several botanical works, who died in 1768. The species now figured is a native of Mexico, whence it was sent in 1840 to Miss Harvey of Hayle, in Cornwall, by whom it was first raised.

It is, perhaps, necessary to observe, that our figures are all, more or less, *reduced* representations, the limits of our plate not permitting figures of the natural size.

THUNBÉRGIA ALÁTA ÁLBA.

Wing-petioled Thunbergia.

Linnean Class—DIDYNAMIA. *Order*—ANGIOSPERMA. *Natural Order*—ACANTHACEÆ.

THE Thunbergias are great favourites with us, not only on account of their elegant flowers and foliage, but also for the very curious structure of those parts of the blossom more immediately concerned in the fructification. Most of our readers are, doubtless, already acquainted with this variety; but we trust, however familiar it may be, that no apology is needed for introducing so interesting a plant into our pages.

In commencing our examination of the flower, we must beware of confounding the two large bracts by which the corolla is enveloped before its expansion, with the true calyx, which is very small, and only perceptible upon a close inspection. If the two bracts be pulled aside, twelve minute teeth will be observed clasping

the base of the tube of the corolla; and after the blossom has fallen, these teeth embrace the ovary so closely, that the uninitiated observer would easily overlook them altogether, and imagine the more conspicuous bracts to be the calyx. If one of the satiny corollas be opened, there will be discovered within four rather short stamens, each terminated by a highly curious fringed or bearded anther. The office this fringe performs—and that it has one, we may be assured—it is somewhat difficult to guess; it perhaps serves to retain the pollen after its emission from the anther, until the stigma is fit for its reception, for it does sometimes occur that the pollen is mature before the stigma is sufficiently advanced to receive it, and if in this case no provision were made for the retention of the fertilizing particles, they would be scattered before the impregnation of the ovules could be effected. Decidedly the most interesting part of the flower is the slender curved style, with its double stigma. This organ, destined for the reception of the pollen, has, in addition to its small *terminal* cavity, a beautifully delicate shell-like *lateral* stigma, of a larger size. Both of them are, however, so minute, that in order fully to appreciate their exquisite finish, a microscopic examination will be requisite; but a Stanhope lens of moderate power will be all that is necessary. There can be no doubt that both of these appendages to the style perform the same function, for if the terminal stigma be cut off before the pollen is ripe, seeds will nevertheless be matured; which proves satisfactorily that, in this case, the pollen must have been conveyed to the ovules through the medium of the supplementary organ to which we have referred. Each of the seed-vessels contains four hard cup-shaped seeds. It will be remarked that the petioles have a leafy edge, or are, botanically speaking, *winged*, a circumstance by which *alata*, and all its varieties, are easily distinguished from the rest of the genus.

There are several varieties of this species besides the *a. alba* figured, differing only in the colour of their flowers; the chief are *aurantiaca*, rich orange; *Freyrii*, the same, but with a whitish throat; and *Doddsii*, differing only from *aurantiaca* in possessing variegated foliage. In the original species *alata*, the limb of the corolla is of a buff colour, the throat being of a rich deep purple-brown, like that of our illustration.

The remaining species of *Thunbergia* are not very numerous, and are chiefly inhabitants of the stove. The principal are *fragrans*, with white flowers of the same form as those of *alata*; *grandiflora*, with delicate blue blossoms much larger than those of any other species; *coccinea*, with blossoms of a dull scarlet; and *angulata* and *Hawtayneana*, both with purple blossoms. To these may be added a somewhat recent species, *chrysops*, perhaps the gem of the family, with the limb of the flower of a rich purple, and the throat or eye of a golden yellow. This plant is a native of Sierra Leone, and is said to require a stove heat for its successful cultivation; though we have reason for believing that it may be grown with a lower temperature than is commonly supposed.

Alata and its varieties are all of easy cultivation, either in pots for the window, or for ornamenting the flower-garden during the summer. The seeds require to be sown in spring upon a hot-bed; and we have sometimes found it advantageous to soak them, for three or four hours previously, in tepid water. A light vegetable soil, composed of leaf-mould or very old and thoroughly decomposed manure, with a third of any good garden soil, will form a suitable mixture in which to sow the seeds. With a good bottom heat of 70° the seedlings will soon appear above ground, and, as the roots descend deeply into the soil of the pot, the young plants will be best potted off separately, as soon as they have made one pair of leaves, in addition to the seed-lobes; in the whole of their after treatment a free, open vegetable soil must be used. If intended as a window ornament, as soon as the small pots are filled with roots the plants should be shifted to one at least six inches in diameter, if a fine specimen is desired; during the early stages of their growth the leading shoot and laterals should be frequently stopped, which will not only cause the production of a multitude of side shoots, but also restrain the plant within moderate bounds; this operation must not, however, be continued too late, as it would retard the period of flowering. When planted in the open ground this 'stopping' is of less importance. All the varieties of *alata* produce an abundance of flowers for three or four months in succession; and when covering, as they can easily be made to do, a wire trellis three feet in diameter, more striking objects cannot well be imagined.

To preserve the delicate green tint of the foliage, the plant should be shaded from the direct rays of the sun during the hottest part of the day; and as the whole of the Thunbergias are extremely liable to the attacks of a minute insect popularly termed the red spider—though it is in reality a species of *acarus* or mite—the plant should be frequently sprinkled or syringed with water. During this operation the pot should be turned on its side; the soil will thus be preserved from too much moisture, and the application of the water can be more effectually carried out. If the plant is kept in a dry hot atmosphere, and the precaution of syringing be neglected, the leaves will speedily lose their rich green hue, and assume a pale spotted appearance; and upon a close examination, the little pests to which we have alluded will be found in vast numbers upon all parts of the plant, chiefly, however, on the under surface of the foliage.

When cultivated out-doors, a shady situation and rich light soil must be chosen; in a hot, dry, exposed locality they will not succeed. They may be grown against a wall with a suitable trellis, or allowed to trail; but in this case the ground should be covered with a few small bushes, which the plants will quickly conceal. A very pretty effect may be produced by planting several specimens in a small bed, and training them over a few willow rods bent across from side to side. In short, in almost any situation partially shaded, and where proper support can be given to

their twining stems, the Thunbergias will be found among the most ornamental of the summer occupants of the flower-garden,

The genus bears the name of the celebrated Swedish Botanist and traveller, Charles Peter Thunberg, formerly Professor of Botany in the University of Upsal, and author of a celebrated work, entitled *Flora Japonica*.

HARDY PERENNIALS.

(Continued from page 32.)

We have now to notice an Order which, in beauty, extent, and utility, is second to no other in the Vegetable Kingdom—we mean the Leguminaceæ, from which it would be an easy matter to select hundreds of hardy ornamental subjects. It will suffice to name the genera, *Lupinus*, *Lathyrus*, *Orobus*, *Baptisia*, *Podalyria*, *Galega*, *Hedysarum*, *Psoralea*, and *Astragalus*. These all include many ornamental species of the easiest cultivation in almost any soil.

Although scarcely to be classed with *hardy* subjects, we cannot refrain from calling the attention of our readers to two splendid plants belonging to this Order; *Erythrina crista-galli*, or Coral Tree, and the Glory Pea, *Clianthus puniceus*, both of which may be grown in the open air, with a little protection in winter. The *Erythrina* is herbaceous, dying down to the ground every autumn, and the roots can therefore be easily covered with a large pot filled with some non-conducting material, such as hay or straw. The *Clianthus* is shrubby, and succeeds best against a wall, where it may be conveniently matted up in severe weather, and will will be less liable to the attacks of the red spider than when grown in the greenhouse.

The Order *Rosaceæ* is no way inferior in beauty or importance to the preceding, although it contains a mnch smaller number of herbaceous perennials. Of the Rose, the type and Queen of the Order, we need say nothing in this place, as the subject is of too much importance to be merely glanced at. More to our present purpose is the herbaceous section of the genus *Spiræa*, which comprises some very interesting plants. *S. ariæfolia* is an extremely elegant species, and also the double flowing varieties of *Filipendula* and *ulmaria*, two British plants; *lobata*, *Aruncus*, *palmata*, and *venusta*, are equally desirable. Two species of *Sieversia*, *montana* and *repens*, are pretty plants; they are both dwarf, with bright yellow blossoms. Of the Potentillas and Geums we have already spoken in the present number, and any further reference to them is therefore unnecessary.

In the *Onagraceæ*, or Evening Primrose tribe, we have some very showy hardy

plants. Not to speak of the elegant Fuschias—some species of which, however, we may fairly claim as nearly hardy subjects, and which would alone invest this order with remarkable interest—we would point out the various species of *Œnothera*, with their large white or yellow flowers produced for several months of the year; the equally interesting but far less common Gauras; and the recently introduced *Zauschneria californica*, which promises to be a valuable autumnal ornament of our garden; it is quite hardy and of very rapid increase, and produces its numerous orange flowers from the end of July until the tops are cut by frost.

Two or three of the Lythrums *(Lythraceæ)* are desirable for their free flowering habit; the best are *alatum*, *alatum superbum*, and *virgatum*; and one species of *Cuphea*, a genus belonging to the same Order, we find to be nearly hardy, the *strigillosa*, which survived the last winter fully exposed in our garden, though we fear that it would hardly bear severe or long continued frost, unless protected by a pot or a covering of leaves.

A small number of Crassulaceous plants are both hardy and ornamental, principally of the genus *Sedum*; but they are chiefly valuable on account of the rapidity with which they will cover a dry sandy spot, for which they are well adapted. More interesting is the Sacrifage tribe, nearly allied to the preceding, which includes some really interesting plants. The very curious *Parnassia palustris* belongs to this Order, and the various species of *Saxifraga*, *Tiarella*, *Mitella*, *Heuchera* and *Chrysoplenium*, are all neat ornaments of the rockery, to which they are well suited. Being mostly natives of Alpine regions, they are quite hardy, but require a pure air, and should be planted on the least exposed side of the rookery.

We now pass to a group of Orders of great interest to the cultivator of hardy plants, the *monopetalous* section, in which the petals are united so as to form an envelope which may be detached from the flower in one piece.

At the head of the list may be placed the *Composite* plants, comprising a host of the most ornamental subjects in cultivation. A mere enumeration of the genera would occupy more space than we can devote to the entire subject; we must therefore content ourselves with pointing out, among others, the handsome genus *Liatris*, so rarely seen in gardens, and yet so attainable; the stately Rudbeckias; the very beautiful North American Asters, of which there are a considerable number of all shades, of blue, purple, and pink; the pretty Stevias; the familiar *Chrysanmum*; and the scarcely less common *Solidago*, or Golden-rod. A few of the perennial Coreopsis are little less ornamental than the annual species, and some of the hardy Cinerarias may be admitted into the borders, though they cannot vie in beauty with the dwarfer and more delicate species of the same genus. Among the composite plants of more restricted growth, the genera *Gaillardia*, *Stenactis*, *Achillea*, *Cacalia*, *Podolepis*, *Tussilago*, *Hieracium*, *Cirsium*, *Catananche*, *Centaurea* are the most remarkable, though there are many others to which our limited space forbids any reference.

The *Campanulas* are universal favourites; but so numerous are they, that it would be a hopeless task to attempt to select where all are beautiful. There are not less than two hundred species, of which nearly the whole are hardy, and of such various habits of growth, that subjects suited to any situation may be easily chosen.

The Lobelias must, on no account, be forgotten, including, as they do, some of the most splendid of hardy exotics. A few of the finest species require winter protection, but a large proportion may be preserved with only a covering of leaves, and some of them are quite hardy. We intend shortly figuring one of the best species, and therefore defer till then any enumeration of the most suitable varieties for outdoor cultivation.

Next on our list stands the *Primulaceæ*, which, if the plants comprising it are less showy than those of the preceding Order, are not the less remarkable for their extreme neatness of habit, and their interesting early flowers. We allude not only to the Primulas, the type of the order, but also to the Androsaces, Soldanellas, and other alpine genera, 'than which nothing can be more lovely; their little modest blossoms, in their native Alps, sometimes rivalling the whiteness of the surrounding snow, sometimes emulating the intense blue of the empyrean, as if one had borrowed its hues from heaven, and the other from the spotless mantle of the earth.' Four other genera, in addition to those we have named, contain plants meriting cultivation, viz. *Cyclamen*, *Lysimachia*, *Dodecatheon*, and *Cortusa*.

Another Order almost exclusively alpine, is the *Gentianaceæ*, including the numerous species of Gentian, with their deep blue or pale yellow flowers; the pretty Erythreas, and the Spigelias, of which one species, *marilandica*, is an interesting hardy plant.

The Phlox tribe is rapidly becoming a favourite, both with the public and professional Florists. Numerous hybrids are now produced every season, some of which are among the finest of herbaceous perennials; and the same may be said of many of the older species from North America. We have not hitherto, in the course of the present paper, ventured to point out any of the structural peculiarities of plants we have named, but we are tempted to occupy a line with a reference to the singular position of the stamens in the Phlox family. In all the species with which we have any acquaintance, these are inserted in the tube of the corolla, not in one plane, as is the case with most other plants, but at different distances from its mouth. We do not know that any explanation of this curious fact has been offered; —may it not arise from the narrowness of the tube, which renders such an arrangement necessary?—for in most of the species the throat is of so small a diameter, that were the stamens all at an equal distance from the mouth, the orifice would be entirely closed. At any rate, this much is certain, that this arrangement of the stamens is only seen in those corollas of a form analogous to that of the Phloxes.

Few gardens are without the so-called Major Convolvulus and the dwarfer Convolvulus tricolor, but how comes it that none of the hardy perennial species of

the same genus are seen in cultivation? There are a considerable number of these, some of a climbing habit, and others of more restricted growth. *Sibthorpii, holosericeus, persicus,* and *sericeus,* are the best of the latter class; and *hirsutus, Malcolmii,* and *chinensis* of the former. The recently introduced *Calystegia pubescens* is interesting, as being the only example of double flowers to be found in the Order; it is quite hardy, and deserves cultivation on account of the freedom with which its large, but somewhat ragged flowers, are produced for several months in succession.

The plants of the Borage tribe, notwithstanding their general coarseness of foliage, are many of them beautiful ornaments of the borders. No garden should be without the handsome *Anchusa Italica;* and where space can be afforded, some of the Echiums, Cynoglossums, Symphytums, and Lithospermums, are almost of equal interest. Two new plants of the Order are very desirable, *Arnebia echioides* and *Lithospermum canescens,* both with orange flowers; a hue somewhat uncommon in the Order.

The *Labiatæ,* or Lip-worts, deserve a more extended notice than we are now able to afford them; but any account of hardy perennials would be altogether incomplete without a brief reference to such plants as the Monardas, Dracocephalums, Phlomis, Scutellarias, and Stachys, many of which are pretty, and some really remarkable for their brilliant flowers. But the most interesting plants of this Order are, undoubtedly, those of the genus *Salvia.* The beautiful *S. patens,* and its white variety, are everywhere seen, as well as the older scarlet *fulgens* and *splendens;* but to what cause is to be attributed the almost general absence from our gardens of such species as *bicolor, Grahamii, Simsii, aurea, hians, indica, Tenorii,* and others too numerous to mention, which are many of them hardier than those commonly grown, and fully equal to them in beauty?

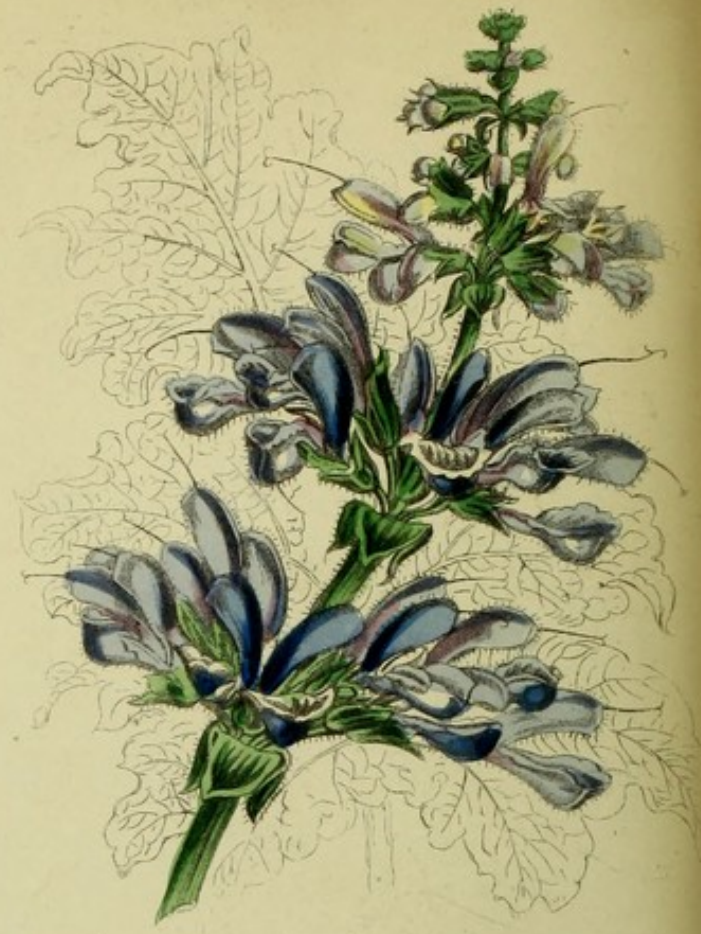
Another family, with equal claims to attention, is the *Scrophularineæ,* or Fig-worts, in which are to be found the elegant Pentstemons, and Chelones, the stately Fox-gloves, and the various species of *Linaria, Veronica, Pedicularis, and Mimulus.*

Our exhausted space compels us to omit many interesting plants which we should otherwise have noticed, but we must not conclude without a reference to the Verbascums, and Solanums, of the Night-shade tribe; to the beautiful Armerias and Statices, of the Lead-worts; to the hardy species of *Asclepias,* of which there are several showy plants; and the *Acanthus mollis,* so interesting from its association with the origin of the Corinthian order of Architecture.

We think a review of the preceding sketch will justify us in repeating here what we have already stated in the commencement of our remarks, that when individual taste or peculiar circumstances may render it necessary to exclude the more tender ornamental plants from the flower-garden, a judicious selection of the numerous hardy species would present a result scarcely less brilliant, and certainly more easy of attainment, than that produced by the aid of the rarest and most costly exotics.



Escallonia macrantha.



Salvia bicolor.



Lilium colchicum.



Cantua dependens.

ESCALLÓNIA MACRÁNTHA.

Large-flowered Escallonia.

Linnean Class—PENTANDRIA. *Order*—MONOGYNIA. *Natural Order*—ESCALLONIACEÆ.

THE number of hardy evergreens in cultivation producing showy flowers, has increased considerably of late years; but they are still so much less numerous than deciduous shrubs, that any addition to this class of plants would be favourably received, even had it fewer claims to notice than the very handsome *Escallonia* we now figure. Several species of this genus, with small white or red flowers, are to be found in the gardens of the curious, but for the *Escallonia macrantha* we may safely venture to predict a much wider popularity; and it is, in fact, although so recently introduced, already tolerably well known, thanks to its rapid growth, and the ease with which it is propagated.

For this interesting shrub the floricultural public are indebted to the enterprise of Messrs. Veitch of Exeter, by whose collector it was found in Chiloe, an island to which we owe several highly ornamental plants, and which, as might be anticipated, are most of them sufficiently hardy to bear the winters of our southern counties with little or no protection. It is true that frost and snow are comparatively unknown in Chiloe, but the climate, to use the words of Mr. Darwin, 'is detestable; rain falling during ten months of the year, and a week of fine weather being regarded as an extraordinary event.'* However favourable such atmospheric conditions, aided as they are by the fertile soil of the decomposed volcanic rocks of which the island consists, may be to the growth of the Chiloen flora, there can be no doubt that plants produced under these circumstances, would be less able to resist a very low temperature than when cultivated in our own climate.

We believe, therefore, that the *Escallonia macrantha* will be found considerably more hardy than was at first supposed, and that if planted in situations not too much exposed, nor in soil too retentive of moisture, it will bear our winters even in the open border. Some of the species hitherto cultivated succeed best against a wall; and in such situations, the *E. macrantha* would probably resist the climate of our northern counties.

It is increased with great facility by cuttings, under a hand glass in summer, and also by layers of the lower branches.

It is usually grown in peat; but in localities where this is not obtainable, a

* See this gentleman's very interesting *Journal of a Naturalist* in the Voyage of the Beagle.

suitable soil may be prepared by mixing sandy loam with one-third of leaf-mould, or of old and thoroughly pulverized rotten manure.

We are unaware of the size attained by this shrub in its native climate, but the oldest specimens in this country have many of them already reached the height of four feet; and in robustness of growth, it probably surpasses most of the other species. The panicles of rosy flowers, which appear in June, and are produced for several months in succession, are borne at the extremity of each branch, and smaller heads are also produced by the side shoots.

The *Escallonias* are found only in South America, where they are widely distributed, from New Grenada to the Straits of Magellan; and from the Organ mountains of Brazil, to Chilóe, the habitat of the present species. Several of them are found at great elevations, frequently at a supra-marine altitude of 12,000 to 14,000 feet.

By some Botanists, the *Escalloniads* are considered as a section of the Saxifrage tribe, with which they have some affinity: we have, however, followed those writers who place them as a distinct order. The *Saxifragaceæ* are well distinguished, by the two carpels of which their fruit is composed diverging at the apex, the two stigmas being sessile on the tips of the lobes of the ovary. In the *Escalloniaceæ*, the two carpels are wholly adherent; and the calyx being united to the ovary, this organ is entirely inferior, whilst in the Saxifrages it is only partially so. The cohesion of the petals in *Escallonia*, offers an additional means of discrimination between the plants of the two orders.

For the benefit of our younger readers we subjoin the technical description of this shrub, which will serve as a lesson in the science of observation. They will do well to remark the order in which the various parts of the plant are described, and the precision with which each peculiarity is noted. Where a specimen is attainable, it should be carefully compared with the following details:—

'A handsome *shrub*, three feet or more high, branched. *Branches* terete, the younger ones clothed with glandular pubescence. *Leaves* alternate, obovato-elliptical, rather obtuse, cuneate at the base, strongly and doubly serrated at the margin, reticulated on the surface, glabrous, dark and shining above, beneath paler, and dotted with resinous points. *Panicle* terminal: *pedicels* bracteolated, the *bracteoles* deciduous. *Flowers* large, red. *Calyx* turbinate, clothed with stipitate viscid *glands*; the lower portion of the tube adherent with the ovary, the upper half free, campanulate, cut half-way down into five erect or slightly spreading, subulate *teeth*. Corolla of five spathulate *petals*, the *claws* erect, and forming a tube, the *laminæ* spreading horizontally. *Stamens* as long as the tube. *Ovary* two-celled. *Style* columnar, surrounded at the base by a large furrowed *gland*. *Stigma* thick, dilated, obscurely two-lobed. *Fruit*, turbinato-cylindrical, surmounted by the spreading persistent limb of the calyx and the style.'*

* *Botanical Magazine.*

Whatever objection may be urged against the pedantic use of botanical terms, it is impossible to read the above description without being struck by the extent of the information thus conveyed, and which could only have been expressed in ordinary language at the risk of much circumlocution.

The stalked glands clothing the calyx and other parts of the plant, and to which reference is made in the foregoing description, are common to most of the species, and communicate to them a somewhat powerful resinous odour. It has been stated, that these resinous secretions occur chiefly in plants growing naturally in arid, exposed localities; their existence on the *Escallonia macrantha* proves, however, that they are not confined to such subjects.

The genus *Escallonia*, the type and chief constituent of the order, bears the name the Spanish traveller Escallon.

SÁLVIA BÍCOLOR.

Two-coloured Sage.

Linnean Class—DIDYNAMIA. *Order*—GYMNOSPERMA. *Natural Order*—LABIATÆ.

WE have already, in a former number, expressed our high opinion of the value of the *Salvias* as an ornamental genus; and we have much pleasure in now presenting our readers with a figure of a species, which, if not the handsomest of the family, is nevertheless eminently deserving of extensive cultivation.

Its blossoms taken individually are, perhaps, less attractive than those of the now common *S. patens;* but, on the other hand, they are far more abundantly produced, and are much less fugacious, remaining expanded several days after their full development. In any moderately good soil the plant attains the height of four or five feet; and clothed as it is with very handsome foliage, an established specimen forms, when in flower, an exceedingly interesting object. Its blooming season extends over a period of two or three months, or even longer, if prevented from ripening seed.

It is, moreover, perfectly hardy, and requires, therefore, none of the attentions necessary to preserve its more tender congeners from the rigours of our winters. So numerous, in fact, are the claims of the *Salvia bicolor* to attention, that it seems surprising that this species should be comparatively so little known. It was first

introduced into this country as early as 1793, but appears to have been almost entirely lost, until its re-introduction, about ten years since, from the North of India, by Messrs. Standish and Noble, Bagshot.

The loss of this and many other valuable hardy plants, is, no doubt, to be attributed to the commonly-received opinion—acted upon, at least, if not really entertained—that hardy perennials require only to be planted in the border, and may then be left to take their chance, without further attention. So erroneous a practice cannot be too soon banished from our gardens; and we have no doubt that, were a tithe of the care lavished on the bedding plants now so much employed for decorating the parterre in summer, bestowed on some of our best perennials, they would amply repay their cultivator for such attentions.

The utmost civility they receive is, perhaps, a chopping round with the spade in the spring; the central and older parts of the stool being allowed to remain, while the more healthy and vigorous fragments are not unfrequently thrown away as superfluous! When a herbaceous plant is divided, the shoots proceeding from the outer portion of the root should alone be replanted, and, in every case, in fresh soil. It is also highly desirable to save seed each autumn, if possible, as we are thus enabled to raise a stock of seedlings, which are usually more vigorous than those plants originated by cuttings or divisions of an older specimen, and are also ensured against the risk of loss from the severity of the season, or the other ills to which plants, in common with poor humanity, are heir to.

The *Salvia bicolor* may be readily increased, either by division of the roots in spring, by cuttings early in summer, or by seed, which generally ripens freely, but which must be gathered just before it is fully mature, or like that of the *S. patens*, it falls from the nodding calyx.

It should be sown on a gentle hot-bed early in spring, and the seedlings, when an inch or two high, be transferred singly to small pots of light soil, and subsequently shifted into larger, until the plants are fit for turning into the borders in May. They will usually flower the first season, as is the case with nearly all the *Salvias*, though not, indeed, so early as older plants. We have, on more than one occasion, raised seedlings of *S. patens*, which grew more vigorously, and flowered more profusely the first season, than specimens preserved through the previous winter.

In the absence of a hot-bed, we have no doubt that seeds of our present subject would readily vegetate, if sown in a warm border about the end of April; especially if assisted by a hand-glass, or protected at night from frost and snails, by having a flower-pot turned over them.

There are many other species of *Salvia* not commonly grown, which are equally deserving of attention with the *S. bicolor*, the genus containing, indeed, not less than two hundred species, a considerable number of which are tolerably hardy. Those most generally found in cultivation, have chiefly flowers of various shades of purple,

blue, or scarlet; but other tints are by no means absent in this family. There are several species with yellow, and at least twenty with white blossoms; others have bright pink, lilac, or violet flowers; and there are a few into the composition of whose colouring nearly all the tints we have named may be said to enter.

Among those most worthy of cultivation, we may name, *azurea*, *hians*, *Simsiana*, *Africana*, *Indica*, *Barrelieri*, and *grandiflora*, with blue or violet flowers; *leucantha*, *interrupta*, and *elegans*, white; *glutinosa*, *nubicola*, and *aurea*, yellow; and *rugosa*, *Habliziana*, *rosea*, and *calycina*, pink. These are all perennials; but there are also a few annual species, some of which, such as *Œthiopis* and *Tingitana*, merit a place in the borders, though they are rarely procurable at any of the seed-shops; and indeed, many of the perennial species to which we have referred, are not to be obtained without difficulty.

From the diversity of colour presented by this genus, we feel persuaded that many interesting varieties might be originated by hybridizing. We have now a white *S. patens;* what obstacle presents itself to the production of a pink, scarlet, violet, or yellow variety of the same plant, by crossing with the pollen of some other species? We need hardly remark, that in addition to the gratification which would naturally be felt by the raiser of a new variety of this, or any other species, a more *palpable* reward might reasonably be reckoned upon.

The *Salvias* are readily distinguished among *Labiate* plants by their peculiar stamens, which have their two anther-cells separated by a long connective, one of the cells being usually abortive. In the *Monarda*, popularly known as the Bergamot plant, and in the Rosemary, but two stamens are present; but the absence in these genera of the branching connective, enables the student to determine, with facility, the plants of the *Salvia* genus from its allies. By the older Botanists, the *Labiatæ* were supposed to have naked seeds, and were therefore termed by Linnæus *Gymnospermous;* but it is almost superfluous to add, that this notion was long since shown to be erroneous, the fruit or ovary of the plants of this order being, in fact, deeply four-lobed, each lobe or nut containing a single seed. All the Lip-worts are remarkable for the aromatic volatile oil existing in the foliage, as well as in the calyx of some of the genera, and it is to this oil that the stomachic and stimulant properties of the order are chiefly due. According to Lindley, camphor is so abundant in this family, and especially in the oils of Sage and Lavender, that it might be advantageously extracted.

Although the *Salvia bicolor* has been found, as we have already intimated, in the North of India, it appears also to be a native of Barbary, from which country it was first introduced.

LÍLIUM CÓLCHICUM.

Colchicum-like Lily.

Linnean Class—HEXANDRIA. *Order*—MONOGYNIA. *Natural Order*—LILIACEÆ.

AMONG hardy bulbous plants, the Lilies have long stood pre-eminent for their beauty and stately grandeur; and the recent introduction of two remarkable species, has invested this genus with great additional interest. Whilst many plants of the order will only produce their blossoms under a combination of favourable circumstances, to induce the Lilies to yield their fragrant flowers it is only necessary to plant the bulbs in any tolerably rich soil, *and leave them undisturbed.* This may be regarded as the *golden rule* of Lily culture, and applies equally to all bulbous plants. The fleshy rootlets proceeding from the base of the bulb are extremely liable to injury by removal; and as they never produce lateral fibrils, as in the case of fibrous-rooted plants, it follows, that when their extremities, or *spongioles*, are broken off, the entire rootlet decays, and the plant receives a serious check. When it is necessary to remove or separate the bulbs, it should be done as soon as the leaves are decayed, and before the young bulbs protrude any roots, which they do long before the appearance of the leaves above ground.

The *Lilium colchicum*, of which (through the kindness of Mr. Groom of Clapham) we are now enabled to publish the figure, if less splendid than some others of the genus, is certainly a handsome species, and well deserving of cultivation. It grows to the height of three feet or more, and, coming from Siberia, is perfectly hardy. Although, for convenience sake, only a single flower is shown in our plate, several are borne by the same stem, the number varying with the size of the bulb.

It grows freely in any good garden soil, and also in peat; though, from the character of its roots, we should have imagined peat earth to be entirely unsuited to this, or any other species of Lilium.

Owing to the somewhat slow rate of increase of the bulbs of this genus, new species are less rapidly disseminated, than in the case of plants readily propagated by seeds; and the *Lilium colchicum* is, therefore, in common with several other recently imported species, rather rare and expensive. It is true, that most, if not all of the Lilies, ripen seed under favourable circumstances, which vegetates quickly, if sown as soon as gathered; but several years usually elapse before the bulbs are of sufficient size to flower.

Notwithstanding this drawback, however, we do not hesitate to recommend to

those of our readers who may be endowed with a sufficient stock of patience, the propagation of the Lily tribe by seed. The Dutch florists have raised many interesting varieties of the *Martagon Lily;* and in England Mr. Groom, who has devoted much attention to this showy genus, has obtained a number of very beautiful hybrids, between several of the species, among the most remarkable of which, are those obtained from *L. bulbiferum*, crossed by the pollen of *L. atrosanguineum*. It would be an error to suppose that these results are only attainable by professional florists; on the contrary, they are within the reach of the humblest cultivator.

We intend, in an early number, to explain how the operation of hybridizing is performed; and, in the meantime, we would point out, that where it is desired to increase to some extent any rare species of Lily, we may avail ourselves of the well-ascertained fact, that any check upon the production of flowers increases the formation of young bulbs. If, therefore, the flower stem be entirely removed at an early stage of its growth, the vital energies of the bulb being no longer directed to the nutrition of stem, flowers, and seeds, will be diverted to the production of an increased number of new bulbs; and the same result occurs, if the old bulb be accidentally injured or removed, in a growing state.

Our space will not allow us to notice, in the present article, all the points of interest in the structure and growth of the plants of this genus. We will now only refer to the small bulbs, or bulbils, formed upon the stem of some of the species, chiefly in *L. bulbiferum*, and *L. tigrinum*. These singular productions may be employed in the propagation of the species; but, as in the case of plants raised from seed or from separate scales of the bulb, a long succession of leaf bulbs must be formed before a flower bulb is produced.

We believe our present subject has been published in Van Houtte's *Flore des Serres*, under the name of *L. Szowitsianum;* we have, however, preferred the more euphonious designation by which it is generally known in this country.

We will avail ourselves of this opportunity to recommend to such of our readers as do not already possess it, the very beautiful *L. speciosum*, and its varieties, which are found to be quite hardy, and also well adapted to pot culture. They are now so extensively grown for sale, that bulbs of the white variety may be purchased at nearly as low a rate as the common white Lily. The *L. speciosum* is often regarded as a variety of the *L. lancifolium*, but erroneously, this latter being a distinct species.

In commencing these remarks we alluded to two recently introduced species, which, if the accounts given of them are not exaggerated, will certainly create a *furore* among horticulturists; we refer to the *L. giganteum* and *L. Wallichianum*, both from Nepaul. A brief account of the first-named species will be found at page 63. The *L. Wallichianum* does not appear to exceed in stature many of the older kinds; but the flowers are even larger than those of *L. giganteum*, and are said to be fully *nine inches* long, and when expanded, as much across the mouth.

CÁNTUA DEPÉNDENS.

Pendent-flowered Cantua.

Linnean Class—PENTANDRIA. *Order*—MONOGYNIA. *Natural Order*—POLEMONIACEÆ.

'SINCE the introduction of the Fuschias and the Bengal Rose, our gardens have received nothing so remarkable as this new shrub.' Such were the words with which Dr. Lindley accompanied the publication in *Paxton's Flower Garden* of the *Cantua dependens*; and in this merited encomium most of our readers will, we are sure, be well disposed to concur.

Of the existence of this species of *Cantua* Botanists have long been aware; but it was not until 1849 that living specimens were introduced from the Peruvian Andes, where it was discovered by Mr. W. Lobb, the indefatigable collector of Messrs. Veitch of Exeter. Whatever may be the demerits of our little publication, we are, at least, exempt from one reproach—that of exaggerating the figure of the plants we illustrate, as, from the limited size of our plate, our drawings are necessarily more or less reduced in their dimensions. Our readers are hardly likely, therefore, to be led by our representation of it, to overrate the beauty of the *Cantua dependens*, which has every chance of becoming one of the most popular plants introduced for many years. Of easy culture, compact medium habit, possessing neat and unobtrusive foliage, and producing a profusion of elegant flowers of more than ordinary dimensions, we have no doubt that in a very short time it will take its place with the Fuschias, Geraniums, and other 'household plants' now to be found in the cottage of the humblest lover of flowers. It will probably prove as hardy as many of the Fuschias, and will certainly flourish in the open border during the summer months. Messrs. Veitch have obligingly informed us that a specimen planted at the foot of a south wall has stood two winters with only the protection of double mats; and they are of opinion that it would bear five or six degrees of frost without injury. The plant so exposed by them is now four feet high, and flowered abundantly during the summer of 1851.

But although it may thus be said to be partially acclimatized in Devonshire, few persons, we apprehend, in the Eastern, Midland, or Northern counties, will feel disposed to risk so valuable and rare a plant in the open ground during the winter months. As a pot plant it succeeds admirably, specimens only a foot high flowering freely; but in winter, it requires to be kept in a cool, airy apartment, with only a small supply of water. It is partially evergreen; and, as like the

Geraniums, it continues to grow slowly during the cooler months of the year, it will not tolerate the complete neglect to which many deciduous plants may be subjected with impunity.

It is propagated by cuttings which root freely under a bell-glass, in a light soil, and more readily with a little bottom heat. It appears to flourish most in a mixture of sandy peat, good loam, and leaf mould, though it will succeed in any soil not of too extreme a character. We are not aware whether it has yet ripened seed in this country; should this be the case, a ready mode of increasing it will thus be offered.

The species we now figure is the *Cantua buxifolia* of Lamarck; and, in fact, it has been published under that designation in the *Botanical Magazine*.

But, notwithstanding the priority of this appellation, it has been clearly shown to be inappropriate, inasmuch as the lower leaves of each shoot are all more or less toothed; and we have therefore preferred the specific term *dependens*, first applied to this species by Persoon, and now adopted by Lindley and other eminent Botanists. This splendid plant appears to vary considerably, not only in the pubescence and form of its foliage, but also in the colour of its flowers, which, in some specimens, are of a pure yellow, and in others, both white and yellow. The delicate teeth which appear in our figure at the edge of the lobes of the corolla, are occasionally wanting.

There are several other species of *Cantua*, two of which, the *C. bicolor* and *C. pyrifolia*, are already in cultivation in this country; but none of them at all approach in beauty our present illustration, the flowers of which we may remark, *en passant*, are nearly four inches long.

The *Cantua bicolor* is, however, a very pretty shrub, with flowers somewhat resembling those of the *Thunbergia Fryerii*, but smaller. The generic name is a slight modification of the vernacular term *Cantu*, by which the species are known among the Indians of Peru. The love of these untutored children of nature for the floral treasures of their native woods is well known, and the flowers of the *C. dependens* are said to be held in high estimation by them, being often used for the adornment of their dwellings on feast-days.

The *Cantuas* are distinguished from most other plants of the order, by their winged seeds, and strongly nerved or ribbed calyx. The imbrication of the lobes of the corolla in the flower bud, the three-cleft stigma, and the three-celled capsule, opening when ripe by three valves, are common to the whole tribe.

The order *Polemoniaceæ* is much less extensive than many other of the natural families, but most of the genera included in it are esteemed for their showy character. The *Gilias*, *Leptosiphons*, and *Collomias*, are among the prettiest of the Californian annuals; and still better known are the *Phloxes*, than which few herbaceous plants have higher claims to cultivation. Nor must we forget the genus *Polemonium*, the type of the order, of which there are several species;

the most common is the *P. cæruleum*, a neat, hardy perennial, with pinnate leaves and clear blue flowers. A recent introduction, the *Cyananthus lobatus*, a plant greatly resembling the *Polemoniums*, also belongs to this order. One interesting plant, formerly included with the *Gilias*, deserves to be more extensively grown—we allude to the *Ipomopsis picta*, the *Gilia coronopifolia* of some Botanists. It is a tall biennial, with finely cut leaves, and scarlet blossoms spotted with purple. It requires to be sown in the borders in summer, and afterwards transferred to pots, and preserved from frost through the winter, during which period but little water should be given it, as it is very liable to damp off. The following season it may be shifted to a large pot for flowering, or turned into the open border.

It is worthy of remark, that most of the *Polemoniads* have *blue* pollen, whatever may be the colour of the flowers; to this, however, the *Phloxes* are an exception.

SEEDS, THEIR STRUCTURE AND FUNCTIONS.

Among the teeming wonders of our beautiful world, few are more calculated to strike the reflective mind with astonishment than the means provided for the multiplication and dissemination of the various members of the Vegetable Kingdom. Whether we consider only the structure and reproductive office of the marvellous organisms by whose agency these ends are effected; the simplicity of the means by which their diffusion is accomplished; the multifarious purposes to which they, or their products, are applied, in augmenting the comforts and luxuries, and diminishing the wants and miseries of mankind; or, finally, the deeply interesting moral associations connected with their functions, it will be readily conceded that no vegetable organ more displays the power, benevolence, and matchless wisdom of the Great Creator, than the apparently insignificant bodies containing the rudiments of a future plant. Deferring until a future number any notice of the successive stages through which the *ovule*, or immature seed, passes, while attached to the parent plant, we will, in the present paper, confine our observations to the ripened seed, in the state in which it falls from the seed-vessel.

Every seed consists essentially of a *nucleus* or *kernel*, surrounded by one or more *integuments*. In the young ovule, these integuments are several in number, some botanical writers enumerating as many as five; but as the seed progresses to maturity part of these are absorbed, so that, in the ripe seed, all that can be detected is the nucleus and two coverings, generally easily separable from each other. These two membranes, which may be seen to advantage in the Walnut, are named, the outer one the *episperm* or *testa*, and the inner one the *endopleura* (*endon*, within, and *pleura*, side). Collectively they form the *spermoderm* (from *sperma*, seed, and *derma*, a covering).

The *episperm* is not always membranous, but frequently so hardened as to be quite woody; in other cases it is leathery, crustaceous, bony, spongy, or fleshy. Its surface is often beautifully marked, and many seeds are, from this cause, interesting microscopic objects. In some seeds the *episperm* is expanded at the edge in the form of wing-like appendages, as in the *Calampelis scaber* (Eccremocarpus), and other plants of the Bignonia family; in the Mahogany, and in many of the Lily tribe. In some cases it is covered with hairs, as in the Willow-herb (*Epilobium*), the Cotton-plant, and the different species of Asclepias. These appendages must not, however, be confounded with those attached to many seed-*vessels*, as, for instance, the *pappus* crowning the fruit of most plants of the order *Compositæ;* the wings of the Sycamore-*keys*, as they are popularly termed, and those of the Ash and Dock. Upon most seeds of any magnitude, a scar is visible at the base, and usually of a different colour to the rest of the integuments. This spot is called the *hilum* or *umbilicus*, and marks the point by which the seed was attached to the interior of the ovary or seed vessel. In the Chestnut it is black and very large, covering one-fourth of the surface. In the Nemophilas, and in the Garden Pea, it is *white;* and in some seeds it is so minute, that it is recognised with difficulty.

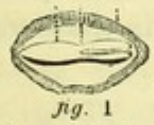


fig. 1

The *nucleus* contained within the integuments, consist either of *albumen* and the *embryo*, as in the Primrose (*fig.* 1) and Potatoe (*fig.* 2), when it is termed albuminous; or of the *embryo* only, as in the plants of the orders Rosaceæ, Cruciferæ, and Leguminosæ, when it is called *exalbuminous*. In seeds of the former class, the proportion of albumen varies greatly; in some instances it forms the great bulk of the seed, as in the Birthwort (*fig.* 3), where the *embryo* is very minute, and in the Cocoa-nut. It may either entirely surround the *embryo* (as in *fig.* 1), or occupy the centre of the nucleus as in the Marvel of Peru (*fig.* 4.) The albumen varies much in its nature and consistence; it may be *mealy*, consisting chiefly of cells filled with starch, as in the Buck-wheat (*fig.* 5), and in the Cereals, and many other plants; or *horny*, as in the Coffee; *fleshy* and *oily*, as in the Poppy and Castor-oil seeds; and occasionally so hard as to be susceptible of a polish, as in the Vegetable Ivory (*Phytelephas*), so much employed for small articles of turnery



fig. 2.



fig. 3.

The *embryo* consists of three distinct parts: the *cotyledons*, or seminal leaves, the *plumule*, or *gemmule*, and the *radicle*. It varies, however, in its structure in different classes of plants; and upon these differences are founded the three great divisions of the Vegetable Kingdom. Plants having two cotyledons, as in the Oak, and the great majority of plants, are termed *Dicotyledonous*; those with *one* only, as in the Palms, Grasses, and most plants having leaves

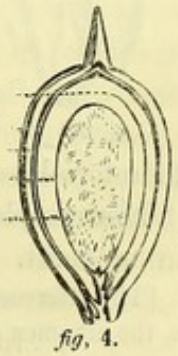


fig. 4.

with *parellel veins*, are *Monocotyledonous;* those without cotyledons, as in the case of Ferns, Mosses, Lichens, and Sea-weeds, are termed *Acotyledonous;* though this term is hardly correct, as we will hereafter explain.

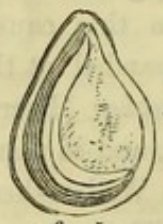


fig. 5.

In the Dicotyledonous embryo, of which all our figures, with the exception of 10 and 11 are examples, the two cotyledons are usually in close contact, the *plumule* being enclosed between them as in the Bean (*fig.* 5), where one of the cotyledons has been cut away. They are generally entire, but in a few cases they are lobed, as in the Walnut; or deeply divided, as in the Lime-tree and Fir (*fig.* 7); this last is often termed *polycotyledonous*, but apparently without sufficient reason.

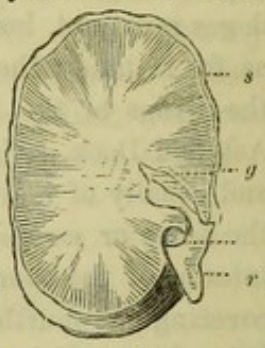


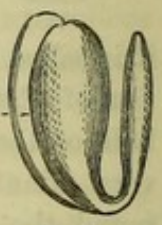
fig. 6.

The cotyledons are commonly straight (as in *figs.* 1, 3, and 6); in other cases they, as well as the entire embryo, are slightly curved (as in *fig.* 5); and in many seeds they are arranged spirally (as in *fig* 2). In the Marvel of Peru (*fig.* 4), where the embryo encloses the mealy albumen, it is termed peripherical.

In the Convolvulus tribe, the cotyledons are crumpled so that when unfolded they expose a large surface; in the Pomegranate, they are rolled up laterally, so as partially to surround each other; and in the Geranium family, they are plaited.


fig. 7.

The *radicle*, or point from which the root proceeds, is usually straight; but in certain important orders it is curved, and gives a marked character to the seed. In the Cruciferæ it is curved, so as to be parellel to the cotyledons, being either folded against the edges, as in the Woad (*Isatis tinctoria*, *fig.* 8), or on the back of one of them, as in the Wall-flower (*fig.* 9). In some plants of the same order, the cotyledons are two or three times folded; and it is on these distinctions that the subdivisions of this order are founded.



fig, 8.

The position of the radicle is also an important mark of distinction. It is usually opposite the hilum (as in *figs.* 2, and 4); but in all the plants of the Nettle tribe, in the Cistus, and in the Buckwheat (*fig.* 5), it is inverted, and is then termed superior. This is almost the only point of difference between the orders Compositæ and Dipsaceæ. In the Primrose (*fig.* 1), and all plants of the order Primulaceæ, the embryo lies across the hilum, and the radicle is therefore lateral.

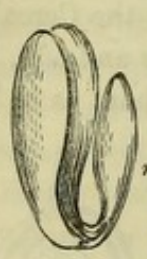


fig. 9.

Monocotyledonous and Acotyledonous seeds, with the phenomena of germination in our next.

[The references are the same for each of the above wood-cuts: *s*, the spermoderm or integument; *a*, the albumen; *e*, the embryo; *c*, the cotyledons; *r*, the radicle; *g*, the gemmule or plumule.]

ON THE CULTURE OF THE RHODODENDRON.

The Rhododendron has been styled the Queen of Evergreen-shrubs; and those of our readers who have had the good fortune to witness the magnificent display of these plants at the Chiswick Exhibitions, will not think such praise misplaced. The great diversity of habit and foliage; the gorgeous beauty of their flowers, of every imaginable shade of colour; and the perfect hardiness of the great majority of the species and varieties, give them the strongest claim to the attention of all classes of cultivators.

These claims are now, indeed, so fully recognized, that there are few persons possessing a garden-plot who have not attempted the cultivation of a Rhododendron; though it must be admitted, that, in general, amateurs are not very successful in their treatment of this plant, if we may judge from the many miserable specimens to be seen in suburban gardens.

As we intend figuring shortly one of the most desirable varieties, we will reserve our remarks on the origin of the present race of hybrids of this genus, and confine ourselves to the best method of cultivation. Some clue to their proper treatment may be found in the fact that, notwithstanding the wide geographical range of the species, they are, with very few exceptions, all inhabitants of moist localities. On the Himalaya Mountains, the Rhododendron is invariably found growing near or on the margin of morasses; and in America, and other parts of the world, where any of the very extensive tribe commonly known as 'American Plants' are found, it is always on the border of lakes, rivers, or bogs, or on the nearest portions of dry land in their vicinity. A *moist* situation may, therefore, be regarded as a *sine quâ non* to their successful cultivation; though soils too retentive of humidity will prove as injurious as those of an opposite character.

Peat soil is usually supposed indispensable to Rhododendrons, and where this can be obtained of good quality, turfy, and of close texture, there can be no doubt that it best accords with their natural constitution. In *very sandy* peat, they will, under the most favourable circumstances, be stunted in their growth, and their flower-heads few and small.

An excellent compost, and one attainable in most localities, may be made as follows:—To two parts of sandy-loam or peat, or, in fact, any sandy soil that does not contain much chalk or lime (American Plants exhibit a great dislike to either), add one-fourth leaf-mould, one-eighth sand, and one-eighth rotten manure. If wanted immediately, the whole should be well beaten, and thoroughly incorporated before using. It would, however, be of great advantage to allow the mixture to remain twelve months, turning it well two or three times. In old exhausted beds, a good dressing of rotten manure forked in will be found highly beneficial.

Where the soil of the garden is of a stiff clayey nature, a bed must be dug and filled in with the above compost. The depth of the prepared soil need not exceed twenty inches or two feet, for the roots of the Rhododendron are generally comprised within a very moderate space.

In *dry situations*, however, a greater depth of soil will be absolutely necessary—at least three feet, and the compost should be made richer and more retentive, by an increased proportion of the rotten manure and a little decayed turfy loam. The surface of the bed should in these cases be *lower* than that of the contiguous soil, so as to retard as much as possible the escape of moisture. In many places where the natural soil contains friable loam, sand, and vegetable matter, in about equal proportions, the preparation of an artificial compost will be unnecessary.

With regard to the exposure, we would observe, that though natives of elevated places, Rhododendrons do not *flourish* when fully exposed to the sun's influence; in such situations the foliage is often scorched, and the growth much less luxuriant than in localities partially shaded. A gentle northern slope, with a slight screen on the southern side, appears to be a situation they delight in, and one that exhibits their beauties in the greatest perfection; but we must add, that although they enjoy the *shade* of trees, their *drip* is injurious to them.

These shrubs possess one obvious advantage over those of a deciduous character, in being removable at nearly all seasons, and whatever may be the size of the specimens. The first season after planting they should be frequently and regularly watered, especially should the weather be dry; and it is desirable to use for this purpose either rain water, or such as has been exposed some time to the weather.

When the soil is poor, or exhausted, all American plants derive great benefit from an occasional dose of weak liquid manure, which has been used with considerable success by some cultivators. After they are fairly established, the only attention they will require will be watering in dry summers, and the removal of weak, straggling shoots with the knife. This is best done early in April, and when several young shoots are produced, a portion of them should be thinned out.

In concluding our remarks on these noble plants, we would again impress upon our readers the necessity of *never allowing them to become thoroughly dry at the root.*

BRIEF NOTICES OF NEW OR RARE PLANTS.

[The number of hardy and half hardy subjects introduced during the last few years, is so considerable, that it would be impossible in a work of limited extent like our own, to figure a tenth part of those deserving notice. With a view, therefore, to make our little periodical more generally useful, we propose to publish monthly,

or bimonthly, a short descriptive list of the most remarkable of these acquisitions. It must be understood, however, that of many of them we shall probably publish figures as soon as they are attainable.]

Acacia Verticillata. (*Natural Order—Leguminosæ.*)—A very handsome species of acacia, with sharp pointed leaves, an inch and half long, and numerous showy yellow flowers, borne in long spikes. It is a native of Van Dieman's Land, and will probably succeed in the open air in the climate of Devonshire and Cornwall. It is well adapted for pot-culture, and would make a noble window ornament for spring. After flowering, it should be turned into the border to make its annual growth.

Berberis Darwinii. *(Berberaceæ.)*—Next to the magnificent Berberis Japonica, this may be regarded as one of the finest species of this valuable genus of evergreens. It grows about four feet high, and bears a profusion of bright orange yellow flowers in drooping racemes. The foliage is not pinnated as in the Mahonias, but simple, and resembles that of the holly. Introduced by Messrs. Veitch of Exeter, from South America.

Collinsia Multicolor. *(Scrophulariaceæ.)*—A beautiful new annual from California. It grows from one foot to half a yard high, and produces a profusion of flowers. These are much larger than in any other species yet introduced, each blossom being an inch across. The middle boat-shaped lobe of the lower lip is a rich crimson, lower lip lilac; the upper lip lilac, with a white spot in the middle, and beautifully spotted with blood colour. It will be a great favorite when more extensively distributed. Introduced by Messrs. Veitch of Exeter. (Figured in *Paxton's Flower Garden.*)

Desfontainea Spinosa. *(Gentianaceæ.)*—Mr. Lobb discovered this very handsome hardy evergreen shrub on the hills of Patagonia. It has the appearance of a common holly, and will probably prove quite hardy. The flowers are tubular, two inches long, with a yellow border, and in its native country, produced with profusion. It is in the possession of Messrs. Veitch.

Gynerium Argenteum. *(Graminaceæ.)*—(Pampas Grass of South America.) At length this noble plant of which so much has been said in the various books of travel, has been introduced to this country, by Mr. Moore, curator of the Glasnevin Botanic Gardens, Dublin. It is a tall perennial plant, growing, in its native plains, from six to eight yards high, and bearing panicles of silky silvery white flowers, two feet, or more, long. It is likely to prove quite hardy, and will, we hope, soon be common. The specimens in this country have not yet produced seeds, and they are therefore propagated by division. Could seeds be imported, its diffusion would take place more rapidly, and it is to be hoped that some efforts will be made to procure them.

Holbollia Acuminata. *(Lardizabalaceæ.)*—A robust shrubby, climbing evergreen from the mountains of Nepaul. The foliage resembles that of the

Mandevilla suaveolens. The flowers have the perfume of the orange blossom, and are produced in racemes of six or eight from the axils of the leaves. Each flower is about half an inch long, and as much across, bell-shaped, of a purple colour, with green tips. It is likely to prove quite hardy.

Lapageria Rosea. *(Smilaceæ)*—An exceedingly handsome climbing plant from Chili, producing large bell-shaped flowers, of a brilliant rosy-red, speckled with white. They are pendulous, and produced singly in the axils of the leaves, each blossom being three inches long, and two and a half inches wide at the mouth. It grows freely, and will probably prove as hardy as the Chilian Alstrœmerias.

Lilium Giganteum. (*Liliaceæ.)*—The most splendid of all the Lilies, and, indeed, few plants of any order exceed it in magnificence. A native of Nepaul, whence seeds of it were sent by Major Madden. Messrs Veitch of Exeter have also imported bulbs of this plant from the same locality through their collector. When of full growth, it attains the *height of twelve feet*, bearing large white flowers, spotted with crimson; and the scent is so powerful, that a single flower cannot be endured in a room for any length of time. It is perfectly hardy, but will not, we ear, be very common for several years.

Penstemon Baccharæfolius. *(Scrophulariaceæ.)*—A native of Texas, whence seeds were sent by Dr. Wright. Apparently a half-hardy perennial, but may be treated as an annual, as it blooms the first season. The flowers are of a bright scarlet colour, produced in terminal panicles, and are very handsome. It grows from one to two feet high.

Salvia Candlelabrum. *(Labiatæ.)*—A hardy perennial from the South of Spain, with leaves like those of *Salvia officinalis*. The flower stem rises a yard high, branching, and producing numerous large blossoms, with a greenish yellow upper lip, and a rich violet lower one, each flower being an inch and half long, and one across the expanded mouth. A handsome species. (Figured in *Paxton's Flower Garden.*)

Tropæolum Pendulum. (*Tropæolaceæ.*)—A half-hardy climbing annual. Calyx of the flower yellow, with green tips; petals yellow, the two upper ones marked with red lines, and a violet-coloured bar near the edge. A very pretty species introduced from Central America to Berlin, by Mr. Mathieu.

Viburnum Macrocephalum. (*Caprifoliaceæ.*)—The most remarkable of all the Viburnums. A hardy shrub from the North of China, producing at the points of its shoots immense trusses of pure white flowers, and when in bloom, forms a striking object in the shrubbery. Small specimens flower freely; we believe Messrs. Standish and Noble of Bagshot, who possess this plant, exhibited last spring a flowering specimen which had been struck from a cutting the previous summer.



Minima Chrysanthemums.



Mitraria coccinea



Lardizabala biternata



Viola pyrolafolia.

CHRYSANTHEMUM MATRICARIOIDES HYBRIDUM.

Hybrid Chusan Daisy Chrysanthemum.

Linnean Class—Syngenesia. *Order*—Polygamia Superflua. *Natural Order*—Compositæ.

Any eulogium of the old *Chrysanthemum sinense*, and its innumerable varieties, would at this hour be altogether out of place; for probably few of the thousands of exotic plants introduced during the last fifty years are now so widely diffused, as this valuable autumnal ornament of our gardens; and whether we regard only the abundance of its beautiful blossoms, which would render it welcome at any season, or value it chiefly from the circumstance of its enlivening the garden at a period when its summer glories are departed, it must be conceded, that never was popularity better deserved than that enjoyed by this, the last floral offering to the garland of the year.

A new race of Chrysanthemums has recently appeared, which are likely to prove as acceptable to Florists of every grade as the older and larger varieties—we allude to the Lilliputian, or Pompone Chrysanthemums, of which a group is represented in our plate for the present month. They owe their origin to the introduction of the *Chrysanthemum matricarioides*, or Chusan daisy, sent from China by Mr. Fortune, in 1846, to the Horticultural Society. From this species, which is of comparatively humble growth, with white flowers, the Continental Florists have obtained, by hybridization with the pollen of the varieties of *C. sinense*, a class of plants possessing the colouring of the older kinds, with the dwarfer habit and smaller flowers of the Chusan daisy. We believe that, for all the hybrids hitherto raised between the two species, we are indebted to the French Florists, as, unfortunately, in this country the Chrysanthemums do not ripen seed; and we have, indeed, understood that it is only in the *south* of France that our neighbours are completely successful in bringing the seed to maturity. The result of this monopoly is, that many varieties have been introduced and sold in this country which have but little to recommend them, for the coloured representations sent round to the trade by the French Florists are by no means to be depended on; and for this reason, we have declined publishing figures of the *newest* seedlings, as we should have been unable to guarantee their exactitude. We are, however, of the number of those who think that a good plant is none the worse for being one or two seasons old; and we have, therefore, ventured to publish a group selected

from the best varieties which have yet flowered in this country, without regard to their respective ages, though all of them have been raised within the last three years.

We anticipate that these little pets will be applicable to a variety of decorative purposes. For window plants, they are peculiarly appropriate; and they are also equally adapted for filling the flower-beds after the removal of their summer occupants, or for cultivation in the mixed borders.

With regard to the details of their cultivation we would observe, that they are increased by the same means as the common Chrysanthemums, viz. by division of the stools early in the year; by cuttings of the young shoots; and also by layers at almost any period of the summer. When a large supply of plants is not required, the suckers will generally be sufficient.

For pot culture, a rich soil must be provided, composed of good loam and well-rotted manure; and during their growth, which may be accomplished out of doors if protected from severe frosts, they will require to be once or twice re-potted. In order to have compact bushy specimens, the points of the shoots should be pinched off at intervals during the spring and early summer, but not after the end of June, or the plants may fail to blossom. If the pots are fully exposed to the sun's influence during the warmer months of the year, they will require to be regularly watered, and should be placed on a stratum of coal ashes, to prevent the ingress of worms; or a layer of soot may be placed at the bottom of the pot, which will answer the same end.

When the plants are needed for bedding purposes, the divisions of the root may be planted in a reserve bed of good soil, stopping and watering them when requisite, and only transferred to the flower garden at the end of September, when the annuals have ceased flowering, and the more tender greenhouse plants are returned to their winter quarters. If they are dug up with a good ball of earth about their roots, this removal will not in any way affect them, especially if they are well watered and shaded for a day or two subsequently. Very nice dwarf specimens for potting may be readily obtained by layering the extremities of the shoots about the end of July.

We have intimated that cuttings may be struck as readily as in the case of the larger kinds. They should be taken as early in the spring as obtainable, struck upon a moderate hot-bed, and afterwards either potted off, or transferred to the open border. Cuttings taken later in the season do not, in general, produce flowers until the following year, unless under very favourable circumstances, the plants being of much slower growth than the varieties of *C. sinense*.

The Chrysanthemums are, *nominally*, quite hardy; but every cultivator must have observed, that by far the finest specimens are those which are grown in a warm situation, such as the foot of a south wall; and these dwarf varieties will, in case of

severe frost during their period of blooming, deserve a slight protection at night, by which means their beauty will be considerably prolonged. In purchasing these plants, those struck from cuttings the previous summer should be selected in preference; for small specimens are not to be depended on, and will, at any rate, produce but few flowers.

Our figures are: 1. Roi de Lilliput, white; 2. Le Jongleur, yellow; 3. Madame Le Michez, lilac; 4. Modèle, white; and we have no doubt that all of them may be obtained at every nursery in the kingdom.

Among the other varieties which are deserving of cultivation, may be mentioned the following:—Sacramento, bright yellow; D'or, golden yellow; Bizarre, straw yellow; Solfaterre, clear primrose; Surprise, white, tipped with lilac or rose; Argentine, silvery white; La Fiancée, pure white; Poulidetto, rosy lilac, good shape and habit; Asmodée, copper colour, yellow centre; Criterion, striped carmine and yellow; Gil Blas, carmine; Madame de Mirbel, yellow, edged with carmine. The flowers of these vary in their size, a few of them being nearly as large as those of the older varieties; but the greater number of them are from three-quarters to one and half inches in diameter.

MITRARIA COCCINEA.

Scarlet Mitraria.

Linnean Class —DIDYNAMIA. *Order*—ANGIOSPERMA. *Natural Order*—GESNERACEÆ.

THE plants of the order *Gesneracæ* are, in general, so remarkable for their beauty, that it has often been a matter of regret that they should require, for their successful cultivation, the temperature of the stove, at least during the earlier stages of their growth. We are aware that the Achimenes, Gloxinia, and even the Gesnera itself, are, when in flower, often purchased for window ornaments; but we doubt whether a creditable specimen of these plants could be shown, which had not been assisted in its growth by a considerable amount of bottom heat, either in a good forcing frame or warm green-house.

Of the novelties recently introduced from Chili and its dependencies, few, therefore, are likely to create a greater sensation among out-door cultivators than the *Mitraria coccinea*, which has the merit of being the only hardy plant of the order yet discovered. We do not, however, use the term *hardy* in its most

extended sense; in very severe winters some protection would, doubtless, be necessary; but at the nursery of Messrs Veitch of Exeter, the importers of this fine plant, a specimen has been *fully exposed* for four winters, without *any* protection, against a north wall. Messrs Veitch are of opinion that it would bear ten or twelve degrees of frost without injury.

This comparative hardiness is, perhaps, to be attributed to the character of the roots, which, unlike those of most other Gesneraceous plants, are not *scaly tubers*, or rhizomes, but truly *fibrous*. We would not, however, be understood to hazard the assertion that all tuberous-rooted plants are necessarily tender; but we think this conclusion would hold good with regard to a large majority.

The habit and general appearance of the Mitraria will be sufficiently understood by a reference to our figure. Its stems are unusually slender, branched, and, in specimens of sufficient age, reach the height of about three feet. The foliage is small, and somewhat brittle and succulent, with a number of short hairs scattered over its upper surface. The flowers are numerous, and produced singly from the axil of the leaves, on foot-stalks two inches long, with a ventricose corolla, from the mouth of which protrudes the long slender style. Its season of blooming extends from May to the end of June.

The soil most suitable for its cultivation is a mixture of good turfy peat and loam, in the proportion of three parts of the former to one of the latter. Where this is not at hand, any soil containing a tolerably large proportion of leaf mould may be used, avoiding those of a poor sandy character, as well as pure loams deficient in decayed vegetable matter. When grown out of doors, it must be planted under a north wall, or screened from the sun's influence by a fence, for it will not flourish except in the shade. Until its hardiness in the northern and eastern counties has been more fully tested, we would not recommend its exposure during the winter months without some protection. A small hand-glass, or a large inverted flower pot, will offer a ready means of warding off the effects of frost; and to these may be joined, as an auxiliary, a small heap of coal ashes. Where there is the convenience of a cold frame, the roots may be potted in the autumn and preserved with less risk.

If grown as a pot-plant, it will be necessary to provide it with a cool, shady window; and an arid atmosphere must at all times be avoided. Especial attention must be paid to the drainage, for the soil in which it appears to succeed best being of a retentive nature, too great an excess of moisture must be guarded against, by a good supply of broken crocks.

Gesneraceous plants, as well as all others with tuberous roots, usually require to be kept quite dry when at rest; but with the Mitraria a somewhat different treatment will be necessary, for its fibrous roots will not bear the complete withdrawal of moisture. It will, therefore, need an occasional watering during the winter months, though the soil must be kept only in a slightly moistened condition, and

the plant should be placed in a *cool* situation—by no means in a warm apartment.

Its propagation presents no greater difficulties than that of the other plants of this order. The easiest mode of increasing it, is by division of the roots in spring; but cuttings may also be taken at any time during the spring and summer months, and struck in any light vegetable soil under a bell glass or tumbler.

The generic name, *Mitraria*, given to this plant by Cavanilles, is in allusion to the *mitre* shaped bracteas which conceal the true calyx. It was introduced in 1846 from San Carlos, in the Island of Chiloe.

LARDIZABALA BITERNATA.

Biternate-leaved Lardizabala.

Linnean Class—Dicecia. *Order*—Hexandria. *Natural Order*—Lardizabalaceæ.

Of deciduous climbers, whether hardy or half-hardy, there is, happily, no deficiency in our gardens; but the number of evergreen climbing plants hitherto available for general cultivation, is so limited, that when we have named the common Ivy, we have exhausted the list. To this valuable climber, which, although possessing few claims to beauty, is deservedly esteemed for its utility in covering walls and concealing other objects offensive to the eye of taste, the *Lardizabala biternata* will prove a formidable rival; for it appears to be equally hardy, produces its beautiful dark green glossy foliage in great abundance, and has, moreover, the additional recommendation of bearing flowers of a singularly interesting character, which, in the case of the fertile blossoms, are succeeded by an edible fruit.

It is a native of Chili, growing as far south as Concepcion, whence it was sent by George Thomas Davy, Esq. of Valparaiso, to Messrs. Veitch of Exeter.

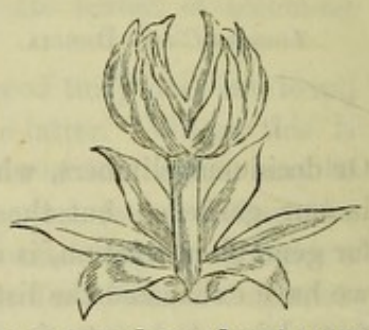
The specific term, *biternata*, does not appear to be very happily chosen; for, although some of the leaves are *bi*ternate, they are more generally simply ternate, especially in the flowering branches, and occasionally they are tri-ternate. The leaflets are often quite entire at the edge, but sometimes spinosely toothed, of a dark green colour above, but paler, and veined, on the under surface.

All the plants we have hitherto figured produce flowers bearing each both stamens and pistils; but most of our readers are doubtless well aware, that in many plants these two organs occur in separate flowers, some blossoms producing stamens,

and others pistils only. When flowers of both descriptions occur in the same plant, as in the Hazel, Begonia, and cucumber, they are termed *monœcious;* when they are found on separate plants, as in the Hemp, Aucuba japonica, and Date-palm, they are *diœcious;* whilst those plants in which, on the same specimen, perfect flowers occur, in addition to those bearing only stamens or pistils, are styled *polygamous.*

Of the Diœcious class of plants, the *Lardizabala biternata* is an illustration; it is, in fact, both *diœcious* and *polygamous;* for, although the flowers of the plant represented in our figure produce stamens only, those of the fertile plant, which has not we believe been yet introduced to this country, yield both stamens and pistils; it differs also from the sterile plant in its *one*-flowered peduncles. These solitary flowers are succeeded by a many-seeded berry, which is sold in the markets of Peru and Chili. The pulp is said to be sweet and grateful to the taste.

The blossoms of the male plant are borne in drooping racemes, hanging from the axil of a leaf, the peduncle or flower-stalk bearing at its base two large heart-shaped bracts; and it is remarkable that these occur at the axil of the leaf, even where there is no flower-stalk. The calyx is formed of six fleshy *sepals,* arranged in two series, three of the segments being external to the others, when in the bud. The calyx is the most highly coloured portion of the flower, the *petals* being comparatively inconspicuous, and of a thin membranaceous, mealy texture. The six *stamens* are united by their filaments into a column *(monadelphous),* and bear six oblong, incurved, pointed, two-celled anthers, which open at the back. The annexed wood-cut represents the stamens and corolla three or four times the natural size.



With regard to the propagation of the plant, it may be effected both by cuttings and layers, in any ordinary soil. It will flourish in any situation not too much exposed to the sun, but appears to prefer shady places; and as it grows rapidly, its merits as a substitute for the Ivy will, doubtless, soon be universally recognized.

In Peru, where it occurs as well as in Chili, it is called by the Indians *Aguil-boguil* and *Guilbogui;* in Chili, its native designation is *Coquil-vochi.* Two other species are described by Botanists, *L. tri-ternata* and *L. tri-foliata,* which appear to differ from the *L. biternata* in not producing an edible fruit.

The plants of the order *Lardizabalaceæ,* although few in number, are all of interest; they were formerly included with the *Menispermaceæ* or Cocculus tribe, to which the narcotic berry known as *Cocculus indicus* belongs, but are now classed apart, their *many*-seeded berries distinguishing them from the plants just referred to. The Holböllias, one species of which is noticed at page 63, belong to this order; and a recent introduction from Chusan, the *Akebia quinata,* will probably

be available for out-door cultivation, at least during summer. Mr. Fortune, who sent this plant to the Horticultural Society, says:—'I found it growing on the lower sides of the hills, in hedges, where it was climbing on other trees, and hanging down in graceful festoons from the ends of their branches. The colour of its flowers in China is of a dark brown, and they are very sweet-scented; indeed, it was the delightful fragrance which first attracted my attention to the spot where the plant was growing. In the Chiswick gardens, where it has flowered for the first time in England, the flowers are much lighter in colour, and nearly scentless. We may still hope, however, that when the plant gets older it will shed its fragrance on us. As many of my Chusan plants have proved perfectly hardy in this country, there is every reason to suppose this *Akebia* will succeed well on a trellis in the open air.'

The order, *Lardizabalaceæ*, commemorates the services to Natural History of Michael Lardizala, of Uribe.

VIOLA PYROLÆFOLIA.

Pyrola-leaved Violet.

Linnean Class—PENTANDRIA. *Order*—MONOGYNIA. *Natural Order*—VIOLACEÆ.

THE *Viola pyrolæfolia* is probably already known to many of our readers under the name of Veitch's Yellow Violet; as well as by another designation given to it in reference to the colour of its flowers—that of *Viola lutea*. As the number of Yellow Violets, is, however, considerable, this specific term can hardly be regarded as sufficiently distinctive, especially as it was long since applied to one of our native species.

The plant was raised by Messrs. Veitch, from seed sent from Patagonia, on whose inhospitable shores it was found by their collector. It was originally discovered about the straits of Magellan, by the illustrious Commerson; afterwards by the Spanish botanist Née: and described by Cavanilles under the name of *Viola maculata*. As the resinous spots on the foliage, in allusion to which this latter appellation was bestowed, are seen only in the dried specimens, Dr. Planchon has resuscitated the name of *pyrolæfolia*, originally conferred on this plant by Poiret, which he admits, however, might be better chosen.

We may not claim for this Patagonian Violet the same interest as that which attaches to the modest fragrant flower, with whose name so many delightful associations are intermingled; and the amateurs of its more showy sister—the Pansey—may perhaps turn from it in disdain; but, although it lacks the delicious perfume of the one, and the rich velvety hues of the other, yet we are sure that from those 'general lovers' for whom every plant possesses an interest, it will obtain a welcome, not only for its geographical associations, but also for the neatness of its blossoms and foliage, a character which it shares in common with all the plants of this pretty genus.

Like the better known species, it seeks the shade, and flourishes best in a *cool* border, in a mixture of peat and loam, or any light soil, rich in decayed vegetable matter. It is propagated by runners, by division, or by seed, which it often ripens. It may be cultivated in a pot, as readily as the *Viola odorata* and Heartsease; and, like them, will produce its flowers in the winter season, when protected from its chilling influences; but, in any case, it should be placed out doors in a cool, shady place, during the warmest months of the year.

We have hitherto scarcely alluded to the medicinal uses of the plants we have figured; but it would be inexcusable, in speaking of the Violet tribe, to omit to notice the well-marked and valuable properties of most of the members of this order. These properties are chiefly emetic, and reside in the roots of nearly all the species. They are most evident in the genera peculiar to South America; but even our European species, including the Sweet Violet, *V. odorata*, and the Dog Violet, *V. canina*, possess it in a less degree. The roots of two or three species of *Ionidium* are sold in Brazil as substitutes for Ipecacuanha; though the true plant of this name belongs to a very different family of plants, the *Cinchonaceæ*. The syrup of Sweet Violets is reputed laxative, and is also occasionally employed by Chemists as a test for acids and alkalies; by the former of which its purple tint is changed to *red*, and by the latter to *green*.

The structure of the flowers of the genus *Viola* is highly curious, especially of the stigma and anthers. The first named organ, which terminates the style, is hooded or inflated, having an orifice at its summit for the reception of the pollen. It is readily seen in the *Viola tricolor*, or Wild Pansey, as well as in the cultivated plant. The anthers are remarkable for a spur-like appendage at their back, of a green colour, and of considerable relative length. In the Sweet Violet these spurs are very conspicuous; they are found, however, only on the two nearly sessile anthers at the bottom of the flower.

The specific term of the plant we have figured, *pyrolæfolia*, implies a resemblance in the foliage to that of some species of Winter Green *(Pyrola)*, neat little plants belonging to the heath order, and which are found in moist woods in some parts of England.

WINDOW GARDENING.

Few sentiments are so widely diffused, or retain their hold so permanently on the human mind, as the love of flowers. The Indian in his native wilds; the denizens of the most civilized community; flaxen-haired childhood, and grey-headed old age; the rich man who rolls by in purple and fine linen, and the peasant, whose unremitting toil scarcely procures him the necessaries of life, alike share this passion for these fair but frail creations of Nature's all-bounteous Lord.

When circumstances preclude the gratification of this taste in open air culture on a more or less extended scale, the difficulty is met by an increased attachment to the few half-stifled plants for which space can be found upon the window-sill.

So healthy a sentiment deserves every possible encouragement; and we gladly, therefore, devote a page or two of the present number to a brief explanation of the principles upon which the cultivation of window-plants should be conducted. We have, however, nothing new to offer under this head; for these principles have been repeatedly explained in the gardening literature of the day; but to those who may not be already familiar with the subject, our remarks will probably be useful.

And in commencing, our remarks, we would observe that, in the majority of instances, window gardening is indeed floriculture pursued 'under difficulties;' and where these are successfully met, we are inclined to think that our Horticultural Societies would do well to stimulate to further efforts by awarding an occasional prize to window-grown plants.

In the greenhouse, plants are, it is true, placed in a similar artificial condition, by having their roots cramped in pots; but they have, at least, the advantage of an abundance of perpendicular light, and enjoy an atmospheric medium, in which it is easy to preserve a due proportion of the moisture so essential to a healthy vegetation. In an apartment, on the contrary, the light usually enters only in a lateral direction; and from the dryness and dustiness of the air of most rooms, it is often impossible for the leaves of a plant to perform properly, for any length of time, their important functions.

Another difficulty, especially in the winter and spring seasons, arises from the impure products of combustion, resulting from the use of open fires. In addition to the carbonic acid gas thus generated, and which, so far from being injurious to vegetation, is indispensably necessary to its existence, other gases are produced which are exceedingly inimical to plants, the most deleterious being the sulphuretted hydrogen, arising from the decomposition of the pyrites, or sulphuret of iron, from which few coals are free. It is chiefly owing to the existence of this and other prejudicial agents in the atmosphere of an apartment, that fresh air is so

requisite for window plants; for it has been shown that, in other circumstances, ventilation may be dispensed with.

It is well known that by animal respiration, oxygen—the life-sustaining principle of the atmosphere—is abstracted, and replaced by carbonic acid gas, a compound of oxygen and the carbon of the blood. By a beautiful law of adaptation, in which the mutual dependence of the animal and vegetable kingdoms is strikingly displayed, this carbonic acid, which to the animal economy is a deadly poison, is the chief source of the nourishment of plants. Under the influence of the solar rays, this carbonic acid is absorbed by the leaves through their breathing pores or *stomata*, and then decomposed, the oxygen being exhaled, and the carbon becoming fixed to form the substance of the plant. By this double process, the constituents of the atmosphere are maintained in their normal proportions; and so far, therefore, from a supply of fresh air being necessary to preserve the health of plants, they will flourish in structures hermetically sealed, or at least so close that the amount of leakage is very small, as long since shown by Mr. Ward of Well-close Square, London. The absence, however, in these structures of the injurious gases to which we have already referred, is an indispensable condition to their success; and as, in an ordinary apartment, this condition cannot be ensured without a certain degree of ventilation, it follows, that in practice a stagnant atmosphere, however appropriate in pure *media*, is not desirable for window plants. In admitting fresh air, however, cold currents must be carefully guarded against, especially in the winter season, when it should be very sparingly given, and the door of the apartment should invariably be closed, whilst the window remains open.

The lateral direction of the light necessarily occasions a distorted growth, which is the more exaggerated, in proportion as the plants are kept at a distance from the glass.

For this, there is no real remedy; it is a common practice to attempt to obviate the evil, by turning the plants round, a course which so far from improving their appearance, *inevitably* increases the distortion. A much better course would be to admit upon the window, only dwarf compact specimens, and to preserve them in this form by constant 'stopping.' *Hard-wooded* plants which have become drawn up and 'leggy,' should be rejected as incurable, a few cuttings of the healthiest shoots being first taken off, when it is thought desirable to preserve a stock of the same plant.

The evil to which we have just alluded cannot be said to interfere with the health of the plants, so much as with the perfection of their form; but the absence of sufficient moisture in the air of most apartments, which causes greater exhalation from the leaves than can be compensated by the absorptive functions of the roots, is attended with more serious results.

In Mr. Ward's glass Cases, and in all closed horticultural structures, the atmosphere surrounding the plants is maintained in a humid state, by the watery evaporation which takes place from the surface of the leaves, under the influence of sun-light, and which, becoming condensed by the neighbouring glass, trickles down to the soil, and is again absorbed through the roots of the plants, or, by saturating the atmosphere with moisture, checks the foliar exhalations. In ventilated places this transpired moisture is, of course, carried off, and its accumulation being thus prevented, the amount of the watery juices exhaled is proportionably greater. The only generally available means of counteracting this evaporation is to supply the soil of the pot with an increased quantity of fluid, but, unfortunately, this plan can only be adopted with a few plants, and with them only in the growing season. Were it followed indiscriminately, it would be productive of a greater evil than the aridity of the atmosphere—we mean a sodden soil—and speedily cause the death of the plant. So numerous, however, are the plants from which selections may be made for window culture, that it would be easy to choose a considerable number which would flourish on the window, almost as well as in the greenhouse; of this character are the Acacias, and, in general, most South Australian plants, together with others which are natives of those extra-tropical countries in which an arid atmosphere obtains during a great part of the year. The cuticle of the leaves of such plants is of a peculiar texture, and enables them to resist the extraordinary dessicating influence of the climate; and they therefore suffer less injury in warm, dry apartments than those plants furnished with leaves of a more delicate nature. For the same reason they also suffer less from the dusty particles constantly present in the atmosphere of a sitting room, and which are quite as injurious to those plants in which the breathing pores are numerous, as the excess of dryness.

Another class of subjects eminently suited to bear the parched air of rooms, are the Succulents, which receive as little injury under such circumstances as the plants previously referred to; and a third group readily suggests itself in the Bulbous plants, which comprehend some of the finest and most easily managed plants in cultivation. The latter have this additional recommendation, that when out of flower they may easily be disposed of, and require little or no attention until the commencement of the following season. There are others nearly, if not quite as suitable; but we defer, until the conclusion of this notice, a complete list of the most desirable window plants.

(To be concluded in our next.)

SUMMER CLIMBERS.

Beautiful as are many of the half-hardy exotics employed as summer ornaments of the open garden, they must yield the palm to the more luxuriant class of plants popularly known as summer climbers, without a due proportion of which, no garden, however perfect in other respects may be its arrangement, can be said to be complete. By the feminine elegance of their growth, they lend an air of freedom, which is sought for in vain in plants of a more restricted habit; and impart a charm to localities and objects the most formal in their character. In no one point do the resources of modern gardeners present a more striking contrast to those of the florists of the past generation, than in the case of climbing plants; for, whilst they were restricted to one or two annual species, the number of these now available is, happily, so much increased, not only by recent introductions, but also by the now ascertained hardiness of plants hitherto regarded as too tender for the open air, that selections may be made suitable to gardens of any extent. Dividing this class of plants, for convenience of treatment, into two groups—*the annuals* and *the perennials*—we will notice, first, the most robust individuals composing it—the perennials.

At the head of the list we must, undoubtedly, place the *Mandevilla suaveolens*, a Bolivian plant of comparatively recent importation, with large white fragrant blossoms, similar in form to those of the common periwinkle, *Vinca major;* both plants belonging to the same natural order, the Dogbanes. The *Mandevilla* is generally treated as a tender plant, being sometimes grown in a warm greenhouse or conservatory, but not unfrequently in the stove. When cultivated in the border of a good greenhouse, its blossoms are earlier and more copiously produced than in the open air; but with the average temperature of our summers, in a good loam enriched with rotten manure, and a warm situation, it succeeds well out-doors in the summer months. A good display of flowers cannot be expected unless the plant be two or three seasons old; and in order to insure its safe removal in the autumn, the pot, which should be very large, may be plunged into the border, the bottom being first broken out, to allow the roots to extend themselves freely. Its branches grow to a considerable length in a single season; but in autumn they may, if necessary, be pruned back to within three or four feet of the soil. It requires to be kept from frost in winter, and may be propagated by seeds, or cuttings of the root. On an arched trellis, this noble plant forms a striking object when in flower.

Fully equal to it, however, is the *Tacsonia manicata*, a plant allied to the Passion Flowers, with blossoms of the richest scarlet, which, in established specimens, are freely produced. Like the *Mandevilla*, the Tacsonias are classed as greenhouse

climbers; but old and well-ripened plants would, probably, bear our average winters with a little protection, which, in the case of such splendid plants, is well deserved. The Tacsonias require a peat soil, but will scarcely need so much space for their roots as the *Mandevilla*, and may have their pots plunged into the border, or turned out if the pot is small. *T. pinnatistipula*, and *T. mollissima*, are commoner plants than the *T. manicata*, but somewhat inferior in beauty; they are, however, well deserving of cultivation. The *T. mollissima* is the most prolific of flowers. They are all increased by cuttings under a glass; the *T. pinnatistipula* does better grafted upon the *T. mollissima*, than upon its own roots.

Far less rare, but scarcely less worthy of attention, is the old and popular *Eccremocarpus scaber* (the *Calampelis scabra* of modern authors.) This is too well known to need more than a passing notice; it may, however, be worth while remarking, that it is so hardy as to require but a covering of dry litter, fern leaves, or coal ashes over its roots; and plants raised from seed early in the spring, will flower the first season, though less freely than subsequently. We have seen specimens of this plant twenty feet high.

Another interesting and favourite climber of rapid growth is the *Cobœa scandens*, with pinnated leaves terminated by a tendril, and large bell-shaped flowers, which are first green, and ultimately change to purple. It may be raised from seed, which is not, however, often ripened in the open air, but may always be obtained at any of the seed shops. If plants are bought at the nurseries, those one year old at least should be procured; though, if the seedlings are raised early in the season, they will flower the first summer. *Cobœa stipularis* has yellow blossoms. Both species require more protection than the *Eccremocarpus*, but will sometimes survive a moderate winter.

Next on the list stands the *Lophospermums*, of more restricted growth, but abundant flowerers. There are several varieties, though we have not yet seen any improvement on the old *L. scandens*, which has dark rose-coloured blossoms, greatly resembling those of the Foxglove. The *Rhodochiton volubile*, sometimes termed *Lophospermum rhodochiton*, with pendulous flowers of a very dark purple, also well merits a place upon a west wall, where it will suffer less from the red spider, to which it is rather subject, than in southerly aspects. Both these plants and their varieties are easily propagated by cuttings in summer, as well as by seeds; they are, however, too succulent to bear exposure throughout the year.

The beautiful *Maurandya Barclayana*, with rich violet blossoms, is considerably hardier than the Lophospermums; we have known it to remain fresh and green throughout the winter, upon a dry subsoil; though it must be admitted that, in general, it will not survive unless matted up. The new rose-coloured varieties of this plant produce a good effect, grown in contrast with it. All are propagated by seeds or cuttings; in height they rarely exceed four or five feet.

The old *Sollya heterophylla*, and the more recently introduced *S. linearis*, are both very pretty evergreen half-hardy climbers. In the south of England and south of Ireland, the *S. heterophylla* is sufficiently hardy to bear exposure against a wall, with a slight protection in very severe winters. The *Sollya heterophylla* reaches the height of five or six feet; *S. linearis* about four or five feet. Both have bright blue flowers, those of the latter species being much the largest. Propagated both by seeds and cuttings.

To the foregoing, we may add the *Solanum jasminoides*, an evergreen of rapid growth, with pink flowers very freely produced. It is usually treated as a greenhouse plant, but appears to be quite hardy on a wall. At Kew, several plants have been exposed in winter, with scarcely any protection. And we think that if the stems were well matted up, and the roots carefully screened from excess of moisture in autumn, that it would pass unscathed through our moderate winters, in the midland and eastern counties.

Among the Convolvulus tribe, are several very showy, almost hardy plants, the most generally useful of which is, perhaps, the *Calystegia pubescens*, remarkable for producing the only double flowers of the order. We find this plant to be quite hardy in ordinary winters. It dies down annually, and succeeds best in a good rich loam, in which its growth is very luxuriant. The flowers are large, and compensate for any imperfection of form, by their great abundance. A single-flowered variety has originated at Shrubland, Suffolk, the seat of Sir William Middleton, but we are not aware if it is yet obtainable through the trade, or whether it may be looked on as a permanent departure from the original type.

In the allied genus *Convolvulus*, we have some very interesting species; *C. bryonæfolius; C. chinensis; C. hirsutus; C. emarginatus;* and *C. italicus*, are the most desirable, and are as hardy as the *Calystegia*. Like that, these are herbaceous perennials, the stem dying down every season. The popular annual known as the Major Convolvulus, though it is in fact a *Pharbitis*, is too familiar to need any extended notice; but one of the perennial species of the same genus claims a few words, the *Pharbitis Learii*, the most splendid plant of the whole Order, though too tender to bear a prolonged exposure in the open air. It will, however, succeed in warm situations against a south wall in the summer months, where, if its growth is less luxuriant than in the greenhouse or stove, it nevertheless forms an exceedingly attractive object. It is readily increased by layers of the bottom shoots.

The genus *Tropæolum* brings us to the annual climbers, of which the pretty *T. Canariense*, or Canary Flower, is perhaps the most popular, though it contains many perennial species. We have already figured and described (at page 24) one of the most interesting of these, the *T. speciosum;* and we avail ourselves of this opportunity of stating, that it succeeds best against a *north wall*, and not one of southerly

aspect as there advised. Two other species, the *T. pentaphyllum* (the *Chymocarpus pentaphyllus* of some authors) and *T. tuberosum*, are sometimes recommended, though less remarkable than some others of the family. All the Tropœolums deserve a trial in the open border, even the most tender of them.

Of the *Annual* climbers, we have but space to remark that, the most desirable —in addition to the Tropæolums and Convolvulus, already referred to—are the Thunbergias, of which there are several species and varieties; the *Scypanthus elegans*, belonging to the Loasa family, but without their stinging properties; the *Loasa aurantiaca;* and the different annual species of *Lathyrus*, or Sweet Pea, all of which, with the exception of the last, require to be raised on a hot-bed, and subsequently turned into the border in May.

We have by no means exhausted the list, either of annual or perennial climbers; for the present, however, we must terminate our observations, only remarking in conclusion, that however beautiful this class of plants may be when well grown and carefully trained, none are more unsightly when neglected.

THE TREE MIGNONETTE.

With little to recommend it in point of beauty, this deliciously fragrant weed—'the Frenchman's darling'—is, we are persuaded, the most ubiquitous of all cultivated plants. If it were possible for it to become extinct, like the now fossil creations of an earlier age, its very name would convey to posterity a faithful idea of the estimation in which it was once held. Mignonette! how musical and endearing the sound; Mignon is sufficiently expressive, but how far exceeded by the diminutive—Mignonette!

We have no intention of occupying our space with any directions for the cultivation of this, the most easily grown of all annual plants; but as the Tree variety is less common than it deserves to be, though it presents no difficulty whatever in its management, we have thought a few hints on its treatment may be acceptable to some of our readers.

The principle on which the shrubby specimens are formed, is very simple. If an annual plant is prevented from flowering, its existence may, in some cases, be prolonged several seasons, always provided that it is, in the case of tender plants, protected from frost.

The Mignonette does not transplant well, its long fleshy roots being injured by removal; and for Trees, it is therefore preferable to sow the seeds either singly in small thumb-pots, or to place three or four seeds in a three-inch pot. In the latter case, when all of them germinate, the weakest plants should be cut out, one only,

and that the strongest and healthiest seedling, being left in the pot. As it advances, all flower buds and all side shoots must be removed, *but none of the leaves* upon the main stem, which must be supported by a stick. As the pot becomes filled with roots, the plants should be repotted into one of larger size, in good sandy loam. The height to which the stem may be trained is entirely a matter of taste; from eighteen inches to two feet is a common size, and when this is attained, the top must be pinched off, which will cause the production of a 'head' of laterals, which are in their turn to be 'stopped' at their extremities, when two or three inches long. The result will be a compact bushy head, upon a straight unbranched stem; and if the plant has been duly watered and attended to during the summer, it will produce an abundant crop of flowers through the winter. It is essential that, through the whole of its earlier stages up to the moment when the head is formed, that all blossoms should be removed; and in no case ought the seed to be allowed to ripen after the plant is permitted to flower, or its death will probably result.

INCONSPICUOUS PROPS FOR PINKS, CARNATIONS, ETC.

A Correspondent of the *Gardeners' Chronicle*, with a view to remedy the absurdity of having props as conspicuous as, or more so than, the plants which they support, has employed well painted, straightened *wires* of various lengths and thicknesses. For Pinks, he uses 24-inch lengths of No 11 wire, which, with two coats of green paint, are almost invisible, and they have proved perfectly firm and efficient as supports. For Carnations, he recommends 36-inch lengths of No. 6 wire (about $\frac{3}{16}$ of an inch thick); but wire of this weight would soon become loose in the ground, and they are therefore fixed into tapering wooden shods or sockets, about 1 inch thick at the upper end, and 7 inches long. These were drilled throughout their length so as tightly to fit the wires, the ends of which were passed through them, and projected about an inch beyond the small ends, which were thus pointed. The sockets were then dipped in boiling tar, and when this had hardened, the wires received two coats of green paint. The firmness and efficiency of the props is most satisfactory, and equally so is their non-appearance. With an annual coat of paint they will last for years, and their first cost is trifling. 'Wires made quite straight by a wire-worker cost me 4d. per lb, which, for small sizes, comes very cheap per 100. The wooden sockets were made for me by a bobbin turner, at 2s. 8d. per gross. When painting the wires I put a spoonful of paint into a woollen cloth laid in the hollow of the left hand, and drew them through it—a plan I find as good, and much more expeditious, than using a brush.' We hardly need add that props of any size may be made on the above principle, and will possess an immense superiority over those usually employed, as regards neatness of appearance.



Cyclamen persicum punctatum.



Tritonia aurea.



Garrya elliptica.



Scutellaria macrantha.

CÝCLAMEN PÉRSICUM PUNCTÁTUM.

Spotted Persian Cyclamen.

Linnean Class—PENTANDRIA. *Order*—MONOGYNIA. *Natural Order*—PRIMULACEÆ.

We believe we shall respond to the wishes of many of our readers in figuring this month a representative of those very interesting little pets, the Cyclamens. They are especial favorites with the fair sex; and, assuredly, in no genus shall we find more fitting types of the virtues which charm us in the feminine character, than among these elegant, unobtrusive, and deliciously fragrant plants. All the species are almost of equal interest, and any one of them, taken at random, would have deserved a place in our pages; but, as a general rule, it seems advisable to select our illustrations from the less known plants, and we have, therefore, chosen a variety which is, we apprehend, rather rare. It differs from the original species, *persicum*, only in the rosy blotches observed on the petals of the flower; and as the culture of all the plants included in the genus *Cyclamen* is similar, if not identical, our remarks will hold good with reference to any species our readers may possess.

With the exception of *persicum*, and its varieties, all the species are quite hardy, and may, therefore, be cultivated in the borders among the dwarfer plants, where they will occupy but little room. A partially shaded border suits them best, and a soil composed of equal parts of leaf-mould, thoroughly rotten manure, loam, and silver sand, will be desirable; though, where all these materials are not attainable, they will succeed in ordinary garden mould of good quality, but not in such as is of a very sandy texture, or heavy retentive clays; for, although they love moisture during their growing season, stagnant humidity is very injurious, especially in autumn. Where there is a peat bed, of turfy texture, for American plants, the Cyclamens may be planted at its edge; if too sandy, a little good loam should be dug in before planting the tubers. They bloom at so early a season that, should severe frost occur, they will experience a considerable check unless covered with a hand glass; and if the roots are planted together, it will greatly facilitate their protection. After the leaves are withered, which will be about Midsummer, they require no water, and should be allowed to remain undisturbed during their season of rest.

They are, however, more commonly grown in pots, to ornament the window in spring, where they will produce their blossoms in company with the Narcissus,

Hyacinth, and other early-flowering bulbs. They should be re-potted in autumn as soon as they manifest a disposition to grow in small pots, about double the diameter of the tuber, which should have its upper surface slightly raised above the level of the soil. This should be of the nature indicated in speaking of their cultivation in the open border; and as the pots are placed out in summer, a little soot should be laid over the draining crocks, not immediately upon them, or it would be liable to fall through, but with a thin, compressed layer of moss or turfy peat between. This will prevent the entrance of worms, which would cause much injury to the root-fibres proceeding from the tuber, which are few in number, and of delicate structure. After potting, they may be left out of doors as long as there is no risk of frost, when they should be removed to the window, but little water being given at first until the leaves are well developed, and the flower buds begin to rise, when the allowance may be increased. A tuber of moderate size will produce flowers in succession for two months. The leaves will receive much benefit from an occasional sponging, which will remove the dust so commonly found on all plants kept in sitting rooms in the winter season.

After flowering, they require an abundant supply of air, and to be duly watered until the leaves begin to wither, and all the species but *persicum* and its varieties, may be placed at once out of doors; that, however, is too tender to allow of entire exposure to the spring frosts, and should be retained within until May.

The Botanical characters of the genus *Cyclamen* are well defined. All the species agree in having a tuberous root more or less flattened; leaves springing from the centre of the crown of the tuber; and flowers borne singly on stalks, generally much longer than those of the foliage; the petals being reflexed, and more or less twisted. The most striking peculiarity, however, of these pretty plants, is that offered by the ripening seed vessel, which may be classed among the most remarkable of the phenomena of the vegetable world. Whilst the flower is expanded, and for some little time subsequently, the flower-stalk remains erect; but after the seed vessel has increased considerably in size, the peduncle begins to coil itself in a spiral direction, and the coil is gradually depressed until the seed vessel is brought into contact with the soil, which occurs about the time that the seed is ripened; and the fruit thus becomes buried beneath the shade of the leaves of the parent bulb.

The only method of increasing these plants is by seed, which readily vegetates, if sown as soon as ripe, in pots of light soil placed upon a window, or in a cucumber frame. The young plants will generally bloom the second season after planting, and increase annually in size for many years.

The number of species of Cyclamen is not very considerable. We may, therefore, venture to give a complete list without occupying too much space.

Hederæfolium. The only species found wild in Great Britain; but it is somewhat doubtful if it be really a native of this country. The leaves are heart-shaped

angularly finely toothed, their ribs and foot-stalks roughish, and brightly variegated with white in the middle. Flowers, reddish purple. There are two varieties; one with white blossoms, the other with flowers of a deeper purple than the original species.

Europæum. Leaves rounded, heart-shaped, toothed with short horny teeth, with a large white interrupted circle round it close to the edge, the under surface of a glossy, reddish purple. Flowers, lilac, red at the mouth; the petals marked longitudinally with numerous faint lines. Flowers in August. The preceding is often sold for this plant.

Coum. Leaves round, smooth at the edge, deeply cleft at the base, and without the white circle so conspicuous in the other species. Flowers, lilac and red; segments of the corolla much shorter than in the preceding species, and less pointed.

Vernum. Somewhat resembles the preceding species, but the lobes of the leaf overlap at their base.

Repandum. The leaves resemble in form those of the British *Hederæfolium*, but are purple on their under surface. Flowers on much shorter foot-stalks than those of the British species, and the corolla of a uniform red tint. Segments of flower, long, but rounded at the points. Flowers in spring. A native of Greece.

Latifolium. Leaves large, angular, deep green. Flowers red; produced in March. A native of Greece.

Linearifolium. Extremely rare. Leaves very narrow, with purple flowers, borne in March.

Persicum. This species, of which our figure is a seedling variety, is perhaps the best known member of the genus. The leaves are kidney-shaped, slightly toothed, with an irregular circle of white, and less deeply lobed at their base than most of the species.

There are several varieties of this plant, in addition to that now figured. *Odoratum*, with highly fragrant flowers; *laciniatum*, with leaves deeply toothed or cut; *albiflorum*, with pure white blossoms; *inodoratum*, which has nearly scentless flowers, and is therefore less esteemed than the other varieties; and *plenum*, with double flowers.

There are four other species known to us only nominally; they are, *Neapolitanum*, said by some writers to be the same as our British *Hederæfolium; littorale; Ibericum;* and *Africanum*, or *robustum*. These two last are at present rather expensive plants.

The spiral peduncle of the Cyclamens was too striking a peculiarity to escape the notice of the older Botanists; and it no doubt suggested the generic term, which is generally supposed to be derived from *kyklos*, a circle, in reference to that circumstance, though some writers have seen in it an allusion to the form of the tuber. Notwithstanding the acridity of the fleshy tuber of all the plants of this genus, they are favourite food of the porcine tribe; and thence the English name *Sow-bread*, and the French *Pain de pourceau;* though we fancy Cyclamen bulbs are a luxury not often enjoyed, now-a-days, by English pigs.

TRITÓNIA AÚREA.

Golden-flowered Tritonia.

Linnean Class—TRIANDRIA. *Order*—MONOGYNIA. *Natural Order*—IRIDACEÆ.

THE natural order of Irids constitutes too important a section of our ornamental plants to remain long unnoticed in THE ENGLISH FLOWER GARDEN; and for our first illustration of this showy tribe, we think a more interesting subject could hardly be chosen than this beautiful Caffrarian bulb.

The *Tritonia aurea* was introduced so recently as 1846; it is, notwithstanding, becoming generally cultivated, and will soon be an accessible plant to all persons of moderate means. We regret that it is rather less hardy than most of the Gladioli and some other popular Iridaceous plants; but its cultivation is, nevertheless, comparatively easy.

It is a fortunate circumstance that, in the treatment of this and many other plants, an exact imitation of their natural climate is by no means necessary; for, were it otherwise, the greatest solar heat ever experienced in this country would be but a poor substitute for the fierce rays of an African sun.

In its native climate—now, alas! devastated by that great scourge, and greater crime of the human race, War—the roots of the *Tritonia*, and a vast number of other plants of a similar structure, are exposed for three months of the year to incessant rains; under whose influence the dormant bulbs start into activity, shoot up their lance-like foliage and flowering stem, and expand their blossoms at the end of the rainy season, before the sun's rays have acquired their greatest intensity, and whilst the atmosphere retains a portion of its humidity. To this comparatively brief floral reign follows a long season of rest, the foliage disappearing at an early period after the ripening of the seed, and the bulb undergoing a prolonged maturation beneath the parched soil of the karroos.

It might have been imagined that the plants peculiar to such regions would have been but ill fitted for cultivation in those of an entirely opposite character. A humid soil and atmosphere during the growth of the plants, are conditions which may be fulfilled; but the unintermitting solar heat, sustained for months together subsequently to the production of the flowers, is an element not so easily supplied in this fickle climate.

Notwithstanding these adverse influences, we doubt if Caffraria can boast of finer specimens of this plant than many of those to be seen at Messrs. Backhouses, of

Fishergate Nurseries, York (to whom we are indebted for its introduction), during its season of flowering, and which prove how much may be done by skilful cultivators to compensate the deficiencies of climate.

It is found to succeed best in a mixture of equal parts of heath-soil, loam, and leaf-mould, with a small portion of sharp white sand; in short, in the same compost in which the Gladiolus, Ixia, and most of the plants usually classed as Cape bulbs, are known to flourish. The bulbs should be potted about October, in well-drained pots filled with the above compost, and placed in a cold frame, with just sufficient protection to ward off severe frost; and during the mid-winter months it should be kept nearly dry. Where there is not the convenience of a cold frame, the pot might be safely placed on the window of a cool room; and in either situation it may be retained till May, when it should be stationed out-doors, in a partially shaded border, upon ashes, to exclude the worms. As soon as the flower scape appears, the plant may be removed to the window, or a cool greenhouse, where the development of the blossoms will proceed more favourably than when fully exposed.

The peculiar membranaceous texture of the leaves of the *Tritonia*, and some of the more delicate Iridaceous plants, renders them very susceptible of injury from the scorching influences of the sun, during their season of growth and bloom; we do not, therefore, recommend turning out the plant into the border, as, although it would certainly flower in such a situation, the blossoms would be inferior to those borne by plants grown as we have advised. If the experiment is tried, a warm but shaded corner should be chosen, and the soil used must be of the same description as that recommended for potting. After flowering, the pot containing the bulb should be subjected to the greatest attainable solar heat, all moisture being withheld, and during heavy rains it will, therefore, be necessary to shelter the plant. Mr. Maund has advised the use of a glass cap, which, placed over the plant, would not only exclude humidity, but also concentrate the sun's heat, and aid in maturing the bulb, upon the effectual completion of which process depends the production of flowers the following season.

The *Tritonia aurea* may be increased by seed, which is produced by the strongest flower scapes, if the plants are continued in growth after flowering, and the seed should be sown as soon as gathered, the young plants being carefully preserved from frost the following winter. Our own specimen of the plant has exhibited a somewhat curious habit of growth which deserves notice. The bulb, from which sprung the last season's flower scape, emitted from its side towards the close of the summer a weak, slender, horizontal fibre several inches in length, which became rooted at its extremity, and has now given rise to a new plant at a distance from the old bulb, but connected with it.

We have, throughout this notice, employed the word *bulb* in speaking of the round flattened body from which the plant is produced; but it is termed by most

Botanical writers a *corm*, and differs from the true bulb in being entirely solid. The *corm*, as well as the tuber, is regarded as an underground stem, the true roots being produced from the under surface of the corm. They contain a considerable quantity of nutritive starchy matter; and, together with those of the Gladioli and other similar plants, are often employed as food by the wild tribes of South Africa, in the absence of more palatable substances.

There are, at least, a dozen or more species of *Tritonia*, but none are so showy as the present member of the genus.

The anthers of the plants, composing the order *Iridaceæ*, are usually affixed by their base to the filaments; but in the genus *Tritonia*, the filaments are attached to the back of the anthers, near the middle, and, in botanical phraseology, these are therefore versatile. The direction in which they point varies in the different species; and, from this circumstance, the genus has been named *Tritonia*, from *Triton*, a weathercock.

GÁRRYA ELLÍPTICA.

Oval-leaved Garrya.

Linnean Class—DIŒCIA. *Order*—TETRANDRIA. *Natural Order*—GARRYACEÆ.

OF the numerous plants introduced from North America by the lamented Douglas, many were doubtless more showy, but few excited, to a greater degree, the curiosity of Botanists than the *Garrya elliptica*.

Its flowers, borne in long pendulous racemes, at once suggest a resemblance to the catkins of the Hazel, Oak, and other members of the order *Cupuliferæ;* but the structure of the *Garrya* differs, in several important points, from the plants just named, and, indeed, from any other known order.

The most remarkable distinctions between the two orders are, first, the absence in *Garryaceæ* of the concentric zones of the wood, which in the Cupuliferous tribe, and nearly all other Exogens (*i. e.* plants with reticulated leaves and two cotyledons), mark the annual growth of the plant. Further, the leaves are without the stipules, or leaf-like appendages, to be seen at the base of the foot-stalk of the Beech, Oak, Spanish Chestnut, and the other members of the order previously referred to; and instead of being alternate, are in opposite pairs. The female flowers are also destitute of the *cupule*, or cup-like organ, so conspicuous in the fruit of the

Hazel and Oak, and are borne on distinct plants from those producing the male catkins shewn in our engraving; whilst the *Cupuliferæ* have the male and female *amenta* on the same plant, though in separate bunches.

The *Garrya elliptica* may, therefore, be briefly described as an evergreen shrub, with opposite wavy leaves without stipules; flowers arranged in pendulous racemes appearing from the axils of connate bracts. Male flowers composed of four leaves or sepals; stamens four, not elastic as in the nettle tribe, which the order greatly resembles. Female flowers, with a two-toothed superior calyx; ovary one-celled; styles, two, bristly; ovules, two, pendulous, hanging by stalks or *funiculi* as long as themselves. Fruit berried, not opening when ripe, two-seeded. Embryo very minute, in the base of fleshy albumen. (The *Cupuliferæ* have no albumen.)

The catkins are produced in September or October; they are often of considerable length, and have a silky appearance, which adds considerably to their beauty. The plant producing the female flowers has not, we think, been yet introduced; the only mode of increasing that we possess is, therefore, by cuttings and layers, which require the same treatment as those of most evergreen plants. Three additional species have been recently added to the genus—*laurifolia* and *macrophylla*, from North America, and *Mc Fadyana*, from Jamaica. They are all handsome hardy evergreens, well deserving cultivation in the shrubbery; and, although only recently introduced, they may be procured at a moderate price. All of them succeed best in peat soil.

The genus was named by Douglas in compliment to Mr. Garry, one of the officials of the Hudson's Bay Company, from whom he received much kindness whilst engaged in his Botanical researches.

SCUTELLÁRIA MACRÁNTHA.

Large-flowered Skull-cap.

Linnean Class—DIDYNAMIA. *Order*—GYMNOSPERMA. *Natural Order*—LABIATÆ.

THOUGH less showy perhaps than some other of the Lipworts, many of the Skull-caps are very ornamental plants, and none more so than the *Scutellaria macrantha*.

It is a native of Eastern Asia, and appears to be widely spread, extending, according to Sir William Hooker, to the great wall of China, where it was detected by Sir George Staunton. As might have been anticipated it proves to be perfectly

hardy, and of easy cultivation and increase. It is a herbaceous perennial, scarcely exceeding one foot in height, with angular, branching stems, and opposite, *entire*, lance-shaped leaves. The very handsome purple flowers are produced in long terminal spikes, and are larger than those of any other species known to us. The plant seeds freely, and may be readily increased by these means, as well as by division of the roots, or by cuttings under a glass, either in the border or frame. Seedlings usually flower the first season, if sown early, and should be transplanted from the seed pan while young, as they will suffer less from removal than at a more advanced stage of their growth.

With regard to soil, a mixture of good loam and decayed leaves or manure appears to best suit this plant, though it will probably flourish in any good garden soil; for many hardy plants, like individuals, possess the happy faculty of adapting themselves to situations of diverse character, provided that they are not of too extreme a nature.

To the amateurs of hardy perennials, the *Scutellaria macrantha* will, we are sure, prove highly interesting; for, as we have already intimated, it needs no protection during the winter, though it is so showy, that there are few plants on which we would more willingly bestow a little care in preserving it from frost, were it necessary. It disappears so entirely during the winter months, that it is advisable to mark its place in the border by a label of some description; for much injury is often done to plants of a similar character when the borders are dressed in spring, from ignorance of the precise locality of their roots.

Sir William Hooker has recommended the *S. macrantha* as very desirable for planting in masses; and when sufficiently common it will, no doubt, be employed for this purpose, as its flowering season is of considerable duration.

There are several other interesting species of Skull-cap which deserve a place in the borders. The most ornamental are *alpina, altaica, Columnæ, orientalis, pallida,* and *grandiflora,* all of which are as hardy as *S. macrantha,* and increased by the same means. There are several South American and Mexican species of much interest, which, although not sufficiently hardy to endure exposure in winter, are desirable summer plants for borders or beds; and it is rather remarkable that it is only among this more tender section of the genus, that species with scarlet flowers are found, those peculiar to the more temperate latitudes being generally of a blue or purple hue, more or less blended with other tints. *Orientalis* and *grandiflora* are however yellow, and *pallida* has flowers which are nearly white. *S. Japonica* is a very pretty species, of dwarf growth, and producing a profusion of showy blue flowers throughout the whole of the summer. It requires, however, some protection in winter. The best of the tender species just referred to are, *splendens,* with rather small, brilliant scarlet blossoms, from Mexico; *incarnata,* with deep rose-coloured flowers, from the western declivities of the Peruvian Andes; and *Ventenatii,* also

with scarlet flowers, from St Martha, New Grenada. They are all strictly speaking greenhouse plants; but, like many others of that class, succeed in the open air during the summer months; *splendens* and *incarnata* only require to be kept from frost in a frame or cool greenhouse.

Apart from the interest which the Scutellarias possess as ornamental plants, they are remarkable for the peculiar form of the calyx, which has been supposed to bear some resemblance to a helmet, or other kind of head-dress; and to this circumstance allusion is made in the popular appellation of the common *S. galericulata* in most of the European dialects. Thus in English we have Skull-cap; in French *la toque;* and in Dutch *helms kruid.* A tolerably correct idea of this peculiarity may be formed from the annexed wood cuts, of which *fig.* 1 represents a single flower of the *S. macrantha,* the calyx of which, it will be seen, is vaulted, or inflated behind. When the corolla is fallen, the cap-like form of the upper lip of the calyx is more evident, as in *fig.* 2, which represents a front view of the calyx of *S. Columnæ,* with the four-lobed ovary within it.



fig. 2.

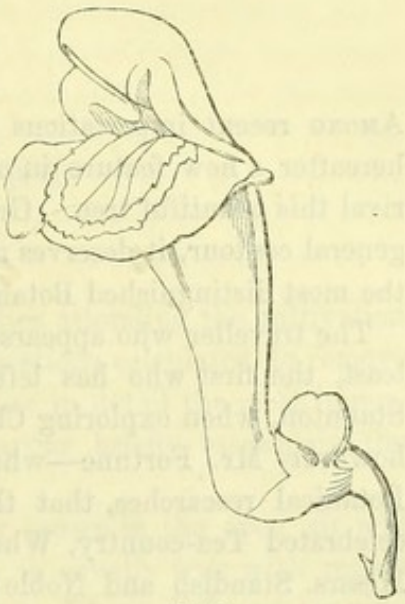


fig. 1.



fig. 3.

As the fruit increases in size, the calyx closes upon it and assumes a globular form, thus completely preserving the seeds from dispersion; so that the precaution so often necessary with many other plants, of gathering the seed as soon as ripe to prevent its falling to the ground, will, in this genus, be altogether uncalled for.

The curve or elbow at the lower part of the tube of the corolla is another characteristic feature of this genus which deserves notice; and the disk or gland upon which the four lobed ovary is seated, as shown in *fig.* 3, although found in all the plants of the order, is rarely so largely developed as in the *S. macrantha.* The white throat and dark upper lip of the unexpanded flower is singularly suggestive of the head of some of the serpent tribe; or it may be compared, without much stretch of the imagination, to that of the swallow.

We will only further add, that the present species of Scutellaria was introduced by way of St. Petersburgh, through the medium of Dr. Fischer, and that it may be obtained of most of the London and provincial nurserymen.

THE WEEPING CYPRESS.

Cupressus Funebris.

Among recent importations of hardy ornamental evergreens, calculated to afford hereafter a new feature in our garden and landscape scenery, there is nothing to rival this beautiful tree. Graceful in outline, interesting in its foliage, and novel in general contour, it deserves all the eulogiums which have been passed upon it by all the most distinguished Botanists of the present day.

The traveller who appears originally to have noticed the Funebral Cypress, or at least, the first who has left any recorded facts in relation to it, was Sir George Staunton, when exploring China in the embassy of Lord Macartney. Subsequently, however, Mr. Fortune—who has, we think, proved by the happy results of his Botanical researches, that there *is* something in a name—met with it near the celebrated Tea-country, Whey Chow; and through the interest of that gentleman, Messrs. Standish and Noble of Bagshot were enabled to import both seeds and young plants.

In the *Gardener's Chronicle* of April 15th, 1850, Mr. Fortune says:—The most beautiful tree in this district is a Weeping Cypress, which I had never met with in any other part of China, and which is doubtless quite new;' and he describes it as a 'noble looking tree, about sixty feet high, having a stem as straight as the Norfolk Island Pine, and pendulous branches like the Weeping Willow. The branches grew at first horizontally with the main stem, then described a graceful curve upwards, and drooped again at the points. From these main branches, others, long and slender, hung down towards the ground, and gave the whole tree a weeping and graceful form. It was also very symmetrical, and reminded me of some of those large and gorgeous chandeliers which one sees in public halls in Europe.' In regard to its effect in scenery, Mr. F. has the following:—'It has a most striking and beautiful effect upon the Chinese landscape; and I have no doubt, in a few years, to see the same effect produced by it on our own. It will be particularly valuable for park scenery, for lawns, for the entrance to suburban residences, and as an ornament for our cemeteries. I have no doubt that it is quite as hardy as the *Cryptomeria Japonica* and the Indian Deodar, and will be a fit companion for both in our parks and pleasure grounds.' The fact of its being quite hardy, as conjectured by Mr. Fortune, is now perfectly established. Messrs. Standish and Noble have hundreds of young plants which have stood exposed two winters unharmed; and a still more convincing proof is afforded by

the fact, that some young seedlings in a growing state were removed from a cold greenhouse to the open ground without protection, and subjected to eight degrees of frost in the first week in May, last year, without injury. The plants now growing in this country are, of course, at present rather small; but as it is a rapid grower, and of easy propagation, its price is much more moderate than is usually the case with new introductions.

WINDOW GARDENING.

(Continued from page 75.)

In our last number we referred to the principal difficulties attending the cultivation of Plants in rooms, and we ventured to offer a few suggestions calculated to remove some of these hindrances to success. We will now notice in detail the most important operations connected with pot culture, and endeavour briefly to explain the principles on which these depend.

Soils.—It is well known that the plants ordinarily grown in the open air will not all flourish in the same description of soil, and this is equally true with regard to those treated artificially in the greenhouse or window. These different requirements depend primarily on the varying structure of the root. Plants with fine hair-like fibres, such as the Azalea, Heath, and Acacias will not succeed in a strong retentive loam, which would be impenetrable by their rootlets; whilst, on the contrary, a soil of this nature is indispensable for the Camellia, Rose, and many other plants. Where, therefore, but one description of soil is attainable, success in the cultivation of widely different classes of subjects can hardly be looked for; but happily there are, we imagine, but few localities where a small quantity of any of the following ingredients may not be procured:—

1. Peat or heath-soil, such as is found where the common heather and ling flourish wild. This consists usually of soft black particles arising from the gradual decay of vegetable matter, a varying proportion of sharp white sand, and generally the roots of those plants flourishing in the vicinity, are more or less abundant. The best peat is that containing about one-fourth its bulk of sand, and the presence of a few roots enhances its value. The value of good peat can hardly be exaggerated, many plants will flourish in nothing else, and there are very few which do not derive some benefit from the admixture of a small portion with the other constituents of the soil. When mixed with loams of close texture it renders them less adhesive, and although we do not wish to speak too positively, we are inclined to think that its black carbonaceous particles have the same property of absorbing the carbonic acid, ammonia, etc. of the atmosphere, which pure charcoal is known to possess.

Leaf-mould may be employed as a substitute for peat; and it has this advantage, that it is procurable wherever there is a garden of any extent.

2. Good hazel loam, of a friable nature, from the top of a pasture. It is best taken off with the turf, and should then be allowed to remain fully exposed at least a year before use, by which time the grass and roots will be decayed. By good loam, we understand a soil whose chief constituent is aluminous earth or clay; lime, sand, and vegetable matter being always present in exceedingly variable proportions. The aluminous earth of the loam may be regarded as the vehicle of the more soluble substances employed in conjunction with it; *they* are slowly absorbed, and require to be constantly replaced to maintain the fertility of the soil, but the earth to which we have referred undergoes no change.

3. A small quantity of thoroughly decayed stable manure, or, where it can be obtained, dried pulverized cow-dung. One of these is indispensable for the more gross-feeding plants, especially the Balsam and Cockscomb; and most plants will grow more luxuriantly in a compost containing a small portion of this substance. It must, however, be completely decayed, for in a fresh state it is utterly unsuited for delicate plants; and it would be better to employ peat or leaf-mould as a substitute, if the manure is not thoroughly decomposed.

4. A small quantity of sharp white sand. This may be obtained of most ironmongers, but cheaper of the nurseryman. When the peat is very sandy, any addition of siliceous matter will be unnecessary; but a small supply will be found very useful for striking cuttings of delicate plants.

Of the four ingredients we have named, we would advise that a good bag-full be procured, if no other source is available, from the nearest nurseryman, who would certainly be willing to supply them for a small charge. The most indispensable are the loam and peat; the others, although desirable, are not absolutely necessary, except in particular cases.

For general purposes a mixture may be made of two parts good loam, two parts of peat, one part of decayed manure, and unless the peat is very sandy, one part of white silver sand; but a portion of peat should be kept in its original state, for such plants as the Azalea, Heath, and Acacia. The ingredients should be well mixed together with the hand, but on no account sifted, and except for small pots, it is not desirable to rub it too fine. The compost may be preserved for use in a small tub or cask, and should be kept neither too wet nor too dry. If the former, it becomes, during the process of potting, a compact mass, which, contracting as it gets drier, leaves a space between the interior of the pot and the ball of earth; if it is too dry, it prevents for a considerable time the free passage of moisture to the roots; and if the plant itself be dry at the time of potting, it will often suffer greatly ere it can receive sufficient moisture to recruit the evaporated juices. Peat soil in particular, when thoroughly dry, as it is liable to become in summer, repels water in a

remarkable manner, and when in this state it should never be used without being previously moistened.

Potting.—Much of the success in cultivating plants in pots depends upon a proper method of potting and shifting them. The pots, if not new ones, should be scrupulously clean and quite dry; for not only is a dirty pot unsightly, but it materially affects the health of the plant, and with a clean pot, the ball of earth can be more readily examined or reshifted when necessary. Every pot should be well drained with an inch or two of broken crocks, the quantity depending on the size of the pot. The manner in which the fragments are disposed is not unimportant. The bottom should not be covered with a flat crock—for in that case the water could not so readily pass off—but by a hollow one placed so as to form an arch over the drain-hole, with a few smaller ones placed over and around it, covering the whole with a layer of turf-peat or moss, to prevent the soil being washed round the larger crocks, which would obstruct the drainage, and cause the soil to become sour and unhealthy; upon this a layer of soot may be disposed, which will often have the effect of preventing the entrance of worms when the pots are placed out in the summer season. When a newly rooted cutting or seedling are potted, a larger supply of drainage is generally required than in the case of older plants, for the young plants are unable to assimilate so much moisture as those in which the roots are more numerous.

In potting, the plant should be kept upright in the centre of the pot, the roots being spread out, and the soil should then be filled in around the plant, shaking it down at every addition, and taking especial care to keep the neck of the plant at the surface of the soil. It is a common, but very injurious practice, to bury an inch or two of the stem of the plant, which cannot be too much reprobated. In summer, a space of at least an inch or more should be left between the surface of the soil and the top of the pot, to allow of an efficient application of water; but in winter a smaller space will suffice, and will indeed be preferable, for the plants will then be less liable to over-watering. In shifting a plant to a larger pot (one of the easiest operations connected with gardening) it should be turned downwards upon the right hand, with the neck of the stem between the fingers. The pot may then be readily removed with the left hand; if it adheres to the soil, a tap on the edge will generally be sufficient to separate them; if this fail, pressure may be applied to the crocks through the drain-hole. A plant should never be allowed to remain in a pot until the roots have become a compact mass; in such cases, it is often necessary to break the pot to insure removal without injury to the plant. When the pot has been removed, the drainage fragments should be taken off the cone of soil, and the ball of earth may then be placed in the centre of a large pot, the fresh soil being filled in around as previously directed for the cutting. Above the broken crocks employed in drainage, a few fragments of crushed bones and small lumps of charcoal

may be added, or intermingled with the lower portion of the soil, with advantage to many of the more robust plants, such as Fuschias and Geraniums. Their roots attach themselves greedily to the bones, which yield a gradual supply of stimulating food for a considerable period, if the fragments are not too small. Pieces of the size of a small nut are the most suitable. There is one point connected with potting to which we would call especial attention—the surface of the soil must never be allowed to form a basin-like cavity round the stem of the plant, but should be slightly raised in the centre and slope gradually to the rim, which, as we have already stated, should be an inch or more higher than the circumference of the soil. It will be evident that it is not the stem of the plant which requires watering, but the roots, by the spongioles or naked points of which the plant obtains its liquid food; and these are generally found near the porous sides and bottom of the pot, through which they doubtless absorb a portion of their atmospheric nutriment—a circumstance which naturally suggests the inexpediency of employing pots which are painted or glazed. When the surface of the soil is disposed as we have advised, the water readily finds its way to the roots without wetting the collar of the plant, which often receives serious injury from the constantly humid condition in which it is kept when the water is poured close to the centre of the pot. This naturally leads us to the subject of

Watering.—Over-watering is, without doubt, the rock on which most window cultivators split. If, however, every pot be *well drained*, it will be easy to avoid this difficulty. All plants should be watered at the top of the pot, and no water should be allowed to stand in the pans in which they are placed, except in the case of a few plants, such as the Calla, which being an aquatic plant, during the growing season may have its pan kept full of water; but this should be occasionally emptied. In the greenhouse, pans are very properly discarded, but in a sitting room, are a necessary evil. They should be kept quite clean; and in order that the pot (from the bottom of which the delicate spongioles frequently protrude) may not stand in stagnant moisture, a ring of gutta percha may be placed in the pan, which will allow the superabundant moisture to escape more readily.

The water used should be *soft;* this we regard as an indispensable condition to healthy plants. In those localities in which rain water cannot be procured, spring water may be rendered more fit for use by the addition of a drachm of carbonate of ammonia (the *sesqui*-carbonate of the shops), or volatile salts, to every gallon of water. The sulphate of ammonia, which is in many places sold at a cheap rate, may be employed instead, in the proportion of a quarter of an ounce to one gallon of water. Whether this solution or plain water be used, it should be of the same temperature as the room in which the plants are placed, and the saline mixture must be made some hours before use. It should be poured *gently* on the surface, and enough should be given at each watering to wet the whole of the soil thoroughly.

(*To be continued.*)

BRIEF NOTICES OF NEW OR RARE PLANTS.

(*Continued from page* 64.)

Chamœrops Excelsa. *(Palmaceæ.)*—Any mention of the Palm tree at once suggests to the mind's eye a tropical climate, with all its accompaniments. The march of Botanical discovery has, however, introduced to us this *hardy* palm, which braved, unharmed and unprotected by any sort of covering, the severe winter of 1850 at the Royal Gardens of Kew. Sent from the north of China by Mr. Fortune; and a number of plants have also been imported by Messrs. Standish and Noble, Bagshot.

Chrysanthemum Hendersonii.—This very remarkable variety originated in Italy, and flowers in the open ground early in September; indeed, so early that it has ceased flowering before the generality of Chrysanthemums have commenced blooming. From this peculiar character of the plant, it will probably prove the progenitor of a new class of these interesting ornaments of the flower garden. It is of dwarf habit, about two feet in height, and so dense a flowerer, that every morsel of young wood is thickly clustered with flower-buds; indeed, the whole plant is literally one mass of well-formed orange-yellow flowers. By having the branches neatly pegged down in the beds, the whole would look like a fine Ranunculus bed during the autumnal months. Messrs. Henderson of the Wellington Nursery purchased the entire stock of M. Pelé, of Paris.

Eugenia Ugni. *(Myrtaceæ.)*—A beautiful hardy evergreen shrub from South Chili, having the habit and appearance of our European broad-leaved Myrtle, and grows from three to four feet high, much branched, and blooming freely. The flowers are globe-shaped, half an inch in diameter, white, tinged with rose. They are produced singly in the axils of the leaves of the young shoots. Introduced by Messrs. Veitch, in whose nursery it flourished out of doors; and the plant will, in all probability, prove much hardier than the common species.

Geranium Hendersonii. *(Geraniaceæ.)*—The great desideratum so long wished for, of a perfectly White Geranium, is at length attained in this plant. It belongs to the scarlet section, and gives very large handsome trusses of elegant white flowers, the petals of which are not, however, equal in breadth to those of the Scarlets, but are a great improvement upon the old *albiflora*. It is an exceedingly free flowerer, and will form a striking contrast to the splendid scarlet varieties of these popular plants. Messrs. E. G. Henderson and Son, St. John's Wood, purchased the entire stock of this plant from Mr. Franklin, the fortunate raiser.

Geranium Shrubland Pet.—This very beautiful variety will prove one of the greatest acquisitions to the flower garden, and, as such, will be found indis-

pensable to every collection. It was raised by Mr. Beaton, late gardener to Sir William Middleton; and in this gentleman's parterre, Mr. Beaton has described it as being one of the principal attractions, and the admiration of many hundred visitors. Its colour is a good crimson scarlet, with sweet-scented foliage. It is very distinct from any other bedding Geranium, and a compact and most abundant bloomer.

Jasminum nudiflorum. (*Jasminaceæ.*)—This plant is no longer a novelty, but to those who have not yet obtained it, we would strongly recommend it for wintering and spring flowering. The blossoms are copiously produced, and have a salver-shaped corolla, not unlike that of the Primrose, and are of a beautiful golden yellow. As the habit of the plant is weak, it succeeds best against a wall, where it will soon cover a large space, and prove highly ornamental in the dreary mid-winter. The leaves are not produced until after the flowers.

Pentstemon Wrightii. (*Scrophulariaceæ.*)—One of the most distinct species of this charming genus. It is a nearly hardy herbaceous perennial, growing about two feet high, with opposite, entire, oblong leaves, and long panicles of deep rose-coloured blossoms. The base of the flower is tubular, as in most of the other species of Pentstemon; but the mouth is furnished with a flat spreading limb, giving it somewhat the appearance of the *Achimenes rosea*, and by which peculiarity it will be readily distinguished from other species. It flowers in June and July, and was introduced from Texas to the Kew Gardens, in 1850.

Salvia nova. (*Labiatæ.*)—This plant was recently introduced from Berlin to the nursery of Messrs. Garraway, Mayes, and Co. of Bristol, of whom we obtained it. Its price does not exceed that of the commoner species. The flowers are said to be of a beautiful puce colour, and it appears to be a free grower, and of easy propagation by cuttings. The foliage resembles that of the Calceolaria, but is less broad; and it has the black currant scent of the little pink *Salvia rosea*, a species which deserves a recommendation for its hardy character; it is, in fact, almost an evergreen, and flowers from April to November.

Saxe-Gothea conspicua. (*Coniferæ.*)—This plant, which has been named in honour of Royal Highness the Prince Consort, is a very beautiful hardy Evergreen tree, growing thirty feet high, and, in its foliage and habit of growth, resembling the common Yew tree. It is, in fact, intermediate between the yew tribe and the coniferous plants. It is described as a tree of beautiful growth, and will, no doubt, rank as one of our most highly valued hardy evergreen trees, affording also a useful timber. It inhabits the Andes of Patagonia, ascending from the summer snow-line to that of perpetual snow, and was introduced by Messrs. Veitch, of Exeter.



Solleya linearis.



Tacsonia mucronata.



Berberis Darwinii.



Ceanothus dentatus.

SÓLLYA LINEÁRIS.

Linear-leaved Sollya.

Linnean Class—PENTANDRIA. *Order*—MONOGYNIA. *Natural Order*—PITTOSPORACEÆ.

In catering for our readers month by month, we have now visited every quarter of the globe. From the North American continent we have culled the *Habrothamnus, Calochortus, Pentstemon, Martynia, Ribes,* and *Garrya;* and the Southern portion of the Western Hemisphere has furnished our pages with the handsome *Tropæolum,* the *Lardizabala, Mitraria, Escallonia,* and *Cantua.* Africa has presented us with the *Oxalis, Grammanthes,* and *Tritonia;* Asia with the *Torenia* of matchless tint, the *Dielytra, Lilium, Salvia, Thunbergia,* and *Scutellaria;* whilst of European productions, we have selected but the Geranium Unique, the brilliant Potentilla, and the Alstrœmeria, which, as owing their existence to the hybridizer's art, may fairly class with the flora of our own clime. There is, however, one important division of the earth's surface which has been hitherto unrepresented in our casket of floral gems; we refer to Australia, for which noble colony so glorious a future appears in store. This omission we will now proceed to supply; and we do so the more readily, that among the Australian plants are many eminently suited to window culture.

The Sollyas are by no means the most striking features in the vegetation of this southern California; but they are so neat in their habit, and of such easy management, that we think we shall do our readers a service in recommending them to their notice. The species we have chosen is not the most recently introduced member of the genus; but we think it is superior to all the others with which we have any acquaintance, though the *S. angustifolia* is nearly as interesting. They are all of a scandent habit, but do not generally exceed five or six feet, and may easily, if thought desirable, be kept down to two or three feet by stopping. Their evergreen character gives them an additional value, and their flowers are so freely produced, from the end of May up to a late period, that we are surprised they are not more generally seen by the side of the Fuschia and Geranium. The oldest and best known species is the *S. heterophylla,* with leaves considerably broader than those of *linearis,* but with smaller and paler flowers. *S. angustifolia* has flowers resembling those of *heterophylla;* but its foliage is narrower, though less so than that of *linearis.* The only other species with which we are acquainted, in addition to the three first

named is the *S. Drummondii*, with very small leaves and flowers, much inferior in interest to those of the other species.

The Sollyas are usually treated as greenhouse plants, where they thrive with but little attention, and upon the window they will flourish quite as well as in the greenhouse. They are, however, so nearly hardy, that wherever a south wall can be afforded them, they will grow to much greater height than in pots, and produce a profusion of flowers. In the south of England, and also in Ireland, the *S. heterophylla* has been known to live for several years with very little protection. They would not, however, resist severe frost, unless well matted up; and even in mild winters, we would advise the same precaution. When the plants are left out-doors, it will be prudent to strike a cutting in early autumn, and preserve from frost. As they are of rapid growth, the loss of a specimen can be easily replaced. The soil best suited to them is a mixture of peat and loam; some cultivators dispense with the peat.

When grown as window plants, they require a rather large pot, and plenty of water during the summer. The plants generally throw up shoots from their base, the first three or four joints of which, if taken off when a little ripened, will readily root under a small bell glass or tumbler, and produce flowers the following season. Seeds are produced freely by all the species, and they may, therefore, be readily increased by this means.

The structure of the flowers of the Sollyas offers nothing very remarkable, the sepals, petals, and stamens all being five in number; and the last named organs adhere so strongly by their anthers, that they may often be detached together from the flower. This circumstance does not appear to have been referred to by any Botanical writers whose works have fallen under our notice.

The long seed pods, a group of which is represented in our plate, are remarkable for hanging upon the plant at least a year before they are ripe, so that the fruit of the previous year is generally seen in company with the flowers of the current season. The seeds are surrounded by a resinous pulp, as in most other plants of the order *Pittosporaceæ*, of which the Pittosporums are the type; and from which circumstance the name of that genus is derived; from *pitto*, resin, and *sporum*, a seed.

The Sollyas are sometimes classed with the Billardieras, plants belonging to the same order, but which appear to be distinct.

TACSÓNIA MANICATA.

Gauntletted Tacsonia.

Linnean Class—MONADELPHIA. *Order*—PENTANDRIA. *Natural Order*—PASSIFLORACEÆ.

WE do not expect often to have the privilege of introducing to our readers so splendid a plant as the *Tacsonia manicata*. The Passion-worts comprise some of the most gorgeous of tropical climbers; but there are few, even of the tender species, which surpass or equal in beauty this magnificent plant. Its probable suitability for out-door cultivation increases immensely the value of this introduction; for had it proved tender, it would necessarily have been confined to the comparatively few persons possessing a conservatory or stove; whilst, if our anticipations as to its hardiness are correct, it will, we trust, be grown wherever there is a trellis or verandah to cover.

Although it is brought to us from equatorial regions, yet the altitude at which it is found growing (often 7000 feet above the level of the sea), favours the supposition that it will support our climate in situations not too much exposed. The *Oxalis elegans* from the same localities proves to be hardy; and we have so little doubt that, with slight protection while young, the *Tacsonia manicata* will endure exposure, that we have turned out our own specimen of this plant against a trellis, with the intention of allowing it to remain through the winter. Should it, however, be deemed in any case advisable to house this or any other species, it could easily be effected at the end of the autumn. The plant might be plunged in the ground, in a very large pot; or if turned out of the pot, the roots should, at the end of the autumn, be chopped round at a distance of a foot from the stem, a week or so before removing it from the ground. If the plant were then carefully potted with as little disturbance of the soil from its roots as possible, and the stem cut down to within two or three feet from the ground, it might be safely preserved in any dry place into which frost could not penetrate. If left exposed, we would advise that, in addition to a thick double mat over the stem, some means of warding off heavy rains from the soil in the immediate vicinity of the roots, should be adopted. And we would even venture to recommend that this precaution should be taken early in autumn; for the copious supplies of moisture to their roots, by which their tissues become gorged with watery juices at a period when the skilful horticulturist restricts the quantity to those more completely under his control, is the chief cause

that so many plants perish in winter, which, with proper care, might be preserved many years.

In their habit of growth, the Tacsonias resemble very closely the common Passion-flowers, being, like most of them, of vigorous growth, the shoots extending ten or twenty feet in a season, according to the age of the plant.

The resemblance between the two genera, is indeed carried so far, that some of the most acute Botanists of the present day are unable to give the precise grounds for the separation of the Tacsonias from the true Passion Flowers.

This leads us to the botanical structure of the plants of this order, which is too remarkable to allow of being passed over. And as the Tacsonias possess its chief characteristics, our illustration will serve as the text of our remarks. The climbing stems (which are somewhat rounded, and not four-sided, as in *T. pinnatistipula*) and three lobed foliage do not claim any special notice, unless it be to point out the glands on the upper edge of the leaf-stalks, and which are found in most Passion-flowers. Occasionally, they are placed at the base of the leaf, near its junction with the petiole, and sometimes on the back of the leaf. These glands, although not conspicuous, are easily perceptible to the naked eye, and have the appearance of small greenish yellow projections rough to the touch. The stipules, or small wing-like expansions, at the foot of the leaf-stalk, are another peculiarity of the true Passion-flowers. In *T. pinnatistipula*, they are deeply divided, as the specific name implies; and in *T. manicata*, they are toothed in a crested manner.

The chief interest of the plants of this order, however, centres in their elegant flowers. These are, at a glance, seen to consist of ten segments or divisions, the lower portions of which are united into a tube, surrounded at its base by three leaf-like bodies, termed bracts. These bracts, which are shown in our plate, are common not only to the Tacsonias, but also, to nearly all the other Passion-flowers, though in a few species they are placed at a considerable distance below the flower, and are extremely small. In one or two species they are cut into hair-like segments, and give a very interesting appearance to the flower, as in the *P. ciliata*, and *P. fœtida*. These bracts are not much larger in the *T. manicata* than in many other Passion-worts; but from the shortness of the tube, which is almost concealed when the flower is expanded, 'it may not unaptly be compared to an arm thrust into a large loose glove;' from which circumstance, it is presumed that Jussieu gave it its specific name of manicate, or gauntletted.

Some difference of opinion exists with regard to the real nature of the coloured portions of the flower. Lindley considers the five outer segments to be the true calyx, and the five inner ones as the corolla; whilst others look on the filaments, or ray-like appendages, as the true petals, and consider all the segments as sepals. Each segment of the outer series is terminated by a horn-like process, which is, in fact, a prolongation of the keel-like ridge on the back of the sepals. The inner

segments which we will call the petals, are rather broader, and more rounded at their ends.

The remarkable appendages arising from the base of the petal, and which are termed the *rays*, or *crown*, vary exceedingly in the different species. In the *Tacsonia manicata*, they are very short and tooth-like, and are arranged in two concentric series; but in some of the Passion-flowers, these filaments are nearly as long as the divisions of the corolla, and are grouped in four or five rings, the innermost series being generally much the shortest. They are regarded as modifications of the petals, between which and the stamens they are probably intermediate in their nature. The stamens are *monadelphous;* that is, the stalks supporting the anthers are united into a tube, above which is borne the ovary seated on a long stalk, which passes to the bottom of the calyx tube. Both the anthers and stigmas are unusually large, and the pollen or farina from the former, forms one of the most interesting microscopic objects that can well be imagined. Each grain of pollen appears, when viewed under a rather high power, as a spherical body covered with a delicate network, and bursting by *opercula*, or lids, of which there appear to be four, to allow of the protrusion of the pollen tubes. The fruit is not the least remarkable part of the plant. We are not acquainted with that of the *Tacsonia manicata*, but in the *T. pinnatistipula*, it is five or six inches in circumference, spherical, and when ripe, of a yellow tint, hanging by the very long peduncle to which the remains of the flower are usually attached. The seeds are surrounded with a pulpy *arillus* of an edible nature, especially in a few species, which are not unfrequently cultivated for the sake of their fruit, as *P. edulis*, and *P. quadrangularis*.

We have so far exceeded our usual limits that we have only space to add, that the *T. manicata* may be increased by cuttings either of the old wood in spring, or of short young shoots in summer, under a bell glass with a little bottom heat. When grown under glass, most of the Tacsonias will ripen seed from which they may be readily increased; but we do not think they will be found to produce fruit in the open air.

The specific name has been already explained; the name of the genus appears to be a latinized form of *Tacso*, that by which the plants are known in Peru. There are several species besides *T. manicata*, those best known being *mollisima*, *pinnatistipula*, *princeps*, and *grandis*.

We must not omit to observe that the shoots of the Tacsonias do not require shortening, but if they are too crowded, they may be thinned out while young. When the growth is too rampant and sterile of blossoms, a flowering habit may often be induced by training the shoots horizontally, or nearly so.

Our figure represents the plant about one half its natural size.

BÉRBERIS DARWÍNII.

Darwins' Barberry.

Linnean Class—HEXANDRIA. *Order*—MONOGYNIA. *Natural Order*—BERBERIDACEÆ.

FEW gardens are now without an example of the evergreen species of *Berberis;* and the general characteristics of this valuable tribe of plants are, therefore, pretty well known. Less robust in its growth than some others of this genus, and with foliage inferior in size to the pinnated leaves of the Mahonias, the *Berberis Darwinii* yet possesses in its elegant pendant racemes of flowers, an attraction peculiar to itself, and which fully justifies the high praise bestowed upon it in the principal Horticultural publications of the day.

The Berberries are very widely diffused throughout the temperate regions of the globe. Those more commonly seen in cultivation are of North American origin; several valuable species are natives of Asiatic climes; whilst the *Berberis Darwinii* comes to us from bleak Patagonia, whose shores are now invested with so melancholy an interest from the painful death of Captain Gardiner and his fellow missionaries. It appears to be also indigenous to the Chilian territory, including the island of Chiloe. On its native mountains, it is often found growing near the summer limit of snow, and is therefore likely to prove quite as hardy as the North American species, which are known to bear our winters admirably. *B. Darwinii* is distinguished from nearly all the other species by the ferruginous pubescence of the young shoots. The leaves, although small, are so thickly disposed upon the branches, that these are quite concealed.

The beauty of the plant is much enhanced by the purplish tint of the peduncles, which contrasts admirably with the rich orange yellow of the flowers and deep glossy green of the foliage. Like the other species, it delights in a free loamy soil, and may be increased by cuttings, division, or seed.

The Berberries with pinnated leaves, were formerly known as *Mahonias,* and they are still classed as such in most of the trade catalogues; but this distinction is not now maintained by Botanists, the compound foliage being regarded as insufficient to justify a division of the genus. These plants are now usually divided into two sections, the true Berberries, with simple foliage; and the Ash-Berberries, with compound foliage (so termed from the supposed resemblance of the leaves to those of the Ash). It is, however, worth while pointing out that there are one or two marks of distinction between these two sections, in addition to the difference

of foliage. In the true Berberries, there is an appendage at the base of each petal, sometimes termed a gland; but as it does not appear to be a secreting organ, it cannot be regarded as a glandular body. In the Ash-Berberries these appendages are wanting; or to speak more correctly, appear to have been transferred to the stamens, on the upper part of which, just below the anthers, will be found a tooth-like projection on each side. They both agree, however, in possessing six petals and sepals, the latter arranged in two series, the outer ones being the smallest. The stamens are *opposite* to the petals, a circumstance which, taken in conjunction with the structure of the anther, enables us at a glance to distinguish a plant of the order *Berberidaceæ*. The anther cells of most plants open by simple fissures; in a few instances, as in the Heath Order, by *pores:* but in the Berberries the pollen escapes by a valve, or in other words, 'the face of the anther-cell peels off, except at the point, where it adheres as by a hinge.' This structure is found in the Laurel tribe, to which the Sweet-Bay *(Laurus nobilis)* belongs; but that order *(Lauraceæ)* is without petals.

Everybody is familiar with the singular irritability of the stamens of the common Berberis *(B. vulgaris)*, which, if touched by any hard substance at a certain stage of their growth, spring forward, and discharge their pollen upon the stigma. The fruit of all the Berberries contains a sharp acid, probably the malic, and the bark and stem of several species are astringent, and yield a yellow dye.

The section with simple leaves, of which the *Berberis Darwinii* is an example, are remarkable for the strong pungent spines found at the base of the fascicles of leaves. These are entirely wanting in the Mahonias, or those Berberries furnished with pinnated foliage; a circumstance quite in accordance with the views entertained by most Botanists with regard to the origin of these somewhat formidable organs.

As most of our readers are doubtless aware, spines are considered to be either leaves or branches whose development has been arrested, the midrib (in the case of a leaf), or principal vein, becoming hardened and the *parenchyma*, or soft portion of the leaf, being completely absent. Plants, which in their wild state are furnished with spines, often lose them under cultivation; and we think it possible that the converse would prove true, that some cultivated plants, if placed in such conditions as would ensure a stunted growth, might become spinous.

The *Berberis Darwinii* is at present rather expensive; but many valuable species are to be obtained at a cheap rate. The *Berberis aquifolia* should be in every garden, as its low price places it within the reach of the humblest cultivator, and it thrives in any moderately good soil, especially if a little shaded. The species *repens*, *umbellata*, *empetrifolia*, and *fascicularis*, are all attainable for a very reasonable sum, and are excellent plants for the shrubbery, and will flourish even under the drip of trees.

At least forty distinct species of Berberis are now in cultivation in England; and one of these, of still more recent introduction than the plant we have chosen for our illustration, is so remarkable that we are tempted to notice it here. We allude to the *Berberis japonica*, discovered by Mr. Fortune on his second visit to China. This magnificent evergreen appears to grow eight feet high, and has pinnated leaves nearly fifteen inches long, the terminal leaflet being, in one specimen, quite five inches in length. Mr. Fortune first met with this species in the neighbourhood of Hwuy-chow-foo, about 150 miles north of Shanghae, and afterwards near Sunglo, whilst engaged in collecting tea plants and seeds for the East India Company. It appears that a specimen of the plant was seen by Mr. Fortune on his journey to the Bohea tea mountains; but, being too large to transport to Shanghae, he was obliged to content himself with carrying off a leaf, with the hope of meeting with smaller examples of the plant in his subsequent travels. On this gentleman's return from the Bohea tea mountains, it chanced that he rested a day or two at the house of the parents of his servant, Wang. Having frequently desired Wang to endeavour to procure him some young plants of the *Berberis*, without effect—for the natives of the Celestial Empire can rarely be persuaded to trouble themselves in any matter in which their pecuniary interests are not concerned—he one morning called three or four of the family about him, and showing them the leaf which he had brought with him, promised a dollar to any one who would bring him a small plant of the same shrub. 'One of them went out immediately, and, to my surprise and pleasure, returned in less than five minutes with a fresh leaf of the plant in question. "That will do," said I; "that is just the thing I want: bring me a young plant, with good roots, and I will give you the promised reward." They now held a consultation among themselves in an under tone, and at last said, that the plant in question had some peculiar medical virtues, and that the lucky possessor would not part with it. "Sell me this one," said I; "and you will be able to buy a dozen others with the money." "No," said they, "the plant belongs to our uncle; he is rich enough, but he requires a little of the plant now and then when he is unwell, and therefore he will not part with it." This was very provoking; but the Chinese were firm, and there was nothing for it but to go, as sailors say, "upon another tack." "Well, at all events," said I, "let me see the plant: don't be afraid; I shall not touch it." For some time they refused to do even this; but, through Wang's influence, they were at last induced to consent, and led the way down to a small cottage garden, completely covered with weeds. There the beautiful shrub was growing apparently neglected, and left to bloom unseen. It seemed very valuable in the uncle's estimation, and he would not sell it, although I tried hard to induce him to do so. It might be that he really valued its medicinal properties, but, as it must be common enough in that part of the country, he could easily have replaced it; it was not unlikely, therefore,

that he supposed I should offer some very large sum to induce him to part with it.

'On the following day, another relation of Wang's came to me in a secret manner, and informed me that he was acquainted with another place where the same plant was to be had, and that, for a consideration, he would go and fetch it. I engaged him at once, merely telling him that he must bring young plants with good roots, otherwise they would be entirely useless to me. This he faithfully promised to do, and kept his word. In the course of the day, he returned with three good plants, which he sold me, and which I afterwards took back to Shanghae. These are now safely in England.' * It is, perhaps, only fair to remark, that although the Chinaman is certainly an adept in the art of driving hard bargains, and, we might add, in cheating, this peculiarity is, by no means, confined to those latitudes.

CEANÓTHUS DENTÁTUS.

Toothed Ceanothus.

Linnean Class—PENTANDRIA. *Order*—MONOGYNIA. *Natural Order*—RHAMNACEÆ.

IT were hard to say whether the floral or mineral wealth of California is the most inexhaustible; for although hundreds of plants, of every class, have been thence introduced of late years, 'the cry is still, they come.' We should, doubtless, excite a smile on the features of some, were we, in such a 'practical' generation as the present, to hazard a comparison of the relative importance of *flowers* and *gold*, nor would we be thought to speak slightingly of the indispensable medium of exchange, to whose value we are feelingly alive. But we may at least venture to point out the superior moral influence of the former upon mankind, to that exercised by the potent yellow ore, at whose shrine all men bow down.

With a few exceptions, the plants of the Buckthorn family are not remarkable for the beauty of their flowers; the Ceanothes recently introduced to this country from California will, however, do much to increase the interest attached to this tribe. The flowers are, individually, very small, but this minuteness is fully

* FORTUNE'S *Tea Districts of China*. Murray, 1852. The three plants above referred to are in the hands of Messrs. Standish and Noble of Bagshot, with whom they have recently flowered. The blossoms are of a pale yellow, deliciously and strongly scented with the odour of a Tea rose.

compensated by the profusion with which they are produced. The foliage, too, is extremely neat, especially in the species selected for our illustration, and which is, perhaps, the most interesting of the genus. Some fears were entertained that the *Ceanothus dentatus* would prove only half-hardy; the specimen from which our figure was drawn was, however, taken from a plant which had been fully exposed on a south wall, throughout the last winter, without any protection whatever, and as its capability of resisting our winters will doubtless increase with the age of the plant, we trust that this charming species may be considered acclimatized. Like many other shrubs cultivated in the open air, it would probably suffer considerably from severe frost; but as the peculiar habit of growth, both of *dentatus* and most of the other species, renders it desirable that they should be planted against a wall, the protection of a matting can be afforded them without entailing much trouble or expense.

The *Ceanothus dentatus* is a branched evergreen shrub, growing to the height of seven or eight feet, perhaps more; for as the plant is of recent introduction, we have no means of knowing the exact size it may ultimately attain. The whole of the plant is covered with down, that on the branches being of a rusty colour. The leaves are very small, the largest scarcely exceeding $\frac{3}{4}$ of an inch in length, with coarse teeth, a revolute margin, and a pair of small scale-like stipules at their base. The foliage has a peculiar, but, to us, not unpleasant odour, due to the numerous minute glands on the edge of the leaves, which are, however, hardly perceptible without the aid of a lens. These glands are said to be found only on this species, and they afford, therefore, a ready means of discrimination. The flowers are produced in stalked heads, sometimes roundish, but in the wild plants much longer. Although small, the number in each head is considerable, and their bright, bluish-violet tint, gives the plant, when in bloom, an exceedingly attractive appearance. A detached blossom is represented on an enlarged scale in the corner of our plate, chiefly for the purpose of shewing the peculiar form of the petals of the plants of this order. These, it will be seen, are much longer than the sepals; *narrow* and hooded *(cucullate)* at the tips, in a curious manner, the stamens being inserted *opposite* the petals.

With regard to the culture of the different species of Ceanothes from California, they all appear to thrive in peat, either alone, or mixed with a little loam. Their growth is somewhat straggling, and the shoots therefore require frequent 'stopping' during the summer; but as the flowers are borne upon the shoots of the previous year, this shortening process must not be performed late in the season. In the Osborne gardens the *C. dentatus* is trained on the horizontal system, and after flowering, the secondary branches are shortened back to an inch or two of the main laterals. The specimen in Her Majesty's garden is seven feet high, and nearly ten feet wide at the bottom.

The species are readily propagated by seeds, which they appear to ripen freely, and we expect they may also be increased by cuttings of the half-ripened wood under a hand glass.

We have selected *dentatus* as being, on the whole, the most desirable species; but it forms but one of a group introduced, we believe nearly about the same time, by the Horticultural Society's collector, Mr. Hartweg, and which are all well deserving attention. The *C. papillosus* and *C. rigidus* are scarcely less interesting than that we have figured, and are a shade more hardy; indeed, we believe they may be said to be perfectly so. The foliage of *C. papillosus* is much larger than that of *dentatus*, and has its surface covered with pimple-like elevations, to which it owes its specific name. It is of more vigorous growth than the Toothed Ceanothe, and may be treated in a similar manner. *C. rigidus* fully equals in interest *papillosus*, but is less branching in its habit. The only other species deserving general cultivation, are the *C. pallidus* and *C. cuneatus*, the first with pale blue flowers, and the second with white blossoms.

One species, the *C. Americanus*, is known as the New Jersey Tea, from the circumstance of its having been used in the American war as a substitute for the Chinese plant. As we may not soon have occasion to notice this order again, it may be worth while to remark that to the Buckthorn tribe belongs the Lotus of the ancients, and the Jujube tree, both of them species of *Zizyphus;* though the articles sold as Jujubes probably contain as much of the genuine fruit as the Perfumer's Bears' Grease does of the real Bruin.

As we would not willingly incur the reproach of unfaithfulness, we feel compelled to observe that our artist has represented the leaves of the plant as too pointed. They are, however, extremely blunt, and, in addition, deeply emarginate.

HYBRIDIZING.

However much the mere Botanist may regret the multiplication of seminal varieties of cultivated plants, it is undeniable, that to the art of the hybridizer our gardens are indebted for some of their most striking features. In support of this opinion, we need only cite the Dahlia, the Pansey, and the Hollyhock, which in their primitive condition would hardly be tolerated by cultivators of the humblest aims, but which, from the immense improvement which has resulted in their form, size, and colouring, are now justly considered necessary in gardens of the smallest extent. And even in the case of those plants which come forth from the hand of Nature arrayed in charms which it were profanity to impeach, much has been done in

introducing a greater variety of tints, in improving the habit of growth, and in combining in one plant the perfections of many.

We have no doubt that a few hints on the process by which these results are attained will be interesting to some of our readers at the present season; and we offer them the more readily, that the operation is of the simplest character, and may be performed by any intelligent person, and upon almost every description of plant.

If a blossom of any plant—one of the Lily tribe for example—be examined, we observe (in this instance) at the bottom of the flower a green triangular body, surmounted by a column one or two inches long, and terminated by an enlargement which, at a certain period after the expansion of the flower, will be found covered with a clammy secretion. These central organs are the *germen*, or immature seed vessel, with its *style* and *stigma*. Around them will be found six *stamens*, also arising from the bottom of the flower, each consisting of a *filament*, or stalk, and an *anther*, or case, borne at the summit, containing a coloured substance (the pollen), destined to the fertilization of the ovules or young seeds contained in the germen. When the flower first opens, the anthers will be found plump and smooth; but in a short period they will be observed to split longitudinally, and become mealy in their appearance, from the escape of the pollen.

These pollen-grains, when brought into contact with the neighbouring stigma, protrude a number of extremely minute tubes, termed *pollen-tubes*, varying in size from $\frac{1}{1500}$ to $\frac{1}{3000}$ of an inch in diameter, and including within them a portion of the contents of the pollen grain, which consists of a semi-fluid matter termed the *fovilla*. These tubes, which appear to be formed from the inner membrane of the pollen grain, are believed to penetrate the loose tissue of the stigma, and to pass down the style to the ovary, where they exert their fertilizing influence on the young ovules. The purpose of this paper being, however, entirely practical, we purposely avoid all further reference to the different theories promulgated on the manner in which impregnation is affected; it is sufficient to show that, unless the pollen reaches the stigma, no perfect seeds will be ripened—an assertion easily verified by cutting out the *anthers* of the Lily, or any other flower, as soon as it expands, when the seed-vessel will be found to wither away; and if, in some few cases, it does become considerably developed, it will either yield no seeds, or only such as have no reproductive power. If, however, after the stamens are removed, others from a flower of the same, or of another species, are dusted on the stigma, the seed-vessel will swell, and eventually ripen its seeds, exactly as in the case of those blossoms from which their proper stamens had not been artificially removed. In this consists the whole art and mystery of cross-breeding. But simple as the actual conveyance of the pollen of one species to the stigma of another may be, certain precautions are necessary to success, and if we desire to control the result,

certain laws must be complied with; but which, to speak frankly, we attach less importance to, as the results are often of the most contrary character. One or two of these laws are however, so natural, that they cannot give rise to the smallest doubt.

1. No plants which do not belong to the same natural order, can by any possibility be made to intermingle. The absurd stories related of the origin of Willmore's Double Pelargonium *(Surprise)*, which was said to be a mule between a Geranium and a Hollyhock, and of some other hybrids, need no refutation.

2. No plants, which do not form part of the same *genus*, can be united by cross-breeding. This law may at first sight appear to admit of many exceptions; but it is highly probable that, in many instances in which a reputed union has taken place between plants of two distinct genera, a further examination would prove that the two genera had been improperly separated, and did, in reality, constitute but one. Should, however, the statement with regard to the recently originated *Cheiranthus Marshallii*, which is said to be the offspring of the *Cheiranthus ochroleucus*, crossed by the pollen of *Erysimum Perofskianum*, prove true, this law would have to be relinquished, for of the wide distinction between these two genera, there is no doubt whatever.

3. Even among species belonging to the same genus, it is only those of similar structure which will yield hybrids. Thus the Gooseberry and Currant, though both belonging to the genus *Ribes*, have never been made to unite. It has been supposed that union can only take place between those species in which the pollen grains are of the same size; and should this supposition be confirmed, a preliminary microscopic examination of the two varieties of pollen, would enable us to judge of the probability of obtaining hybrids between any two species.

Where no natural hindrance exists to the union, the following precautions are all that are necessary to success.

1. The anthers or pollen bags of the plant which we desire to impregnate artificially, should be removed immediately on the expansion of the flower; or, if when this takes place, they are already burst, it will be necessary to open the flower prematurely, for it is essential to success that the anthers should be cut out before their pollen is ripe. In some of the Campanulas the anthers burst previously to the opening of the flower, and also in some of the Cytisus family, and probably in many others.

2. When the anthers have been thus extracted, the stigma of the flower must be carefully preserved from accidental impregnation by insects or other means, until it is in a fit state for the reception of the pollen of the species with which we desire to hybridize it. This end is best attained by tying a piece of fine muslin over the branch on which the blossom is situated. It is usually easy to perceive the proper moment for the application of the pollen, for the stigma, in most instances, exudes a viscid fluid; and in those plants in which it is divided into lobes at its

extremity, as in the Fuschia, Geranium, Clarkia, and many others, these lobes, which on the first expansion of the flower are commonly undistinguishable, diverge and spread themselves towards the anthers. In some plants, especially in such as have fugacious blossoms, the stigma is fit for the reception of the pollen as soon as the flower has opened; in others, not until a few hours after expansion; and in the Lilies, neither the pollen nor stigmas are fit for the operation of hybridizing until after an interval of one or two days from the opening of the flower.

3. The operation should be performed only in dry weather; for when moistened, the pollen-grains are ruptured and lose their fecundating power. This explains the injurious influence of heavy rains upon many crops when in flower, as well as upon fruit trees. In many plants the flowers close in wet weather, apparently with the intention of preserving the pollen and stigma from injury.

4. The actual operation of hybridizing consists simply in removing the anther, or, if necessary, the entire flower from the plant with which we desire to cross another species, and in applying the anther in a dry mealy condition to the stigma, by bringing them into contact. Some hybridizers collect the pollen with a small camel's-hair pencil, but, whenever it is possible, we advise the anthers themselves to be applied, without any intermediary. As the pollen of most plants is coloured, its presence upon the stigmatic surface will be easily detected. The quantity of pollen necessary for the fertilization of the ovules of any plant varies exceedingly in different species; it is better, however, to use too large than too small a quantity. As a general rule, it may be advisable to apply to the stigma of one species the whole of the anthers of the male flower. When practicable, the anthers should not only be rubbed upon the stigma, but also be inserted in the centre of the flower, where the arms of the stigma will often suffice to retain them. The pollen of some plants may be preserved for a considerable period, especially if kept quite dry, but in practice it is advisable to apply it as soon as ripe; though where two species, which it is desired to cross, are not simultaneously in bloom, the experiment may be tried of preserving the anthers between two pieces of glass until the expansion of the flowers of the other species.

The stigmas of most plants are sufficiently apparent to render any special instructions necessary, except in the instance of one or two plants. The stigma of the Iris is sometimes quite a puzzle to the inexperienced florist; but it is, in reality, as easily seen as in any other plant. If the petal-like body, usually of a vaulted form, which covers over the anther, be slightly raised by its bifid lip, a thin membranous ridge will be observed immediately below the lip, at the point where it is, when shut, in contact with the true petal beneath it. The whole of this membranous edging may perhaps act as an absorbing surface for the pollen, which will generally be found upon it after the opening of the anther; but the central portion between the bifid lip is no doubt the true stigma. After the application of

the pollen, the stigma either withers, or loses its viscidity—changes which may be deferred for some days by preserving them from contact with the anthers. This well-known fact may be made available for the prolongation of the blossoming period of most plants, for after fecundation, not only the stigma, but also the entire flower, rapidly decays.

It is generally supposed that in hybrid plants, the flowers and organs of reproduction partake of the characters of the female parent, while the foliage and habit resemble those of the pollen-bearing plant. This is, however, by no means an established law, for the plants raised from the same pod of seed, will often contain individuals, some of which resemble the male plant, whilst others inherit the leading features of the pistilliferous plant. Hybrid plants usually ripen seed, but their offspring seldom continue fertile beyond the second or third generation, though to this rule there are many exceptions. They may, however, be fertilized by the pollen of one of the parents.

The choice of subjects for hybridization, is obviously a matter for the exercise of individual taste. Much has been done by the florist in improving some of our cultivated plants, but an immense harvest remains to be gathered amongst our hardy bulbs, shrubs, and perennials; and every amateur florist may be assured that it is fully within his power to originate, in each of these sections, new varieties which would yield him both fame, pleasure and profit. To such of our readers as may be induced to try their hand at this interesting art, we earnestly recommend that a record of each experiment and its results should be kept.

THE CHRYSANTHEMUM IN CHINA.

'The Chrysanthemum is the Chinese gardener's favourite winter flower, although it is generally past its full beauty at the Chinese new year. There is no other plant with which he takes so much pains, or which he cultivates so well. His Camellias, Azaleas, and Roses are well grown and well bloomed, but in all three we equal him in England; in the culture of the Chrysanthemum, however, he stands unrivalled. The plants themselves seem to meet him half way, and grow just as he pleases; sometimes I found them trained in the form of horses and deer, and at other times they were made to resemble the pagodas so common in the country. Whether they were trained into these fanciful forms, or merely grown as simple bushes, they were always in high health, full of fresh green leaves, and never failed to bloom most profusely in the autumn and winter.

'The method of cultivating the Chrysanthemum in China is as follows:—Cuttings are struck every year from the young shoots, in the same manner as in England.

When they are rooted, they are potted off at once into the pots in which they are to grow and bloom; that is, they are grown on what would be called by our gardeners "the one-shift system."

'The soil used in potting is of a very rich description. About Canton it is generally obtained, in the first instance, from the bottom of lakes or ponds, where the Nelumbium or Water Lily grows. It is then laid up to dry and pulverize for some months, when it is mixed with old night-soil, taken from the manure-tanks found in every garden. A heap of this kind, after being laid up for some time, and frequently turned over, is in a fit state for potting the Chrysanthemum. Manure-water, taken also from the tanks, is liberally supplied during the growing season, and its effects are visible in the luxuriant dark green leaves which cover the plants.

'In forming the plants into nice compact bushes, which, with due deference to Chinese taste, I think prettier than animal and "seven-storied pagodas," their system is as follows:—The plants are trained each with a single stem; this is forced to send out numerous laterals near its base, and these are tied down in a neat and regular manner, with strings of silk thread. By having the plants clothed with branches in this way, and by keeping the leaves in a green and healthy state, the specimens never have that bare and brown appearance which they often present in England, when taken into the greenhouse in the winter.

'About Shanghae and Ningpo, the Chrysanthemum is still better managed than it is near Canton; but the success which attends it may be attributed, partly at least, to the more favourable nature of the climate, the plant being indigenous to the central or more northern parts of the empire. The system of cultivation is nearly the same—the main points attended to being those already noticed, namely, choosing a rich soil, planting at once into large pots, training to a single stem, and inducing it to send out numerous laterals, and giving liberal supplies of manure water during the growing season. The Chinese are fond of having very large blooms, and in order to obtain these, they generally pick off all the small flower buds.

'In China, as in England, the Chrysanthemum flowers during the winter months. When in bloom, it is in great request among the people, and is used in the decoration of court-yards, halls, and temples. It is everybody's plant, and blooms alike in the garden of the lowly Chinese cottager, and in that of the red-buttoned mandarin.

Although we are indebted to China for the parents of those varieties of Chrysanthemums which now enliven our gardens during the dull months of winter, yet, strange to say, the progeny is more numerous in Europe than in China itself. Some of those more beautiful kinds raised by Mr. Salter in France would be much admired even by the Chinese florist. It is a curious fact, however, that many of those kinds, such as *formosum* and *lucidum*, which were originally raised from seed in Europe, are also met with in the north of China.'—Fortune's *Tea Districts of China*.



Oxalis elegans.



Acacia grandis.



Rhododendron lanatum.



Plumbago Larpenta.

ÓXALIS ÉLEGANS.

Elegant Wood-sorrel.

Linnean Class—DECANDRIA. *Order*—PENTAGYNIA. *Natural Order*—OXALIDACEÆ.

In our first number, we gave a figure of a very pretty species of Wood-sorrel, and promised to return to the genus. The *Oxalis cernua* then published, was offered as an interesting spring-flowering bulb for the window; the *O. elegans* now figured, is an example selected from the summer-flowering species.

In common with most of its congeners, it is produced from a bulb of small dimensions, and appears likely to prove nearly, if not quite, hardy. The leaflets are bluntly triangular, generally of a pale green beneath, but, in some plants, of a bright reddish purple. Judging from our own specimen, we should infer that both varieties of foliage may be found on the same plant. The leaves are less numerous than in the *O. cernua*, and some others; but in the case of full-sized bulbs, are much larger than in many of the species. The flower scape is about twice the length of the petiole, supporting a truss of from six to ten blossoms, of a purple colour, the eye of the flower being of a very intense shade.

The sepals, or divisions of the calyx, are remarkable for four minute linear glands of an orange tint, at their tips, which, although too small to be readily detected by the unassisted eye, are easily perceptible under a microscope of low power, such as the Stanhope or Codrington lens. These glands form an excellent mark of distinction.

As in all the species, the petals are twisted in the bud, and form, when expanded, a flat-limbed corolla. The stamens of this, as well as of all the Oxalises, are ten in number, the five alternate ones being shorter than the others, and all are united at their bases by the dilated filaments. The five longest of these have frequently a broad scale at their base; but this is absent in some specimens. An examination of the uncoloured figure at the side of the plate, will afford an excellent idea of the arrangement of these central organs, not only of the flower of the *Oxalis elegans*, but also of most of the other species. The five styles, it will be observed, are longer than the stamens, slightly hairy, and terminated by an enlarged stigma, with a central depression, or, as it is technically termed, *umbilicate*. In many species of Oxalis the styles are recurved laterally about the period that the pollen is ripe, but afterwards assume the erect position of those in the diagram. As the styles are not

unfrequently even longer than those of the *O. elegans*, it is obvious that, elevated as they are above the stamens, the process of fecundation could with difficulty take place, but for the temporary change in their position to which we have referred.

Notwithstanding this curious adaptation, the Oxalises, like many other plants removed from their natural habitats, do not generally ripen seed; at least, none of those we have seen under cultivation, except the little *O. rosea*. Most of them produce, however, a large crop of bulbs, by which they may be readily increased.

In speaking of the *O. cernua*, we observed that the new bulbs in that species were formed in a cluster at the extremity of a long fibre, proceeding from the base of the old surface bulb. In the species now under consideration, this fibre is very much shorter, the new bulbs being found in the immediate neighbourhood of the parent root.

In the *O. Bowiei*, a very handsome late-flowering species, with crimson blossoms, the bulbs are produced at intervals along the radical fibres, in clusters of three or four; and between the fibre and the base of the young bulbs, there will often be found intervening a whitish, transparent, fleshy body, occasionally as thick as the little finger. The precise nature of this curious appendage is not very clear; nor do we find any notice of it in any modern Botanical writer, but it is, probably, a variety of the undergrown stem or *stipe*.

From what has been said of the roots of these pretty plants, one important practical conclusion may be drawn, viz. that the new tubers require to be dug up after flowering, as they are produced at such a distance from the surface, that, unless this precaution is adopted, they will eventually be lost. In the case of *O. Bowiei* and other autumn-flowering nearly hardy species, it is advisable to defer the removal of the tubers until spring, as in severe winters they would be safer at a depth of some inches; and from the late period at which the blossoms are produced, the young tubers would suffer from being disturbed in their immature state. As they do not commence their growth until the following summer, the month of April will be sufficiently early to replant them.

The bulbs of the *Oxalis elegans* do not penetrate the soil so deeply as some of the other species; but they should, notwithstanding, be replanted every autumn, after the decay of the leaves. The soil best suited to this and most of the Oxalises, is a light, sandy loam, with an admixture of peat or leaf-mould. A dry sunny situation should be chosen, for the blossoms expand only under sunshine.

The *O. elegans* is a very free flowerer, even the small bulbs will generally produce several umbels. The trusses will need the support of a small rod, to prevent them from being dashed to the ground by heavy rains; and for this purpose, nothing is better than the top of a slender, unpeeled osier. These supports are commonly employed by professional florists, but they are not so generally in use among amateurs as they deserve to be. Their pale bark renders them very incon-

spicuous, and their freedom from knots or roughness, and tapering form, makes them, in our opinion, far more desirable than the brittle hazel rods or painted sticks, ordinarily used for these purposes.

The hardiness of the present species has already been adverted to. It will be prudent, however, to afford the roots some protection in very severe weather; but the covering should not be suffered to remain too long, or the bulbs would be forced into premature growth.

All the Oxalises may be cultivated in pots; and when thus treated, they can easily be preserved through the winter in a dormant state. Considering the great interest attaching to this pretty genus, and the showy character of their blossoms, we are really surprised that they are not more frequently met with. A bed of mixed species, planted in clumps of eight or ten bulbs each, forms in sunny weather one of the most attractive objects imaginable. All the half-hardy species which flower in summer and autumn may be thus grown, and their tubers may be dug up after the leaves are withered, and preserved in dry sand. Among the most desirable species, whether for the open borders or pots, are *arborea*, yellow; *spectabilis*, pink; *violacea*, violet; *caprina*, flesh; *crenata*, yellow; *cuprea*, copper-coloured; *lobata*, yellow; *lasiopetala*, pink; *geniculata*, yellow; and *variabilis*, with its varieties *grandiflora* and *Simsii*, with white flowers.

There are one or two other points of interest connected with these Oxalises which we reserve for a future occasion. We have, however, said enough we hope to show their value as ornamental subjects, and to induce our readers to possess themselves of such as may be attainable in their respective localities. They are not generally kept by the provincial nurserymen; but at most of the London horticultural establishments, from twelve to twenty species may be obtained, and in a dry state are easily forwarded to any distance.

The *Oxalis elegans* is one of the many importations of Messrs Veitch of Exeter, by whose collector, Mr. Lobb, it was obtained in the neighbourhood of Loxa. It is certainly one of the prettiest of these children of the sun.

ACÁCIA GRÁNDIS.

Grand Acacia.

Linnean Class—POLYGAMIA. *Order*—MONŒCIA. *Natural Order*—LEGUMINOSÆ.

Imperium in imperio is an appellation which may be, with great justice, applied to the *Acacias*, so large and distinct a group do they form of the highly important and extensive Natural Order of Leguminous plants.

Some years since, Mr. Bentham enumerated no fewer than 340 species of Acacia; and from the numerous subsequent additions to the genus, it now comprises at least 400 species. They are divided by Botanists into two groups: the first includes the species with pinnated leaves; and the second, those in which the true leaves are absent, their place and functions being supplied by the peculiarly developed leaf-stalk or petiole, which is furnished with a leaf-like expansion, varying greatly in form, termed a *phyllodium*. The pinnated species are widely spread throughout the tropical regions of Africa, Asia, and America; but requiring, as most of them do, not only the temperature of the stove, but also a greater amount of space than can usually be afforded them, these tender species are rarely seen in cultivation in this country. Those of them which adorn our conservatories and greenhouses in spring, are chiefly natives of New Holland, of the flora of which country both the pinnated Acacias and the leafless section form one of the most striking features. The Phyllode-bearing division of the genus, of which the common *Acacia armata* is an example, is, we believe, peculiar to Australia, to whose arid climate they are especially adapted. Both sections contain a considerable number of species, remarkable for their elegant and graceful habit, and the abundance of their fragrant flowers. The airy foliage of the pinnated species imparts, however, a charm often wanting in the leafless section; and it is, therefore, from the first division of the genus that our illustration has been selected. We hope, however, on another occasion, to have the opportunity of showing that the other species are scarcely less attractive in an ornamental point of view, and fully equal to them in botanical interest.

The *Acacia grandis* is a recently imported species, and is, doubtless, a native of New Holland, thought we are unacquainted with its history. It forms a shrub of moderate size, and flowers freely while small. The stems are angular, grooved, and covered with long spreading hairs. The leaves consist of two *pinnæ*, articulated at their base, each pinna being about an inch long, and composed of from eight to ten pairs of linear, alternate smooth, leaflets, the *rachis* or stalk to which they are attached being flattened, and terminated by a small leafy point.

At the junction of the pinnæ with the branch, several curious appendages arise which deserve attention. First, between the two *pinnæ* will be found a short thread-like prolongation of the petiole, terminating in a little globular head: next, a minute gland-like body, which is apparently an abortive flower bud; then either one or two small cup-like involucres, out of which the flower stalks arise; fourthly, an articulated woody spine, about half an inch long; and, lastly, at the base of the leaf are two bristly stipules, and occasionally a third, beneath the prolonged petiole first mentioned. The flower heads are generally in pairs, on smooth stalks about three-quarters of an inch in length, and are very numerously produced.

The beauty of the flowers of the Acacias is entirely due to the long projecting stamens, the calyx and corolla being so small, as not to be easily distinguished after the full expansion of the *capitule* or flower-head. Both the floral envelopes referred to are composed of five equal divisions, regularly arranged; and, in this respect, there is a departure from the type of the Order, which, as our readers are well aware, is chiefly characterized by its *papilionaceous* flowers, of which those of the common Pea and Laburnum are examples. In those genera of the Order in which the flower is regularly formed, we still find the peculiar pod-like seed-vessel or *legume*, on which the name of the Order is based; so that the recognition of the *Leguminosæ* is one of the easiest problems for the student of Botany.

The Acacias, including the species now figured, generally ripen seed; but the number of legumes bears but a very small proportion to that of the flowers, for it must be borne in mind, that most of these contain *stamens only:* of the twenty or thirty florets composing the *capitule*, but a very few contain both stamens and pistil.

In some of the Acacias, the spiny process in the axil of the leaf is so largely developed, as to be a very formidable organ, and capable of inflicting a serious wound, as in the *A. horrida* and *A. Cafra;* in others, it is altogether absent, as in the species *Julibrissin*, *lophantha*, *dealbata*, and *discolor*.

The *A. grandis* is a most charming window-plant for spring flowering, being at that season loaded with its golden yellow balls; and at all periods of the year its elegant foliage gives it an ornamental character.

Its propagation is effected either by seeds or cuttings, usually by the latter method; they should be inserted in white sand, or very sandy soil, and covered with a bell glass or tumbler. As they are impatient of damp, they require a little more care during the rooting process than those of the leafless species; the inside of the glass should be wiped daily, and as soon as the cuttings are fairly struck, they must be potted off into sandy peat, and eventually into good fibrous peat containing less sand. During the summer, the pot may be placed out-doors in a warm aspect, on a layer of ashes, to keep out those plagues of the gardener, the worms; but in dry weather, it must be carefully watered, as the foliage of this and similar species is more delicate than that of the *phyllode-bearing* Acacias, in which the cuticle is much thicker, and contains fewer *stomata* or exhalating pores. In this and other cases, it will be found an excellent plan to place the pot containing the plant into one considerably larger, the space between the two being filled up with moss, which may be kept damp. This will prevent the roots from being injured by long exposure to the scorching rays of the sun.

As it is essential to the production of flowers the following spring, that the young wood should be thoroughly ripened, it will be better to remove the plant from the

influence of heavy rains about the middle of September; after which period, it should receive but moderate supplies of water. In winter, it will require all the air and light that can be given it, and should be kept in a cool apartment up to the month of February, after which a warmer room will hasten the development of its beautiful flowerheads. In case of very severe weather, measures must be taken to secure it from frost.

We have introduced this species to the notice of our readers, not only for its great intrinsic merits, but also as the representative of a large genus of plants, which, if we except the common *A. armata*, are rarely seen in cultivation among that class of amateur horticulturists to which we more especially address ourselves. This is greatly to be regretted, as they are as easily managed as the plants more commonly grown upon the window; and flowering, as most of them do, in early spring, when but few other plants are in blossom, it might have been supposed that they would have been eagerly sought after.

There are many other mimosa-leaved species fully equal in most points to the *A. grandis*; among which may be mentioned *pulchella*, *dealbata*, *discolor*, *pubescens*, and *spectabilis*; the last named being, perhaps, even more desirable than *grandis*. One of the species above cited, *pulchella*, is sometimes sold for *grandis*, which it resembles, differing chiefly in its longer spine and fewer leaflets.

The economical uses and products of the various species of Acacia, are too numerous and important to be alluded to in the present notice; we reserve them for a future occasion.

RHODODÉNDRON LANÁTUM.

Woolly Sikkim Rhododendron.

Linnean Class—DECANDRIA. *Order*—MONOGYNIA. *Natural Order*—ERICACEÆ.

ON the north-eastern frontier of the immense continent of India, between the states of Nepaul and Bhotan, lies the small territory of Sikkim, governed by a native prince, but under the protection of the East India Company. Until within the last few years, the very existence of this obscure state was, we suspect, unknown to the majority of the English public; but from being the most neglected, it now bids fair to become one of the best known of the principalities composing the vast empire of Hindostan. The country is, of course, wholly mountainous, forming a

part of the stupendous Himalayan range, which here reaches, in the peak of Kinchin-junga, the altitude of 28,000 feet; though the average height above the level of the sea does not, perhaps, exceed 8 or 9,000 feet.

Here, exposed to the alternate influences of a prolonged tropical summer and the snows of a Himalayan winter, were found the magnificent Rhododendrons, the discovery of which has conferred such well-merited fame on Dr. Joseph Dalton Hooker. This gentleman, whilst employed on a Government Botanical Mission, detected in the Sikkim Himalaya no fewer than thirty-two distinct and undescribed species, of most of which he has published figures in a superb atlas of plates, which must be regarded as a perfect triumph of art, though the price at which it is issued necessarily places it out of the reach of all but the wealthiest patrons of horticultural science.

With a view to aid in making these beautiful shrubs still more extensively known, we have selected one of the most interesting species, though the *R. lanatum* has been chosen less for the size of its flowers, which are exceeded in their dimensions by those of several other species, than for their yellow tint, which is, as our readers are aware, uncommon in the genus. Several of the species produce flowers of such magnitude, that a single blossom would require more space than we can afford to the entire figure: those of *Dalhousiæ* and *Edgeworthii* are four or five inches across, and those of *Thomsoni* are but little less.

'By whatever standard of floral beauty we judge of them, they rank very high. Every quality which can possibly render plants attractive is combined in them. Beauty of form, richness and diversity of colour and fragrance, are possessed by them individually or collectively; and in foliage, too, they are equally diversified. *Falconeri*, a tree thirty feet high, found at an elevation of 10,000 feet, has leaves twelve or eighteen inches long, by six inches wide. *Argenteum*, growing to a similar height, has leaves equal in size, and with large compact globular heads of pure white flowers. Then there is *Hodgsoni*, with noble foliage and aspect, having large ovate heads of pale purple flowers, beautifully and symmetrically arranged. Others contrast widely with these. *Setosum*, a small and elegant shrub, with flowers resembling a *Rhodora*, and evergreen box-like foliage; and the interesting *pumilum* and *elæagnoides*, with delicate blossoms not more than one inch across, will serve as examples. And between these extremes there is a great diversity in the character of the several species, in height, foliage, and flower. The colours of the latter vary from pure white, or with the faintest tinge of rose-colour in *Maddeni*, *Dalhousiæ*, and *Edgeworthii*—to the richest and deepest crimson, in *Thomsoni* and *fulgens*. The latter is especially attractive, from the intensity of colour and polished appearance of its blossoms. The flowers of *Dalhousiæ* are remarkable for their thick leathery texture, and for the length of time they continue in perfection, as well as for their delightful fragrance. For the often-

desired combination of yellow flowers with good evergreen foliage in Rhododendrons, *Wightii, lanatum* and *campylocarpum*, may be mentioned as examples.'

Doubts have been expressed whether the figures published by Dr. Hooker, from drawings made by native artists in the Himalaya, might not be exaggerated; but there does not appear the smallest reason for supposing this to be the case, on the contrary, it is probable that the plants now growing in this country will produce blossoms exceeding in size those of the plants in their native habitats. In the first species which flowered in this country, *ciliatum*—of which a figure appeared in the *Botanical Magazine* for May, 1852—the blossoms were fully one-third larger than those of the wild plant; and as showing the tendency the Sikkim Rhododendrons evince to produce their flowers in a young state, we may remark, that the species just mentioned was only seven inches high, and but twenty months old.

In the little work recently issued by Messrs. Standish and Noble of Bagshot, of which we have given a notice at the end of the present number, we find some instructions for the cultivation of these Sikkim Rhododendrons, upon which our readers may implicitly rely, these gentlemen having been very successful in their treatment, and their plants being the largest in the trade.

Some fears had been entertained by Dr. Hooker, that these noble plants would prove unsuitable for cultivation in England, less on account of the severity of our winters, than for the late, cold, and changeable springs which, in many years, are indeed only a prolongation of the winter. In the Sikkim Himalaya, the mean temperature of the months of November, December, January and February, differs but little from that of London; but the increment of temperature which occurs in the native regions of these Rhododendrons early in March, and which rapidly excites them into growth, does not take place in this country before the month of May. The chief difficulty in their cultivation will therefore occur in early spring; but in the case of those species which do not flower until June, Messrs Standish and and Noble are of opinion that they will be found much hardier than was supposed.

'From the accounts given by Dr. Hooker of their time of flowering,' these gentlemen observe, 'many of them not putting forth their blossoms till June, we trust they will prove much more valuable as hardy plants than the old *arboreum*, which, however beautiful it may be, can only be successfully grown out of doors in the more favoured situations in Great Britain. Whether they will retain their late flowering qualities in this county, must for the present remain an open question; but as the greater part of them are perfectly hardy, if they should be found to bloom earlier than we anticipate from their natural habits, there are many situations in the country where spring frosts are but very slightly felt, in which they may be successfully grown. It is possible that one or two of the species, as *Dalhousiæ* and *argenteum*, may be better suited for the conservatory than the American garden under any circumstances. But, whatever situation they may

be found best adapted for, any care they may receive will be amply repaid by the great beauty of their flowers.

'As regards their cultivation, situations having a great amount of atmospheric moisture should be chosen. In bogs drained two or three feet deep, they would succeed well. But it must be remembered that, while they will require a moist and cool subsoil, it must not arise from stagnant moisture. In the damp climate of a great part of Ireland, on the southern and western shores of England, and at the base of the mountains on the western coast of Scotland—situations where there is always a large amount of atmospheric humidity with little frost—these beautiful plants will doubtless succeed well. To those already possessing young plants, we recommend the following course of treatment:—Procure a quantity of peat soil containing a large amount of vegetable matter, as it is necessary that it should be very rich, to which add about one-fifth of silver sand; well mix it, and place a layer of it about six inches deep in the bottom of a frame, in which place the plants at distances according to their size, allowing each plenty of room, and while growing, shade from the direct influence of the sun, and keep them saturated with moisture. At a corresponding season, on their native mountains they are deluged with rain; and it is from not affording them sufficient water, that many persons have failed in their cultivation. From the want of it, the leaves, especially at the points and edges, become withered and brown.

'A great point to be attended to in the cultivation of the Rhododendron, especially when under glass, is never to allow the temperature to get too high, nor the atmosphere dry. Nearly all the species are natives of cool and moist regions; and if these (to them) unnatural conditions are allowed to occur, their healthy economy is sure to be materially deranged.

'In placing them in the open ground, August will be the best season; rainy weather should, if possible, be chosen, and the plants should not be less than a foot high. After planting, boughs should be stuck in and around the groups, to afford them a partial shade, as well as to prevent evaporation; and, of course, the plants will have been gradually prepared for their final removal.

'From the fact that many of the species were discovered epiphytical on rocks and trees, it has been inferred that corresponding conditions for their culture must be secured in this country. But from our own experience, we think that little importance, in a cultural point of view, should be attached to this circumstance; and we are confirmed in our opinion by that of Dr. Hooker, in his very elaborate paper in *The Journal of the Horticultural Society* for the present year. The localities in which any of the species of an epiphytal character were found, were always excessively humid, often in dense woods. And the same species which there occurred as epiphytes, became terrestrial in more open and, of course, drier situations. This character must, therefore, be considered as merely local or accidental, and

should by no means influence the course of treatment adopted for them in this country.'

The *Rhododendron lanatum* is a shrub of some size, flowering in June, and will probably prove one of the hardiest of the group. It was discovered at an elevation of about 10,000 feet near Jongri and Chola. As its specific name implies, it is remarkable for the dense coating of down upon the back of its handsome foliage.

PLUMBÁGO LARPÉNTÆ.

Lady Larpent's Leadwort.

Linnean Class—PENTANDRIA. *Order*—PENTAGYNIA. *Natural Order*—PLUMBAGINACEÆ.

THE *Plumbago Larpentæ* is now so well known, that we feel an apology is due to our subscribers for occupying our pages with so familiar a plant; a circumstance due solely to our having been deprived, by an accidental delay, of one or two of the drawings intended for this month's illustrations.

No plant of recent introduction has given rise to so great a diversity of opinions as the *Plumbago Larpentæ;* by some it has been injudiciously extolled, whilst by others, less successful in their treatment of it, the plant has been as unduly depreciated. Its thin fugacious blossoms, and but partial hardiness, doubtless detract considerably from its merits; but the bright colour of its flowers, and the peculiar freshness of its ciliated foliage, will always procure it admirers. The late period at which it blossoms renders it, perhaps, more liable to injury from the early frosts and autumnal rains, than many plants which are not one whit more robust.

When treated as a hardy herbaceous perennial, it suffers less from the cold of the winter months than from the late springs so characteristic of our climate. The average temperature of the winter at Shanghae (one of the localities where this plant is found), scarcely exceeds that of the same season in England; but the spring frosts, so injurious to many of our shrubs and perennials, are unknown in that latitude, and the summers are not only considerably hotter than our own, but also of longer duration; so that the plant is, up to a late season of the autumn, subjected to a degree of heat by which it is so thoroughly matured, that it is enabled to resist the cold of the winter months with far more success, than the succulent specimens produced under the influences of an English autumn.

The plant may be left in the borders throughout the year, in favourable situations, upon a dry subsoil; but, as a general rule, we would advise the same precautions as suggested for several other plants previously figured—protection from long continued rains in autumn, and a covering of ashes, sand, or dry fern leaves, during the winter months. But even with these precautions, plants thus exposed will rarely present so favourable an appearance as those which have been preserved in a cold frame or dry cellar. When dug up and potted, the tops should be allowed to remain uncut whilst they continue green; and so long as the soil does not become quite dry, but little water will be required during the winter. It will be found to succeed best in peat; but, as a substitute, when this is not procurable, sandy loam, with a considerable portion of thoroughly decayed leaf-mould, may be used. In either of these soils its growth is rapid; an abundance of suckers being generally produced, which, if taken off and struck on a mild bottom heat, will make flowering plants the same season. It may also be readily increased, by division of the roots in spring, about the period they commence their growth.

As a pot-plant, its cultivation is remarkably easy. We have observed that it may readily be preserved in any convenient place, in a half-dry state, through the colder months of the year. When it 'pushes' in spring, it should be repotted; and if the specimen is large, it should have a second removal as soon as the first pot has become filled with roots. Beyond these attentions, nothing will be needed but free supplies of water, and a few supports for its slender flexible stems.

Without indulging in extravagant encomiums of this plant as a window ornament, it may yet be said to be of great value on account of the bright blue tint of its flowers, which continue in perfection for a longer period than when exposed in the open borders.

As the first plant of the Leadwort tribe which we have yet figured, a few remarks on the structure of the Order may not be out of place. The *Plumbaginaceæ* are distinguished, among all other monopetalous plants, by their plaited or furrowed calyx, five styles, and superior one-celled ovary, containing a solitary ovule suspended from the extremity of a cord, which arises from the base of the cavity of the cell. Although we have used the term monopetalous as applicable to the Order, several of the genera have their petals distinct, as in the Statices and Armerias, and in the genus Plumbago, the styles are partially united; but in all the genera their extremities are distinct, and the one-seeded superior ovary, with a pendulous ovule, is an invariable feature of the Order.

In the genus *Armeria*, the mode in which the fertilization of the ovule is effected is highly curious. We have stated that this is suspended from the end of a cord, which is attached to, or lies over, the *foramen* or opening in the young seed through which the pollen tube has to be introduced. At the moment this is conveyed from the stigma through the style to the ovary, the cord attached to the

ovule slips aside, and allows the fertilizing particles to enter through the *foramen.*

We have retained the more popular name of the *Plumbago Larpentæ*, though, as many of our readers are doubtless aware, it is now called *Valoradia plumbaginoides*, Leadwort-like Valoradia. Nor is this the only synonyme conferred on it by Botanists; for its first designation was *Ceratostigima plumbaginoides;* and it is generally regretted that this name was not adopted, alluding as that term does, so expressively to the minute gland-like processes or *horns* upon the arms of the stigmas. It was our intention to have given a diagram of these marks of distinction between the true Plumbagos and the present plant: but by an inadvertence of the artist, it has been omitted. We must not forget to point out the fringe of hairs or *cilia* at the edge of the leaves, nor the reddish tinge of the chaffy bracteas by which the heads of flowers are surrounded, nor the delicate veins and minute teeth of the beautiful heart shaped petals.

We shall avail ourselves of the earliest opportunity of figuring one of the most desirable of the genus *Statice;* in the mean time, we venture to recommend, as fully equal in value to the majority of cultivated plants, the *Plumbago Larpentæ.*

WINDOW GARDENING.

(Continued from page 94.)

WATERING *(continued).*—We observed in the conclusion of the last article, under this head, that the water should be poured *gently*, and in a small stream, on the surface of the soil. If this precaution is disregarded, and the fluid is applied violently, the result will be that the soil will be disturbed, and, in the course of a short time, probably a hollow formed around the stem, not only giving the pot a very unsightly appearance, but injurious to the health of the plant. It was also advised that the water employed should be of the same temperature as the apartment; but an exception to this rule may be made in the case of Calceolarias, to which the coldest water may be applied with advantage, these plants being natives of the Andes, where they are fed by the streams of melted snow.

It frequently happens that plants potted in soils of too open and sandy a texture, become so dry from neglect, that when a dose of water is given them, it escapes almost instantly. In such cases, the proper method of proceeding will be to give the plant only a small quantity of water in the first instance; but after a short interval a more copious supply may be given, which will then be retained by the soil.

Plants grown in peat soil require some attention to prevent extreme dryness. When from an oversight this occurs, the peat will become so repellent of moisture, that it will be necessary to perforate the soil of the pot with a small stick; or, in some cases, it may be advisable to remove the ball of earth from the pot, and place it in water for some minutes, or until the entire mass appears to have imbibed the moisture. It may then, after draining for a short period, be returned to the pot. In other instances, it sometimes happens that from defective drainage, or too frequent waterings, the soil of a pot becomes sour and sodden, and remains in this state even when water is subsequently withheld. As the plant would materially suffer from a continuance of these conditions, it should be at once examined whatever may be the season of the year. It will often be found sufficient to shift the plant to a *dry* and *perfectly clean* pot of the same size; and when the mischief has been caused by insufficient drainage, a larger supply of broken crocks must be added, the operation being performed as already described at page 93. In extreme cases it will, however, be better to shake off the old soil from the roots of the plant, and to pot it in fresh materials. When this is done in the height of the growing season, it will be necessary to give the branches of the plant a slight pruning.

Another difficulty with which window cultivators have to contend, is the large size to which some specimens attain, especially the fuschia, and the consequent inconvenience of pots of a size entirely out of character with miniature gardening. If these gigantic specimens must be preserved, there is no alternative but to allow them pots of a proportionate size; for should they become pot-bound, death would necessarily ensue at an early period. Something may be done, however, by annual root-pruning in spring, at which period, just before the plant commences its growth, it should be turned out of the pot, and the largest of the roots cut away; and if thought desirable, the crown of the plant may be divided, or reduced in size, so that the same pot, or one of the like dimensions, may be employed from year to year, and the plant kept within the same limits.

There are a few plants which flower more freely by being kept in small pots; but as a general rule, it is exceedingly injurious to allow them to become *pot-bound*, as it is technically termed, in which state the entire ball will frequently be found a compact mass of fibres; and when in this condition, even although it should be transferred to a larger pot, it will rarely be of any avail, unless the soil is shaken away, and the greater portion of the fibres removed. There are few plants which do not become shabby at a certain age; instead of preserving them from year to year, it is far preferable, therefore, to raise new plants from cuttings: and this leads us to the subject of

Propagation of Window Plants.—Although this is sometimes effected by seeds, the most usual method is by cuttings. With a very few exceptions, cuttings of most of the plants usually grown in the window, such as Acacias, Cactus, Calceo-

larias, Cytisus, Ericas, Fuschias, Heliotropes, Kalosanthes, Lobelias, Mesembryanthemums, Pelargoniums, Petunias, and Verbenas, succeed best when taken in a young state, at any period between April and September. The Cineraria strikes best from cuttings of the suckers; and the Camellia, Myrtle, China and Tea Roses, Sollyas, from cuttings of half-ripened wood, taken off from June to August. The cuttings of the Geraniums, Fuschias, Roses, Myrtles, and Camellias may be three or four inches long; of the other plants named, shorter lengths will suffice; in all cases the shoot should be cut close under a joint with a very sharp knife, and the lowest leaves removed. The object to be kept in view is, to check the evaporation of the juices of the cutting until it has emitted roots; and the removal of a portion of the foliage tends materially to this end, but in all cases the leaves on the upper part of the shoot must be left. Almost all the plants we have named will root readily in sandy loam or very sandy peat; a soil containing a considerable proportion of sand is *indispensable*. The pot containing the cuttings should be at least one-half filled with drainage, and, where it can be procured, a thin layer of small charcoal fragments may be superposed on this, before filling in the soil. Cuttings which do not require a glass may be inserted near the side of the pot, but those which are too succulent to bear exposure must, for the convenience of covering them, be placed in the centre. In this case, it will be found an excellent plan to have but a thin layer of soil above the broken crocks and charcoal, so that the bottom of the cutting nearly touches the drainage.

Another method often pursued is, to invert a small pot inside one several sizes larger, so that the mouth of the smallest just fits, when inverted, the base of the largest. The space between the two pots is partly filled with drainage, and upon this is placed a layer of the soil, the cuttings being inserted round the sloping side of the bottom of the innermost pot. When a glass is employed, its interior should be wiped every day, to prevent the cuttings from damping off; an accident which often occurs with those of a succulent nature.

During the first week or ten days the cuttings, whether covered with a bell glass or not, should be placed if possible on a window with a north aspect, or at any rate be shaded from the sun until a *callus* is formed at their base; after which it may be gradually exposed to a stronger light, and as soon as the cuttings appear to have struck, the glass should be slightly raised to admit air, and should be removed at the earliest period, to prevent them from being drawn.

It is well, however, to bear in mind that many cuttings will frequently elongate upwards before any roots have been formed. Before removing them from the soil, it will therefore be advisable to invert the pot, and remove it from the ball of earth, when, if the cuttings have been arranged round the sides, it will easily be seen which of them have emitted any fibres. When, however, they have been planted in the centre of the pot, a single cutting may be carefully removed as a preliminary step.

(*To be continued.*)

Review.

PRACTICAL HINTS ON PLANTING ORNAMENTAL TREES AND SHRUBS; 200 pp. By Standish and Noble, Bagshot. Bradbury and Evans.

THIS little work is so entirely in our way, that we hasten to introduce it to the notice of our readers, feeling assured that they will thank us for making them acquainted with a publication every way so trustworthy.

The title of the work, as above given, conveys a very inadequate idea of its contents; for, in addition to the valuable instructions on planting, it contains a description of the principal *Coniferæ*, and hardy evergreen trees and shrubs, with remarks on the situation for which each is best adapted. Following these are chapters on the cultivation of American Plants, and of the Rhododendrons of the Sikkim Himalayas, to which we have already referred in a previous page of the present number. To these are added lists of plants especially adapted for particular soils and situations, which will be of great value to the inexperienced planter.

The following extract has reference chiefly to the *Coniferæ*, but it is also applicable to every species of hardy shrubs:—

DISADVANTAGES OF POT-GROWN PLANTS.

'A prejudice exists against plants removed from the open borders; in numerous instances it is a just one. It has arisen from the fact that many growers do not transplant often enough. The consequences are, the plants become coarse-rooted, and being removed in an indifferent condition, are often lost before they can recover the check consequent on their change of situation. But the remedy for this is in the hands of purchasers; if coarse-rooted plants cannot be sold, growers will cease to bring them into the market.

'But the disadvantages of pot-grown plants are, as a general rule, of equal magnitude with the worst condition of those badly managed in the open borders, for as it becomes a matter of great importance to nurserymen that their stock of pot-grown plants should occupy as small a space as possible, pot-bound specimens are the rule, rather than the exception. And for plants intended to be removed to the open ground as permanent specimens, scarcely a worse condition could exist; it is superlatively bad.

'For the purpose of illustration, we will suppose a person to have purchased a plant in the condition above described. On removing the pot, he is delighted to find coil upon coil of healthy roots. He knows very well that to commit them to their new situation in an uncoiled state will be highly improper, and so, with great care, he proceeds to disentangle them. However careful he may be, the loss of many valuable roots will result, and damage to the remaining will be equally certain. Those in the interior of the ball, from their size and woody texture, will not yield at all, and he closes his half-finished labour, with the conviction that he has seriously damaged his plant. But this mutilation, great as it is, is far preferable to having planted it with its matted roots undisturbed.

'A plant which has once been thoroughly pot-bound, never gets so firm a hold in the soil as one whose roots have never been confined. Instances are numerous where valuable specimens, after years of growth, have been blown down in consequence of the very slight manner in which they retained their position. The main roots, when young, had, from pot-culture, acquired a coil-like arrangement, which, during all their subsequent growth, they adhered to—enlarging, but not spreading—increasing in bulk, but contributing little to the mechanical support of the tree; in fact, they often destroy each other; and in every instance of a plant which in its young state has been subject to the confinement of a pot, these conditions will be evident.

Of course, new roots strike out, and take a horizontal direction, but they are only of secondary importance, and will ever remain disproportionate to the proper support of the tree. In short, pot-grown plants have many disadvantages, without a redeeming quality.

'The objections to plants grown in the open ground, supposing them to have been properly managed, have no real weight. They can always be removed, at proper seasons for planting, to any distance, without risk of failure from the effects of their removal. Frequent transplanting while in the nursery will have induced the production of numerous healthy roots, ready to commence their important functions the moment favourable opportunities are presented. They will at once gain firm hold of the soil; and support will, if required at first, be quickly dispensed with.'

PROPER SEASONS FOR PLANTING.

'With regard to the most suitable season for planting, about which so much has been said and written, and to which so much importance is attached, nothing need be said; so much depends on the state of the weather, the condition of the plants, and various local circumstances, that advice which would in some cases be valuable, would in others only mislead. Something will always remain to be decided by the judgment and discrimination of the planter.

'As a general rule, March is the worst month of the year for removing evergreens. It is generally accompanied by cold parching winds, the worst possible condition to which newly planted shrubs can be subjected. A hot dry season is bad, but a cold dry one is much worse. But if the plants to be removed have been frequently transplanted, and are well furnished with fibrous roots, the operation may be successfully performed at almost any season of the year.

'Though a cold dry season, as we have just observed, is the worst possible in which to transplant evergreens under any circumstances, if the plants are coarse-rooted, from not having been previously removed, the difficulties are much augmented, and the chances of success decrease in an equal ratio. It will be impossible to remove such without destroying the greater part of their fibrous roots; and as the vegetative powers of the plant are dormant, others will be but slowly produced. Under such conditions, the leaves will help to destroy rather than accelerate vegetation. Evaporation from the leaves of plants is great under ordinary circumstances, and in very dry weather it is much increased; and when the state of the atmosphere is such that it contributes nothing for absorption, and from the absence of rootlets no moisture can be sent up from the soil, every drop of sap is quickly drawn from the branches, the leaves dry, the bark shrivels, and death ensues before new roots can be produced to contribute a fresh supply. From this it will be readily seen, that for evergreens with large thick leaves, which are coarse-rooted when removed, a warm moist season, just before they make their young shoots, or when they are nearly ripe, and while the sap is still in an active state, will be the best season to transplant; and if the roots are 'puddled' when planted, it will greatly assist them; and if their leaves can be kept syringed when the atmosphere is dry for a fortnight or three weeks after planting, by that time fresh roots will have been made, and the plants are safe.

'The evergreen oak is proverbially difficult to transplant successfully; more failures are experienced with it than with any other tree, but with good management, it can be effected even under unfavourable circumstances. Some years since, Mr. Ingram, gardener to Her Majesty at Windsor, moved some large specimens in the first week of June, and which had not been previously removed for many years. They were carefully taken up, and the roots well 'puddled' when planted, and the weather was moderately moist; but when it was not so, a man was kept constantly syringing their leaves and stems for about three weeks. The plants succeeded well, and are now fine trees.

'Under ordinary circumstances, evergreens may be safely removed during the latter part of August, in September and October, or even in April and the early part of May. But under the conditions we have already detailed, they may be transplanted at almost any season. We have succeeded well with many in May and June. For *deciduous* trees and shrubs, it matters little at what period they are transplanted between the time of casting their leaves and of commencing to vegetate in spring. But immediately after the fall of the leaf is the most suitable period.'



Delphinium Hendersonii



Antirrhinum Hendersonii



Calceolaria.
Wellington Hero



Campanula coronata

DELPHÍNIUM HENDERSÓNII.

Henderson's Larkspur.

Linnean Class —POLYANDRIA. *Order*—TRIGYNIA. *Natural Order*—RANUNCULACEÆ.

IF a stately habit, and magnificent flowers of the deepest blue, are to be regarded as recommendations to notice, then is the *Delphinium Hendersonii* entitled to a prominent place in our list of choice subjects. It possesses, in a high degree, those characteristics for which the perennial Larkspurs are so deservedly esteemed. As one of the chief points by which it is distinguished from most other varieties is the large size of the flowers, we have preferred to give one or two detached blossoms, of nearly the natural size (about two-thirds), rather than a reduced figure of the entire spike, which must, necessarily, have failed to convey a correct idea of their great beauty. The dark green glossy foliage, cut into acute segments, is strikingly handsome, as is that of most of the Delphiniums. In common with the other members of this showy genus, it delights in a rich light soil, in which it grows from four to five feet high, and is, as might be supposed, perfectly hardy. It is a hybrid between *D. cheilanthum*, and *D. elatum splendens*, and was raised by M. Chauvière of Paris, of whom Messrs. Henderson of the Wellington Nursery purchased the entire stock.

The size of the flowers is very remarkable; but it is, we think, fully within the range of probability that varieties will, ere long, be raised with yet larger blossoms. By a very simple process, all our perennials, and, indeed, *every* description of plant might be greatly improved.

Everybody has heard of the method by which the late eminent Horticulturist, Mr. Knight, originated many of the superior varieties of the Garden Pea, and other vegetables. He selected the largest of the produce, and reared from them several successive generations of plants, employing the finest of each crop as seed for the succeeding one. By these means he ultimately obtained Peas nearly double the size of the original variety. Now there can be no doubt whatever that the same plan may be adopted, with success, in the case of such plants as the Delphiniums, though it is equally applicable to annuals, bulbs, shrubs, and perennials of every class.

It must have been remarked by all observant Horticulturists, that the first few blossoms which expand on any plant, are considerably the largest; and that even when the flowers are removed as soon as faded, the succeeding ones do not equal them in size. In such plants as the *Potentilla*, *Enothera speciosa*, and many others,

the flowers gradually diminish in size, until, at last, they are scarcely more than one-half the dimensions of the earliest ones. It follows, as a matter of necessity, that the seeds ripened by the flowers first expanded, will be much finer than those produced by the latest blossoms; and if, instead of permitting the whole of the buds upon the spike, or raceme, to reach maturity, all but the first two or three are pinched off, a still further improvement will result; for the vital forces of the plant will be concentrated in the development and maturation of a very small number of blossoms. When the plant produces several flower stems, one may be very well spared for this purpose. It is not advisable, we think, to cut off the upper portion of the spike; we would simply pick off the buds, and that at the very earliest period at which they can be removed, so that none of the strength of the plant be wasted in nourishing them. The plants raised from seed thus obtained, may be subjected to the same process; and so on, for any number of generations, with increasing benefit. It would, however, be necessary to guard against cross impregnation by any other species of an inferior kind present in the same garden, as this would tend to modify materially the character of the progeny.

To return from this digression to the Delphiniums, which we must not quit without a few remarks on the structure of the flowers. Like many other genera of the Ranunculus tribe, the Larkspurs are remarkable for their coloured sepals, the true petals being comparatively small. Of the five divisions of the calyx, the upper one is prolonged into a hollow spur, which varies in length in the different species. In the true Delphiniums, the petals are four in number; two usually very narrow, and furnished with spurs, which are included in that of the upper sepal; the other two are much broader at their ends, and reflexed downwards over the stamens. In *D. Hendersonii*, and many other species, these two petals are covered with yellowish hairs, about the centre, which communicates to the flower the appearance of being occupied by a Bee, or other large insect, which may be supposed to have crawled in in quest of nectar; and thence the popular designation of Bee Larkspur, applied to *D. elatum*, and other species.

The distinct carpels of the perennial Larkspurs should be examined; they are very characteristic of the Order, and afford a good idea of the *follicle*, or single carpel, opening by one suture. They are generally three in number, and contain one or two rows of angular seeds.

The annual species have been recently separated by Dr. Lindley from the genus *Delphinium*, on the ground that the petals are united into one piece, as may be seen in the common varieties. They are now, therefore, known as a distinct genus, *Consolida*, in allusion to this union of the petals. Their single carpel is also a feature of distinction not to be overlooked.

Delphinium, from the supposed resemblance of the spur of the flower to a dolphin *(delphinus)*.

ANTIRRHÍNUM MÁJUS.

Greater Snapdragon, var. Hendersonii.

Linnean Class—DIDYNAMIA. *Order*—ANGIOSPERMA. *Natural Order*—SCROPHULARIACEÆ.

THE Antirrhinum is one of the very few of our indigenous plants which time, and the fostering hand of the Horticulturist, have elevated to the rank of Florists' flowers. Although some improvement has been affected, yet, of late, but little advance has been made in this subject, and it has with some fallen into disfavour; though, with that portion of the public whose early associations are not affected by the caprice of fashion, the Antirrhinum will always continue a favourite, whatever may be its deficiencies in the eyes of those Florists who subject every plant to a sort of Procrustean bed.

The great ease with which they are cultivated, their adaptability to almost every description of soil, with their prolonged season of flowering, and the varied hues of their blossoms, fully compensate for any deficiency of form in some of the varieties. By judicious management, the Antirrhinum may be had in flower from June to November; and there are but few hardy plants of which the same can be said. When the flowers have not been artificially impregnated, the plants raised from seed are very frequently like their parent; for the peculiar form of the corolla opposes an obstacle to the ready entrance of the insects, by which, as well as by the agency of the atmosphere, so many other plants become naturally hybridized. Still, as the perpetuation of any particular variety by seed cannot be implicitly depended on, it is usual to increase them by slips taken off in September, which should be inserted in a sheltered border, under a handglass, though this is not indispensable; a few evergreen branches placed round them will be sufficient. If the slips are not too thickly planted, they may remain all the winter where they are struck, and in March may be removed to the borders where they are intended to bloom. To keep up a good succession of flowers, the spikes of seed vessels should be invariably removed the moment the blossoms have fallen. In moderate winters, the Antirrhinum has an advantage over many of our hardy plants, in retaining its foliage, so that it may, without much impropriety, be termed an evergreen. Seedlings raised in spring under a handglass, will form nice flowering plants the following autumn; they usually attain a much larger size than those raised from cuttings.

The *Antirrhinum Hendersonii* is one of the handsomest varieties of this plant

raised for some time past, the broad bands of carmine edging the lips being very striking, and each of the blossoms appears to be an exact counterpart of the others. It was raised by Mr. George Parsons of Brighton, though the entire stock is now in the possession of Messrs. Henderson of the Wellington Nursery.

The Antirrhinum is one of a group of Scrophulariaceous plants, including the genera *Linaria*, *Nemesia*, *Anarrhinum*, and a few others, having what is termed a *personate* corolla (from *persona*, a mask), the two lips being closely pressed together, and the base of the tube either swollen, or prolonged into a spur. The projecting portion of the lower lip is called the *palate*. A slight approach to this palatial prominence is seen in the *Maurandya*, a plant belonging to the same section of the Order, but it is most conspicuous in the *Antirrhinum* and *Linaria*. The spur is most developed in *Linaria* and *Nemesia;* in the Snapdragon and *Anarrhinum*, it is short and blunt, and generally termed a *heel;* a slight gibbosity is also observable in the flower of the *Lophospermum*, a genus closely allied to the *Maurandya*.

The seed-vessel of the Snapdragon partakes of the irregularity of the other parts of the flower, the upper of the two carpels projecting beyond the lower one, over which it is slightly curved. The upper cell opens by *one* orifice, the lower by *two*, all three being ragged at their edges.

The scientific name of the Snapdragon is compounded of *anti*, resembling, and *rhin*, a nose or snout, from a fancied resemblance between the flowers and the muzzle of some animal. The popular name of this plant in France, *muflier*, also alludes to the same peculiarity.

CALCEOLÁRIA HÝBRIDA.

Hybrid Slipperwort, var. Wellington Hero.

Linnean Class—DIANDRIA. *Order*—MONOGYNIA. *Natural Order*—SCROPHULARIACEÆ.

THE singular form of the flowers of the Calceolarias has invested them, from their earliest introduction, with an interest which the numerous beautiful hybrid varieties raised of late years, have fully maintained. In common with most other cultivated plants, the Calceolarias, especially the herbaceous varieties, may be cited as examples of the improvements that may be effected by the art of the Horticulturist. The original species, with a very few exceptions, are yellow-flowered; happily, however, one or two are found with blossoms of a purple hue,

(*C. arachnoides* and *C. purpurea*); and from their admixture with the yellow varieties, have arisen the splendid specimens which form so attractive a feature in the early exhibitions.

Our readers will scarcely need to be informed, that the Calceolarias are divided into two sections, the *herbaceous* and the *shrubby*; though many of the newest varieties are of an intermediate class, the two divisions having become blended by cross breeding. The herbaceous section, for a long period, monopolized the attentions of the Florist; but of late years, the superior claims of the shrubby varieties for out-door purposes, have become apparent; and the result is, that in place of the small, pea-like, flowers of the older bedding Calceolarias, we now have shrubby varieties, with blossoms all but equal in size to those of the herbaceous kinds.

The Wellington Hero variety, figured in the present number, is one of the latest additions to this class; and although, at first sight, it may not appear to possess greater merit than some others now in general cultivation, when our readers are informed that the figure represents the flowers of scarcely *one-half* their natural size, we think it will be readily admitted to have very high claims indeed. Its rich, deep golden-yellow flowers, and excellent habit, render it one of the most desirable of the bedding Calceolarias; and we anticipate that, in the following season, it will be extensively grown.

The cultivation of the shrubby evergreen Calceolarias is of the easiest character; and they have one important advantage over the fancy varieties, in being much less liable to the attacks of the green fly. Although they may be grown in pots, yet, as they are chiefly employed for bedding out in summer, our remarks will have especial reference to that mode of culture.

The Calceolaria succeeds best in good soil, in situations somewhat shaded. No plant suffers more in hot, dry, sandy localities; and in gardens of this character, it should never be exposed to the sun's influence throughout the day.* During the unusually warm July just passed, specimens came under our observation, which received so much injury from the burning rays that, although abundantly watered, they will probably not recover their healthy appearance. Nor is this surprising, when it is remembered that most of the original species are natives of the Chilian and Peruvian Andes, growing often at an elevation of from eight to twelve thousand feet; and a predilection for cool soils equally mark their progeny.

Their increase is best effected either at the end of the summer, when the plants are removed from the beds, or in March; but the former period is to be preferred.

At that season the shoots are partially ripened, and the decreased temperature favours the emission of roots. These two conditions, viz. a cool atmosphere and ripened wood—are essential to success, and the failure of cuttings taken in summer

* This hardly applies to such species and varieties as have the rigid habit of the old *C. rugosa*.

is readily to be explained. The cuttings, or rather *slips*—for these are best—may be planted in a shady spot in the open air, in sandy loam, or any soil rendered tolerably open by an admixture of sand; and it will be an advantage if they are covered with a hand glass. Occasionally, the procumbent shoots will be found to have emitted a few roots, and these will require but a short period to make nice plants. The cuttings may also be planted in pots, of well-drained sandy loam, and placed in a cold frame, where they may be left during the winter undisturbed; and in spring, most of them will be found to be well-rooted, and in a fit state for potting off. In mild seasons, the cuttings left in the open air will do very well, if protected from heavy rains and frost.

The Calceolaria is *much hardier than is usually supposed;* and in sheltered localities, we should have no hesitation in leaving a few plants exposed throughout the winter. Very sharp frosts would, doubtless, prove fatal; but the loss of the plant could always be guarded against, by preserving a slip or two in a cold frame. If any of our readers should be induced to try the experiment, we should be glad to be informed of the results, with the name of the varieties thus exposed.

The cuttings should be potted off early in spring, in rich loamy soil, and be transferred to the beds or borders in May. In watering the Calceolaria during the summer season, whether in pots or the open ground, the *coldest* water may be employed; for, as we recently remarked in an article on Window Gardening, their fluid aliment, in their native habitats, is derived from the melted snows of the Andes.

The colours of the shrubby Calceolarias are not quite so varied as those of the Show varieties; but we see no reason why this should be so; and we hope, before long, to see the former as beautifully mottled in their tints, as the herbaceous kinds.

There are already a number of highly beautiful varieties, which will, no doubt, soon supersede those with small flowers so generally seen in cultivation. We have been much pleased with the fine yellow variety, *sulphurea splendens;* not only are the flowers of considerable size, but the foliage is handsome. The old *Viscocissima* is well known. *Amplexicaulis* is a recently introduced *species*, with deep yellow flowers. Of the brownish crimson varieties, the best are *Sultan;* and *Shankleyana*, *Kendles Superb*, and the old *Kentish Hero*, are both very fine varieties. The two former have the largest flowers. There is a very pretty variety, *Vivid*, with the larger lobe of the flower of almost a scarlet tint, the *cap* of the flower, as it is termed, being yellow. Nor is pure white altogether unknown, there being one very interesting species of this colour, *alba*, or *albiflora;* which proves to be one of the hardiest of the genus, and may be had for a very reasonable sum. Messrs. Henderson and Son of the Wellington Nursery, St. John's Wood, London—who very obligingly furnished our artist with the specimen from which our figure was drawn—have also introduced a striking variety, of a deep rich crimson, and dwarf

shrubby habit, named by them *Tom Thumb*. This, and the variety *Crimson King*, with small *plum* coloured flowers, will be in much request when better known. The older *arachnoides* and *purpurea*, both species with purple flowers, appear to be, at present, quite lost—a circumstance greatly to be regretted, as that tint would enable us to impart greater variety to the flowers of those now in cultivation. Many of the earliest hybrids raised in England would, on account of their colours, be great acquisitions, could they be now obtained; though, to be sure, much cannot be said of their forms.

The best Calceolarias for bedding purposes are, we think, those with flowers of a medium size; unless, indeed, with every enlargement of the corolla, increased stiffness of stem can be obtained.

As the Calceolarias readily ripen seed, and the plants are raised without any difficulty in spring, we recommend to our readers a trial of their skill in originating improved varieties of these interesting plants.

Botanically, the Calceolaria is characterized by its four-lobed calyx, irregular inflated corolla, *two* stamens, and two-celled superior ovary. The arithmetical relation existing between the various parts of most flowers, is, in this genus, well exemplified, all of them being either two, or a multiple of that number.

The slipper-like form of the blossoms (to which allusion is made in the generic term, from *calceolus*, a slipper) is less apparent in those varieties now seen in cultivation, than in the earliest introduced species, such as *corymbosa*, and its allies.

CAMPÁNULA CORONÁTA.

Crowned Campanula.

Linnean Class—PENTANDRIA. *Order*—MONOGYNIA. *Natural Order*—CAMPANULACEÆ.

AMONG the floral treasures which Creative wisdom has scattered over the face of our fair planet with so unsparing a hand, the Campanulas hold a conspicuous place. Scarcely a country within the temperate zone which does not contribute several species to this very interesting genus. There general appearance is well known, for the gardens are few, indeed, in which some Bell-wort is not to be found. In so extensive a genus, considerable differences of habit would naturally be looked for; and, accordingly, we find species varying from a few inches in length—as in the

elegant little *C. pumila*—to several feet, as in the equally well known *C. pyramidalis*. Some of them are trailers, of which class the *C. garganica*, often cultivated as a window plant, may be cited as an example; but far the greater portion of the species are of erect growth. A few are annual, and there are about twenty biennial species; but the genus consists chiefly of herbaceous perennials. White, and various shades of violet, blue, and purple, are the prevailing colours; there are, however, several yellow species, and also a few of a reddish lilac, but none of a distinct red tint.

There is much to interest in the structure of the plants of the order *Campanulaceæ*. They are distinguished among all other monopetalous plants, by the valvate folding of the corolla in the bud; dilated filaments; style covered with collecting hairs; with an inferior three five-celled many-seeded fruit, and a milky juice. It is of little moment what species is examined, any of those at hand will be found to answer to the above brief description.

In the genus *Campanula*, the divisions of the calyx are usually five in number, and are very often reflexed, so as to cover the seed-vessel.* The corolla is both *valvate* and *plaited* in estimation; that is, before expansion its lobes are applied to each other by their margins only, and the body of the corolla is folded lengthways, so as to present a fluted appearance.

In *C. carpatica*, and *C. nitida*, the mouth of the flower is very wide; and in *C. elatine*, and a few others, the limb is almost flat; but in *coronata*, *medium*, *pumila*, *nobilis*, and, perhaps, the greater number of the species, the corolla is truly bell-shaped, although not always cernuous.

The most curious parts of the flower are, however, the central organs, the stamens, and style. In the greater number of plants, these organs enlarge with the growth of the corolla, and attain their full development only after the opening of the flower. If, however, the blossom of any species of *Campanula* be examined immediately after its expansion, the three-lobed stigma will be seen protruding, more or less; but the stamens will be observed at the bottom of the flower in a shrivelled condition. They will be found, in fact, to have already discharged their pollen, which will be seen collected around the style below the lobes of the stigma.

The mode in which the pollen is transferred to the style, may be easily seen by pulling open a half-grown blossom. At this stage of development, the long anthers will be found closely surrounding the style, which does not now exceed them in length. This organ is covered with what are termed *collecting hairs*, which are best observed before the pollen is shed. These hairs are of two kinds; the longest are readily perceptible to the naked eye, and appear, under the

* In the Canterbury Bells (*C. medium*), the intermediate portions of the calyx, between the lobes, are prolonged downwards in an ear-like form, so that there appear to be ten divisions, five erect, and five reflexed.

microscope, as transparent, smooth, blunt tubes, curved upwards towards the point. Between these are others, much shorter and smaller, forming a sort of underwood—if we may be allowed the expression—not discernible but with a somewhat powerful lens. As the style elongates, this double set of hairs brushes out the pollen from the anther cells, which open inwardly, and carries it upwards, where it is retained until the stigmas are fit for its reception. At this stage, the branches of the stigma, on the inner side of which the absorbing surface is situated, are erect; but about the period of expansion the lobes will be seen to curl back, by which change in their position the stigmatic surface is brought into contact with the pollen on the style. Nor are these the only provisions for the fertilization of the flower. We have observed that the longest hairs of the collecting brush are smooth; in order, therefore, to enable the pollen to attach itself with greater tenacity, the grains are covered with small projections. Under the microscope, the grains may be seen clinging to each other and to the hairs, in a curious manner. After fecundation, the stigmas gradually return, more or less completely, to their previous position, and the longest series of hairs disappear.

We must now revert for a moment to the stamens, to point out the dilation of the five filaments at the base, and the dome-like covering formed by the union of the five valves over the top of the seed-vessel and the base of the style. The inferior ovary is usually three-celled, each cavity containing numerous small seeds attached to the axis, by what is termed a central placenta. The capsule, or mature ovary, opens in a somewhat unusual manner, viz. by small apertures at the sides, one to each cell. The mode in which this opening is formed, is not the least interesting feature in the economy of the Campanulas. In *C. Carpatica*, which is to be found in most gardens, the membranous partition forming the cell, is crossed obliquely by a stiff cartilaginous fibre or process, which arises from the top of the cell. As the capsule ripens, this fibre curves upwards, and its point perforates the walls of the ovary and the adherent calyx. When the seed-vessel is mature, this hook-like body may be plainly seen at the upper part of the aperture by which the seeds escape. The position of this opening varies in different species; in the Rampion (*C. Rapunculus*) it is near the base of the cell.

Such is a brief outline of the structure of the floral organs of the Campanulas. It only remains to be added, that the very ornamental species, *coronata*, figured in the accompanying plate, is a recent importation from Belgium. A blue variety of the same name was, we believe, figured some years since in the *Botanical Register*; which of the two is the original *coronata*, we are, at this moment, unable to state.

The present plant is a hardy perennial, growing about three feet high, and having foliage closely resembling that of the peach-leaved Campanula, *C. persicifolia*. The white calyx, with its green tips, has a very pretty effect, and we strongly recommend

the species for general cultivation. It is of easy increase by seeds, or division of the roots in spring.

We have already had occasion to express our great obligations to the Messrs. Henderson of the Wellington Nursery; and we are also indebted to their courtesy for the specimen from which our figure was made.

The derivation of the term Campanula is too obvious to need explanation; and it must be acknowledged that, in this instance at least, a happy choice has been made, for the flowers of nearly all the species are eminently suggestive of the form of the bell. True, no audible sounds issue from their graceful forms, yet do they praise, with mute eloquence, the Goodness that has formed all created things.

CACTACEOUS PLANTS.

We have been requested by a correspondent to give some instructions on the culture of the plants of the Cactus tribe; and as certain of the species are very generally grown as window plants, a few hints on their management may prove useful to many other of our readers. And we offer them the more readily, that the most critical period of the year is at hand; for upon their treatment in the autumn and winter season, depends the production of the flowers in the following year. Most of the plants formerly included in the genus *Cactus* are now divided into several distinct genera, or sub-genera, of which the following are the principal:—

Cereus.—The whip-like pendant stems of *C. flagelliformis* are well known, but many of the species are of erect growth. All of them are, however, comparatively slender, round, and with many small vertical furrows, like those of the Creeping Cereus. The night-blowing *C. speciosissimus* is now classed with the true *Cacti*, which comprises most of the square-stemmed, jointed species.

Echino-cactus.—The species placed here are mostly of a thick, but tapering form, regularly, and often deeply, furrowed, the ridges being set with numerous sharp spines. Some of the species attain an immense size. They consist usually of only *one* stem, which increases annually in bulk. The flowers proceed from the ribs.

Epiphyllum.—This division includes all those species with thin, flattened, and jointed, leaf-like stems, indented at the edges, and *without spines.* Flowers produced singly from the indentations.

Mammillaria.—This easily recognized genus contains the species covered with small tubercular nipple-like bodies (whence the name.) There are no ribs; and their form is generally round, or oblong.

Melo-cactus.—Under this name are arranged the *globular*, melon-like Cacti. They are mostly flattened on the upper surface, more or less ribbed, and with smaller and fewer spines than the *Echino-cacti*. Flowers produced not from the ribs, but from the upper part of the surface.

Opuntia.—The Indian Fig section, composed of species with jointed stems, the joints being mostly of an oval-flattened form. Some of them have round, candle-like stems, and many of them produce yellow flowers. They are, however, very rarely seen in cultivation as window plants.

This enumeration of the chief differences of the sections will assist our readers to classify those species in their possession; but, lest they should be alarmed at the idea of having to pursue a different treatment in each case, we hasten to add, that there is but little variation in the culture of the species. Our remarks will, therefore, be understood as applicable to all the above-named sections.

With a very few exceptions, Cactaceous plants are natives of the most arid and parched regions of tropical America. Many of them flourish in the clefts of rocks, especially in volcanic districts, and in localities in which rain seldom falls but during a brief period of the year. In short, they exist in places where nothing else will do so, the peculiar structure of their skin enabling them to retain for a long period the fluid absorbed during the rainy season, and even those species which assume a withered flaccid appearance during the long droughts, retain their vitality, and quickly revive when moisture falls.

A consideration of these facts will at once render it evident, that the Cacti should, *at all* seasons, be exposed to the strongest light attainable in this country; on no account should they be grown in a shaded window.

Another essential point in their cultivation, scarcely less important than the preceding, is the employment of porous, well-drained soil. We do not think that the precise nature of the soil is material, provided it be not retentive of moisture. Sandy loam, with a very little leaf mould, and a few fragments of lime rubbish, will suit most of the species. A compact strong loam will be improper, as well as any very rich soil. The pots should be drained for at least one-third of their depth; if large, they may be half filled with broken crocks, which may be made small at top, to prevent the soil from getting into the interstices.

But the chief condition to successful cultivation of the Cacti, is the withholding of water during the autumn and winter seasons. During the summer months they may be freely watered, especially when well drained, for in that case all superfluous moisture rapidly passes off; but from the middle of August the supplies should be gradually diminished, until the end of September or beginning of October, when it should be entirely withheld. From October to March they should be kept dry, but be placed where they will receive the full influence of the sun's rays. If they should look a little the worse for this starving process, it need excite no alarm, the

first good dose of water in March will restore their plumpness, and they will flower all the more freely for the season of rest they have enjoyed. They will require to be kept from frost, but beyond this they will need no artificial heat during the winter.

In the growing season, it is indispensable to place pans beneath all classes of plants, chiefly for the sake of neatness; but in winter, they should be removed from the Cacti, that no one may be tempted to indulge them with a little water.

It sometimes happens, that from over-watering, the lower part of the stems decay. In this case, the sound portion of the stem should be cut off, and after being allowed to become dry on its cut surface, may be put in as a cutting, when it will soon root; and the more readily if it has been laid aside to wither for a few weeks. We might have said *months*, for the tenacity of the vital principle in these plants is very remarkable. It is also an extraordinary circumstance that the cuttings will root with equal readiness at either end.

The *Cactus*, *Cereus*, and *Epiphyllum* are increased by cuttings; the other sub-genera by off-sets.

The blossoms of the *Cactaceæ* are liable to become infested with the green fly; a little snuff sprinkled over the buds the moment the insects are seen, will speedily remove them.

If those of our readers who have hitherto failed in inducing these showy plants to yield their beautiful blossoms, will make a trial of the plan we have recommended, and which is followed by all successful growers of these plants, we are assured that the object of their wishes will be attained.

BRIEF NOTICES OF NEW OR RARE PLANTS.

Arbutus Magnifica. (*Ericaceæ.*)—A truly magnificent variety, said to be a hybrid between *A. procera* and *A. Andrachne*. It grows to a considerable size, and has large leaves four or five inches in length, entire, not unlike those of the Portugal laurel, but of stouter texture. The flowers are produced in spring, in very large pendant compound bunches, of a white colour. It is very hardy, and grows readily in peat, or in good light garden soil. It may truly be said to be the King of the Arbutus family, and is, indeed, one of the finest of all evergreens. It is to be had of all the London nurserymen.

Cerasus Ilicifolia. *(Rosaceæ.)*—This Californian *evergreen plum*, or cherry, is likely to attract considerable attention, though the plants of it in cultivation are at

present too small to produce their flowers and fruit; * and it will probably be some time before its true merits are known. The leaves are of a rich shining green, very much toothed, but, in our specimen, quite destitute of the spines so conspicuous on the holly; and the specific name is, therefore, so far inappropriate. The flowers are borne in racemes, like those of the common Bird Cherry of our shrubberies, and are succeeded by blackish fruit, like small plums, which are highly esteemed by the natives of the country where it is found, and which Hartweg, who discovered it, describes as having a fine flavour. It is very hardy, but apparently of rather slow growth. It is highly probable that this valuable shrub will give rise to a race of evergreen plums, possessing its handsome foliage, with the larger fruit of the commoner species.

Echeandia Terniflora. (*Liliaceæ.*)—A very desirable tuberous-rooted herbaceous plant, introduced from Mexico to the collection of Sir Charles Lemon some years since, and which ought, therefore, to have become common by this time. It is a greenhouse plant, but does well in the open air during summer, and may be treated like the *Commelina cælestis*. The flowers are produced in a long spike, in long succession, five or six being expanded daily during July and August. They are about an inch across, and of a golden yellow colour. As the plant ripens seed, we are surprised it is not more generally diffused.

Lilium Wallichianum. (*Liliaceæ.*)—This highly-interesting addition to the Lily tribe, has flowered during the past month at Messrs. Henderson's of the Wellington Nursery, and is, we believe, the first specimen which has blossomed in England. The bulb being young, the plant was only of moderate height, with lance-shaped leaves resembling those of the Japan Lily. The flower is of a delicate primrose, of very large size, the tips of the segment being curled back, but not to such a degree as in *Lilium lancifolium*. The anthers are of a bright red tint; and this contrast produces a striking effect. Although at present grown in the greenhouse, there is no doubt that, coming from Nepaul, it will prove as hardy as the Japan Lily, and most of the other species.

Paulownia Imperialis. (*Scrophulariaceæ.*)—This noble tree has recently flowered at Bishopstowe, the residence of the Bishop of Exeter. Many specimens of it exist in this country; but it frequently receives so much injury from the spring frosts, that it will not succeed well in exposed situations, or far north of London. It greatly resembles the common *Catalpa*, having, like that, large heart-shaped foliage, and erect spikes of flowers of a pale purple colour. They appear rather before the leaves, which detracts somewhat from its value.

Pentstemon Kellermannii. *(Scrophulariaceæ.)*—This very beautiful plant is a variety of the *Pentstemon speciosum*, figured in our second number. The flowers are

* Since the above was written, we learn that some of the plants in the neighbourhood of London flowered during the present season.

larger, of a better form, and the habit of the plant is dwarfer and more branching. The blossoms are of a beautiful bright blue, the lower lip of the corolla being streaked with purple. A group of three or four plants proves very attractive; our own specimen appears likely to ripen abundance of seed.

Skimmia Japonica. *(Aurantiaceæ.)*—Another highly interesting hardy evergreen shrub from Japan and China. In its wild state, it scarcely exceeds three or four feet in height, but the cultivated plants are taller. The leaves are thick and fleshy, of a deep green, smooth on both sides, five or six inches long by one and a half broad, tapering at both ends, and dotted with numerous transparent glands, as in the Orange tree and Myrtle. The flowers are produced in May, in large dense heads of a greenish yellow colour, and emit a strong and delicious odour resembling that of the Daphnes. The blossoms are followed by bunches of bright scarlet berries, which remain upon the plant some months Messrs Standish and Noble states that it produces flowers when but two *inches* high, and fruit at five or six *inches;* but we imagine that *feet* is here intended. These gentlemen further state that 'as an ornamental shrub for the lawn, or for the winter decoration of the conservatory, it has scarcely a rival. No degree of cold seems to injure it. Even when but a few inches high, and the lower leaves resting on the soil, it is wholly unaffected by frost.' It was discovered by Dr. Siebold near Nangasaki, about 12,000 feet above the level of the sea. Notwithstanding its agreeable perfume, the Chinese and Japanese regard it as a poisonous plant. *Sikimi*, its native appelation, from which *Skimmia* is derived, signifying *noxious fruit.*

CAPE BULBS AS WINDOW ORNAMENTS.

The very pretty half-hardy genera of the Natural Order of Irids known as Cape Bulbs, and including the *Ixia, Sparaxis, Trichonema, Vieusseuxia, Babiana, Watsonia, Tritonia,* and some others, are, with the exception of the *Ixia* and *Sparaxis,* not usually found in cultivation as window plants.

We are induced to notice them this month, in consequence of having been applied to by a correspondent for our opinion with regard to their growth in water. The ease with which the Hyacinth, Narcissus, and other early spring bulbs and corms may be cultivated in glasses, has, doubtless, suggested the enquiry; but we regret that we are compelled to express a serious doubt as to the applicability of the system to the more delicate corms of the Cape bulbs.

We think our correspondent has overrated the difficulties attending on the

cultivation of this class of plants in pots. It is quite true, as he remarks, that very grievous errors are committed in furnishing them with excessive supplies of water, and that to this cause is to be attributed the frequent failures to which he alludes. We have found, however, that the *Ixia* and *Sparaxis* require only to be planted in light soil, containing a considerable proportion of white sand, the pot being well drained; and that, unless very incautiously watered, they will flourish on the window nearly as well as in the greenhouse.

The employment of the sharp white sand is a *sine quâ non;* it renders the entire mass of the soil so pervious to the passage of the superfluous moisture, as well as to the atmospheric influences, that we believe it to be essential to success, and especially so in the case of the smaller corms. Let our correspondent then make one more attempt at their growth in pots. A few pints of white sand—or, what will do as well, *very sandy* peat—should be procured. If the latter, add to it one-third its bulk of good fibrous loam, and the same of leaf-mould. If pure sand is employed, then equal proportions of sand, loam, and peat, or leaf-mould, may be used. We have succeeded very well with good peat, containing about one-third of sand, without the admixture of any other ingredients. The materials should be roughly mixed with the hands, and pots drained one-third of their depth, filled with the compost. The corms are often planted in groups of three; but we prefer a good clump of them, from six to ten of the smaller corms, such as those of the *Ixia;* the larger and stronger growing species will require to be planted separately. The period at which the roots are potted depends, in some measure, on the character of the species; we prefer, however, the end of October for all the spring flowering species, as, although they are often planted in March, we have found that those potted in the autumn produced the strongest specimens. Where a succession is required, a few may be potted at each season; those planted in March will flower in June or July.

The soil should be in a damp, but by no means moist, condition, at the time of planting, and but very little water should be given until the stems appear through the surface; for, until the roots are formed, large supplies of fluid nutriment will be, of course, superfluous. The pots containing the bulbs should be placed in a sunny window, but not in a warm apartment; the most healthy specimens are usually those which are slowly grown. When they have made some progress upwards, the supplies of water may be gradually increased, and air should be given them freely in fine weather. The tall growing species will need a slight support.

The early flowering genera are but little subject to the attacks of insects; but those which blossom in July and August are sometimes infested with the red spider, especially in a very dry hot atmosphere. Whenever the leaves become spotted with minute yellow specks, this little pest will be sure to be found present; but it is easily removed by sponging the foliage frequently, or by syringing them out of

doors. After flowering, water should be gradually withheld, unless seed is desired; and when the foliage is withered, the pots should be exposed to the sun, to ripen the corms. They may be preserved in the pots until the season arrives for replanting them, or disinterred and wrapped in paper, as convenience may suggest.

Before we enumerate a few of the most desirable species, we would observe that, in some instances, *moss* has been substituted for soil, with success. We have not, at present, any personal experience of its value as a medium, but we are about to give the plan a trial, and see no reason to doubt its feasibility. The common crocus is well known to succeed perfectly, planted thickly in moss.

The mosses in a damp state are to be pressed into the pots so as to form a compact mass, and the bulbs are planted exactly as in soil. As the moss decays and settles down, fresh portions may be added, either at the top or bottom; in the latter case, the ball must be turned out, which may be safely done, for the roots so intertwine with the mass, that it may be moved more safely than the ordinary materials. Of course, it will be necessary to water the moss at times; but it appears to retain moisture longer than most soils. Probably nearly all the Amaryllids, Irids, and Lily-worts, grown as spring plants for the window, might be made to flower in this elegant substance.

The most interesting of the Cape bulbs for window culture are, first, the

Ixias and *Sparaxis*.—We class these together, as the only distinction between them consists in the laceration, in the latter genus, of the membranous spathe from which the flowers issue. The most desirable *Ixias*, are *aulica*, *amethystina*, *crateroides*, *maculata*, *multiflora*, *patens*, *polystachya*, and *viridiflora*, the last is a very curious species. Of the *Sparaxis*, the best are *tricolor*, *bulbocodium*, *grandiflora*, *bicolor*, and all its varieties, and *versicolor*.

Babiana.—This is a very pretty dwarf genus, the best species are *rubrocyanea*, *Thunbergii*, *sambucina*, *plicata*, and *villosa*.

Trichonema.—Like the preceding, the species are of dwarf habit, and early flowerers. *Bulbocodium*, *caulescens*, and *speciosum*, are, perhaps, the prettiest.

Hesperantha.—This is a genus of limited extent, but the species are all of interest. *Graminifolia*, *falcata*, *pilosa*, and *radiata*, are the principal. The flowers of all are of a violet tint, and are borne in May.

Antholyza.—This, and the following genera, are of taller growth. *A. splendens*, known also as *Anisanthus splendens*, is a very handsome plant, with scarlet flowers.

Watsonia.—Some of these are very tall, others do not exceed two feet. They resemble the Gladioli in their flowers, which are very beautiful.

Tritonia.—The beautiful *T. aurea* has already received a notice in these pages, and there are also several other showy species, such as *crocata*, and *longiflora*, and their varieties, which may be had cheap. The culture of Cape Bulbs in the open air we are obliged to defer to a future number.



Lobelia "Belle Pyramide"



Gladiolus "M. Blouet"



Bouvardia aurantiaca.



Phlox Drummondii Maxpi

Rosenberg & Pusey, Lith. & Imp.

LOBÉLIA HÝBRIDA.

Hybrid Lobelia.

Variety. La Belle Pyramide.

Linnean Class—PENTANDRIA. *Order*—MONOGYNIA. *Natural Order*—LOBELIACEÆ.

OUR gardens can boast of few more splendid autumnal ornaments than the tall-growing herbaceous varieties of the *Lobelia*. With us they are especial favorites; and we think that all who should see a bed, or even a smaller group, of some of the new varieties, would not easily forget the effect of their dazzlingly brilliant flowers.

The more common occurrence of the *Lobelia cardinalis* and *L. fulgens*, both with scarlet flowers, may have induced the belief that other hues are deficient in the genus; but, on the contrary, it would be difficult to name a primary tint which is unrepresented in this showy tribe; and as many of them have become intermingled by cross breeding, the shades of colour in the *Lobelias* are now very numerous, and every season will, doubtless, add to their number.

The variety of habit among the plants included in the genus *Lobelia*, is as remarkable as the great diversity of colour: few genera, indeed, contain plants presenting so striking a contrast in this respect.

Some of the species are well known trailers of the most delicate and diminutive character, such are the *L. gracilis* and *L. erinus;* whilst others attain the height of twelve or fourteen feet, and possess quite a shrubby habit. It is, we hope, within the range of probabilities, that hybrids between the shrubby and herbaceous species may be eventually obtained; and in this case, we might anticipate a race of Lobelias, compared with which the present herbaceous varieties would be mere pigmies. Meanwhile, we shall be glad to aid in bringing into more extensive cultivation, the section of which *cardinalis*, *fulgens*, and *splendens* are the type; for, assuredly, the garden in which these species, or their hybrids, are not to be found, lacks a most essential feature.

La Belle Pyramide is one of the numerous beautiful hybrids of this genus recently introduced from the Continent, and is remarkable for the richness of the colour of its flowers. Its culture, and indeed that of all the Lobelias, is of a very simple and easy character; and they are equally well adapted for the open air, of the greenhouse, or window.

Although in some favourable localities they are sufficiently hardy to bear entire

exposure in the open ground, yet as the soils in which they best succeed are those of a moist description, and, therefore, more affected by frost, it is better to remove the roots at the end of the autumn, and preserve them in pots during the winter months. They may be placed in small pots, and need not, therefore, occupy much room, which in the winter season is a matter of some importance. They must not be allowed to become quite dry; but with this exception, their preservation involves no trouble, as they may be stowed away in a cellar, or any place into which sharp frost will not penetrate.

The offsets, or suckers, formed at the base of the stem, are sometimes removed in the autumn, and potted separately in rich soil; but as they then require more space, and are less vigorous than when they are allowed to remain attached to the old stool until spring, we prefer the latter season for their separation. In either case, they should be potted in rich light soil, consisting of loam, with a large proportion of thoroughly rotten manure—in a word, in such a mixture as the Balsam, Cockscomb, and Aster are known to delight in. As they advance in their growth, the plants should be shifted to larger pots, sinking the ball slightly at each change, for the stems of the Lobelias throw out roots, which, if encouraged, contribute materially to their vigour. In May, the plants may be turned into the borders, or grouped in beds, for which the long continuance of their flowers well adapt them. The soil should be of the richest description, and of some depth; if very poor, or of too stiff a nature, it should be either removed, and its place supplied with a prepared compost, or else a considerable quantity of rotten manure should be thoroughly incorporated with it. Each plant should be supported by a neat *inconspicuous* rod, and this, with abundant watering during the summer, will complete the attentions requisite to obtain, in perfection, their magnificent flowers. We need hardly observe that the 'stopping' process should never be resorted to in the case of the Lobelias.

Their culture when grown as window plants, will be readily inferred from the hints already given. To obtain fine specimens, pots not less than eight or ten inches in diameter, or even larger at the last shifting, must be employed; and pans of water should be kept beneath the plants during the whole of their growth. Unless the soil is very rich, an occasional dose of liquid manure will be found beneficial. The Lobelias are rarely infested with insects, and there are few window plants, in the treatment of which, so small an amount of trouble is entailed.

They ripen abundance of seed, from which, if hybridized, new varieties may be readily obtained; but when seed is not required, the withered flowers should be removed. Seedlings usually flower the second year, and as they are readily raised on a gentle heat, with other half-hardy plants, we hope some of our readers may be tempted to try their hands on this genus. Cuttings of the lateral shoots root without much trouble under a glass; they should be taken off when about two or three inches long, and will generally produce a few flowers the same season.

Most of our readers are, doubtless, aware that the Lobelias were formerly classed with the Campanulas, to which they are very closely allied ; though, at first sight, this relationship would hardly be apparent.

In the Lobelias, the regular symmetrical corolla of the Bell-worts is replaced by one of an irregular form, the two upper divisions of the flower being usually much narrower than the lobes of the lower lip, and the tube of the corolla is split on its upper side, through its entire length. The anthers, too, which in the Lobelias are adherent or *syngenesious*, are in the Campanulas quite distinct. Both orders are characterized by their milky juice, but in the Lobelias, this is extremely acrid and poisonous; that of the Campanulas being comparatively innocuous. The cohering anthers and irregular split corolla of this order, indicate a near approach to the *Compositæ*, to which it is closely related. If a strap-shaped floret of one of the Cichory tribe, be compared with the flowers of a Lobelia, the resemblance between the two orders will be very obvious.

The mode in which fertilization is ensured in the Lobelias, although, perhaps, less remarkable than in the Bell-worts, is nevertheless deserving notice. When the flower first expands, the style and stigma are invisible, being concealed by the tube, formed by the cohesion of the anthers; and as these open inwards, the pollen is brought immediately into contact with the stigma. As would be anticipated, the pollen of the Lobelias is, therefore, destitute of the rough projections characterising that of the Campanulas, by which, as we recently explained, it is in those plants enabled to retain its hold on the style when this is carried up out of reach of the stamens. The tube formed by the united anthers, is, at first, so completely closed at top, that the escape of the pollen is impossible; but after the fecundation of the flower is effected, the tube opens, and in specimens grown out of the reach of the wind, a long streak of yellowish pollen will be observed on the lower lip, suggesting—if the snuff takers will forgive us for the allusion—a ludicrous resemblance to the train of 'brown dust' one often sees on the vests of the votaries of the mull.

Finally, the style elongates and protrudes the two-lipped stigma beyond the anthers. In many of the species, the stigma will be found surrounded with a fringe of hairs, often arranged in a cup-like form.

Some Botanists have propounded a theory, that the three primary colours of the prismatic spectrum are not to be met with in the same genus of plants. To refute this idea, we need only cite the genus under consideration, in which, as we have already hinted, not only blue and red flowers are found, but also a few species with yellow blossoms.

The properties of the plants belonging to the *Lobeliaceæ*, are strongly marked, most of the species containing a powerful acrid juice, which, in some, is so virulent that the plants cannot be touched with safety. Happily for the Florist, those more

commonly seen in gardens are not of this class, and, practically, they are as harmless—except when taken internally—as the majority of the other plants usually cultivated.

The species are very numerous, the annuals and perennials comprising scarcely less than one hundred, of which only a single species, *L. Dortmannia*, is indigenous. A few are natives of northern climates, but the majority are found in countries in which the temperature is considerably higher than in Great Britain. The dwarf trailers are natives of the Cape of Good Hope and Australia.

The Order and genus take their name from Dr. Lobel, a Physician and Botanist of the reign of James the First.

With a view to guide our readers in their purchases, we append the following list of some of the most remarkable of the recently imported varieties :

Agathocles	*large violet crimson.*
Ajax	*violet plum or damson, fine.*
Aurora	*puce.*
La Belle Pyramide	*plum crimson.*
Cælestis	*blue.*
Cardinalis alba	*white.*
Episcopalis	*dwarf, good light blue.*
Favorite	*violet, strong grower, fine foliage.*
Insignis	*rich intense scarlet, one of the best.*
L' Etoile du Matin	*violet.*
Topaz	*violet blue.*
Vesuvius	*violet crimson.*
Queen Victoria	*bright scarlet, very fine.*
Vierge Marie	*good white.*

GLADÍOLUS BLOUETIÁNUS.

M. Blouet's Corn-flag.

Linnean Class—TRIANDRIA. *Order*—MONOYNIA. *Natural Order*—IRIDACEÆ.

OF all the Cape Bulbs the Gladioles are, and will probably continue to be, the most popular; for, not only are their flowers larger than those of most of their congeners, but the greater hardiness of their corms renders them more fitted for cultivation in the open air in this country, than the dwarfer and more delicate genera from the same localities.

The number of true species of *Gladiolus* is considerable, and a few of them are widely distributed in this country, *communis*, *floribundus*, *psittacinus*, and a few others being found in almost every garden, however small; but interesting as these and the other species all are, they will, no doubt, soon give place to the more beautiful hybrids, which have recently rewarded the attention of our own and the continental Florists; every season bringing us varieties each more splendid than its predecessors.

One of the earliest hybrids raised in this handsome tribe, was the *G. Colvillii*, the result of a cross between *G. concolor* and *G. cardinalis*; and this variety still maintains its ground as an exceedingly beautiful flower, and one of the earliest to bloom. There are two or three varieties of *Colvillii*, all of them worth growing, and to be had cheap, their price not exceeding 2s. to 3s. per dozen.

The hybrids raised since *Colvillii* are now so numerous, and differ so much in their habit that it has been proposed to divide them into sections, according to their height and period of flowering.

Section 1—contains the *Colvillii* varieties, which attain the height of two feet, and flower early in June.

Section 2—includes *blandus*, *pudibundus*, *Cardinalis*, and their hybrids. Most of them are under two feet in height, and flower from the end of June to the end of July. Their colours are exceedingly varied, perhaps more so than those of the other sections. and they deserve to be more extensively grown. *Auguste Hardy*, *General Bedeau*, *distinctus*, *Rex rubrorum*, *blush*, *and Loddigesii*, are a few of the best of this class.

Section 3—comprises the varieties of the *Ramosus* breed, flowering in August, and growing about eighteen inches to three feet high. The flowers of most of them are larger than those of the preceeding sections. The whole of these are extremely beautiful plants; so much so, that it is difficult to select. Perhaps *Christianus*, *Beeswing*, *Lord John Russell*, *Mehemet Ali*, *Oscar*, *Queen Victoria*, *Rising Sun*, and *Von Gagern*, are among the most interesting.

Section 4—includes the hybrids of *floribundus*, *Gandavensis*, and some others of a similar habit. They are all truly magnificent objects when in flower, many of them being from four to six feet high, and bearing flower spikes two feet or more long, with a large number of blossoms; in the specimen of *M. Blouet*, from which our drawing was taken, there were seventeen, and even this must not be understood as the maximum number. They are the latest bloomers of the tribe, a few of them not blossoming before the end of September, and continuing into October. The oldest of this class are *floribundus*, *psittacinus*, *autumnalis*, and *Gandavensis*, all of them now pretty well known, especially the two former. *Gandavensis* is an extremely desirable variety, and is also of interest, as being the parent of many seedlings even yet more beautiful than itself. One of these we have figured; and although our space does not permit us to do justice to this or many

other subjects, it will be sufficiently evident that a considerable improvement has taken place in the form of the flower, the narrow lower segments seen in *Gandavensis* being here replaced by divisions nearly as broad as those of the upper part of the flower. To give an idea of the appearance of the plant when in bloom, we need only state that each blossom is about three inches across.

There are many other varieties equally splendid, especially *Brenchliensis*, with brilliant scarlet flowers; *Fischerianum*; *Hamlet*; *ignescens*, fine scarlet, with broad white feather on each of the lower segments; and *splendens*, a superb scarlet, with very large flowers.

This section, as being the hardiest of the tribe, and producing the largest flowers, is, perhaps, the most desirable where space does not allow of a selection from each division. It is, however, a matter for regret that the diffusion of new varieties of plants of this and the allied natural orders, cannot take place with the same rapidity as in the case of those plants which can be readily multiplied by cuttings. The variety we have figured, as well as most of those named in the above paragraph, is, therefore, at present rather expensive; but each season will considerably diminish their cost, so that, ere long, they will doubtless be as cheap as *psittacinus* and the commonest of the tribe.

We have observed that the plants of the last section are the hardiest; but the *Gladioli* are all hardy in soil not retentive of moisture; and if the earlier flowering varieties need, in some exposed situations, a little protection, it is chiefly on account of their commencing their growth late in autumn, or at an early period of the year, at which time the corms of *Gandavensis*, and its allies, are perfectly dormant.

The plants of the first three sections should be planted in autumn; those of the *Gandavensis* group from February to March. As an easy guide to the proper season for planting any variety of unknown habits, it will be sufficient to observe that all those corms which manifest a disposition to protrude their fibres in autumn, should be planted at that season.

Although the Gladioli are not particular as to soil, they, nevertheless, attain their greatest luxuriance in rich, well-drained composts. In *wet* soils, the earth should be removed to a depth of eighteen inches, and six inches of drainage, composed of small stones, broken cinders, or crocks be placed at the bottom. The remaining space is then to be filled in with a mixture of good fibrous loam, thoroughly decayed manure, and sandy peat, in equal parts; the corm being planted from four to six inches beneath the surface. In dry poor soils, on a sandy or gravelly subsoil, the same plan must be pursued, but in this case the drainage will be unnecessary. During their growth in spring and summer, they should never be allowed to suffer from drought, which causes the foliage to become yellow and is a serious obstacle to a successful blooming. All the varieties ripen seed,

which is generally true to its kind, unless artificially hybridized; and a considerable number of plants of any given variety may thus be readily obtained within two or three years of sowing the seed. Offsets are also freely produced by nearly all the species and hybrids, but it is not absolutely essential that they should be separated each season; on the contrary, the corms may be left undisturbed for two or three years after planting. In very severe weather, it will be desirable to give the early flowering varieties some protection; for which purpose, there is nothing better than a layer of fern leaves, or a few short furze bushes, which will be found very useful in the garden for this and similar purposes.

Most of the Gladioli succeed well in pots, in the same description of soil as that already recommended for their growth in the open air. Those potted in autumn are best kept in a cold frame, or in a very *cool airy* room; those planted in spring should have the pots plunged in the ground until the shoots are visible, when they may be removed to a cool window. Should the foliage betray the presence of the red spider, which is sometimes troublesome in dry seasons, it should be frequently sponged with soap-suds, or sulphur and water, and subsequently with clean water, to remove the stains.

The structure of the flowers of the Gladiolus presents no very marked features, beyond those peculiar to the other plants of the natural order *Iridaceæ;* the peculiar irregular form of the perianth being the chief distinction between it and other allied genera. The Watsonias are the only plants at all likely to be mistaken for them; but in that genus, the three stigmas are each of them bifid or cleft, so that there appear, at first sight, to be six. The seeds of the *Gladioli* are also winged. The crested stigmas present a beautiful appearance under a lens of moderate power.

The sword-like form of the leaves gave rise to the generic designation of the plants, from *gladius*, a sword.

BOUVÁRDIA AURANTÍACA.

Orange-Flowered Bouvardia.

Linnean Class—TETRANDRIA. *Order*—MONOGYNIA. *Natural Order*—CINCHONACEÆ.

THERE is a class of plants, comprising many interesting genera, which, although they may have been in this country twenty or thirty years, and possess very high claims to general cultivation, are yet, somehow or other, rarely met with as

window plants, or among the possessors of small gardens. Of these, the Bouvardias are an illustration ; for, though common enough in greenhouses, and in gardens of some extent, especially in those in which the bedding system is adopted, they are yet, as far as our own experience goes, almost unknown to many of that class of cultivators to whom we more especially address ourselves.

It cannot be that they are deficient in interest, for we are acquainted with few subjects combining so neat a growth, with so free a habit of flowering ; nor does their price place them out of the reach of cultivators of small means, as they may be procured for a very moderate sum, and of the humblest provincial Florist ; and their management and propagation being unattended with any difficulty, we are at a loss to account for their limited diffusion. The long period during which their flowers are produced, would alone suffice to give them a high value. As each head of flowers fade, fresh shoots are formed at the base of the stalk supporting the truss ; and these, in their turn, put forth others ; so that a constant succession of blossoms results up to the arrival of the sharp frosts, which render it expedient to remove the plants to their winter quarters.

The species of *Bouvardia* are not very numerous ; the oldest and best known is the *B. triphylla*, which has been cultivated in this country for nearly fifty years. The specific name of this species would naturally lead the inexperienced Botanist to suppose that the *triphyllous* arrangement of its leaves was peculiar to it ; but it is by no means distinctive, the majority of the other species, including that now figured, having foliage of the same character.

Of the species just referred to, there are several varieties ; *pubescens*, *glabra*, and *splendens* ; though this last must not be confounded with the true *splendens*, which is a distinct species, and, in our opinion, preferable to either *triphylla* or its varieties. Other very desirable species are, *angustifolia*, *versicolor*, *Jacquinii*, *Cavanillesii*, and *leiantha*, all with scarlet or red blossoms ; *flava*, with yellow ; and *longiflora*, with white flowers. *Leiantha* and *longiflora* are natives of Guatemala ; most of the other species have been received from Mexico. They are all of comparatively dwarf habit ; in suitable soil, however, plants bedded out in spring will, by the end of the autumn, make shoots from two to three feet long, with numerous lateral branches. Where it is thought desirable to restrict the growth of the shoots, they may be stopped, which will induce a more compact habit ; but this will rarely be necessary. They are readily increased by cuttings about three joints long, which may be taken off at any period during the summer, and inserted in light, sandy, soil. A little bottom heat will materially shorten the time required for the emission of rootlets ; but we have struck them even in August without any such aid. They are rather liable to damp off, unless the interior of the glass be wiped regularly each day ; and as soon as they appear rooted, the glass should be removed at night.

Triphylla does not root so readily from cuttings as *splendens* and some others ; that,

as well as most of the species, are sometimes increased by short pieces of the roots, in spring, which should be planted in pots of light soil, with the ends of the cuttings exposed above the surface. If placed in a good cucumber frame, they will soon make nice plants. As, however, most of the other species may be easily increased by cuttings of the young shoots, we venture to recommend them in preference to *triphylla*. Any of them may be purchased for a shilling, or even less, in some places. They will flourish most in the same description of soil as that employed for Verbenas, and other bedding plants; but with proper precautions against drought in summer, they will succeed in most soils, except those of a stiff clayey kind.

As window plants, they deserve especial attention, the abundance of their flowers, and their neat habit, render them in our opinion extremely desirable. During winter they require but little attention, as most of them lose their foliage, and may be kept dormant, like the Fuschia, Lemon-scented Verbena, and other window plants. In spring, they should be pruned rather closely and repotted in fresh soil, with a pot suited to the size of the plant.

Botanically, the genus *Bouvardia* is characterised by a four-parted *calyx*, with intermediate teeth in some species, as shown in *aurantiaca*, our illustration; *corolla* tubular, from an inch to an inch and a half long, the mouth four-lobed; *stamens* four, included in the throat of the corolla, alternate with the lobes; *capsule* inferior, with a central depression externally, separating when ripe into two divisions, each containing many seeds, furnished with a narrow wing or edge.

Among many other interesting examples of the adaptation of the length of the style and stigma to the position of the flower, so as to ensure fertilization, the present genus may be cited as an illustration.

In most of the species, the corolla is more or less erect; in these the style, which is terminated by a two-cleft stigma, does not exceed half the length of the tube; and the stigma is, therefore, below the stamens. In *versicolor*, *flava*, and *aurantiaca*, the flowers are pendant; and we find, therefore, that the style is elongated so as to protrude from the mouth of the flower; and by this change, it is brought within reach of the pollen. As in all the plants of the *Cinchonaceæ*, stipules are observable between the leaves of the Bouvardias, forming, by their partial union, a kind of sheath round the stem.

Although they have no known economical uses, the order to which they belong is one of the most important in the vegetable kingdom; furnishing the various species of *Cinchona*, or *Jesuit's Bark*, from which the invaluable *Quinine* is prepared; the *Ipecacuanha;* and the *Coffee* plant, whose produce, if not more useful, is at all events less unpalatable, and more generally welcomed.

The genus, *Bouvardia*, was named in honour of Dr. Charles Bouvard, Curator of the Paris Botanic Garden.

PHLÓX DRUMMÓNDII.

Drummond's Phlox.

Variety Mayii.

Linnean Class—PENTANDRIA. *Order*—MONOGYNIA. *Natural Order*—POLEMONIACEÆ.

IF we have hitherto figured but few annual plants, it is certainly not because we undervalue this class of subjects; but rather that the number introduced during the last few years has been so limited, that we could offer but little novelty, and illustrations of the older and now well known annuals, beautiful as many of them are, would we imagine, hardly be acceptable to our readers. We confess, too, that perennial plants have a larger share of our affections than those of a more transitory character; though there are many exceptions, and, among them, must be placed the beautiful *Phlox Drummondii*, with its endless varieties.

No one of the annuals created at their introduction a greater amount of interest; for, independently of the intrinsic beauty of its fragrant flowers, the long period during which they are produced gave it an immense superiority over many other claimants for public favour. And as an evidence of its value, we need no stronger proof than that, notwithstanding the numerous subsequent introductions, it is as popular as ever, both with professional and amateur Florists.

The plant we figure is certainly a charming variety of the original species; but many of the others are scarcely less so, especially *Leopoldiana*, and *oculata*, both raised several years since, and seeds of which may be had of any of the Florists. It is somewhat curious that as these varieties were, we believe, the result of a natural sport, they should be capable of being reproduced by seed.

The *P. Drummondii Mayii* has been, during the present season, increased by cuttings; but we are informed by Messrs Henderson of the Wellington Nursery—who very obligingly favoured us with the specimen from which our drawing was made—that they hope to be able to increase it by seed with the same facility as the other varieties.

The *Phlox Drummondii* has, sometimes, been classed with the tender annuals; but we have always found it succeed very well in the open ground, though the seeds require, in the first instance, to be sown on a gentle heat in spring. When, however, the use of a hotbed cannot be obtained, it will germinate readily on a warm window. In either case, it is essential that the young plants should be transplanted singly into small pots, as soon as they are large enough to be handled without injury.

In the first stage of their growth, they do not need a rich soil; but in the subsequent pottings, this can hardly be of too generous a nature. Great care should be taken that they do not become 'drawn,' which must be prevented by giving the young plants as much light and air as possible. Those intended for grouping in the beds or borders, should be gradually hardened before turning out; for which purpose they should, for a week or two, be exposed during the day, but protected at night. As the plants are comparatively slender, and not much branched, a better effect is produced by grouping several together, than by single specimens. They require rich soil, and abundant watering in dry weather, or the stems are liable to become naked at the bottom.

When grown entirely in pots, they are very ornamental objects for a long period during the summer and autumn, especially when not drawn up during their earlier progress. As the production of seed checks the further formation of flowers, the seed-vessels should be pinched off, when not required.

Where there are facilities for preserving the seedlings through the winter, either in a cold frame or cool greenhouse, the seeds are sometimes sown in autumn; in which case, they flower at an earlier period, and are rather more vigorous in their growth. In the case of any particular variety which it may be desired to propagate with certainty, cuttings may be taken at almost any period, and treated in the usual manner; though this must be regarded rather as a precautionary measure, than as absolutely necessary, for many of the varieties may be perpetuated by seed.

The perennial species and hybrids of the *Phlox* family, are among the most useful of all the hardy herbaceous plants, and no garden should be without several of them. So numerous have the hybrids become, that, at most of the London Nurseries, several hundred varieties may be obtained. *Madame Frobel*, *General Duvivier*, *Adonis*, *Conspicua*, *La Perle*, and *Napoleon*, are a few of the best; the last, especially, is a very beautiful plant, with blush white flowers, striped with rosy violet, and of excellent habit.

A very pretty and useful dwarf and nearly hardy variety, raised between *P. Drummondii* and one of the perennial species, is the *P. depressa*, with rosy purple flowers. There are many other varieties with larger and more showy blossoms, but none of so compact a habit; it rarely exceeds ten or twelve inches in height, and produces a profusion of side shoots, much in the same way as its parent the *P. Drummondii*.

All the perennial Phloxes require a rich, strong soil, and should be divided every autumn, and replanted. If this precaution is neglected, they will speedily dwindle, especially in poor, dry soils.

In a structural point of view, the Phloxes are of less interest than many of the plants we have figured; but even here something may be found worthy of observation. The tube of the flower is so narrow, that were the stamens all arranged in

the same horizontal plane, the orifice of the flower wonld be completely choked; they are, therefore, placed in different planes, one or two of them being near the mouth, and the others at various distances down the tube. As the style is generally shorter than the tube, a part of the anthers being above the stigma and others below it—the result of this arrangement is that, whatever may be the position of the flower, (some of the blossoms being vertical, whilst those at the sides of the truss are more or less reflexed), impregnation readily takes place.

We are unacquainted with the history of the variety of Phlox; we now figure the original species, *Drummondii*, is, however, a native of Texas. All the wild species are, indeed, peculiar to the North American Continent.

The generic appellation of the family is an unaltered Greek term, signifying flame, in allusion to the brilliancy of the flowers of many of the species.

HARDY PLANTS OF THE LILY TRIBE.

Among Endogenous plants, no other Natural Order contains so great a number of interesting hardy perennials as the *Liliaceæ*. The *Amaryllids* are certainly equally specious, but by far the greater number of them are too tender to bear full exposure in this climate.

In bringing the Lilyworts under the especial notice of our reader, it is less our intention to speak of such plants as the Tulip and Hyacinth, and the better known plants of the Order, than to group together a few of those genera less commonly seen in cultivation, but which are equally deserving of the attention of all amateurs of hardy plants.

The noble genus, *Lilium*, would alone suffice to stamp this order of the highest value; for they are unsurpassed in grandeur by any other herbaceous or bulbous plants. A collection of the different species would prove one of the most interesting imaginable, and the majority of them are readily attainable. Our limited space forbids our giving a list of the species, all of them, however, are beautiful, and none more so than the *L. speciosum* and its numerous varieties. This noble plant is quite hardy, and should be in every garden.

The Fritillaries are scarcely less attractive than the preceding, to which they are very closely allied, and the species are more numerous than is usually supposed. Most of them are valuable on account of the early period at which they bloom. With the exception of the *F. imperialis* (Crown Imperial), they are all of dwarf growth, not exceeding twelve or eighteen inches.

Far less common than the above is the *Agapanthus umbellatus*, or African Lily. This plant being a native of the Cape of Good Hope, is generally treated as a green-house subject; but as it is dormant in winter, if planted from eight to twelve inches deep in a sheltered border, it will succeed admirably, and flower far more abundantly than in pots. It does best in rich sandy loam, and is easily increased by suckers. The flowers of the species are blue; but there is a white, and also a variegated variety.

The *Funckias* are very ornamental, and their flowers are deliciously fragrant. Two species, *ovata* and *cærulea*, have blue flowers; those of *undulata*, *Sieboldiana*, and *lanceolata*, are lilac; and in *albo-marginata*, they are also lilac, but beautifully edged with white. Their average height is about eighteen inches, and most of them flower during the summer months. As they may be had at a cheap rate at the London and most provincial nurseries, we strongly urge those of our readers who may not be already in possession of some of the species, to add them forthwith to their collections. They prefer a dry situation, and are all increased by division.

Allied to the above are the species of *Hemerocallis*, one or two of which are old inhabitants of our gardens. *Flava*, *graminea*, *disticha*, and *speciosa*, are the most desirable species, far more so than *fulva*, the species most usually seen. All those we have named have yellow or orange flowers produced in May, June, or July.

Closely associated with the two preceding genera, are the species of *Anthericum*, of which *liliastrum* and *sulphureum* are hardy. The first is by no means rare; it grows rather more than a foot high, and has white flowers of some size. Their relationship render it probable, that this and the previous genera would intermingle by hybridizing.

The Blue variety of *Ornithogalum pyramidale*, or Star of Bethlehem, is a beautiful plant when in flower, and the white species are also desirable from their hardiness. We notice this rather common genus, however, chiefly with a view to draw the attention of amateurs to the possibility of obtaining hybrids between the hardy white species, and the more tender yellow ones from the Cape of Good Hope. We have very little doubt that these would live in the open ground, if slight protection were afforded them, and their beauty renders them fully worthy of a little extra care; but even should they prove too tender, their hybrids with the common white species would certainly bear our winters, and be a valuable addition to our hardy bulbs, The only one of the yellow Ornithogalums readily attainable, is *aureum*, which may he had of some of the London Florists; we have seen it in the catalogue of Messrs. Henderson, Pine Apple Place, Edgeware Road.

Scilla.—These are among the prettiest of the dwarfer section of the Order. The majority have blue flowers, of various shades; but there are white, pink, and lilac-

flowered varieties, which form a charming contrast when grown with the others. The bulbs are all to be procured in a dry state of the Florist at this season of the year, and may be planted in patches near the edges of the border. *Italica, amœna, Siberica, præcox, imperialis, Peruviana,* and *campanulata,* are among the best of the blue-flowered species, and of nearly all of those named, there are white and flesh-coloured varieties.

The *Allium azureum, A. moly, and A. acuminatum,* notwithstanding the ideas usually associated with the Onion tribe, are very handsome plants; the last named is at present rare, but *azureum* and *moly* we have found in most of the Seedmen's lists of bulbs. There are also several other interesting species, but they are very scarce, and confined to private collections.

The *Gageas,* a genus allied to *Ornithogalum,* are pretty hardy yellow-flowered bulbs worth cultivation; the *G. lutea* is an indigenous plant; but it is less ornamental than *G. glauca, bracteolaris,* and some others.

Of more interest is the *Calliprora flava* or *lutea,* an extremely neat little plant flowering in July and August, with yellow blossoms of some duration. It is quite hardy, and increases very freely by offsets, which flower while small. It does best in a rather shaded border of peat or other light soil.

More interesting still is the *Triteleia laxa,* with beautiful blue flowers, produced in July. This charming plant ripens seed freely, and ought, therefore, to have been by this time within the reach of everybody; but it is still comparatively scarce. Mr. Groom of Clapham Rise is the only party, to our knowledge, in possession of this bulb, though it is, doubtless, in the hands of other Florists. It is not quite so hardy as the *Calliprora,* but will need bnt little protection, except in severe weather. There are two or three other species, but we are ignorant whether they are to be procured in this country.

The *Brodiœas* are no less deserving of general cultivation than the two preceding plants. There are two species, *grandiflora* and *congesta,* both with bluish-purple flowers; and like the *Calliprora,* they are best grown in heath-soil, or in sandy loam, in which old leaf-mould has been incorporated. The *B. congesta* is the hardiest of the two species; both of them may by procured for a very trifling sum.

The splendid genus *Calochortus* has already been noticed in our pages. They are all, with the exception of *C. luteus,* too tender to permit of being classed with hardy bulbs; that species, however, succeeds with very slight protection in ordinary winters, especially if sheltered from autumn rains. The allied genus *Cyclobothra* is more hardy, but *alba* is the only species readily obtainable. This may be had of nearly all the London Florists, and will please all lovers of bulbous plants. It ripens abundance of seed, and may be quickly increased in that way, as well as by the buds, or *gemmæ,* which are produced on the stem. Should any of our readers

be in possession of the other species of this genus, we should be glad to be informed.

For the present, we will conclude our list of Hardy Lilyworts with a reference to the highly ornamental genus *Tritoma*. Perhaps, after the Lilies and *Agapanthus*, these are the most ornamental of any of the plants we have named. There are four species in cultivation: *Burchellii*, *media*, *pumila*, and *Uvaria*. The two last are the hardiest, as they flower during the latter part of the summer; *media* produces its blossoms at a later period, and its activity during the cold season renders it, therefore, more susceptible of injury from frost. They will all be safer with a little protection, such as that afforded by a layer of fern leaves, or cut furze; *media* should have a few evergreen branches placed round it. Their flowers, produced in a long spike, are very numerous, and of a bright orange tint.

THE ANEMONE.

The Order *Ranunculaceæ* furnishes us with two of the most valuable of the plants usually denominated Florist's flowers—we allude to the Anemone and the Ranunculus. The latter has many admirers, and if its beauty alone be considered, it equals, and perhaps surpasses, its rival; but for general utility, and adaptation to the purposes of the amateur, we think it is much its inferior.

By judicious successional planting, the Anemone may be had in flower at least six months of the year; it is perfectly hardy, less liable to the attacks of the wire-worm, and the varieties are capable of being perpetuated by division, without degeneration, for a long period; it may, in fact, be cultivated successfully by the veriest tyro, and of the Ranunculus this can hardly be affirmed.

There are very few gardens in which the double scarlet varieties are not grown; but the crimson, blue, rose, white, and variegated varieties, although equally beautiful, and lending, by their contrast, an additional charm to the 'scarlets,' are much less common.

To grow, in perfection, the double Anemone (and it is of that only that we shall now speak), it is requisite that the soil in which it is planted should be changed each season; unless this is done, the blossoms, even of the finest varieties, will speedily dwindle to an inconspicuous size.

The soil best suited to this plant is a good light loam, containing a cousiderable proportion of thoroughly decayed cow-dung. Anemone growers differ somewhat in their opinion with regard to the mixture of the manure with the soil, some of them advising that the cow-dung should be placed in a stratum, at a distance of six inches from the surface, whilst others recommend that it should be thoroughly incorporated with the soil.

The last is that adopted by Mr. Tyso, of Wallingford, one of the most successful cultivators of this plant and the kindred Ranunculus. In following this plan, it is desirable, however, that the manure should be at least twelve months old, and by no means in a fresh state. If it can only be procured in this moist condition, it will be indispensable to place under and around each tuber at the time of planting, a handful of dry sandy loam; or the first method may be followed of removing the soil entirely to the depth of six inches, and arranging at the bottom the layer of manure, which in this case may be used fresh, as the roots will not be in immediate contact with it. When the manure is incorporated with the soil, a depth of at least ten inches should be allowed for the bed.

The best period for planting the roots is from the middle to the end of October; those planted at this season produce finer blossoms, and in greater abundance than others committed to the ground in the early spring. For a succession of blooms, the root should be planted at several periods; those planted in October will flower in May; others planted in February or March will bloom at a later period.

When arranged in a bed, the roots should be placed at least six inches apart, and about two inches below the surface. The best method of planting is to rake off the entire surface of the bed, place the roots in rows at the distance we have named, pressing them gently down, and then return the mould over them. Some cultivators, however, still adopt the older plan. When the bed is composed of different sorts, the most harmonious effect will be produced by planting the strongly contrasted tints at opposite extremities of the bed, and blending them by intermediate rows of lighter shades.

Although quite hardy, the roots will bloom much finer if protected, in severe weather, by dry fern, clean straw, or furze; and should sharp frosts occur while in bloom, it will be highly desirable to place over them at night a mat, supported by sticks, two or three feet high. In dry springs they will require watering, as nothing interferes so much to prevent fine blooms, as a deficiency of moisture at this period.

After flowering, however, they should be screened from heavy rains, and as soon as the foliage has decayed, the roots should be dug up, and *gradually* dried off. Care should be taken at this stage, that the different sorts do not become mixed.

The following are a few of the best now in cultivation:—*Blues.*—Azure incomparable, Count Rossi, Fontainbleau, Imperator, Euphrosyne, Ornament de la Nature, Lord Liverpool. *Rose.*—Beauté Supreme, Cœur tendre, Exquisite, Pallas, Rose surpassante: *Crimson.*—Emperor Alexander, Henrietta Sontag, Josephine, Prince Albert. *Scarlet.*—Feu Superbe, Evèque d'Amboise, Cramoisie Royale, High Admiral. *White.*—Grandeur à merveille. *Variegated.*—Gertrude, Henri Quatre, Miss Wright, Virgilius. All the above may be procured of Mr. Tyso and other Florists for a very moderate sum.



Pentstemon gentianoides atro-caruleum



Microsperma bartoniodes.



Œnothera prostrata.



Gelasine azurea.

PENTSTÉMON GENTIANOÍDES ATRO-CÆRULEUM.

Gentian-like Pentstemon. *Hybrid Variety.*

Linnean Class—DIDYNAMIA. *Order*—ANGIOSPERMA. *Natural Order*—SCROPHULARIACEÆ.

We have, on several occasions, expressed the high opinion we entertain of the value of the genus *Pentstemon* for ornamental purposes, and in our second plate we figured one of the blue-flowered species. We now return to this interesting family, for the sake of introducing one of the latest hybrids, of a somewhat different colour, although *nominally* it is classed with those of cærulean tint.

It is a matter of regret that, among a certain class of Florists, there is a strong disposition to give a fictitious value to their productions, by attaching to them high-sounding titles, scarcely warranted by the circumstances of the case; sometimes a plant differing only in the smallest degree from many other kindred varieties, is dubbed *splendidissima*, and enjoys a short-lived reputation, at the expense of that of its sponsors; while, in other cases, a really valuable plant is sent out with a name greatly calculated to mislead the inexperienced purchaser with regard to its tint.

The Pentstemon now figured is an illustration of this objectionable system of nomenclature; although termed *dark blue*, our readers will see that it has but small claims to such distinction. It is, however, a handsome and very hardy variety of the original *gentianoides*, and, as such, merits a place wherever this very desirable genus is cultivated. It was raised at Lille by M. Pellier, between *gentianoides* and *Hartwegii*, and is now in the hands of most of the principal Florists in this country. It is of much dwarfer habit than the *true gentianoides*, and also a much freer flowerer, in this respect equalling the *Hartwegii* and its varieties.

There exists considerable confusion with regard to these two species, which are often confounded together under the name of *gentianoides*. This last species is of a very tall habit, frequently reaching the height of six feet, or even more, and its blossoms are of a dull purple, the tube being shorter, and much less drooping than in *Hartwegii*. They are numerously produced, but the plant does not remain long in flower. It is singular that *Hartwegii* and its varieties, now so common in our gardens, should ever have been mistaken for the preceding; for, although its foliage is somewhat similar, the habit of the plant is very different, and also the colour and form of the flowers, which are pendant, and of various shades of scarlet and purple-

crimson. The whole of these are amongst the most valuable bedding plants we possess; and among *hardy* bedders they are indeed unrivalled, flowering from the beginning of July to October, or even later, if they are prevented from ripening seeds.

There are a considerable number of varieties of this species, which shows a strong tendency to 'sport' its colours. Among the best are *giganteum elegans*, scarlet with streaked throat; *magnificum*, with large dark red flowers; *Buckii*, large scarlet, with pure white throat; *diaphanum*, rose, with tube nearly transparent; and *Salterii*, with white tube variously streaked with rose and red; we believe this last is also sold under the name of *variabilis*. All of them are of the easiest propagation, by short side shoots, inserted under a hand-glass in a shady place. A readier method of increasing them is by layers, which root with great facility during the summer months, and indeed at almost any season. *Gentianoides*, *Hartwegii*, and all their varieties, are quite hardy in most localities; in wet soils, especially in the northern counties, a few cuttings or rooted layers should be preserved through the winter season, out of the reach of frost, as a precaution against loss.

Although for general purposes the Pentstemons we have named are the most valuable of the genus, there are many other very beautiful species of great interest.

The *P. atro-purpureum* is an extremely handsome plant, with dark purple flowers, and somewhat slender stems, the foliage narrow and toothed. It is less hardy than some others; but although the stems are often killed by sharp frosts, the roots preserve their vitality, and the plant shoots again the following season. It is so ornamental a species that it deserves a little protection; where it is found too tender for exposure, a shoot or two should be layered, and when rooted, potted off and protected in a frame. It also ripens abundance of seeds. This plant is by no means rare; we have seen it in nearly all the London Florists' Lists. *Campanulatum* and *roseum* are scarcely more than varieties of the preceding.

The *P. Murrayanum* is another fine species, from Texas, with beautiful glossy scarlet flowers and glaucous foliage, the upper leaves being connate. It is rather more delicate than the species just named, and requires frame protection in winter. A loamy soil suits it best.

The *P. Wrightii* is a charming plant, and will, we have no doubt, be a great favourite. This species is described at page 96. There are several comparatively dwarf species, which would be useful as edgings to beds of the taller kinds, or they would form very pretty groups by themselves for the borders; such are *miniatum*, *gracile*, *hirsutum*, *pruinosum* and *procerum*, the first with vermilion-coloured flowers, the remainder with blossoms of various shades of purple, and all of them from nine to eighteen inches in height. The *P. cordifolium*, a new shrubby species, will probably prove a very useful plant, from its hardiness and easy management; its flowers are of a rich dull red, in long panicles, and produced freely through the summer.

The distinction between the Pentstemons and the genus *Chelone*, have been already explained at page 24; to which we refer the reader for some other particulars relative to this delightful family of plants.

MICROSPÉRMA BARTONIOÍDES.

Bartonia-like Microsperma.

Linnean Class—POLYADELPHIA. *Order*—POLYANDRIA. *Natural Order*—LOASACEÆ.

AMONG plants remarkable for their curious structure, the *Loasa* tribe occupies a conspicuous place; and many of them being, in addition, showy plants, they would deserve to be generally cultivated, but for the unfortunate stinging properties of some of the species. Happily, these are chiefly confined to the true Loasas, the other genera of the Order possessing it only in a very slight degree, and in some it is entirely absent.

The *Bartonia aurea*, and the allied plant we now figure, are of this number, as well as the *Scypanthus elegans;* and the pretty *Blumenbachia insignis*, although not entirely destitute of stinging properties, is so harmless, that none need be deterred from its cultivation.

This plant (the *Blumenbachia*) is one of the prettiest of the hardy annuals, and should be grown by every body, once at least, for the sake of the opportunity it will afford of examining its highly curious flowers. Its habit is somewhat trailing, and it is therefore suitable for the front of the borders. Although classed as an annual, it will live more than one season, if preserved from frost, in a cold frame. Flowers white and yellow.

The *Scypanthus elegans*, or Cup-flower, is rather less hardy than the preceding, but is fully as interesting. It is a twining plant, growing about four feet high, with yellow blossoms, and requires no care beyond that of raising the seeds in a gentle heat, and planting them out, when a few inches high, where they are to bloom. The snails are very fond of this plant, and must be well looked after, or they will speedily strip it of its foliage. Like the *Blumenbachia*, the *Scypanthus* is perennial if protected during winter.

Both are remarkable for the pouch or boat-like form of the petals; and this is also seen in the true Loasas. In all three genera, the stamens are arranged in five very distinct bundles, each of the bundles being, at the time of the flowers' expansion, enclosed within the cavity of a petal. When the anthers burst, the stamens

spring in succession from their horizontal position, and are applied closely to the style; in those blossoms which have been some days expanded, the petals will be found empty, all the stamens having become erect. Between each fascicle of fertile stamens will be seen a curious appendage, generally looked upon as a modified petal, having one or two abortive stamens attached; these are very conspicuous in the *Scypanthus* and Loasas; the spirally twisted seed-vessel of the latter, and of the *Blumenbachia*, are also well deserving of attention.

The *Bartonia* and *Microsperma*, although belonging to the same Order, differ considerably in their structure from the genera we have just noticed. The *Bartonia aurea* is well known as one of the most ornamental of the numerous North American annuals, and we dare say but few of our readers are unfamiliar with its brilliant yellow flowers. We have always treated it as a hardy annual, sowing the seed where it was intended to bloom. It does best in light rich earth, or in a mixture of sandy loam and leaf mould, in which a good patch makes an exceedingly showy appearance.

The *Microsperma* now figured is closely allied to the *Bartonia*, from its resemblance to which it has derived its specific name. It is a native of Mexico, and was introduced into this country from Hamburg in 1849, under the name of *Eucnida bartonioides*. It is a succulent annual, growing about a foot high, with ovate, lobed, and serrated foliage. The flowers, which are nearly two inches across, are terminal, and produced either singly or in pairs, with five spreading, ovate, obscurely-toothed petals, of a sulphur-yellow above, but much paler beneath. The stamens are arranged in five fascicles or bundles, the filaments of each fascicle being united at the base, and attached to one of the petals; the stamens arise in two distinct rows or series from the point at which they are united. The filaments are very long, bearing a roundish flattened anther, opened by its margin. The style is about the same length as the stamens; stigma undivided, but with five longitudinal furrows at the extremity.

The seed-vessel is one-celled, many-seeded, opening at the top by five valves. Seeds attached to the walls of the ovary, in five longitudinal ridges or placentæ. They are very numerous and minute, of an oblong form, and with several spiral furrows, which are visible, however, only under the microscope. In the *Bartonias*, the stamens, although fully as numerous as in the *Microsperma*, are not divided into fascicles as in that genus.

The cultivation of the *Microsperma* involves a little care; for, although it is quite hard enough to bear the open air, its succulent nature renders it liable to injury in all stages of its growth from any excess of moisture, whether in the seed-pan or the borders. It may be raised in the spring on a gentle heat, in pots of well-drained sandy loam. The seeds should be thinly sprinkled on the surface of the soil, and then gently pressed in; they will germinate with greater readiness than if covered more deeply. In raising these and other small seeds, it is a good plan to cover the rim of the pot with a piece of glass, which will greatly retard the evaporation from

the soil, and obviate the necessity of frequent watering; but as soon as the seedlings are above the soil, the glass should be partially removed, as too much care cannot be taken to preserve them from damping off. When sufficiently large to transplant, they should be potted, two or three together, in four-inch pots, using a mixture of sandy loam and leaf-mould or peat; good drainage must be ensured by a handful of crocks. In May the plants may be transferred to the borders, with their balls of earth entire. We are inclined to think that the seed might be sown in the open borders about the middle of April, if the soil is light, and a hand-light can be placed over the patch, for the first month or so. The plant may also be grown in pots for the window, or green house; and in this situation it will be more likely to ripen seed than in the open ground.

The generic term, *Microsperma*, has been applied in reference to the smallness of the seeds, from *micros*, small, and *sperma*, seed; but it cannot be said to be very appropriate, inasmuch as these organs, although comparatively minute, are far less so than in many other plants.

ŒNOTHÉRA PROSTRÁTA.

Prostrate Evening Primrose.

Linnean Class—OCTANDRIA. *Order*—MONOGYNIA. *Natural Order*—ONAGRACEÆ.

UNDER the name of *Œ. riparia*, this pretty dwarf Evening Primrose is now somewhat generally known; and though its flowers are smaller and less showy than those of some other species, we have no doubt that its hardiness, free-flowering habit, and especially the extreme neatness of its foliage will cause it to rank among the most useful of the tribe. Its prostrate growth renders it very suitable for an edging to other bedding plants; in contrast with the blue *Salvia patens*, for example, or with the Scarlet Geraniums, it produces an interesting effect, and it will probably group with purple, scarlet, or white verbenas. None of the species are more easily propagated, as when pegged down it will root freely without any further trouble, and it may be multiplied indefinitely by cuttings. Though naturally procumbent, it may, if thought desirable, be tied up, and will then form a bush one and a-half to two feet high. It seems to succeed in almost any good garden soil.

This genus, *Œnothera*, furnishes some of our most valuable hardy perennials; as examples we way cite *speciosa*, *cæspitosa*, *taraxicifolia*, with white flowers, and *macrocarpa*, *missouriensis*, and *Fraserii*, with yellow flowers. The first of these, *speciosa*, is, if well grown, highly ornamental when in flower, and is both perfectly hardy and easily increased. Its stems are quite erect, reaching in good soil the

height of two to three feet, the flowers being produced near the top of the stem in a sort of bunch or close raceme. They are very large, often three inches across, and pure white, except the immediate centre, which is pale yellow; the calyx tube of this species is very short and inconspicuous, a circumstance by which it is readily distinguished from most others. It throws up abundance of suckers, often at some distance from the old plant; in spring these scattered suckers should be dug up and replanted in a group.

The *Œ. cæspitosa*, or tufted Œnothera, though an older plant, is much less generally known than the preceding. In habit it resembles *taraxicifolia*, being almost stemless, but the leaves are shorter and less deeply pinnatifid, and their segments broader and blunter. The flowers are pure white with obcordate petals, and the calyx tube is very long. This interesting species seems as hardy as *speciosa*, and certainly more so than the two following. It may be increased by division. Messrs. A. Henderson and Co., of the Pine Apple Nursery, Edgeware Road, London, can supply it at a moderate price.

The *Œ. taraxicifolia*, or Dandelion-leaved, has procumbent stems, with the foliage deeply pinnatifid, and quite free from hairs. The flowers are pure white, large, with a long calyx tube, the petals quite entire, and with five transparent nerves or veins. It is not only very ornamental, but has the merit of flowering almost throughout the summer. It may be increased either by seeds, which ripen abundantly, or by cuttings under a glass, with slight bottom heat. In mild winters this species will survive with a covering of furze or dry fern, but in any case a single root should have protection. In wet soils, or severe winters, it is generally killed. The *Œ. acaulis* scarcely differs from it except in the smaller size of its flowers.

Of the yellow flowered species, the finest is undoubtedly the *Œ. macrocarpa*, a plant which no garden should be without, its large blossoms making it a very conspicuous object in the borders for a long time in summer. The stems of this species are procumbent and stained with purple; the leaves fleshy, lanceolate, the margin and nerves covered with silky hair; and the flowers pure yellow, with a long spotted calyx tube, and broad obcordate petals. The *Œ. Missouriensis* very closely resembles *macrocarpa*, but its habit is less prostrate and shows a greater disposition to grow erect. Both species grow well in good garden soil, and may be increased either by seeds, or by short pieces of the roots taken in spring and planted in a pot of soil, with one end of the cutting exposed; if placed on a moderate hot-bed they will speedily emit roots, and should then be potted separately prior to turning out.

The popular designation of this genus, Evening Primrose, is inappropriate to all the species, many of them expanding their blossoms during the day; the *speciosa* and *prostrata* are both of this number.

The mode in which the flowers of the Œnotheras expand has attracted the attention of most Botanical writers. The four segments of the calyx adhere so strongly by their tips, that in nearly all the species, the petals escape from their green envelope by bursting one side of the calyx. In *prostrata*, *taraxicifolia*, and some others, the sepals are prolonged beyond their immediate point of union into horn-like processes.

All the parts of the flowers of this Order are either four in number, or multiples of four; thus the sepals and petals are each *four;* the stamens *eight;* the lobes of the stigma *four;* and the cells of the capsule *four;* and this circumstance, taken in conjunction with the seed-vessel being *inferior*, or below the flower, affords a ready means of distinguishing them from those of any other Natural Family.

The pollen of the Œnotheras is remarkable for its stringiness, all the grains being connected together by a fine thread-like body. This cohesion is perceptible to the naked eye, but it is better seen under the microscope. The grains themselves are very interesting microscopic objects, being in most of the species of a triangular form, with black opaque spots at the angles. It is rather singular that the form of the pollen should be found to vary in the species of the same genus; but this fact must be known to all who have made these interesting bodies their study. Between the pollen-grains of the *Clarkia pulchella* and *C. elegans*, belonging to the same order as the Evening Primrose, there is a considerable difference, and it would be worth while to ascertain whether these two species would mingle by hybridizing.

The long tube of the calyx of several of the species of Œnothera generally arrests the attention of the tyro, especially those of *macrocarpa* and *taraxicifolia;* and the large winged seed-vessel of the first species is no less curious.

Whilst on the subject of *Onagraceous* plants, we will notice a recent introduction from Texas belonging to this order, the *Gaura Lindheimeri*. It is a tall herbaceous plant, growing three to four feet high, with white flowers, in long terminal spikes, produced in profusion throughout the summer and autumn. Before expansion, the buds have a pinkish hue, the calyx being of that tint. Although not a first-rate plant, it will yet prove of value in the mixed borders; for any other purpose it is unfitted by its tall habit of growth. It is not, we fear, quite hardy, but a few cuttings taken off in autumn will be sufficient to preserve the stock from year to year, or it may be treated as a half-hardy annual, sowing the seed on a slight hot-bed, or in a frame, early in spring, and subsequently turning out the plants where they are intended to bloom.

To return for one moment to the Œnotheras, we may observe that, in common with nearly all the other plants of the Order, they are destitute of any marked properties; the roots of *Œ. biennis* have, however, been used for food, and there is presumptive evidence that none of this tribe are in any way deleterious.

Some difference of opinion exists with regard to the derivation of the term

Œnothera. According to the more generally received explanation, it is compounded of *oinos*, wine, and *thera*, imbibing; the roots of *biennis*, one of the earliest known species, being supposed to be an incentive to wine. *Thera* also means a wild beast; and according to an ancient writer, the Œnothera, or a plant bearing the same name, when steeped in wine, possessed the property of rendering savage animals more tractable. It may not be improper to point out, that in the word *Œnothéra*, the accent falls on the penultimate, or third syllable.

GELASÍNE AZÚREA.

Azure Gelasine.

Linnean Class—TRIANDRIA. *Order*—MONOGYNIA. *Natural Order*—IRIDACEÆ.

Now that hardy bulbs are beginning to be more sought after, any addition to their number will be likely to be favourably received, especially when possessed of flowers of so attractive a tint as those of the *Gelasine azurea.*

This pretty plant is, we suspect, but very little known; indeed, we have recently seen in a popular Dictionary of plants a fear expressed that it was lost; and it is partly with a view to remove this impression that we are induced to give a figure of it. We met with the plant at the nursery of Messrs. E. G. Henderson and Sons, St. John's Wood, and we believe that these gentlemen are at present the only possessors of it. Its price is extremely moderate for so rare a plant; flowering bulbs may be had for about 2*s.* 6*d.*

The *Gelasine azurea* was first introduced into this country in the living state in 1837, having been sent from Boston, U. S., to the collection of the lamented Dean of Manchester at Spofforth, where it flowered and ripened its seed. It is a native of the Banda Oriental and the province of Rio Grande, where it occurs in stony places. It is sufficiently hardy to bear exposure in this climate, especially if covered with a few dry fern leaves, and, like some of the Irises, retains a part of its foliage through the winter. It is readily raised from seed, and young plants will produce flowers the second season; so that it will, we hope, soon be classed among the commonest of our hardy bulbs. The seeds germinate most freely when sown as soon as ripe, on a gentle heat, and the seedlings should be kept growing through the winter. The plant also produces offsets, by which it may be increased.

Our drawing is necessarily much reduced, at least, as far as the stem and foliage are concerned, and we will therefore give a brief description of the plant. It grows

from eighteen inches to two feet high, the flower stalk being furnished with four bracts placed at regular distances, the upper one being leaf-like. The leaves are from one to two feet in length, and about one inch in breadth, pointed at their extremities, and plaited, as in the case of the Tiger flower *(Tigridia Pavonia)*. The flowers are produced from a spathe, which is shorter than their foot-stalks. The funnel-shaped limb of the blossom is divided into six regular segments, alternately smaller, which are united at the base into a tube; each segment is marked with white at its base, on which are several black spots, the segments themselves being of a deep blue tint. The three filaments are united into a short tube, in other words, *monadelphous*, the anthers tapering upwards, and opening by their sides. Style simple, divided into a three-lobed stigma. Capsule egg-shaped, opening when ripe at the top by three valves. Seeds angular, flat at top, tapering downwards. One of the divisions of the flower, and also the monadelphous filaments, are shewn separately in the plate.

The *G. azurea* is, we believe, the only species yet cultivated in this country; but several others are known to exist and were named respectively by Dr. Herbert, from dried specimens, *G. Purruchuchana*, of which there are two varieties; *G. grandiflora; G. punctata; G. nuda, and G. Texana;* the two last, however, are somewhat doubtful.

The genus is closely allied to *Nemostylis* of Nuttall, the chief difference being in the non-adhesion of the stamens, and the division of each of the three stigmas into two lobes, in the latter genus. It is also related to the better known genus *Trichonema*. The term *Gelasine* is derived from *gelasinos*, a smiling dimple. Paxton's *Botanical Dictionary* gives it as derived from *kelas*, late, in allusion to its season of flowering; but this is evidently an error.

Before quitting this subject, we are desirous of calling the attention of our readers to one or two other very interesting genera of Iridaceous plants, not commonly seen in cultivation. One of these is the *Cypella Herbertii*, a beautiful bulb from Buenos Ayres, nearly hardy, and certainly less tender than the Tiger flower, which it somewhat resembles. The flowers are large, and of a vermilion tint. It is a summer flowering bulb, and may be treated exactly as the *Tigridia*; that is, planted in April in the open border, and dug up in autumn when the foliage is decayed. This plant may be purchased in a dry state, at this season, of most of the London Seedsmen, for about 6d. per bulb, but care should be taken to secure ripened roots; many of them, being dug up in an immature state, decay on being again planted, or at most produce only a few unhealthy leaves.

Equal in interest to the *Cypella*, and perhaps more manageable, is the *Pardanthus sinensis*, the *Moræa sinensis* of the older Botanists. In habit this shewy plant resembles one of the smaller evergreen Irises, the leaves being flattened, distichous, and diverging in a fan-like form. The flowers are produced on a dichotomous

scape, about one and a-half to two feet high, which arises from the midst of the central leaves, and bears several spathes, from each of which emerge three or four Ixia-like flowers, about one and a-half inch in diameter, with six spreading segments, of an orange colour, streaked with orange-red. They are somewhat fugacious, but this defect is compensated for by their number. The *Pardanthus* is not absolutely hardy, but will only need a covering in severe weather; it requires a warm and rather dry situation and soil. Increase may be effected by division in spring; or by seeds which are generally ripened; seedlings generally bloom the second year, occasionally the first if sown very early.

To these we may add the *Bobartia aurantiaca*, a half-hardy bulb, growing about one and a-half feet high, with linear foliage and numerous star-shaped flowers of a vermilion tint. It does best on a mixture of sandy peat and loam, and may either be planted in autumn—in which case the bulbs should be at least four inches from the surface, and have a pot turned over them in severe weather—or planting may be deferred until March. As the bulbs are small and cheap, several should be planted together in a clump.

The *Sisyrinchium Californicum* is another useful plant deserving mention, and has the advantage of being hardy in most localities. It is a harbaceous plant growing about one foot high, the leaves flat and almost linear; throughout the summer it produces numerous bright yellow flowers, lasting only a single day, about one inch across, with six spreading segments. In a friable moist soil it increases with great rapidity.

PROTECTION OF HALF-HARDY PLANTS IN WINTER.

We have, on several occasions, when treating on plants not in the strictest sense hardy, given hints as to their management in the winter season; but it may be advisable, now that winter is approaching, to bring together into a connected form the more important of these directions.

There can be no doubt that the list of plants capable of out-door culture throughout the year might be greatly extended, provided a proper system of protection were employed; and that many plants which are now rarely seen in any but a restricted form, would, under such treatment, attain a luxuriance rivalling that exhibited by them in their native haunts. Among many others, the *Tropæolum tricolorum*, or Tricolored Indian Cress, occurs to us; this plant is, we believe, never, or at least very rarely, seen cultivated except in pots, in which, however, we

admit it makes, when well grown, an exceedingly ornamental appearance; but when planted out against a wall, and the tuber protected in winter, the difference in the size attained is scarcely credible. It is true these results are not procurable without a little care; but the splendid display made by this and many other exotics during their flowering season, is a rich reward for the pains bestowed.

For the greater convenience of treatment, plants which it may be desired to protect may be classified in three or four groups: 1st, Wall plants; 2nd, Shrubs, or Half-Shrubby plants; 3rd, Herbaceous plants; 4th, Bulbs. The first division includes a large number of beautiful subjects, such as the *Habrothamnus fasciculatus*, Tacsonias, Sollyas, *Mandevilla*, Myrtle, and *Clianthus puniceus*. In protecting these, and indeed all other plants, it must be borne in mind that, in many cases, it is not so much a low temperature that is to be dreaded, as its association with sodden soil and unripened tissues; could these last conditions be guarded against, the protection of many plants would be comparatively an easy task; our endeavours must, therefore, be directed to preserving the soil around their roots in as dry a condition as possible.

The *Tacsonia manicata*, figured and described at page 99, appears likely to fulfil our anticipations of its comparative hardiness. Our specimen is planted against a wall, and has covered a considerable space. We intend to place over its roots a semicircle of wood, eighteen inches wide and an inch thick, the straight edge of the board to be placed against the wall, and a small notch cut out for the stem of the plant. The board will be raised above the soil, by two or three cube-like feet, and the space between it and the ground stuffed with some dry material, hay or fern. As wood is, however, liable to warp and also to decay by exposure, the common sheet zinc might be substituted with great advantage. The stems themselves will be left exposed as long as the weather is mild; on the first approach of frost they will be cut down to within four or five feet from the ground, and the whole be gathered into a bundle, around which will be wrapped one or two thicknesses of bast-matting, or the new material termed *frigi domo*; this, however, being so liable to become soaked by heavy rains, in which state it would be worse than useless, will be covered with a piece of waterproof calico or oil cloth, the top or end of the bundle being also tied over with this material. Thus the bast will act as a non-conducting medium, and the waterproof calico will preserve the whole in a dry state. With these precautions we fully believe that the *Tacsonia* will take no harm, even with the thermometer as low as 18° or 20° F.; such of the surface roots as extend beyond the wooden semicircle may perhaps be killed, but the plant itself will not suffer. The *Mandevilla suaveolens* may be treated in a similar way, and all other deciduous climbers requiring protection. We do not, however, advise the exposure during winter of comparatively young plants of this beautiful climber;

it is only in the case of old specimens that the experiment could be tried with any chance of success.

The *Habrothamnus* will need little more than the covering at the roots we have recommended for the *Tacsonia;* on a west wall, where its shoots will receive but little excitement from the sun's rays, this beautiful shrub will bear some degree of frost uninjured, without *any* protection, especially in dry soils; some provision should be made, however, for covering it in severe weather, as the flowers are produced at the ends of the branches, and these are precisely the portions of the plant which would first suffer. We know no better plan of affording this temporary shelter than by placing in front of the plant a frame covered with matting, or old carpeting, and sufficiently large to extend some inches beyond the plant on all sides.

Such a frame may be made in any style, and with any materials, from smooth deal splines put together *secundum artem*, to rough poles cut from a coppice, and tied at the corners with strong cord. These last may be made to answer every purpose, and need not be more than one inch in diameter, except for large frames. The size of the frame will, of course, vary with that of the plant to be sheltered; it will be a good plan to prepare several of them differing in dimensions. One of five or six feet in height, and the same in breadth, will be found very useful, and if made of light poles, will not be too heavy for even a lady to remove. The covering for the frame may be bast-matting, old carpet, floor-cloth, tarred canvass, or, in short, any fabric capable of being securely fastened. The tarred canvass will be found an excellent material, on account of its waterproof qualities, and strips of floor-cloth are equally useful; but these will need nailing to the frame, and should overlap each other. When placed before the plant, the frame will, of course, be arranged in a slanting position; and, if necessary, may be secured by a short hooked stake driven into the ground at the foot, and at the top by a staple and cord.

It will be understood that these frames are only to be employed when frost threatens; in mild, open weather their use would be injurious to most of the shrubs and likely to cause a premature growth, which must be carefully guarded against, as much of the success in preserving the more delicate of this class of plants during winter, depends on their energies being kept quite dormant. It is for this reason, that, when the shoots are well ripened, they often suffer less in mid-winter than in early spring, when they commence their growth.

We have referred only to the *Tacsonia* and *Habrothamnus*, but our suggestions are equally applicable to all other wall plants of a tender character. Armed with a few of the portable frames, the amateur Horticulturist will be able to preserve many greenhouse plants, usually supposed to be too tender to endure our winters, such as the splendid *Clianthus*, the Pittosporums, the Acacias, Photinias, Camellias, Magnolias, Myrtles, and many others.

Tender shrubs and half-shrubby plants.—The protection of this class of subjects involves, perhaps, a little more care than the preceding, but the same principles must be kept in view. A great point will be gained if the roots of shrubs can be screened from the heavy rains so characteristic of our autumnal seasons; and this can be accomplished without difficulty, by applying two of the wooden or metal semicircles, referred to in the previous page, around the base of the stem, so as to form a complete disc. In many cases, such a protection, applied early, would so materially check the production of young wood, and assist the ripening of the shoots, that it would alone be sufficient to prevent injury by subsequent frosts.

There are a few plants, however, which will need a covering of some description, and of this number is the Tree Pæony *(Moutan)*. This splendid plant, our readers are aware, does not die down annually, but possesses a shrubby habit, and, like the herbaceous kinds, commences its growth in early spring, while frost is yet rife. It is at this period that protection is chiefly required; and it may be afforded by driving a few upright stakes around the plant, and arching over these two stout osiers, placed cross-wise, their ends being secured to the stakes by tarred strings. Over the top a piece of waterproof material can be thrown at night, and secured with strings to the stakes. The same kind of covering may be used for all tender evergreens of large size, such as the *Rhododendron arboreum*, and the other species that are likely to suffer from full exposure. It is not only during actual frost that this protection will be needed, but also whenever the cutting east winds are prevalent. In the latter case, it is often advisable to protect with the canvass only that side of the shrub next the wind, the other being left open. Some of the Cistus family are liable to perish in winter if the soil is wet, or the situation is very exposed, and to these beautiful shrubs the kind of covering here suggested is very suitable. In dry soils, a few branches of fir, laurel, or other common evergreens, will often be found a sufficient protection for many dwarf shrubs and half-shrubby plants.

Where it may be occasionally necessary to completely cover half-hardy plants of moderate size, such as the *Cantua dependens* and *Mitraria coccinea*, a cylinder, formed of two or three hoops connected by a few upright rods, and covered with tarred canvass, will be found of great service. If preferred, the skeleton of the frame might be constructed of galvanized or painted iron wire, which would last many years, if strongly made. A top to the cylinder will be essential; and this, being separate, will allow of air being admitted in mild weather without disturbing the entire protector. If additional warmth is required—and for the two plants we have named it will be desirable—the cylinder may be covered with a piece of matting, before attaching the outer canvass; this last should invariably be tarred or painted, or it will soon rot; in its stead oil-cloth may be used, but the canvass is considerably the cheapest. The cost of such cylinders as we have described, three feet

high and eighteen inches in diameter, need not exceed 6d. each; and they may be constructed by any person possessing the smallest modicum of mechanical genius, and in any locality where a few stout osiers, a bit of canvass, and a little tar are attainable.

Herbaceous and bulbous plants.—Practically, these two divisions may be classed together, and their protection is very simple. In most cases, an 8-inch pot filled with hay will be a sufficient protection for such roots as the *Salvia patens*, *Cuphea strigillosa*, *Anomatheca cruenta*, and nearly all the Cape Bulbs.

It is usual to employ in these cases a mulching of half-rotted manure, but this is, in our opinion, very objectionable, as it soon becomes saturated with moisture, which it retains for a long period. Leaves are open to the same objection unless they can be kept dry, which may be done by placing a slate or tile over them: this will not only keep the leaves in their places, but afford in itself additional protection. Small heaps of coal-ashes are sometimes placed over tender roots, and if screened from wet by covering them with a large pot, these are very efficient protectors. We have seen sawdust used for the same purpose; but no worse substance could be employed, unless it is kept dry by covering; when exposed to wet, it loses entirely its protective character.

For bulbs or plants requiring only slight protection, a furze branch or two, pegged down, is one of the best and simplest coverings; and this material will be found exceedingly useful for beds of half-hardy bulbs, as well as for placing between patches of autumn-sown annuals in severe weather. It is, however, very important to observe that, in the case of bulbs or roots which commence their growth early in the spring, the coverings should be partially removed, and their place supplied with an empty pot.

We have by no means exhausted the subject, but sufficient has been said to guide our readers to successful results. It must be borne in mind, that a sudden increase of temperature must be as carefully guarded against as severe frosts, especially in the case of wall plants, which are often exposed in early spring to the alternate influences of bright sunshine by day, and sharp frosts by night; the injurious effect of these sudden changes must be prevented by keeping the screens entirely before the plants during the prevalence of such weather, removing it only in dull days. In all cases, protective coverings should be cautiously withdrawn on the approach of spring, and never entirely dispensed with at night, in the case of delicate plants, until the end of April, when they may be placed aside in their summer quarters until again,

'Autumn's yellow lustre gilds the scene.'

WINDOW GARDENING.

(Continued from page 123.)

Our last observations under this head had reference to the treatment of cuttings, and logically we ought, therefore, to resume the subject with the subsequent management and training of young plants. A few suggestions, however, on the winter treatment of the plants usually cultivated as window ornaments will, we think, be more seasonable and acceptable, especially as their management, at this period of the year, involves points of more importance than is usually supposed.

The successful treatment of most plants depends mainly on the practical recognition of the fact, that *all* plants, without exception, as well evergreens as deciduous, have their season of rest, during which any attempt to keep them in a growing state will be infallibly attended with injury; and it is chiefly owing to the neglect of this important feature in their economy, that so many plants refuse to yield their flowers. The period of the year at which this dormant condition prevails, of course varies; in the case of the Cyclamens, Cape Bulbs, Hyacinths, and many other endogenous plants, it occurs in the hottest months; but in the majority of plants commonly seen in windows, it takes place during the cold season.

As both these classes of subjects are commonly grown in company, one difficulty with which the amateur of gardening *en petit*, has to contend with in winter, is the existence, on the same window sill, of plants requiring opposite modes of treatment; the deciduous *Fuschia*, which should be kept dry, being generally seen side by side with the *Cyclamen*, *Lachenalia*, and Chinese Primrose, in full growth. This, in itself, would be unimportant in a cultural point of view, if water were withheld from such plants as were at rest; but, unfortunately, most of them being at this season kept in a room artificially heated, they are stimulated into growth, and the soil being rapidly dried, unless water were given they would be greatly injured. The obvious remedy for this state of things is the complete separation of those plants which are dormant from others in a growing state; and this is the more desirable that the first named are, with a very few exceptions, any thing but ornamental in their appearance, and their removal will allow room for a larger number of winter flowering plants.

All window plants may be divided, with reference to their winter management, into three classes.

The first includes all plants which either die quite down, as the *Achimenes*, *Begonia*, and Japan Lily; or which lose their leaves, as the Fuschia, Heliotrope, *Lantana*, Lemon-scented Verbena. These, and all others of this class, should be

stowed away in a closet, or wherever they may be out of the reach of frost; but provided that is excluded, the cooler they are kept the better. Light is by no means essential, and the windows may therefore be spared for other subjects.

The second class of plants consists of those which, although requiring no fire-heat, and only occasionally watering, yet need a window of good aspect. This includes the evergreens, such as the Myrtle, Heaths, Geraniums, Verbenas, *Calla æthiopica*, Cinerarias, Roses, Calceolarias, *Mimulus*, *Cantua dependens*, *Mitraria coccinea*, *Crassula*, *Cacti*, *Aloes*, Mesembryanthemums, and all other succulents. The whole of these require to be exposed to a good light, in order to preserve them in a healthy condition; but they must be kept cool, and all the succulents will do perfectly well without a drop of water from November to February. The Cinerarias, Mimulus, Geraniums, and Heaths, however, will need an occasional watering, more especially the two former, as they continue to grow throughout the winter. The *Calla* may be kept nearly dry, and should have only sufficient water given it to keep its leaves erect. This beautiful plant should never be exposed to the excitement of a warm room in winter; it will bear any amount of cold short of actual frost, and will flower more freely the following season, from being kept at this low temperature. The *Camellia* is not unfrequently grown in the window, but it will not absolutely need a sunny aspect, although the weak rays of the winter sun will do it no harm. It must, however, be kept at an equal temperature, or the blossom buds will fall, and therefore a warm sitting room will be objectionable. This plant will require to be watered more frequently than most of the other plants we have named; the soil should be kept thoroughly moistened, but not wet.

The third class of plants contains those which may be preserved in a moderately warm sitting room without receiving much injury; they consist chiefly of the Acacias, Chinese Primrose, *Cytisus racemosus*, Cyclamens, Lachenalias, Hyacinths, and other early bulbs. To these may be added the common dwarf Chrysanthemums in autumn, and the Cinerarias at a later period, when they are about to bloom. The beautiful *Torenia asiatica* figured in our first plate, will require to be kept in a warm room, as it will not live at a low temperature, and it will be preserved in a healthier condition if pruned in, and covered with a large bell-glass. We do not mean to affirm that no other than the plants we have just named may be kept during winter in a heated apartment; but we are persuaded that all those we have given under the second class, and which are very commonly allowed to remain in warm rooms, will be far better in a cool window. An exception may, perhaps, be made for the Geraniums; but even these, the least delicate of window plants, receive much injury from the dust created by coal-fires.

Many of the plants which require to be kept cool in the early winter months may, however, be removed to a warmer room later in the season; among these may be cited the Cinerarias, Ixias, and Mimulus.

HARDY SHRUBS

It would not, perhaps, be too much to affirm that of all classes of ornamental plants, the most generally useful are the Hardy Shrubs. They constitute, in fact, an indispensable feature in all well-arranged grounds; for while, on the one hand, it would be easy to conceive of a garden composed entirely of shrubs, which should scarcely yield in interest to those of a more mingled character, it is hardly possible to imagine an effective arrangement in which shrubs should be completely excluded.

From their larger size, they impart a boldness to the *ensemble*, for the absence of which the gaudiest colours will scarcely compensate; and form, also, to the smaller gems of the garden a 'setting,' which greatly enhances their charms.

A considerable number, too, both of evergreen and deciduous shrubs, produce flowers of so much beauty and interest, as to make them conspicuous objects even at those seasons, when these fragile creations are scattered around us with a lavish hand; and in the dreary winter months,

'When the winds whistle, and the snows descend,'

the garden may be said to owe its chief attractions to the cheerful evergreens which glisten on, as if to keep alive the interest of their possessor, until the return of spring.

Another, and by no means the least recommendation of this class of plants, is the very slight amount of trouble they entail; beyond a little care in planting, and an occasional pruning, they require no attention, each returning season witnessing a more copious display of blossoms than its predecessor.

Few shrubberies, however, present that variety which is one of the greatest charms of gardening; they are too commonly either occupied by old-fashioned shrubs of little interest, or the number of each kind is too large to allow of that diversity so easily attainable. In gardens of limited extent, we certainly think that, as a general rule, only one plant of each species should be permitted, which would allow of the introduction of a considerable number of interesting subjects.

Our limited space forbids our giving a complete list of hardy shrubs, which would be of little use, if unaccompanied by note or comment; and we shall therefore content ourselves with making a selection of the best of each class, both of evergreen and deciduous shrubs, which will, we hope, be of some service to such of our readers as may be desirous of extending their acquaintance with this valuable section of ornamental plants.

The EVERGREENS constitute the largest and most important division; and we, therefore, give them precedence.

Andromeda.—This genus includes a considerable number of highly interesting species, all of them remarkable for their neat habit, and pretty white or pink flowers. Where there is room for only one species, none is more desirable than the *A. floribunda,* which, whether grown as a single specimen on a lawn, or in a group with other Americans, forms an extremely beautiful object when in flower. The blossoms are pure white, appearing in early spring 'before the swallow dares.' *Acuminata* is another beautiful species, also with white flowers; and both *speciosa* and *pulverulenta* are equally desirable, flowering, as they do, through the summer. Those of *polifolia,* and its varieties, are pink; this species is of dwarfer growth than the preceding, and is very suitable for the front of the shrubbery or the edge of the peat bed. They succeed best in heath mould, and will do well in partially shaded places; in very dry soils, such situations should be chosen for them, as they suffer from drought.

Arbutus. (Strawberry Tree.)—This justly popular genus needs no eulogium from us, all the species being among the most beautiful of our hardy evergreens. Perhaps the species ordinarily met with in gardens, *A. unedo,* is as handsome as any; but the whole of them are very desirable. For the sake of contrast, the very handsome variety, *Croomii,* which has large red flowers, should be grown in company with it. *Croomii* must not be confounded with *rubra,* which, although of the same colour, has smaller flowers and leaves. The *A. magnifica,* noticed in a previous page, is remarkable for flowering freely whilst small, a characteristic which—in conjunction with its fine foliage, so distinct in form from that of *unedo* and its varieties—will, doubtless, make it a favorite. This species, or rather *hybrid,* blooms in the early spring months, about the same time as the *Andromeda floribunda,* and sometimes suffers from late frosts.

Aucuba japonica. (Spotted Bay.)—But for its somewhat slow growth, this well-known shrub might be classed as one of the most valuable of evergreens; and, notwithstanding this drawback, its large mottled foliage, contrasting so well with that of other shrubs, makes it very desirable. It has an advantage over some other evergreens in its greater capability of bearing the air of towns; and it will also succeed very well in shady places, but not where there is stagnant moisture.

Berberis.—The whole of the evergreen section of this genus, especially those with pinnated leaves, formerly termed *Mahonias,* are amongst the most useful, and generally available of hardy shrubs. No garden should be without the *B. aquifolia,* which, notwithstanding the many species introduced during the last few years, remains without a rival, at least, among those species at present attainable by amateurs of moderate means. For a notice of the remarkable *B. japonica,* and some others, the reader is referred to page 102.

Cistus.—The beautiful, but fugacious blossoms of the Gum Cistus, *C. ladaniferus*, are among the greatest attractions of the shrubbery in June; and those of most of the other species of this esteemed genus are almost equally showy. When old, they are liable to become naked and unsightly at the base, an appearance which may be prevented if the points of the leading shoots are pinched off every season when their growth is completed. *C. ladaniferus* produces the largest flowers; and where only one species is grown, it should be preferred; where there is room for a larger selection, *populifolius*, *laurifolius*, *venustus*, and *villosus*, may be grown; the last has purple flowers, the others are similar to those of the first named species. Few shrubs are more easily increased by cuttings; those of the Gum-Cistus will strike in autumn or spring without a hand light, and as young plants are so readily raised, it is advisable to remove the old ones when they become scrubby. Besides the species we have named, there are a considerable number of dwarfer kinds, adapted for the front of the shrubbery; among the best of these are *acutifolius*, white; *creticus*, purple; *platysepalus*, red; *Ledon*, white. These dwarf species are rather less hardy than the larger kinds, and as a precaution against loss, a cutting of each should be preserved from frost in a pot.

Coronilla glauca.—We are somewhat at a loss to understand why this pretty evergreen is not more generally cultivated in the open borders, as it is certainly quite hardy, although classed with greenhouse plants by most Botanical writers, and forms, when raised from seed, much handsomer specimens than those usually seen in pots. At the Gold-Rood, a villa near Ipswich, an example of this plant may be seen in the open ground, which is said to have been in its present situation nearly twenty years—a length of time abundantly sufficient to test its hardiness. As far as our experience goes, we may state that a seedling plant in our possession has been exposed three seasons, and is now, in the middle of November, covered with a considerable number of flower-heads. It may be necessary to warn our readers, that the plant does not flower very freely until it has been exposed one or two seasons. If, however, after it has reached its full height (three or four feet), the shoots, which often form so dense a head that the stem is hidden from view, are rather severely thinned, there will be no subsequent lack of its bright yellow flowers; in fact, an established specimen is seldom without blossoms.

Cytisus racemosus.—We have no doubt the appearance of this species in a list of *hardy* shrubs, will excite surprise in some minds, the plant being usually treated as a greenhouse subject, and is very often grown as a window plant, for which it is well adapted. It will, however, bear exposure in ordinary winters, and in the open ground attains a much larger size than in pots; but its flowers are, of course, produced at a later period of the spring than when cultivated under glass. When in bloom, it forms a most interesting object, and loads the air with its delicious perfume. It is best raised from seed, which may be procured of most seedsmen,

and it will, perhaps, be desirable to preserve the seedlings in a frame the first winter. It may also be increased by cuttings, but these make smaller plants. The *C. sessiliflorus, nigricans,* and *capitatus* are desirable evergreen species, of larger growth than the preceding; but may easily be kept dwarfer by 'stopping' the shoots while young.

Daphne.—Few of the evergreen species of this genus produce showy flowers, but their delicious fragrance make them desirable additions to the shrubbery. One of the oldest and best known is *D. pontica,* a very neat species, from three to five feet high, with broad foliage terminating the stems. It will succeed in the shade or beneath trees. The little *D. cneorum,* a trailing species, with pink flowers, is a general favorite. It does best in peat, and in a cool situation. The *D. japonica,* a recent introduction, is a beautiful species, almost hardy in sheltered situations. Its foliage is handsomely variegated, and its flowers very fragrant. It requires only ordinary soil. Another very desirable species is the *D. hybrida,* with purplish flowers and large glossy leaves; it is the *D. dauphinii* of some writers.

Escallonia macrantha.—This beautiful shrub has already been noticed in these pages (see p. 49), and the strong recommendation there given has been fully justified by subsequent experience. It is, in short, so highly ornamental, that it must be regarded as indispensable; and its price is now so low that none need deny themselves the gratification of possessing it. It is easily increased by cuttings, and succeeds in almost any soil. In those parts of England in which the winters are very severe, it will, perhaps, be advisable to plant it either at the foot of a wall, or else surround it with other evergreens which will afford it some shelter.

Garrya.—The *G. elliptica* has already received an illustration in these pages; our figure, however, gives but a very imperfect idea of the beauty of the long catkins, which impart so much interest to this plant. It deserves to be in every shrubbery, and may be had at a very reasonable cost. See the notice on page 86.

Kalmia.—This is a charming genus of plants, of easy cultivation, of which the *K. latifolia* is the most desirable. This grows from two to four feet high, bearing oblong, entire leaves, and umbels of rose-coloured flowers of curious structure, the ten stamens being at first horizontally disposed in plaits at the bottom of the corolla, but becoming ultimately erect. It requires peat soil and a northerly exposure. Increased by layers of the young wood in autumn. There is a pretty variety with white flowers. The *K. glauca* and *K. angustifolia* are dwarfer and have smaller flowers.

Laurus nobilis. (Sweet Bay).—It is to be regretted that this interesting plant, the Laurel of the poet, is liable to suffer in exposed situations in severe winters. With a view to guard against the effects of frosts, it should be planted in a sheltered part of the shrubbery, or a warm corner, and will then receive but little harm. In winters of more than ordinary severity, it well deserves a covering;

for, when seriously injured, it recovers with difficulty, and its symmetry is not unfrequently much impaired. There are several varieties of the common Bay, of which the best is that termed *latifolia*. All do best in a light friable loam. A new species, the *L. regalis*, has been recently introduced from California, which is perfectly hardy; but it will not, we fear, be common for some years.

Leycesteria formosa.—This plant is by no means so common as it deserves to be, although quite hardy in the midland and southern counties, and, probably, even in the north, in all but the severest winters. We have never known it to be seriously injured by frost in our own neighbourhood; and even if it were killed to the ground it would shoot again. The flowers are not very conspicuous, but the habit of the plant is very graceful, and in autumn the deep purple tint of the bracts and berries adds greatly to its beauty. In good soil it will reach the height of five or six feet; but it will succeed very well in any ordinary soil. It is a fast grower, and readily increased by seeds or cuttings.

Pernettya mucronata.—This is a very pretty dwarf shrub of trailing habit, with small, ovate, glossy foliage, interesting both for its neat whitish Arbutus-like flowers, in small bunches, and for the bright red berries by which they are succeeded and which render it very attractive during the early winter months. It is quite hardy, as its Patagonian origin would lead us to infer; and flourishes in moist peat-soil and partial shade. Propagated by layers.

Piptanthus Nepalensis.—Here is another *leguminous* shrub, rarely seen in gardens, but which is eminently deserving a place in even the smallest. It is sufficiently hardy for all but the most northern counties; but will succeed on a wall in any part of Great Britain. The flowers are yellow, of some size; and, although lasting but one day, are produced for some time in succession, and make a very showy appearance. It is easily increased by seeds or cuttings, and grows from five to six or eight feet high, in any common soil.

Ruscus. (Butcher's Broom.)—The plants of this curious genus are very rarely seen in cultivation, though, from their dwarf, compact habit, and indifference as to soil or aspect, they merit attention. They will succeed under the drip of trees, and, when in fruit, are very ornamental. There are several species, one of which, *aculeatus*, is a British plant; but is less desirable than *R. racemosus*, sometimes termed the Alexandrian Laurel, which is of taller growth, and has larger foliage than *aculeatus*. They are both readily increased by suckers, and will thrive in any moderate good soil.

The commoner evergreens, such as *Arbor Vitæ*, Portugal Laurel, Box, Cedar, Juniper, Holly, *Buddlea globosa*, and others, we have omitted, as being too widely diffused to require notice, but there are others which our limited space alone has compelled us to defer to a future article. The Rhododendrons have already received attention in a previous number, and references to many others will be found in our index.

Among the DECIDUOUS shrubs now in cultivation, many are of great beauty; but there are, however, fewer novelties in this class than among the evergreens, and most of those we have named below are now well-known plants.

Adenocarpus.—The species now included under this head were formerly classed as *Cytisus;* from which they differ, in having a small yellow waxy gland on each side of the seed near the *hilum*. The only one commonly found at the nurseries is the *A. intermedius*, a pretty shrub three or four feet high. The pea-like blossoms are yellow, spotted, produced in June: and if, after flowering, the shoots bearing the pods are clipped off, a second crop of blossoms often follows in autumn.

Caragana.—This genus belongs to the same natural order as the preceding. The species are, with one exception, all yellow-flowered shrubs of rather low growth, and are somewhat rare in gardens. They are all handsome, especially *frutescens*, *Chamlagu*, *Redowski*, and *spinosa*, which are generally grafted on *C. arborescens*. *C. jubata* has pink flowers. All of them flourish in sandy loam, and may be increased by seeds or grafting. One species, *C. Halimodendron*, will be referred to under the head of *Halimodendron*.

Clethra.—The *C. alnifolia* is found in most nurseries. It is a pretty shrub of moderate growth, bearing white, Arbutus-like flowers in autumn, and requires peat soil. There are several species, all worth growing, one of which, *Mexicana*, is an evergreen.

Cratægus. (Hawthorn.)—Some species of this beautiful and extensive genus should be in every garden, and none are more beautiful than the numerous varieties of the *C. oxyacantha*. Although most of the species grow naturally from ten to twenty feet, or more, high, all of them may be grafted on low stems of the common Hawthorn. The double scarlet-flowered and golden-berried varieties of *oxyacantha*, with the species *flava*, *odoratissima*, and *tanacetifolia*, are among the best, and are generally kept by nurserymen.

Deutzia.—This genus is nearly allied to the Syringa, and comprises several very desirable shrubs. *Scabra*, the earliest introduced, is now pretty well known, and has taken a high rank. It produces an abundance of white fragrant flowers, and small plants blossom freely. The other species are *corymbosa*, *staminea*, *sanguinea*, and *gracilis*. *Corymbosa* we have never been able to flower, although we have tried it in a variety of soils. *Gracilis*, the most recently introduced species, is a charming little plant, and with *D. scabra* should be procured by everybody. Both may be had cheap, and are quite hardy. Increased by cuttings of the ripened wood.

Forsythia viridissima.—A very beautiful shrub, and valuable on account of its early flowers. It is sometimes grown against a wall, but is hardy enough for a standard in all but the most northern counties. The blossoms are large, of a yellow tint, and copiously produced along the previous year's wood; the shoots

should, therefore, never be shortened until after flowering. It will grow ten feet high, but may be kept dwarfer by pruning.

Gordonia.—In warm situations, one or two species of this genus will succeed. They belong to the Camellia tribe, and produce large white or yellow flowers; those of *lasianthus* are of the latter tint; *pubescens*, which is more common, has white blossoms. Where a wall can be afforded them, they will do better than in the open shrubbery.

Halesia tetraptera. (Snow-drop Tree.)—Although this interesting plant may be procured for a small sum, it is seldom seen in the shrubbery. The flowers, which are white, appear before the leaves, and are succeeded by a fleshy-winged fruit. It is very ornamental, and deserves more extensive cultivation.

Halimodendron.—The *H. argenteum* is a most beautiful *leguminous* shrub, or small tree, with pink flowers in drooping bunches. It may either be grown on its own roots or grafted on the Laburnum, or Thorn-Acacia. On a lawn it would make a very handsome appearance. It flowers in May.

Ribes.—The varieties of the *R. sanguineum* are now as common as the Gooseberry; but there are many other species equally interesting, such as *speciosum*, *Gordonianus*, *cereum*, *aureum*, and *floridum*, all of which should be obtained. To keep the plants of a compact form, they should be closely pruned in autumn, as in the case of the common Gooseberry, and will then flower more freely. At most nurseries several species are kept.

Spiræa.—The Spiræas are rather numerous, and all are pretty. There are three species which we would recommend for a small garden, *callosa*, *ariæfolia*, and the double-flowered variety of *prunifolia*. The first has flowers of a deep lake colour, in flattened corymbs, produced from the end of July to September, and grows about four feet high; *ariæfolia* is a very elegant species, producing in June large drooping bunches of whitish flowers, which have a charming effect; *prunifolia flore-pleno* is, perhaps, one of the most desirable of deciduous shrubs, on account of the early period at which it flowers, generally in April, and its double blossoms of pure white, with here and there a spot of green at the tips of the petals, are always much admired.

Virgilia lutea.—This handsome shrub, or rather small tree, is another of those subjects too rarely seen in cultivation at the present day. If its merits alone are considered, it ought to be as common as the Laburnum, which it resembles; but its flowers are produced a month or six weeks later than those of that well-known shrub. It is perfectly hardy, and will attain the height of fifteen feet, but may be trained to a dwarfer form by stopping the leading shoots while young. The classical associations of this beautiful plant would make it desirable, even were it less ornamental.

Weigela rosea.—Few of Mr. Fortune's Chinese plants have become so popular as

this interesting shrub, for nothing can exceed the beauty of its appearance in spring, when covered with its large pink and white flowers. In good soil (and so fine a plant deserves to be supplied with a generous compost) it grows five feet high, forming a handsome bush. It is quite hardy; although, in very exposed situations, it sometimes suffers from frost, after it has commenced its growth in spring. The soil in which it is grown should be easily penetrable by the roots; if of close texture, a little peat, or leaf mould, should be dug in before planting. It will flower more freely if the shoots are shortened in early spring. In poor, sandy soil, it does not grow so large, but it blossoms more abundantly, we think, than in richer materials.

In the preceding lists we have taken care to enumerate only such shrubs as are procurable for a moderate sum, and which, with a few exceptions, are generally kept by nurserymen. All of them are suitable for gardens of limited extent; and although, did our space permit, the list might be greatly extended, the shrubbery, which includes those we have named, will present attractions of no common order.

In our next volume we hope to figure many of the recent introductions in this class of subjects, which, from their comparative rarity, and consequent high price, we have omitted in the foregoing pages.

NOTICES OF NEW OR RARE PLANTS.

ESCHSCHOLTZIA TENUIFOLIA (*Papaveraceæ*).—This is an extremely pretty little plant recently introduced by Messrs. Veitch from California. Its habit is dwarfer and more compact than that of the other species, but its foliage is of a similar glaucous hue, and much divided, with linear-subulate segments. Though the flowers are scarcely one half the size of those of *E. Californica*, their bright sulphur-yellow tint is very pleasing, and they are quite as numerously produced. The thickened summit of the footstalk, or receptacle, peculiar to this genus, is in this species expanded, into a short tube which surrounds the base of the flower. It is increased by seeds, and requires only the same treatment as the commoner species.

RUBUS BIFLORUS (*Rosaceæ*).—A very handsome bramble, introduced by Messrs. Veitch and Sons, from Nepaul. It is of very tall growth, often reaching the height of ten or twelve feet; and, its stems being covered with a very white pulverulent substance, it forms a conspicuous object. The flowers are white, produced in May or June, and are, as the specific name implies, generally in pairs. They are succeeded by a deep amber-coloured fruit, as large as the Raspberry, which, when

young, is enclosed in the erect calyx, but as it ripens, the segments become reflexed. It is not only a very ornamental species, but will probably prove valuable for its fruit.

Sabbatia campestris (*Gentianaceæ*).—A fine half-hardy annual from Texas, growing about six inches high, with the habit and flowers of a *Chironia*. The stems are four-angled, somewhat procumbent unless supported, with opposite, sessile, oblong leaves, quite entire. The flowers are more than an inch across, of a bright pink with a yellow eye, and are produced singly, on long stalks, near the extremity of the shoot; the corolla monopetalous, with a salver-shaped, five-lobed limb. It should be sown in March, in pots of light vegetable soil, on a hot-bed, and will flower in the open border in August and September. It seems to require a moist soil, and a partially shaded situation. Introduced in 1853 by Mr. Carter, Holborn, from whom seeds may be obtained.

Whitlavia Grandiflora *(Hydrophyllaceæ)*.—A beautiful annual with the habit of the *Eutoca viscida*, and with similar foliage. The flowers, of a rich deep blue, are produced in terminal, many-flowered, circinate or curled racemes, which unroll gradually as in *Eutoca*. The corolla is, however, very distinct in its form, having a campanulate tube about an inch in length, with a spreading, five-lobed limb. The genus is further distinguished by having an oblong retuse scale at the base of the stamens, which are five in number. It is one of the numerous importations of Messrs. Veitch, from California, and requires the same treatment as most of the hardy annuals from that quarter. Seeds of it may be procured of all the principal seedsmen.

LACHENALIAS.

We know no spring-flowering bulbs more worthy the attention of window gardeners than these very pretty, though somewhat common plants. Their culture is so exceedingly simple, that it is almost impossible to fail; and they increase so fast, that the offsets from two or three bulbs would, in a couple of years, be sufficient to fill several pots. Their habit, too, is extremely neat and unobtrusive, and the spotted foliage of most of the species gives them additional interest. They succeed quite as well on the window as in the greenhouse, and, during the six months of the year in which they are dormant, they require no attention whatever.

The most common species is *L. tricolor;* but, where procurable, *pendula*, *quadricolor*, *pustulata*, and their varieties are to be preferred. These are not to be met

with at every provincial nursery; but they may be had in a dry state of most of the London Florists and Seedsmen.

Pendula is of very graceful drooping habit, and its leaves are beautifully blotched with black; its flowers resemble in their tints those of *tricolor*, but are larger, and produced upon a stouter scape. The flowers of *quadricolor* resemble those of *pendula*, but are much brighter in their tints; those of *pustulata* are purple and green, and the leaves of this species are curiously blistered. There are also a few species with pale blue flowers; of these, *pallida* and *mutabilis* are the best. The former is sometimes kept by the Florists: we observe it in the Bulb Catalogue for the present season of Mr. J. Carter, Seedsman, 238, High Holborn, who has, too, eight or ten other species on sale. Those we have named are all spring flowers, blooming from February to May.

They usually commence their growth early in autumn; and when it is necessary to divide the clusters of bulbs, it should be done before the roots are protruded. Three or four full-sized bulbs may be placed in a four-inch pot; and the soil most proper for them is a mixture of leaf-mould and sandy loam; they are not, however, very particular in this respect, almost any light, porous soils will suit them, but those of a heavy, close, retentive character must be avoided. The pots must be well drained with broken crocks, and in planting, the bulbs should be placed one or two inches below the surface. For a month or six weeks they may be left exposed out-doors, if placed on some hard material, but this exposure is not essential. During the early stages but little water will be required; when the leaves are far advanced, larger supplies may be given, but care should be taken that the heart of the plant is kept dry, or the embryo flower-stalk may be injured. After flowering, water should be gradually withheld; and when the leaves are quite withered, the pot may be placed away until the return of autumn. It is not necessary to divide the bulbs each season, but the cluster should be, in any case, repotted in fresh soil. The bulbs of the Lachenalias are nearly hardy, but they can not be recommended for cultivation in the open border, unless protected when in flower.

EXTRAORDINARY SPECIMEN OF DIELYTRA SPECTABILIS.

A CORRESPONDENT of the *Floricultural Cabinet* gives an account of a remarkable example of this beautiful plant, growing in the garden of a gentleman, at Lexden Heath, near Colchester. It was planted in 1850, and was then only a few inches

high. During that and the following season it flourished wonderfully, but this year it reached a size and form surpassing anything of the kind yet seen. In the middle of August it became necessary to cut it down on account of its enormous size, to prevent it from destroying some neighbouring roses; and it then measured upwards of thirty feet in circumference, and five feet in height! Between April and August, it frequently bore upwards of two hundred perfect spikes of flowers at once; and it had not a single stem or branch broken by the wind, although in a very bleak and exposed situation. This luxuriance is attributed to its being planted in soil of the richest kind. In the same garden, there are also extraordinary specimens of the *Myoporum tenuifolium*, the two sorts of *Vinca*, and of the new *Cantua dependens*, said to be of a size far beyond anything yet attained in our best managed greenhouses.

It would be difficult to exaggerate the value of the *Dielytra*, which is assuredly one of the most valuable hardy plants ever introduced; but we think there must be some error in the size attributed to the above mentioned specimen—a diameter of ten feet for a single plant seems hardly credible, even in these days of progress. We can but wish it may be true; for what has been once done may be repeated, and, at all events, this much is certain, that a group of four or five specimens would make a highly attractive object.

We find the *Dielytra* to be of very easy increase by cuttings; not only may the terminal and side shoots be taken off and struck, but every joint of the stem will make a plant, provided it be furnished with a leaf and axillary bud. They root readily without bottom heat, under a tumbler or bell-glass, at almost any season of the year. It is necessary, however, to plant them in very sandy soil, well drained, and also to wipe the interior of the glass each morning, or they are liable to damp off.

We observe that a suggestion has been made in the pages of a contemporary with regard to the cross-impregnation of the plant with the *D. eximia*. We could, however, hint that far more striking results would be obtained by hybridizing it with the pollen of some of the yellow species of *Corydalis*, to which genus it is nearly related. All the Dielytras, with one exception, have pink flowers, and *spectabilis* being by far the finest species, we do not think any great improvement would be obtained by intermingling the inferior one with it. The flowers of most of the *Corydalis* are small; but their yellow tint offers a chance of some great variation in colour, supposing that the two genera will hybridize. When the flowering season for these plants arrives, we will make a suggestion as to the mode in which the operation should be performed.

END OF VOL. I.

INDEX.

PLANTS FIGURED.

		PAGE
Acacia grandis	*to face page*	113
Alstrœmeria Van Houtteii	,,	33
Antirrhinum Hendersonii	,,	129
Berberis Darwinii	,,	97
Bouvardia aurantiaca	,,	145
Calceolaria Wellington Hero	,,	129
Calochortus venustus	,,	17
Campanula coronata	,,	129
Cantua dependens	,,	49
Ceanothus dentatus	,,	97
Clematis cœrulea	,,	33
Cyclamen persicum punctatum	,,	81
Delphinium Hendersonii	,,	129
Dielytra spectabilis	,,	1
Escallonia macrantha	,,	49
Garrya elliptica	,,	81
Gelasine azurea	,,	161
Gladiolus Blouetianus	,,	145
Grammanthes gentianoides	,,	17
Habrothamnus fasciculatus	,,	17
Lardizabala biternata	,,	65
Lilium colchium	,,	49
Lobelia hybrida	,,	145
Martynia fragrans	,,	33
Microsperma bartonioides	,,	161
Mitraria coccinea	,,	65
Œnothera prostrata	,,	161
Oxalis cernua	,,	1
Oxalis elegans	,,	161
Pelargonium Unique	,,	1
Pentstemon gentianoides	,,	161
Pentstemon speciosum	,,	17
Phlox Drummondii Mayii	,,	145
Plumbago Larpentæ	,,	119
Pompon Chrysanthemums	,,	65
Potentilla Menziesii	,,	33
Rhododendron lanatum	,,	113
Ribes albidum	,,	1
Salvia bicolor	,,	49
Sollia linearis	,,	97
Tacsonia manicata	,,	97
Thunbergia alata alba	,,	33
Torenia Asiatica	,,	1
Tritonia aurea	,,	81
Tropæolum speciosum	,,	17
Viola pyrolæfolia	,,	65

PLANTS NOTICED.

	PAGE
Acacia verticillata	63
Arbutus magnifica	140
Cerasus ilicifolia	140
Chamœrops excelsa	95
Chrysanthemum Hendersonii	95
Collinsia multicolor	63
Cypella Herbertii	169
Desfontainea spinosa	63
Echeandia terniflora	141
Eschscholtzia tenuifolia	184
Eugenia Ugni	95
Gaura Lindheimeri	167
Geranium Hendersonii	95
Geranium Shrubland Pet	95
Gynerium argenteum	63
Holböllia acuminata	63
Homeria lineata	170
Jasminum nudiflorum	96
Lapageria rosea	64
Lilium giganteum	64
,, Wallichianum	141
Œnothera cæspitosa	166
,, macrocarpa	166
,, speciosa	166
,, taraxicifolia	166
Paulownia imperialis	141
Pentstemon Baccharidifolius	64
,, Kellermannii	141
,, Wrightii	96
Rubus biflorus	185
Sabbatia campestris	184
Salvia candelabrum	64
,, nova	96
Saxegothea conspicua	96
Skimmia japonica	142
Tropæolum pendulum	64
Viburnum macrocephalum	64
Whitlavia grandiflora	185

MISCELLANEOUS.

Anemone, the Culture of	159
Cactaceous Plants, their Winter Management	138
Cape Bulbs as Window Ornaments	142
Chrysanthemum, the, in China	111
Cupressus funebris, or Weeping Cypress	90
Deciduous Shrubs, Select List of	181
Disadvantage of Pot-grown Shrubs	127
Evergreen Shrubs, Select List of	178
Extraordinary specimen of Dielytra spectabilis	187
Hardy Plants of the Lily tribe	156
Hardy Perennials	29, 45
Hardy Shrubs	177
Hybridizing, Process of	107
Inconspicuous Props for Plants	80
Lachenalias, Culture of	182
Microscope, the, and Flower Garden	15
New Plants, List of	62, 95, 140, 180
Ornamental Trees & Shrubs, Practical Hints on Planting, by Messrs. Standish & Noble	127
Proper Season for Transplanting	138
Protection of Half-hardy Plants in Winter	170
Rhododendrons, Culture of	61
Seeds, their structure and functions	58
Shrubs, hardy, evergreen, and deciduous	178
Sikkim rhododendrons	118
Summer climbers	76
Tree mignonette	79
Window Gardening	73, 91, 124, 175



Collinsia multicolor.



Bomarea acutifolia.



Skimmia Japonica.



Fortunes Yellow Rose.

THE

ENGLISH FLOWER GARDEN.

COLLÍNSIA MULTÍCOLOR.

Many-coloured Collinsia.

Linnean Class—DIDYNAMIA. *Order*—ANGIOSPERMA. *Natural Order*—SCROPHULARIACEÆ.

WHO does not remember the enthusiasm excited among Florists of all classes on the first introduction of the Collinsias and other Californian annuals by poor Douglass! They may, indeed, be said to have created a new era in Decorative Horticulture; and although their beauty has been, to some extent, eclipsed by the numerous showy perennials since brought into cultivation, it is very doubtful whether they do not yet constitute the most valuable class of plants for early summer flowering that we at present possess.

Every gardener knows how difficult it is to keep up a gay appearance during the sort of interregnum which succeeds the flowering of the spring bulbs, and before the majority of the herbaceous perennials and bedding plants are in bloom. For filling this void, the autumn-sown Californian annuals are unrivalled; and, indeed, a succession of sowings would produce throughout the season an effect but little inferior to that obtained by the employment of any other plants.

It affords us therefore great pleasure that we are enabled to commence our second volume with a figure of the charming *Collinsia multicolor*, a species which will, we are sure, obtain as large a circle of admirers as any of those previously introduced. It is quite as robust in its habit as the well-known *C. bicolor*, growing from twelve to eighteen inches or more high; and its flowers are, we think, the largest and handsomest of the genus, though their colour is less intense than in one or two older species. The foliage is larger and more coarsely toothed than in *bicolor;* but it is chiefly by the purple tint of its floral leaves or bracts, which add greatly to the beauty of the plant, that it is distinguished from most, if not all other species. The bracts beneath the lowest whorl of blossoms are cordate, bluntly toothed, and pointed; the middle ones are much narrower and without

teeth; the upper ones quite abortive. The flowers are on rather long pedicels, which, as well as the calyx, are almost free from glands. The segments of the calyx are very narrow, shorter than the corolla, and three-ribbed. The lower lip of the corolla is lilac, but the pouch-like cavity of the middle lobe is crimson, though externally this tint is hardly visible. The upper lip of the flower is also lilac, but with a large quadrangular white spot in the centre, speckled with bright rosy purple.

The pouch-like cavity of the lower lip is an interesting feature in the Collinsias, and distinguishes them from the Bartsias and Euphrasias, to which they are allied. Within this cavity lie concealed the stamens and style; when irritated by heat, it is said, in some of the species, to open occasionally for an instant.

The cultivation of the *Collinsia multicolor* is, as may be inferred, of the easiest description. It is only necessary to sow the seed thinly, in patches, in the open border where the plants are to bloom; and this may be done any time between the beginning of March and the end of April. As the seeds are comparatively small, they must not be too thickly covered with earth, especially if of a heavy, adhesive nature. In soils of this character, it is a good plan to cover the seed with a little pulverized sandy loam.

The very unfavourable springs of the last few years have, however, rendered autumn sowing more than ever desirable; most of the hardy annuals, such as the Clarkias, Collinsias, Leptosiphons, Godetias, Limnanthes, and others, if sown in September in poor thin soil, will stand the winter, make finer plants, and flower much earlier than any sown in spring. For this purpose, a small patch of reserve ground is necessary, and the poorer and drier it is the better, because in soil of this description the growth of the plants will not be so luxuriant, and they will be less liable to receive injury from severe frosts. In any case, they will need in hard weather the protection of a few bushes, and in spring they may be transferred in patches to the richer soil of the beds or borders. To many cultivators, however, spring sowing may be more convenient, and in favourable seasons the results are nearly as satisfactory, though the flowers are necessarily produced at a later period. Many of the failures with annual seeds are due, we believe, to their being sown at too great a depth; and in other cases, to the sharp frosts which often occur during their germination, and which effectually arrest all further growth. In most instances, a few furze bushes over each patch would be sufficient to obviate this cause of failure, and every garden should have a supply of this very useful protector. The bushes must, however, be removed as soon as the growing plants are an inch or two high, or their growth will be weak; and at that stage of their progress there is little or nothing to be feared from frost.

Besides the *C. bicolor*, that most generally met with, there are several very pretty species deserving cultivation. One of these, the *C. verna*, we desire especially to

recommend to our readers. It is less robust than *bicolor* and *multicolor*, but the deep blue tint of the lower lip of the blossoms renders them exceedingly attractive. This species produces less seed than some others, and it is, doubtless, to this circumstance that its relative scarcity is attributable. The beautiful colour of its flowers suggests the expediency of attempting to hybridize with it, the larger but paler-flowered species. Could the lilac of the blossoms of *C. multicolor* be deepened by the admixture, to purple, its beauty would be greatly enhanced; and we see no reason to doubt the success of the experiment. The cross-impregnation of annuals is, as far as we are aware, a thing very rarely thought of; but we believe that improvements as important could be accomplished in this class of plants as any which have been effected among the perennials.

The principal other species in addition to those already named, are *grandiflora*, *heterophylla*, *parviflora*, *sparsiflora*, and *tinctoria*; the two first are of some interest, and may be grown where a large selection of annuals is required; *tinctoria*, so named from the numerous glands covering the calyx, communicating a yellow stain to the fingers when touched, is not yet, we believe, in the hands of the trade.

The *C. multicolor* is one of Messrs. Veitch's numerous importations, and although introduced from California but a very few years since—not longer ago, we think, than 1848—it will, as well as the *C. bartsiæfolia*, another interesting species obtained by these gentlemen from the same locality, be offered for sale the present season by the principal seedsmen; so that our readers will speedily be able to possess themselves of this truly handsome annual.

The genus, *Collinsia*, was established by the American naturalist, Nuttall, in honour of Zaccheus Collins, Vice-President of the Academy of Natural Sciences, Philadelphia.

BOMARÉA ACUTIFÓLIA.

Acute-leaved Bomarea.

Linnean Class—HEXANDRIA. *Order*—MONOGYNIA. *Natural Order*—AMARYLLIDACEÆ.

IT can hardly excite surprise, that of the immense number of exotic plants introduced into this country, many of the older ones should at times be overlooked, and become eventually so rare from neglect, as to need resuscitation and reintroduction to public notice. The *Bomarea acutifolia* is an interesting example of these neglected plants. We believe it has been several times imported as a novelty, but is still comparatively little known; and as one of the objects of the

English Flower Garden is the illustration of old plants possessing merit, as well as those of more recent discovery, we are induced to give it a place among our 'gems.'

The Bomareas are very closely allied to the Alstrœmerias, and were formerly included with them. They differ, however, from the latter in their twining stems, and several details of their floral structure. In the genus *Alstrœmeria*, the two upper segments of the perianth differ generally from the others, either in form or colour, so as to give the flower an unsymmetrical appearance. In *Bomarea*, it is destitute of this irregularity, the two series composing the flower, although differing slightly from each other, being composed of segments uniform in shape and colour.

The two upper divisions of the flowers of the Alstrœmerias have their margins, from the middle to the base, turned inwards, so as to form a sort of channel or tube, which secretes a sweet fluid. In the Bomareas, *all* the three divisions composing the inner series are, more or less, tubular and nectariferous, though this peculiarity is not so marked in *acutifolia* as in *hirtella* and some others. To these distinctions we may add that the flowers of the Alstrœmerias are more spreading than those of the allied genus. In both genera, the seed-vessel is six-angled in its green state; but when ripe, that of *Bomarea* becomes triangular, the intermediate angles being obliterated. It is also important to remark, that there is, as our figure will shew, a great difference between the upper and under sides of the leaf in *Bomarea*, whilst in *Alstrœmeria* the two surfaces resemble each other very closely.

We trust these details will not be altogether without interest. We have hitherto adopted the course of pointing out all the most remarkable features in the œconomy of the plants selected for illustration; and believing, as we do, that a garden very inadequately answers its end when it ministers only to the senses, we shall continue the same mode of treatment so long as it meets with the approbation of our subscribers.

The *Bomarea acutifolia* is a tuberous-rooted plant, with twining stems, growing in the open ground to the height of six feet or more. The leaves are, as the trivial name suggests, long and pointed, smooth, and dark green on their upper surface, but paler, and strongly nerved on their under side, the nerves being clothed with numerous hairs. A curious feature, common however to all the species, as well as to the Alstrœmerias, is the twisted petiole or leaf-stalk, by which the position of the leaf is reversed. It would seem as if Nature had, in a careless mood, originally attached the leaves upside down, and afterwards corrected the error by the very simple expedient of twisting the foot-stalk. The flowers are produced in an umbel, terminating the stem, and vary in number from six to twelve blossoms, which are borne singly on a pubescent foot-stalk, and furnished at

the base with a many-leaved involucre. Their general form will be seen by a reference to the figure, which represents them about two-thirds the natural size. The inner segments, which are slightly the broadest, are of a pale orange; the outer ones of an orange-red, with a green spot at the tip. They are usually produced in September, and as each root throws up several flower stems, a succession of blossoms is maintained until the arrival of the autumnal frosts.

The plant luxuriates in a rich sandy loam, and when the soil is naturally heavy and retentive, a considerable proportion of sand should be mixed with it before planting the roots. In low, moist situations, it will also be highly desirable to place a few inches of drainage beneath the soil on which the tubers rest. This will give them a much better chance of enduring frost, for it is only in dry soils that they can be considered hardy. The tubers should be planted at least six inches deep, in a warm aspect; if at the foot of a south wall, the plant will flower finer than in more exposed places.

When grown against a wall, the stems of the plant may be secured to a narrow trellis; in other situations a neat stick will be requisite. In those localities in which there may be some risk in leaving the tubers in the ground throngh the winter, they should be carefully dug up soon after the stems have died down, and be preserved in pots of sandy loam, in a dry place until spring. It is not advisable to remove the soil entirely from them, or they will shrivel, and perhaps decay.

The increase of the *B. acutifolia* may be affected by division of the tubers, or by seeds, which are usually ripened freely. Like those of some other Endogenous plants, the seeds are apt to become so hard by keeping, especially if in a very dry place, that they will only germinate after a long interment, unless sown as soon as ripe, which is not always practicable or desirable.

This dessication may be prevented to some extent by burying the seeds in a pot of sandy loam, which should be preserved in a dry, cool place. It is usual to sow them on artificial heat in spring, but stronger plants are obtained by sowing in the open borders under a hand-glass, about the middle of April. Soil of a light porous nature will be indispensable, and when the plants appear above ground, air must be admitted, but they must be covered at night, as long as there is any danger of frost. The snails and slugs are very partial to this genus, as well as to the Alstrœmerias, and should be watched for, or they will eat off a batch of seedlings in a single night. Some of the strongest plants may be expected to flower the second year, but generally blossoms are not produced until the third season.

The *B. acutifolia* is a native of the temperate parts of Mexico, where several other species are found. There is a spotted variety, *punctata*, which is very pretty, but it exists, we fear, only at the Kew Gardens. The principal others, are *hirtella*, which is rather more hardy than *acutifolia*, with red, yellow, and green flowers; *ovata*, a half hardy Chilian species; and *simplex*, from Peru, with pink blossoms. *B. salsilla*

and *B. edulis* are both stove plants; the tubers of the latter form an article of food in some of the West India Islands. There are several other interesting Peruvian species, but they have not, we believe, yet been introduced in a living condition to this country.

The genus, *Bomarea*, was first separated from *Alstræmeria* by the French Botanist Mirbel, and has since been confirmed by Dr. Herbert; the name appears to be commemorative of some Spanish Botanist; but for this we have no exact data. In enquiring for the Bomareas, our readers must bear in mind that they are more generally known by their older appellation. The *B. acutifolia* is kept by Messrs. Lane, Berkhampstead, and seeds may be procured at some of the London seed shops, certainly of Mr. Carter, High Holborn, and Mr. Charlwood, Covent Garden.

SKÍMMIA JAPÓNICA.

Japanese Skimmia.

Linnean Class—POLYGAMIA. *Order*—MONŒCIA. *Natural Order*—AURANTIACEÆ.

How great are the privileges enjoyed by English Horticulturists of the present day! For their gratification every quarter of the globe yields up its choicest productions, and the fruits and flowers of many a widely separated clime are gathered together on our shores, to minister in rich abundance to their wants and pleasures, and to testify to the love and bounty of the Great Creator.

We have already figured in our previous volume many evergreen shrubs of much beauty, but few of them equal in interest the remarkable addition to our exotics, which we now have the good fortune to introduce to our readers.

The Orange-tribe is usually associated in our minds with pictures of the balmy south and ever smiling skies;

'Kennst du das Land wo die Citronen blühn?'

and with regard to the greater part of the plants composing the Order, these impressions are perfectly correct, all of them, with we believe only one exception, being natives of warmer latitudes than our own, and that exception is the *Skimmia Japonica*. Loaded in spring with deliciously fragrant flowers; in winter studded with berries, rivalling in the brightness of their tint those of the Holly, and possessing evergreen foliage, which would alone make it a great acquisition even without its fruit and flowers, can we doubt the reception this truly ornamental shrub will meet with among Florists of every grade?

The *Skimmia japonica* was first discovered by Thunberg in Japan, but it is found also in China and the Himalaya. The plant from the region last named, has been long known to Botanists under the name of *Limonia laureola;* but recent investigation has shewn it to be one and the same with the Japanese plant. According to M.M. Siebold and Zuccarini, it grows throughout Japan among the mountain forests, but always in scattered specimens; from which circumstance it is comparatively rare. It was found by Siebold near the port of Nangasaki, about 1200 feet above the level of the sea. In our notice of this shrub at page 142 of our previous volume, this height is, by a misprint, given as 12,000 feet. In the wild state it scarcely exceeds four feet, but the cultivated plants are said to attain a greater height. The largest specimen in this country is not, however, at present more than eighteen inches high. It is of very compact growth, the lower branches being somewhat procumbent. The foliage is thick and fleshy, of a rich deep green colour, five or six inches long by one and a half broad, pointed and tapering at both ends, smooth on both sides, and disposed in tufts of three or four each. They are said to remain attached to the plant three or four years, and their age may be distinguished by the length of the interval between the different groups. In the wild plant, the leaves are more acute than in the cultivated one.

The flowers which appear in April and May, are of a pale greenish yellow tint, and are disposed in dense terminal panicles; occasionally the buds have a pale tinge of rose just before expansion. They are deliciously fragrant, especially in the evening, the odour resembling that of the *Daphne indica.* The same plant produces both perfect and imperfect flowers, that is to say, flowers containing both stamens and pistil; others producing stamens only; and a few in which these are abortive, the pistil alone being perfect. The calyx is divided into five persistent segments; the corolla into five deciduous petals. Ovary superior, four-celled, each cell containing a single pendulous ovule, and surrounding the base of the ovary, is a four-lobed fleshy disk. Style very short, with a thick four-lobed stigma. The berry is at first fleshy, but afterwards becomes a dry four-celled fruit, with cartilaginous cells, each containing one pendulous seed. The berries are ripened in October, and remain attached to the plant during the greater part of the winter; at the moment we write, those on Messrs Standish and Noble's plant appear more beautiful than ever.

Although it is at present scarce, the abundance with which they are produced will soon enable it to be increased a thousand-fold; it will, therefore, in the course of one or two seasons, be, we hope, within the reach of most cultivators. It is also multiplied by cuttings, and succeeds well in a mixture of peat and loam.

In our previous notice of this plant, we stated that it was said to produce flowers when only two or three *inches* high, and fruit at *six inches;* and although at the time we imagined this to be an error, it appears to be perfectly correct, its

fortunate possessors having personally confirmed this statement. This tendency to blossom and fruit in so young a state is very remarkable, and would prove an additional recommendation were any required.

As to its capability of bearing entire exposure, Messrs. Standish and Noble informs us that they have no doubt that it will prove perfectly hardy in this country; and this will readily be believed when it is known that, on the Himalaya, the plant is often found at elevations where it is covered with snow during a part of the year. It is said to require some protection in Holland, where it was first introduced; but this statement needs confirmation.

The true affinities of this remarkable genus have only recently been detected. It has been, by some Botanists, classed with the Holly-worts *(Aquifoliaceæ)*; and the resemblance of its bright red berries to those of the Holly, appears, at first sight, to favour such a supposition. But the fleshy disc surrounding the ovary of the *Skimmia*, and its dotted leaves, distinctly point out its relationship with the Orange-worts, to which family it was first referred by De Candolle. The transparent glandular spots of the foliage are hardly perceptible, however, in the cultivated plant, though they are very evident in the wild specimens. It differs from most other plants of the Orange tribe, in the absence of the winged petiole generally present in that Order, and also in its seeds containing albumen in considerable quantity, surrounding the greenish embryo. Its place is certainly at the extreme limits of the Order, and it may be regarded as a connecting link between it and the Rue tribe.

It is difficult to believe that any of the *Aurantiaceæ* possess hurtful properties, but according to the best authorities, the Chinese and Japanese regard the berries as poisonous, and the native term *Sikimi*, from which *Skimmia* is derived, signifies *noxious fruit*. The leaves have an aromatic, but slightly acrid taste. The Japanese, with whom the plant is a great favourite, have a cultivated variety, producing *white* berries, but it has not yet been introduced to this country.

The *Skimmia japonica* is one of Mr. Fortune's numerous introductions, having been sent by him from the north of China to Messrs. Standish and Noble of Bagshot, on his second visit to that country. We learn that this gentleman is about to proceed on a third mission to the Chinese territory, to procure tea-plants for the East India Company; and we can but wish him, not only a prosperous voyage and safe return, but also, that the same good fortune may attend his Botanical researches as on his previous visits. Notwithstanding the rich harvest already gathered, we have no doubt that there are many valuable plants yet to be discovered.

We have to express our great obligations to Messrs. Standish and Noble for affording us an opportunity of figuring this beautiful plant, as well as other interesting Chinese subjects which we hope speedily to place before our readers. The list of exotics is now so rich in hardy evergreens, that to those possessing gardens of only

limited extent, selection has become a difficult task. If, however, there be one shrub, the merits of which entitle it to a place in even the smallest collection, that plant is undoubtedly the *Skimmia japonica*. Our figure represents the plant about one half the natural size.

FORTUNE'S
DOUBLE YELLOW CLIMBING ROSE.

Linnean Class—ICOSANDRIA. *Order*—POLYGYNIA. *Natural Order*—ROSACEÆ.

ALTHOUGH the restricted limits of our plate render it impossible to do adequate justice to this remarkable rose, the comparative rarity of the yellow varieties of this peerless family, induces us to select it for our first example of the 'Queen of flowers.' Its peculiar tints are scarcely imitable by art, but some idea of it may be formed by those acquainted with the variety of the China rose, called Ophirée, to which, however, it is very greatly superior.

Its history affords us an instructive example of the errors of cultivation, resulting from inattention to the habit of plants; and many other instances could be cited of valuable subjects condemned as worthless, owing to ignorance of the true mode of treatment.

Of the origin of the *Wang-jang-ve* rose—for such is its Chinese designation—nothing is known; it is, however, in all probability only a variety, and not a true species. It appears likely to ripen seed in favourable seasons, and may therefore be the means of introducing yet further diversity of tint among the already varied hues of this unsurpassed genus of plants Its flowers are very large, our figure representing them less than one half the natural size; and are also very double. The purplish tint of the leaf stalk contributes not a little to the effect of the whole.

Our readers will be glad to learn that its price does not exceed that of the roses more generally grown, and we anticipate therefore, that its great merits will soon give it a place wherever fine flowers are esteemed.

We have been obligingly favoured by Messrs. Standish and Noble, of Bagshot, with the following remarks on its culture; and as these gentlemen were the first to discover its value, and to point out the treatment best suited to it, their hints will doubtless be properly appreciated by our readers.

'Although this beautiful plant has been cultivated in our gardens for several years, its merits remained comparatively unknown till the past season. It was first received by the Horticultural Society of London, from Mr. Fortune, who discovered it, on his first visit to China in 1845, in the neighbourhood of Ning-po. From some cause, attributable either to the mode of treatment it received, or to the

situation it was placed in, it did not justify the expression of a favourable opinion when growing in the Society's garden at Chiswick. In other localities, and under different treatment, it assumed, however, quite another appearance; so much so, indeed, that all who saw a plant of it in full blossom, were charmed with its beauty. Nor could it be otherwise; for the profusion with which its flowers are produced, and their novel and beautiful colour, are qualities eminently calculated to command admiration. In the past summer we had two large specimens in our nursery, which we had grown as specimens, literally covered with flowers. They were striking objects, and attracted much attention. The comparatively little success which has attended its cultivation, has arisen, in a great measure, from its economy not having been understood; most cultivators having, from ignorance in that respect, destroyed by injudicious pruning the flowers they were anxious to produce. The secret in its successful management consists almost wholly in the mode of pruning. If the branches are closely cut in, no flowers—or at least, but a few weak and ill-formed ones, will be produced; and from this circumstance, many who attempted its management and failed, pronounced it to be an inferior kind, and not worthy of cultivation. The flowers are produced directly from the wood of the past season, in the same manner as the Persian Yellow, and Banksian Roses; and the mode of pruning employed successfully with them, must be adopted with the one now treated of. Whether trained to a wall or kept as a standard, the great point is, to encourage the production of healthy shoots, thinning but not shortening them, or only slightly, and affording them every facility to become properly ripened. This being secured, an abundance of flowers will follow as a natural consequence.

'With regard to soil, it is in no way particular; where the ordinary kinds of roses succeed, this will flourish equally well, in fact any common garden mould seems to suit it.'

'Although it is not, perhaps, readily classed among our cultivated Roses if the numerous divisions into which they have been broken are recognised, yet, with reference to its period of blooming, it is essentially a summer Rose. It, however, commences blooming at a very early period in the season, earlier than most others, and continues to produce a good succession of flowers, which remain a long time in perfection. The colour is a rich yellow, inclining to bronze, the outer petals often being strongly marked with lake; though the tints of the individual flowers on the same tree vary much. Those fully exposed have the colour alluded to, while others in the shade are paler, and exhibit a strong tint of lake. In conclusion we may say that no rose is of more easy culture, but though forming a very good plant on its own root, it is much best, and flowers with greater profusion, when budded on the stock in ordinary use. Cuttings of the half-ripened wood root very readily. A well-grown standard treated as we have described, forms a most beautiful object, and will not fail to be greatly admired.'

HARDY ANNUALS.

We have hitherto given this interesting class of plants far less attention than their merits entitle them to. This apparent neglect has not, however, arisen from any doubt of their value, but rather from an impression that they less needed the aid of illustrations than many other plants of slower increase, the abundance of seed ripened by most annuals generally ensuring their speedy diffusion.

The adoption of late years of the bedding system in most gardens of any extent, has contributed somewhat to the disuse of annual plants; but although their blossoms may lack the brilliancy and duration of the Scarlet Geranium and Verbena, they are exceedingly useful, as we have elsewhere remarked, at that early period of the summer when no bedding plant is in flower. How bald is the effect produced by a bed of verbenas when first planted out! Now this might be almost if not entirely obviated, by filling the bed in spring with autumn-sown annuals, transplanted from a reserve ground. These would many of them be in flower by the middle of May, and the Verbenas or other plants with which it was intended to occupy the bed for autumn flowering, would, if planted between the annuals, receive that protection which they so often need in our changeable spring weather. As the bedding plants advanced in growth, the annuals could either be thinned out, or entirely removed, as circumstances might dictate.

To cultivators of limited means, the small cost at which a display of flowers may be effected with annuals, forms no slight recommendation; and we know no class of subjects which so well deserve to be termed emphatically plants for the million. We intend figuring in the present volume several new and interesting species; and in the meantime, the following list of some of the most showy and desirable of those now in cultivation, may be of service to such of our readers as are inexperienced in this class of plants.

A few of those in our list such as the *Schizanthus*, *Calendrinia*, and others, are often treated as half-hardy annuals; but they succeed much better when sown in the open borders, the protection of a furze bush being afforded them in the earliest stage of their growth, as suggested at page 3 of the present number.

	HEIGHT IN FT.	COLOUR.
Anthericum annuum	¾	Yellow
Argemone grandiflora	3	White
,, speciosa	2	Yellow
Bartonia aurea	2	Yellow
Blumenbachia insignis	trails	White & Yellow
†Calandrinia discolor	1½	Bright Rose
† ,, umbellata	¼	Crimson
,, speciosa	¼	Crimson
Calliopsis Drummondii	2	Yellow & Brown
Campanula Lorei	¾	Blue & White
Centaurea depressa	1	Blue
Clarkia pulchella	2	Pink
,, ,, alba	2	White
Centranthus macrosiphon	1½	Pink & White
Collinsia bicolor	1½	White & Lilac
,, multicolor	1½	Lilac & Crimson

	HEIGHT IN FT.	COLOUR.
Collinsia verna . . .	1	Blue and Purple
Dracocephalum canescens .	2	Blue
Erysimum Peroffskianum	1½	Orange
Eschscholtzia compacta .	¾	Orange
,, ,, alba	¾	Cream
Eucharidium concinnum .	½	Pink
Eutoca viscida	1½	Blue and Rose
Gilia tricolor	1½	White, Lilac, & Purple
Godetia Lindleyana . .	2	White and Rose
,, Wildenovii . .	2	Violet
,, Lansfordii . .	1½	Violet
†Heliophila trifida . . .	½	Blue and White
Hibiscus calisureus . .	1¼	Pale Yellow and Purple
†Ionopsidium acaule . .	¼	White and Violet
Kaulfussia amelloides alba	¼	White
Leptosiphon densiflorus	¾	Lilac
,, androsaceus	¾	White and Lilac
Limnanthes Douglassii .	½	White & Yellow
,, rosea . .	½	Pale Rose
Lupinus nanus.	1	Blue and Rose
Malopa grandiflora . .	3	White and Rose
Nemesia versicolor . . .	1¼	Various
Nemophila insignis grandiflora	trails	Blue
Nemophila maculata .	,,	White and Violet
Nolana prostrata . .	,,	Blue
,, grandiflora alba	,,	White
Oxyura chrysanthemoides	1	Yellow and White
Platystemon Californicum	½	Sulphur
Podolepis chrysantha . .	1	Yellow
,, gracilis alba .	¾	White
†Schistanthe peduncularis	1½	Rose and Violet
†Schizanthus pinnatus .	1½	Various
,, ,, Priestii .	1½	White
Sphænogyne grandiflora .	1	Yellow
†Tagetes tenuifolia . .	1½	Orange
Tropæolum perigrinum	climbs	Yellow
Viscaria oculata . . .	1	Rosy Purple
,, ,, alba . .	1	White

Wherever there is room, the above fifty species and varieties should all be grown. We have selected none that are not generally kept by all seedsmen. The dwarfest should be sown at the edge of the borders, the others at a distance varying with their height. Unless the season should be very mild, it will not be advisable to sow the seeds before the beginning of March; and those marked † will be safer if deferred till the end of March, unless they can be protected by a hand-light. Half-hardy annuals requiring a hot-bed, will be noticed in our next.

NOTICES OF NEW OR RARE PLANTS.

CALCEOLARIA CHELIDONIOIDES. (*Scrophulariaceæ*)—A very pretty half-hardy annual from Peru, introduced to this country by Isaac Anderson, Esq. of Edinburgh. Most of our readers are acquainted with the old *pinnata*, which is, we believe, the only other annual species besides the *C. chelidonioides*. This latter is a dwarf plant, of decumbent branching habit, clothed with viscid hairs, leaves pinnated, with lanceolate incised divisions. Flowers in pairs, from the axils of every one of the upper leaves, on slender stiff stalks. The corolla is comparatively small, but of a brilliant pure yellow. Its treatment is that of other half-hardy annuals, but when planted out, it requires rather a moist situation, and does best in peat. It flowers abundantly during the summer and autumn, and would form a pretty contrast to the dwarf blue Lobelias. (*Journal of Hort. Soc. Vol. 7. Part. 4.*)

CEANOTHUS VERRUCOSUS, *(Rhamnaceæ.)*—This species proves to be a hardy evergreen of the best kind. It forms already (i. e. the specimen in the Chiswick Garden) a large bush, and will probably become a tree, with long stiff rod-like branches, covered in winter with multitudes of large oblong or roundish brown buds. The leaves are opposite, roundish oblong, either slightly notched or entire at the end, scarcely an inch long, flat, deep green, shining, with grey hairy pits distributed over the under surface. Occasionally, when the plant is young they are coarsely toothed, but that is an exceptional state. At the base of each leaf is a pair of stipules, which gradually lose their thin extremities and change into soft fleshy conical prickles. The flowers are very pale blue, produced in great abundance in dense corymbs at the end of very short stiff lateral branches. This shrub is among the most easy of plants to grow, and seems indifferent to climate or soil. It may be increased by cuttings of the half-ripened wood, placed in sand under a hand-glass in a north aspect about the end of August, but is best propagated by layers in autumn. It flowers in June.

GAURA LINDHEIMERI. *(Onagraceæ.)*—We noticed this new herbaceous perennial at page 167 of our last volume, and we now recur to it for the purpose of stating that it is a native of Texas, which will account for its being only half-hardy. It has been advised in one or two of our contemporaries that it should be treated as a half-hardy biennial, as seedlings do not flower the first year. We have grown it two seasons, and therefore venture to repeat our recommendation, that it should be increased by cuttings off the side shoots, taken off in August or September, and struck under a glass in a pot of sandy soil. In the spring they may be potted off, and turned into the borders in April or May. We doubt if the plant will ripen seed in this country, those sold by the trade being imported from France.

LYSIMACHIA CANDIDA. *(Primulaceæ.)*—A pretty, hardy herbaceous perennial with white flowers, growing about a foot high, and therefore likely to be very useful for bedding, or clumping in the borders. It blossoms profusely, succeeds in any soil, and as it ripens plenty of seed will, we hope, soon be common. Unfortunately, this class of plants receives but little attention from nurserymen; at present we believe the plant is only to be met with in the gardens of the London Horticultural Society. It is a native of China, having been raised from the soil contained in a box in which other plants had been forwarded to England.

LINUM GRANDIFLORUM. *(Linaceæ.)*—A very beautiful hardy annual from Algeria, with brilliant crimson flowers. It grows about a foot high, and produces an abundance of flowers in succession, They are rather more than an inch across, bright crimson, with five white wedge-shaped spots at the base of the petals. We think it likely that seeds of this handsome annual will be in the hands of some of the London Seedsmen this season, but if it should not be yet procurable of them, those of our readers who may feel disposed to take the trouble of sending to Paris can obtain it of Messrs. Vilmorin, Andrieux and Co., 30, Quai de la Mégisserie, Paris. We hope to be able to give a figure in a few months, as these gentlemen have forwarded us a pinch of seed. It is necessary to state that there is also a perennial species with large *blue* flowers, sold as *grandiflorum*.

MYRICA CALIFORNICA. *(Myricaceæ.)*—An interesting hardy evergreen, raised from seeds collected by Hartweg, near Monterey in California, where it grows twelve feet high. It was originally discovered by Menzies on the North-west of America, and was also found by Douglass at Paget Sound. It forms an evergreen bush, with dense narrowly lanceolate, slightly serrated leaves, covered, especially on the under side, with transparent glossy saucer-shaped sunken scales, of microscopical dimensions, consisting of a layer of wedge-shaped cells, placed obliquely round a common centre. The flowers are green and inconspicuous, in short axillary spikes which eventually bear from one to three small globular fruits, whose surface is closely studded with fleshy, oblong obtuse grains of a dull red colour, and astringent flavour. It flowers in July, and ripens its fruit in September. Its leaves are fragrant like those of the Sweet Gale *(Myrica gale)* of our English moors. It grows freely in any good garden soil, and is increased by seed or layers. *(Journal of Hort. Soc., vol. 7.)*

Nemesia Versicolor. *(Scrophulariaceæ).*—A very pretty *hardy* annual of erect, branching habit, well deserving cultivation from the long succession of its flowers. It grows about twelve to eighteen inches high in good soil, but begins to flower when only half that height, and continues in blossom until very late in the autumn. The flowers are about the size of those of *Linaria Cymbalaria*, but the variety of colour found in the same patch of seedlings compensates for their comparative smallness. In some the upper lip of the corolla is a bright blue, in others it is lilac streaked, and in many it is clear yellow, the lower lip being in nearly every instance white. It is, strictly speaking, a *perennial*, but is best treated as an annual. The seeds are very interesting microscopic objects, the outer coat being formed of a beautiful reticulated membrane, furnished with a wing or edging of the same character. It requires only to be sown in the open borders in March or April, with the other hardy annuals. A native, we believe, of the Cape of Good Hope.

MISCELLANEA.

THE ENGLISH AND THE TROPICAL FLORAS.

There has been (as "R. T." suggests) much exaggerated writing about tropical scenery. The delight which a naturalist experiences in exploring the tropical regions, arises almost entirely from the novelty and apparently boundless variety of forms with which he meets—not from anything striking in either the grouping or the colouring of the masses. A traveller on the Amazon and its tributaries, with no taste for any branch of natural history, would at first be struck with admiration by the immensity of the rivers and forests; but after the first novelty had worn off, he would find both exceedingly monotonous. The gorgeous tropical flowers, which the eye takes in at one view in our European conservatories, are here so widely and rarely dispersed, that a traveller may spend years in the search, and not come across a tithe of them. Then, all tropical plants of moderate size may be much improved by cultivation. Shrubs of straggling, inelegant growth, putting forth flowers few and far between, will be, in the gardener's hands, reduced to compactness and regularity, and made to flower equally and copiously. The mere protection from winds and storms, which English glass-houses afford, is alone sufficient to insure greater perfection of development. In the great Conservatory at Chatsworth, I recollect being much struck with the noble bearing and symmetry of the Bananas and other Musaceæ. Here, they are still noble and striking objects at a distance; but viewed more closely, their growing leaves are seen to be torn and ragged, and their slimy stems are half hidden by the pendant semi-putrid, decaying leaves; which latter, as everything else unsightly, it is the gardener's care to remove. What a magnificent sight it is, too, in the Orchid-houses at Chatsworth and Kew, to see fifty or more species all in flower at once; each individual plant tended as carefully as a new-born infant, and repaying that care by exhibiting a degree of beauty and symmetry scarcely ever attained in its native forests. Here, it is rare to see at once three species of Orchideæ in flower; and the masses of bulbs are universally the refuge of hordes of ants, which tear to pieces the flowers as they expand, or eat off the young peduncles, so that no flowers are ever produced. How exquisite to sight and smell is a profusion of Passion-flowers, proceeding from a single plant, trained so as to almost cover the glass roof of a hothouse! I have seen nothing like this here. There are, perhaps, no flowers more obnoxious to the effects of insects than Passion-flowers. Legions of caterpillars attack the flower-buds ere they can expand; and, though I have gathered here several species of these lovely plants, I have not been able to obtain thirty perfect specimens of any one of them. So fully am I convinced of the improvement effected by cultivation

on all plants that can be submitted to its influence, that I am compelled to dissent from many of the remarks in Humboldt's *Aspects of Nature;* especially where, in the last paragraph of the "Physiogonomy of Plants," he says, that "individual plants languishing in our hothouses, can give but a very faint idea of the majestic vegetation of the tropical zone." In truth, taking the plants as they at present exist in our hothouses, they give an exaggerated idea of tropical vegetation: though this might possibly not be the case thirty or forty years ago. I will admit that we may never reproduce in Europe the Eriodendrons, Bertholletias, Hymenæas, and various Laurels, whose enormous development sometimes exceeds anything that European forests can show; but of these it is not the beauty which strikes the traveller with admiration. We have trees in England quite as handsome, or handsomer. It is their inordinate size which astonishes.'

'I do not wish it to be understood that there is never anything gay or beautiful in these forests, that would be going to the contrary extreme; but when flowers occur in masses, so as to enter into the landscape, they are almost always extremely evanescent. The flowers of most myrtles and Melastomaceæ last only a day. When I look out in a morning over the forest, I sometimes see it variegated with round masses of snowy white—the flowers of scattered trees of some species belonging to one or the other of these tribes; and I know by experience that if I do not secure the flowers that very day, I shall, in all probability, lose them. Some of these myrtles remind me much of our own hawthorns; but they rarely approach the hawthorn in beauty as individuals, and they never occur in such continuous masses as to be at all comparable to an old hawthorn hedge in full bloom, or to the venerable hawthorns which, in the spring time, form such striking objects in (for example) Castle Howard Park, and many other localities in England. The campos of Santarem were at their gayest in the month of June, when a low-spreading leguminous tree (*Bowdichia pubescens*), growing solitary, like most trees here, yet in some abundance, was completely clad with flowers of the brightest amethystine blue. Later on, in the month of August, a taller tree of the same family (a new species of Lonchocarpus), put forth long spikes of purple flowers which were certainly very beautiful. Neither of these trees was more handsome than the laburnum, but they are the only approach to vivid colour, *in masses*, that I have seen on the Amazon; and from the distance between the individual trees, the general effect was much inferior to that of an English orchard in spring; and not at all comparable to a field of flax, or sainfoin in full flower. In the virgin forest, nothing of the sort is ever seen. I repeat, with "R. T." that "the general impression of tropical vegetation has nothing to do with gay colour"; its striking and truly admirable features are (speaking of equinoctial America) the blending of almost every form and family of plants into a mass, which the eye takes in at one view; the immense variety and noble aspect of the palms—the arborescent grasses—the enormous forest trees, decked with parasites on a scale as gigantic as themselves—and, perhaps above all, the abundance and strangeness of form of the twining plants, whose stems vary in thickness from the slenderest threads to huge python-like masses, are now round, now flattened, now knotted, and now twisted with the regularity of a cable.'

'Mr. Ellis's rejoinder to R. T. (*Athen.* No. 1215.) involves a series of misconceptions. Where—

The sun shines for ever unchangeably bright,'

I suspect the only colour will be *white*,—as in the burning deserts of Africa. To apply such an expression to this, the rainiest region in the world, is absurd. Even at Para, throughout the dry season, a shower is expected every afternoon as a rule. Here, at Sao Gabriel, I am so near the actual Equator that I sometimes in my excursions cross it twice in the day:—the climate is perhaps the most inconstant on the face of the earth. As to the quantity of rain that falls, and the rapidity with which a shower brews up, on any day of the year, and at any hour of day or night,—the variableness of the English climate (so much complained of) is constancy itself in comparison. Humboldt says, that on the upper Rio Negro it rains eleven months in the year:—he made a mistake

of but one month—he should have said *twelve*. The consequence of this constant supply of moisture is, an abundant and perennial leafiness, exceeding even that of the Amazon. It has also been said that 'the darkest green prevails over the leaves of tropical plants.' I had gathered so many plants with pale green leaves that this assertion quite startled me, and I had only to lift up my eyes from the paper to see its complete refutation. Before my house were the common tropical weeds—peppers, mallows, nightshades, Cassias, Triumfettas, etc.—all with pale, and many with hoary, foliage. My gaze then extended over the islands in the foaming rivers, the plains and round hills beyond, and the picturesque sierras in the distance, all (save the steepest escarpments of the latter), clad with unbroken forest; and though various shades of green were distinguishable, I looked in vain for a tint so deep as that of our holly and arbutus. I need scarcely add, that since entering the tropics I have never seen anything comparable to the Stygian green of our yews and Scotch-firs. Again, in looking over my list of plants collected, what will it be supposed are the predominant colours of flowers therein noted? White, greenish-white, and green. So very inconspicuous are the flowers of many trees, that sometimes when I ask the Indians the time of flowering of a species which I have just gathered in fruit, I am laughed at for my ignorance. 'Such a tree,' they will say, 'never puts forth flowers—it bears its fruit at once, *na mais*.' It is sometimes said, that in the tropics, the loftiest trees are adorned with the largest and handsomest flowers. I have met with some instances of this, but none excelling in beauty the horse-chesnut.

In conclusion, I have only to express a hope that nothing which I have above said may be construed into speaking 'disrespectfully of the Equator.' It would be easy to fill a volume with the relation of the wonders of nature on the Equator, nor would it be necessary, in order to exalt them, to depreciate the handiwork of the same nature in any other clime or latitude.—*Abridged from a Letter of Mr. R. Spruce in No.* 1305 *of the Athenæum.*

FLORISTS' TRICKS.

A popular contributor to the *Cottage Gardener* writes:—'I was among strangers the other day, of whom some were gentleman Florists, but none of them knew me. I had on my Sunday clothes, and I was a little more spruce than usual, so one of them took me, or rather mistook me, for a half-pay officer, and out of him I got the grandest secret yet out about Pansies; I think I could now win a prize with them myself. Like all great secrets, it is very simple when you know it. Grow your Pansies as large as it is possible that any one can do in rich free soil, with doses of liquid manure, thinning out flower buds, and stopping the shoots (all this is as necessary for the Pansey as it is for the Grape Vine); then, two days before the show, the plants must be allowed to flag for want of water, even the shoots ought to droop, and the flowers be collapsed. This is the moment to pick them for the show; then is no blood or sap in them, so you can handle them as you would Indian rubber lace; then, with a pair of compasses, draw a lot of circles on a sheet of paper or pasteboard, and fit the dried flowers with mathematical precision. When you have them all exactly in the right way, make dots on the paper where the foot-stalks join the blade of the flower, then a hole for every dot for the stalks to pass through; now put your pasteboard over a vessel full of water, and the footstalks of the flowers will dip into it, and feed the flowers till they are like to burst; they are then fit for exhibition, and the prize will be according to your dexterity in drying, ironing, (!) and final damping.—*Cottage Gardener* for July, 1852.

Our object in giving the above extract is certainly not that our readers may be enabled to gain a prize for Pansies by such a procedure, but rather to express our great regret that so respectable an authority as the writer in question should have lent his countenance to a practice so utterly unworthy of the dignity of Floriculture. Could these lovely creations become vocal, how would they protest against being made the accomplices of such deception.



Primula Stuartii.



Pentstemon Wrightii



Lilium venustum.



Meconopsis Wallichii.

PRÍMULA STUÁRTII.

Stuart's Primrose.

Linnean Class—PENTANDRIA. *Order*—MONOGYNIA. *Natural Order*—PRIMULACEÆ.

WHOEVER loves the modest primrose of our shady banks and groves—the flower for which our affections never grow old—will be ready to welcome another beautiful sister from the far east.

The *Primula Stuartii* is remarkable among nearly sixty species for its considerable development; though perhaps this would hardly be guessed from our meagre figure, and we must therefore endeavour by words to convey an idea of its proportions. The height of the flower stalk is about sixteen inches, and the leaves are mostly from ten to eleven inches long. They are, as in all the species, radical, and are broadly lanceolate, with acute points, smooth and shining above, but covered below with the yellowish mealy powder so characteristic of many species of this genus. The margins of the leaves are closely set with sharp teeth, which are generally curved downwards. The flowers are, as our figure shows, salver-shaped, with a tube twice as long as the calyx; this tube is narrow about the middle, and then expands in a somewhat campanulate manner near its union with the limb, where it is again contracted; the limb, or expanded portion of the flower, is of an orange tint towards the centre, as in the case of the common Primrose. The calyces, as well as the upper half of the flower-scape, are covered with the pale sulphur-yellow farina found on the leaves.

This fine Primrose is a native of Northern India, where it has been found, both in Nepal and in the Himalaya, at an elevation of 9,000 feet, and, according to Royle, it communicates a rich yellow glow to those regions. It was introduced in 1845, by seeds from Major Grant of the 9th Lancers, and proves to be perfectly hardy, having stood several winters without any artificial covering, even so far north as Edinburgh. It requires, however, like most of the species, to be planted in a cool border, where it can be preserved from the effects of drought in summer; and with this hint, we might safely leave the plant in the hands of the amateur. But in treating of a genus which contains so many species exclusively natives of mountainous, and often, snow-clad regions, a glance at the conditions in which such plants must necessarily exist, may not be without interest, and may serve as a guide to the successful treatment of Alpine plants in general.

It is hardly necessary to observe, that the elevation at which they mostly occur, secures to them a comparatively low temperature, even during the warmest part of the year. The snow with which they are often covered during the winter months,

not only protects them at that season from those variations of temperature to which plants of less elevated regions are often liable, but what is equally, if not more important to observe, preserves them by its permanently congealed condition (often for several months together) from the excess of humidity so common in this climate during the winter months. In the summer season this condition is completely reversed: the melting of the snow supplies them with abundant moisture (which, however, on account of the generally small depth of the soil, rarely becomes stagnant), and their roots are thus kept cool during the whole of the growing season. We do not wish it to be understood that *all* Alpine plants are subject to these conditions; they apply chiefly to the genus now under consideration, and to some others of the same Order.

From this it will be seen, that the chief essentials to success in the cultivation of Alpine Primulas and other plants of this class are, comparative dryness in winter, with some protection from sudden changes of temperature, especially in early spring, and a cool, shaded, moist situation in summer. This last condition can, without much difficulty, be secured; but the character of our winters is such that the first is hardly attainable without some covering. For this reason, they are generally grown in pots, and preserved in a cold frame through the winter months, but a cool window is quite sufficient; and if they are allowed abundance of air, they will succeed admirably, *provided a fire is not kept* in the apartment.

It is a singular anomaly in the character of this interesting family, that although 'children of the free air,' they yet endure a smoky atmosphere better than most plants; and in large towns they will not only exist, but even thrive for years, if treated as we have suggested. The pots must be well drained, and should be rather wide, than deep, for the roots of Alpines extend but a short distance below the surface. A mixture of loam and peat, or thoroughly decayed leaf-mould, suits the greater number.

Many of the species require, however, no more care than the Polyanthus; and of this number is the *P. Stuartii*, although it may, if thought desirable, be treated as a pot plant, like the dwarfer and more delicate of the species.

Since the introduction of the *P. Stuartii*, several interesting additions have been made to this genus, one of which, the *P. sikkimensis*, is perhaps even more desirable than the plant we have figured. This, too, is a Himalayan species, first detected by Dr. Hooker, and styled by him 'the pride of all the Alpine Primulas.' It inhabits wet and boggy places at elevations of from 12 to 17,000 feet at Lacken and Lachlong in the Sikkim-Himalaya, covering acres with a yellow carpet in May and June. The flower stem rises from one to two feet high, bearing an umbel of seven or eight large yellow flowers. It is, like the *P. Stuartii*, herbaceous, dying down to the ground in winter, and re-appearing in spring. It is quite hardy, although too rare at present to be fully exposed in the borders.

The *Primula involucrata* is another gem, of rather dwarfer growth than the preceding, with pure white flowers; and this, with the *P. Munroi*, also with white blossoms, should be in every collection of Alpines. Both of them are kept by all the principal Nurserymen.

But even these fine species must yield the palm to a plant which, if it be not a true *Primula*, was at first classed as such, and is, at any rate, very nearly allied. We allude to the *Cankriena chrysantha* of De Vriese (the *Primula imperialis* of some Botanists) found hitherto only in the island of Java, and there only on the summit of the extinct volcanic mountain called Manellawangie, at an elevation of about 9,000 feet. This noble Primrose—for such we will still term it—produces a flower stem often three feet high, the blossoms of which are borne in three, or sometimes four, verticils or whorls, one above the other. The flowers are, as the name indicates, of a golden yellow, and in form campanulate, somewhat resembling that of the *P. nivalis*, but with a much wider tube. The plants of Java are most of them too tender for open-air cultivation in this country, but the elevation at which the *Cankriena* is found, renders it more than probable that it will prove hardy in these latitudes. Dr. Junghuhn, its discoverer, states that on the borders of the stream, in the immediate neighbourhood of which the plant was found growing, he often detected thin ice, and the mean temperature did not exceed 50° Fah. It is a remarkable fact in vegetable geography, that this beautiful plant should be found only in a single isolated locality, and there only within a range of 300 feet of altitude and 1000 feet of diameter, though the case is by no means unique. We are not aware whether this fine Alpine is yet introduced in the living state to this country, but we hope the collectors will not lose sight of it.

Before concluding the present notice, we are desirous of calling the attention of all lovers of herbaceous plants to another highly interesting genus of this Order, we mean the Dodecatheons, or American Cowslips. They are all perfectly hardy, and of the easiest cultivation in any situation not too much exposed to parching influences in summer; a moist peat border suits them admirably. As they die down in autumn, a label of some kind should be inserted close to them, or they may receive injury when the borders are dug. All the species and varieties may be obtained at a cheap rate; the best are *gigantea* and *Meadia elegans*.

The *Androsace lanuginosa* is another of the *Primulaceæ* which should be in every collection; and the same may be said of the charming Soldanellas.

We will merely add, as a matter of form, that *Primula* is derived from *primus*, first or early—in allusion to the early period at which most of the species flower.

PENTSTÉMON WRÍGHTII.

Dr. Wright's Pentstemon.

Linnean Class—DIDYNAMIA. *Ordèr*—ANGIOSPERMA. *Natural Order*—SCROPHULARIACEÆ.

We very recently noticed this ornamental genus; but the beauty of the *Pentstemon Wrightii* is so great, that we feel persuaded no apology will be needed for introducing it to our readers.

It is decidedly one of the most distinct of all the species; the peculiar form of its corolla being, we believe, quite unique, and the rich rosy-carmine of its numerous flowers is very remarkable.

It is a native of Texas, and will therefore probably require a little protection in winter, for most of the plants of that province are somewhat tender; but this will hardly prove an obstacle to its extensive adoption, in an age when hundreds of green-house plants are employed for open-air decoration.

We have no doubt, from what we know of this charming species, that it will be very readily raised from seed; and it is even probable that, if sown early, the young plants would flower the first season. It grows from two to three feet high, and bears a very long branching panicle of flowers. The lower leaves are spathulate, and lengthened at the base into a narrow petiole; the upper ones are almost heart-shaped and sessile; all of them are smooth, and with margins destitute of serratures. The corolla is remarkable for its spreading limb, and has been compared, not inaptly, to that of the *Achimenes rosea*, which it also resembles in colour. The intense rosy-carmine of the flowers, which are borne in June and July, is quite unrivalled in the genus, especially for a few days after expansion; subsequently this tint loses a little of its depth, but this rather adds to, than detracts, from the general effect.

It was introduced to the Royal Gardens at Kew in 1850, and flowered the following season. We believe it will be in the hands of the trade this spring, and as it produces seed plentifully, it will soon grace by its presence our parterres.

It is to be regretted that, in an establishment like the Royal Gardens, supported by the public money, no better provision is made for the dissemination of the numerous treasures sent to it from all quarters of the globe. As nothing is sold at the Gardens, the only way in which new plants in their exclusive possession can reach the public, is through the leading Nurserymen, who are, we believe, allowed the privilege of exchanging rare plants in their possession for any of those at Kew; but there are, doubtless, many who are unable to comply with this condition.

For notices of several other species of Pentstemon, see pages 22 and 161 of vol. I.

LÍLIUM VENÚSTUM.

Beautiful Lily.

Linnean Class—HEXANDRIA. *Order*—MONOGYNIA. *Natural Order*—LILIACEÆ.

To those cultivators (and they are, we suspect, a numerous class,) who may be desirous of enjoying the sweets of Floriculture, without incurring the labour and constant attention to details necessary in the treatment of many plants, none of our hardy exotics are more deserving of notice than the Lilies. Once planted in suitable soil, they will flourish for years with annually increasing vigour, demanding absolutely no attention, beyond that of being allowed to remain undisturbed, and perhaps an occasional watering in summer.

We can imagine few objects that would be more interesting than a bed of Lilies; and the species are now so numerous, and of such varied colours, that ample materials exist for forming an exceedingly attractive group. The noble *Lilium giganteum*, more than once referred to in these pages, would form a most appropriate centre-piece for such a bed; around it might be arranged the species of more moderate height, and those of dwarfer growth would constitute a fitting edging to the whole. To produce the greatest possible effect, some care would be necessary in selecting only such species as flowered simultaneously; but the magnificent *coup d'œil* afforded by such an arrangement, would more than repay any amount of trouble. The comparative brevity of the flowering season of most of the Lilies, will, perhaps, prove a drawback to their employment as bedding plants; this objection might be obviated to some extent by mingling the early and late flowering species, by which, if some of the effect were sacrificed, it would be *en revanche*, much prolonged.

It is, however, only in gardens of considerable extent that this system of cultivation can be adopted; but happily the merits of this popular genus are such, that in whatever situations they may be grown, their beauty cannot be hid.

The Lilies are by no means particular as to soil; they will grow in almost anything except very sandy loams, and even in these they will succeed if not fully exposed to the sun. They flourish most, however, in rich mellow loam, of strong texture, and will also thrive in turfy peat.

Perhaps one of the most remarkable and best known of the species, is the lance-leaved Japan Lily, *L. speciosum*, and its varieties. Until recently, this elegant plant was supposed to be too tender for full exposure, but it is now proved to be perfectly hardy in the neighbourhood of London, and we have no doubt that it will succeed out-doors anywhere south of the Tweed. Experiment only can test its

hardiness 'over the border,' and we shall be glad to be informed of the result of any which may be made.

The interesting *Lilium venustum*, figured in our plate for the present month, although less remarkable than the one just noticed, is eminently deserving its specific appellation of 'beautiful,' the bright orange tint of its large blossoms being particularly attractive. Like the *L. speciosum*, it is of Japanese origin, and is very nearly related to *L. Thunbergianum*, for which it is sometimes sold; but it differs from the true species of that name in having its lower leaves *linear* and not oval. It is also of dwarfer growth than *L. Thunbergianum*, and, unlike that species, has *smooth* petals which are slightly stalked. The stem, which scarcely exceeds two feet in height, is rough, and stained with brown at its lower part, and covered near the summit with soft hairs. The upper leaves are ovate-lanceolate, arranged in a whorl of four or five; the lower ones are much narrower, and all are smooth and strongly nerved. The blossoms are of considerable size, very much expanded, and slightly reflexed at the edges. They are remarkable, as we have already observed, for their brilliant orange tint, which immediately arrests the attention of the observer, even among many rivals. The stamens, and especially the anthers, are much longer than in the *L. Thunbergianum*, and this offers an additional mark of distinction between the two plants; but compared with those of most other species, these organs present nothing extraordinary.

The *Lilium venustum* is one of the many valuable introductions of Dr. Siebold, and appears to have been first brought to this country about twenty-five years since, from the Belgian Gardens. It is perfectly hardy, and may now be procured of most of the London nurserymen and seedsmen.

Like all the dwarfer species of this genus, it may be grown as a pot plant, and is very ornamental in the window when in flower. Full sized bulbs will require a large pot, which is the only objection to the general adoption of this, and many other beautiful species, as window plants, where there is room but for a few.

Among other comparatively little known members of this genus, the *L. excelsum* deserves to be mentioned. As its name implies. it is a tall growing species, with very large drooping flowers, of a pale orange tint, and very fragrant. This plant is sometimes sold as *testaceum* and *perigrinum*, but it is certainly distinct from either of those species.

In our notice of the *L. colchicum* (page 54, vol. I.), we referred to the small *bulbils* formed on the stems of several of the species; and we would now point out a characteristic of the Lilies which can hardly have escaped the attention of the most inobservant cultivator, viz. the long nectariferous furrow or gland at the base of each petal. This is present in all the species, but is most conspicuous in those with reflexed flowers, especially in the *L. speciosum*. When the flower first expands, the furrow is dry, but gradually becomes moist, and at the end of a few

days, will be found filled with an intensely sweet fluid. This honey-pore is also well seen in the Crown-Imperial, and other species of Fritillary; but in that genus it is generally of a circular form. In the Cyclobothras, which are closely allied to *Fritillaria*, the nectary is *bearded* in the interior, and is placed at some distance from the base of the petal.

The bulbs of several of the Siberian Lilies, especially those of *L. pomponium*, are used as articles of food by the inhabitants of northern Asia, and we have no doubt that the bulbs of all the species might be similarly employed—a hint which may be of service to any future Robinson Crusoes we may chance to have among our readers.

Some other remarks on this genus will be found under the head of *Lilium colchicum*, in our first volume.

MECONÓPSIS WALLÍCHII.

Dr. Wallich's *Meconopsis*.

Linnean Class—Polyandria. *Order*—Monogynia. *Natural Order*—Papaveraceæ.

Few plants are more easily recognised than the Poppyworts, to which our present illustration belongs; for, notwithstanding the important distinctions between the genera composing the Order, there is a striking general resemblance running through the whole, which enables even those entirely ignorant of Botany to distinguish them at a glance. This applies chiefly to those usually found in gardens, such as the different species of *Papaver*, *Argemone*, *Meconopsis*, *Glaucium*, *Eschscholtzia* and *Hunnemannia*, for a few of the genera more rarely met with so nearly approach other orders in their structure, that their relationship is less obvious.

Every body is familiar with the leading characteristics of the true Poppies, the type of the order; the two sepals, which fall off as soon as the flowers expand; the four crumpled petals; numerous stamens; broad, radiating stigmas, seated directly upon the top of the seed vessel, and the milky narcotic juice, are features which will readily recur to the memory. The most unvarying character of the Order is the deciduous nature of the sepals (generally two in number, but in *Argemóne* three), which, taken in conjunction with the milky narcotic juice, effectually distinguishes the *Papaveraceæ* from all other plants. The character of the seed vessel is much more inconstant; in the Horn-poppies (*Glaucium*), and also in the *Eschscholtzia*, it approaches in form the pod or *siliqua* of Cruciferous plants; and in the curious little annual, *Platystemon californicus*, which forms the connecting link between the Poppy-

worts and the Ranunculus tribe, the carpels of which the fruit is composed are only partially adherent by their inner edges, and separate when ripe. In the genus *Meconopsis*, the departure from the type of the Order is less important, the chief distinction being that the stigmas, instead of being sessile on the ovary, as in *Papaver*, are borne on a short thickened style.

Most of the plants of this family are of a showy character, and deserve cultivation; all of them, with scarcely one exception, being hardy. Some of the dwarf annual Poppies are very handsome, particularly the species *amœnum*, from the north of India, with bright vermilion flowers; and *setigerum*, a European plant, with white blossoms, deeply stained with purple near the base of the petals. Among the perennial species, *orientale* is remarkable for its brilliant scarlet flowers; *bracteatum* (red) and *nudicaule*, the yellow Norway Poppy, are also both desirable plants for the mixed flower border. They are all readily raised from seeds; and even the perennials will generally flower the first year.

The prickly Poppies *(Argemone)* are less commonly grown than they deserve to be, though few plants are more ornamental than the *A. grandiflora*, where sufficient space can be afforded it. The flowers of this species are pure white, and often four inches across; the ring of yellow stamens and the purple stigmas, contrast very prettily with the white petals. This fine species is a perennial, but will flower the first season from seed. There are two other species with whitish flowers; *Barclayana*, also a perennial, but less hardy than *grandiflora;* and *albiflora*, which is annual. The only others we have any knowledge of are *Mexicana*, and *ochroleuca*, both annuals, with pale yellow flowers; they all deserve to be grown once at least, and are of the easiest management.

The Eschscholtzias are too well known to need any description; and we refer to them only for the purpose of calling the attention of our readers to the new white, or more correctly, cream-coloured variety of *E. californica*. Its flowers are rather smaller than those of the species, but it is very pretty, especially when grown in contrast with the yellow one.

The horn-Poppies *(Glaucium)*, so termed in reference to their long seed-vessel, also merit attention, especially the *G. fulvum* and *G. phœniceum*, the first with orange, and the last with purple flowers; *fulvum* is strictly speaking a perennial, but is best treated as a hardy annual.

The *Hunnemannia fumariæfolia* is occasionally found in the Seedsmen's lists. It very much resembles the *Eschscholtzia;* but the two sepals are not united into the calyptra-like organ, which is so remarkable a feature in that plant.

The other genera of the order we must defer to a subsequent occasion; but before noticing the *Meconopsis Wallichii*, which has given rise to these remarks, we must spare a line for the *Platystemon californicus*, and *Platystigma lineare*. Although pretty, they are less remarkable in an ornamental point of view than for the

curious structure of their fruit, which well merits examination; both require only the ordinary treatment of hardy annuals.

The handsome *Meconopsis*, figured in our plate, is remarkable as being one of the very few plants, if not the only one, of the Order, with blue flowers. It was discovered in the Sikkim Himalaya, by Dr. J. D. Hooker, who sent seeds to the Royal Gardens, which produced flowering plants in June, 1852. The plant attains the height of two and-a-half to three feet, and is everywhere of a pale, glaucous green, covered with long reddish bristle-like hairs. The root leaves are very large, often twelve to eighteen inches long, or more, stalked, and much lobed, and cut. The stem-leaves are small, and without stalks. The flowers are rather numerously produced from the axils of the upper stem-leaves, on short drooping peduncles, and are of some size; the ring of yellow stamens round the seed-vessel contrasts charmingly with the pale blue colour of the petals. The seed-vessel is more elongated than in the true Poppies, and is densely clothed with erect bristle-like hairs or *setæ*; the stigmas, as we have already remarked, are elevated on a thick cylindrical style, as long as the ovary, as shown in our plate.

The mode in which the capsule of the Poppies opens, viz. by pores or valves immediately beneath the disk-like stigmas, is no doubt familiar to most of our readers. In the *Meconopsis Wallichii*, and the other species of this genus, the capsule also opens, when ripe, by six or seven valves at the top of the style, which appears to be rather a mere elongation of the ovary, than what is generally understood to be a true style. The numerous seeds are arranged as in *Papaver*, or thin membranaceous ridges, radiating from the inner walls of the capsule.

This very ornamental plant has been too short a time in cultivation in this country to authorise us to speak with confidence of its hardiness, especially as the last winter was comparatively mild. Judging, however, from the locality in which it was found, there is scarcely a doubt that it will prove quite hardy, and in that case it will take a high rank among our herbaceous perennials. At present it is, we believe, confined to the collection at Kew; but will doubtless be procurable, through the trade, in the course of another season.

The genus contains a few other species, one of them, the *M. Cambrica*, being indigenous to this country. Two others, *M. crassifolia* and *M. heterophylla*, both with orange-coloured flowers, are natives of California; and in addition to the species now figured, two others have been found in Northern India. One of these, the *M. nepalensis*, with yellow flowers, is in the possession of Mr. Stark, Nurseryman, Edinburgh, who has also a considerable number of the rarer herbaceous plants.

The name of this genus is derived from *mekon*, the Greek term for a poppy, and *opsis*, like, in allusion to the close resemblance between the two genera.

The narcotic properties of the plants of the Order *Papaveraceæ* are too well known to require noticing. It may, however, be worth while pointing out the singular

fact, that the seeds of most, if not all of the species, are entirely destitute of this property, and yield by expression a large quantity of bland oil. In the North of France the Poppies are extensively grown for this purpose, and the oil is there in general use for domestic purposes, its price being considerably lower than the olive-oil for which it is employed as a substitute.

HALF-HARDY ANNUALS.

We gave in our last number a select list of such annuals as are sufficiently hardy throughout England to allow of being sown in the open borders, and we now complete the subject by appending a list of those which usually require the aid of a hot-bed. It is obvious, however, that the distinction between the two classes cannot be very clearly defined; some of those commonly termed hardy annuals succeed best when treated as half-hardy, and, on the other hand, a few of those in the following list, such as the dwarf Lobelias, Marygolds, Arctotis, Callichroa, Cuphea, and Clintonia, will, in favourable seasons and situations, do very well in the open border.

Considerable latitude must therefore be allowed to the judgment of the amateur, though to the inexperienced we venture to recommend, that *all* the plants named below should have some artificial protection. For the greater number, a good hot-bed is indispensable, if anything like perfection is desired, and especially for *early* flowers. The localities are few in which this is unattainable; in most cases, one good frame and light will be sufficient to contain a pot or two of each of the seeds enumerated, and the materials for forming the bed are generally procurable, even in towns. In the early spring, a larger quantity of manure will be necessary than later in the season, for the low temperature generally then prevalent checks the fermentation, and, if the bed is too small, a single sharp frost will often entirely arrest it. For this reason, where a sufficient supply of manure is not available early in the season, it will be far better to defer the construction of the hot-bed until March; though in any case, enough will be needed to form a mass at least two yards long, one-and-a-half wide, and four feet deep, or it will lose its heat in a week or two, and leave the young seedlings exposed to a serious reduction of temperature in case of severe weather.

Where a large supply of leaves is available, they will form an excellent adjunct to the manure, but they are generally too much decayed when left exposed to the weather during winter, to be able to furnish much heat. Even if the manure can only be procured by purchase, it will be worth the expenditure, as when thoroughly decayed it will prove available for renovating the borders.

It may appear trivial to attempt to explain so simple an affair as the formation of a hot-bed, but the novice in Horticultural matters may need to be informed, that the manure should on no account be at once made up; before being finally arranged, it should be turned and shaken at least twice, at intervals of two or three days; this will prevent too violent a fermentation, which would not only prove injurious to the seeds, but also very quickly subside. It should be from nine inches to a foot larger every way than the frame, and should be stationed, if possible, in a sheltered situation, open to the south. When the bed is constructed, the frame may be at once placed on it, and if on settling the surface becomes unequal, a little fresh material should be added.

As soon as the first violent heat has slightly subsided, a layer of sandy soil about six inches deep must be placed over the surface of the bed, and it will then be fit for the reception of the seed-pans. Nothing is more common among desultory gardeners, than a light in which the broken squares are at least as numerous as the whole ones, but in these days of cheap glass, such a state of things is inexcusable. Even a *cracked* pane should be replaced, for the rain would surely find an entrance, and cause the destruction of the seedlings beneath.

The seeds may be sown either in pots or pans; the last are preferable, and would be still more so, if they were made with an opening at the bottom. Whichever are used, they should be filled to one-third of their depth with broken crocks, and then nearly to the top with sandy loam, in a moderately damp state. The surface of the soil should be slightly pressed, and the seed sprinkled thinly upon it, and finally covered with a very thin layer of fine soil; very small seeds will be sufficiently covered by being gently pressed into the surface. Before placing them in the frame, they must be carefully watered from a very fine rose; and to avoid the necessity of the too frequent use of this, it is a good plan to cover the pots with a thin compressed layer of damp moss. During the first week or ten days, the frame may be kept closed, but as soon as the young seedlings appear, air must be cautiously given, if the weather be mild. In severe weather it will be necessary to provide some covering for the frame at night; a thickness or two of matting with a piece or two of old floor-cloth over it, will in most cases be sufficient. When the seedlings are two or three inches high, they should be potted off into pots of light soil, and gradually inured to a full exposure, previously to turning out.

We can easily imagine that some of our readers may be unable to command the use of a hot bed; and in this case, we know of no better substitute than a box or trough of spent tan, in which small pots may be plunged, and placed upon a warm window. Many of the seeds will even vegetate in such a position, without the aid of the warmth generated by the tan; but the Thunbergias, Portulacas, *Cleome*, and a few others, will not succeed without the aid of artificial heat in the early stages of

their growth. With the exception of those we have named, they will even succeed in the open borders, if the sowing be deferred till April; but the same degree of success must not be expected, unless in very favourable seasons; by the use of hand-lights, however, much may be done. More than one of the plants named in the following list, is a perennial, but flowering the first season, they are conveniently treated as half-hardy annuals.

	HEIGHT IN FT.	COLOUR.
Ageratum mexicanum	2	Blue
,, ,, album	,,	White
Alonsoa incisifolia	1½	Scarlet
Arctotis breviscapa (new)	1	Orange & brown
Aster, German quilled	2	Various
Brachycome iberidifolia	1	Blue
,, ,, alba	,,	White
Calceolaria chelidonioides (new)	½	Yellow
Callichroa platyglossa	1	,,
Centaurea Americana	2	Red
,, involucrata	,,	Yellow
Chænostoma polyanthum	½	Lilac
,, fastigiatum	,,	Pink
Cleome rosea	2	Rose
Clintonia pulchella	½	Blue white and yellow
Cosmanthus fimbriatus	½	White
Cosmea bipinnata	2	Purple
Cuphea silenoides	1	Purple and rose
,, purpurea	1	Purple
Didiscus cœruleus	2	Blue
Dolichos lignosus	climbs	Purple
Ethulia corymbosa	2	Yellow
Grammanthes gentianoides	¼	Orange
Helichrysum bracteatum	2	Yellow
,, macranthum	2	Rose
Ipomæa hederacea	5	Blue
,, Dicksonii (fine)	5	Red and blue
,, rubro-cœrulea	climbs	Red and blue
,, purpurea	,,	Various
,, ,, Burridgii	,,	Crimson
Isotoma axillaris	½	Blue
Loasa Herbertii	4	Dark or
Lobelia heterophylla major	½	Deep blue
,, Erinus maxima	,,	Azure blue
Lophospermum scandens	4	Rose, spotted
Lophospermum erubescens	4	Rose spotted
Martynia fragrans	2½	Purple & yellow
,, lutea	,,	Yellow
Manulea violacea	¾	Violet
Microsperma Bartonioides (Syn. Eucnide Bartonioides.)	1½	Yellow
Mesembryanthemum tricolor	¼	Cr. w. & y.
,, pomeridianum	½	Yellow
Nierembergia intermedia	¾	Dark purple
Nyctarine capensis	¾	White & yellow
Pentapetes phœnicea	2	Scarlet
Petunia phœnicea (All the varieties.)	2	Various
Phlox Drummondii	2	Various
,, oculata	2	,,
Portulaca striata	½	White & crimson
,, Thorburnii	½	Yellow
,, Thellusonii	½	Crimson
Rhodanthe Manglesii	1	Pink
Salpiglossis sinuata atropurpurea	1½	Purple
,, coccinea	1½	Scarlet
,, picta	1½	Various
Scypanthus elegans	3	Yellow
Sedum azureum	½	Pale blue
Senecio elegans (All the varieties.)	2½	Purple
Tagetes patula (Dwarf French marygold)	2	Orange & brown
,, erecta (Double African)	2	Orange
Thunbergia aurantiaca	3	Orange & purple
,, alata alba	3	White & purple
Tweedia cœrulea	3	Blue
Zinnia elegans (All the varieties.)	2½	Various

CAPE BULBS.

Although the number of half-hardy Irids of this class, capable of successful cultivation in the open border, is very considerable, they are, with the exception of the Ixias and a few others, so rarely seen in gardens of only moderate size, that it is difficult to resist the conviction, that to a large class of amateurs, the treasures of this beautiful tribe are comparatively unknown.

As the season for planting most of them is arrived, a few hints on the best species and their treatment, may prove useful.

They are usually grown in beds; and this arrangement affords great facilities for protecting them in severe weather, the majority being too tender to endure full exposure during frost. There is little or no danger, however, to be apprehended when the bulbs are not planted till February or March; and in that case, the question of beds or clumps may be left to the taste and convenience of the amateur.

The question of soil is more important; it may, indeed, be termed the chief point on which their successful cultivation hinges. They will not do well in poor, sandy soils, which afford them too little nourishment, and stunt their growth; neither will they succeed in the strong, tenacious loams so peculiar to many districts; and even peat, in which they are so often grown, is less desirable than a compost in which it forms but one ingredient. By far the best results are obtained in a mixture of white sand, good fibrous loam, and turfy peat, in about equal proportions. In such a compost, the whole of the Cape Irids will flourish, whether in the open borders, or in pot. The ingredients should be well chopped together, and mingled with the hands, but not sifted, as this would remove the fibrous portions, the presence of which is essential to the porosity of the whole. When the peat and white sand cannot be procured, a mixture of decayed leaf-mould and sandy loam may be used as a substitute; but leaf-mould is so generally infested with insects, that it cannot be recommended for this purpose. Any Nurseryman will supply a small quantity of all three ingredients for a trifling sum.

When the bulbs are grown in clumps in the mixt border, the soil should be removed to a depth of from 12 to 16 inches. At the bottom of the cavity thus formed, three or four inches of broken sherds must be placed, as drainage, and the remaining space may then be filled with the compost of peat, loam, and sand. The largest bulbs should be planted from four to six inches, and the smaller ones about three inches deep. Single bulbs, especially of the smaller species produce so little effect, that they should always be planted in patches, of at least three bulbs of each kind. In severe weather, and also during very heavy rains, it will be advisable to cover each patch over, even before the leaves appear, with an empty pot.

When grown in a bed, the entire surface may easily be covered with furze, and in the case of bulbs planted in spring, this will afford them all the protection they are likely to require.

As they progress in spring, the only further attention they will need will be an occasional watering in dry weather; and the little trouble entailed in the preparation of a proper compost, will be amply rewarded by the greater vigour of the plants, and the superior character of the flowers. But that none may be deterred from the culture of these interesting plants, we would add, that in almost any good garden soil, of not too heavy and moist a nature, they will succeed, and even in the case of soils of the most adverse character, a single barrowful of the peat and loam would suffice for ten or twelve good clumps of bulbs.

After flowering, water should be withheld, unless seeds are required, in order that the bulbs may be ripened *early*. This will, in general, be accomplished soon after the foliage is completely withered, but their removal from the ground is a matter to be left entirely to the taste of the cultivator. If allowed to remain, they will vegetate earlier than those removed and preserved in a dry state, and in mild seasons they will flower earlier the following spring; but on the other hand, they will require more attention during the winter to protect them from frost. When sufficient protection can be afforded them—and this is comparatively easy in the case of those planted in clumps—we think that there is some advantage in allowing them to remain undisturbed for two or three years at least, by which time most of them will have increased so much by offsets, as to require division. If they are kept out of the ground during winter, the smallest offsets frequently wither and perish.

We have only room for a brief list of a few of the best species in each genus. The Gladioli, Watsonias, and Antholyzas are the tallest; most of the others are comparatively dwarf.

Gladiolus psittacinus, insignis, emicans, Queen Victoria, and especially *Gandavensis,* and all its varieties. (See page 148, vol. I.)

Watsonia fulgida multiflora, pyramidalis, and *alœtroides,* are easily procurable. They resemble the preceding, but are not quite so hardy.

Antholyza Æthiopica, and its varieties, *prealta coccinea,* and *Cunonia,* are very beautiful, and may be had for about 6d a root.

Moræa papilionacea, plumaria, tricolor, and *miniata,* are extremely interesting. They are not often kept, but the species named may be had this season of Mr. Carter, 238, High Holborn. Allied to the Iris, but flower more freely.

Vieusseuxia pavonia, the well-known Peacock Iris, and the equally common *V. glaucopis,* are very cheap, and easily managed.

Homeria lineata, miniata, and *aurantiaca,* are generally kept by Seedsmen, and should on no account be omitted; they are nearly hardy.

Ixia and *Sparaxis*, may be classed together; all the species should be grown, including the curious *I. viridiflora*.

Babiana rubro-cyanea, *sulphurea kermesina*, *ringens*, and *speciosa*, are very shewy, and not expensive. These, too, may all be had of Mr. Carter.

The *Anomatheca cruenta* is desirable, on account of its flowering throughout the summer, and is easily raised from seed, which will flower the first year. Should be thickly planted.

The *Bobartea aurantiaca* is a pretty *hardy* bulb of this class, but requires to be planted in autumn, as it is an early flowerer.

The *Pardanthus Chinensis* is also hardy in most places, and is very desirable. Its blossoms resemble those of the Tiger-flower.

To these may be added *Ferraria undulata*, the Tritonias, and *Ovieda corymbosa*.

The whole of the above are admirably suited for pot culture, for which see the notice at page 142, vol. I.

MISCELLANEA.

DISTRIBUTION OF THE OAK TRIBE.

'If the reader should happen to be acquainted only with our own indigenous Oak, though he would recognize in it a vegetable form, which from olden times has continued the symbol of strength, and the prize of civic virtue, yet he would not derive from it any conception of the rich variety of appearances, which the tribe of Oaks developes in its distribution over the surface of the globe.

Up to the present time about 230 species of Oaks are known, belonging principally to the northern hemisphere. To the south of the line they occur only on the Sunda Islands, among which, at Sumatra, crossed by the equator, and at Java, in lat. 8° south, there exists a numerous and highly remarkable group of Oaks. It is a striking fact, that they are entirely wanting in the temperate zone of the southern hemisphere, f. i., in New Zealand (35—45° S.), in Van Dieman's Land (42° S.), in southern Chili, Patagonia, and Terra del Fuego (45—54° S.); the more so, because forests are found there of Beeches, which in Europe ordinarily accompany the Oak, and which count the majority of species in those very parts of the southern hemisphere.

'With respect to the distribution of the species, only 2 (3) Oaks are found in Europe, north of the Alps. To the south of these, in the southern Europe, bordering in the Mediterranean, there are 18 species. That portion of western Asia which approaches nearest to the Mediterranean has 14 species. The eastern temperate zone of Asia has 25 species, out of which 20 belong to Japan; India has 21, and the Islands of Sunda 37 species. The northern coast-lands of Africa possesses seven sorts, the Canary Islands (Madeira) one sort; but none is met with in middle and south Africa, or the Islands belonging thereto. New Holland and Australia have no Oaks, nor South America, south of the line. Thus Europe counts 20, Asia 97, and Africa 8 species. But since several of the South European Oaks occur again in Asia Minor and the adjoining countries, and in northern Africa, the sum total of Oaks in Europe, Asia, and Africa, must be reckoned at 110 species.

'From America 101 species of Oaks have already been described; which number, however, will

probably suffer a not inconsiderable reduction, when the species are critically revised. I venture, nevertheless, to assert, that the American Oaks surpass in number the aggregate amount from all other parts of the world, with reference only to the forms preserved in the herbaria of Europe—nay, to those only which are at present in my hands.

'It is deserving of notice, that while other parts of the world have several Oak-species in common, the case is not so as regards America, where not one single species exists from thence. The cause of this is to be traced, partly in the circumstance, that neither in America nor Asia do the Oaks extend so far north, as to be able to migrate from one quarter into another, where the transition is shortest; and partly in the extraordinarily brief vitality of the acorn, by which the ocean is prevented from transporting them in a living condition, from one part of the globe to the other.

'As in Europe, north of the Alps, the Oaks are *deciduous*, and continue leafless during all the winter, while in the Mediterranean they are *evergreen;* so also do we find, that, in North America, to the north of the equator, and as far as a considerable difference exists between the temperature of summer and winter, the Oaks are *deciduous;* while those in its tropical and subtropical zone, are *evergreen*.

'It has hitherto been a prevailing notion, that the Oak-form is peculiarly characteristic of the temperate zone. But whether we look to the number of species, the beauty of the forms, or the size of particular organs (leaves, fruits, cups), we shall find their maximum in the tropical zone, that is, in the Sunda Islands of the Old World, and tropical Mexico in the New. It must be admitted however, that, in the hot zone, it is especially at an elevation above the sea enjoying a temperate climate, that the Oak predominates; though with this express reservation, that, ordinarily, the conditions of vegetation are far more favourable in the temperate mountain region within the tropics, than in the temperate zone, which has commonly been placed on a parallel with the former; for neither in the seasons, nor between night and day, is the difference so great in the temperate region of the tropical zone, as in the temperate zone; and the quantity of rain, that important condition of vegetation, is far more considerable within than without the tropics, and increases much at mountain elevations in tropical countries.

'Moreover, it must not be supposed, that it is in the temperate zone, where the Oak developes itself most favourably, with regard to the appliances of its wood for useful purposes; or where its trunk attains the greatest size. There are as mighty Oaks in the torrid zone with perhaps higher trunks, though scarcely of greater diameter; and as regards the hardness of its wood, many of the Mexican species greatly exceed those of the temperate zone in that respect, so that the wood is hardly to be wrought by means of ordinary tools; nay, on account of its iron-hardness and toughness it is converted into tools, which in other parts are made of metal.

'It is known that there are Oaks in the south of Europe, Asia Minor, and in northern Africa with edible fruits *(Quercus esculenta, Ilex, Ballota);* the acorns being sold like our filberts and walnuts. Rich as America is in Oaks, not a single esculent species was known until within the last few years. Captain Fremont became acquainted with such a species among the indigenous Indian tribes of the western slope of the Upper-Californian Cordilleras, who collect the acorns for winter store, and to a great extent are supported by them. The species is *Quercus Hindsii*, described already by Hooker and Arnott in the collections brought home from Captain Beechey's Expedition; though the use of the fruit as an article of food was unknown before the journey of Fremont.

'A small group of deciduous Oaks, not ripening their fruit until the second year, is peculiar to North America. To it belong *Q. Phellos, Banisteri, rubra, coccinea, tinctoria, palustris*, and others. Likewise some species, whose leaves become blood-red towards the fall, thereby imparting to the forests in autumn a magnificent appearance; among these are *Q. coccinea* and *rubra.—From Hooker's Journal of Botany, translated from the Danish of Professor Liebmann.*



Abelia uniflora



Arnebia echioides



Gentiana Bavarica



Salpiglossis coccinea

ABÉLIA UNIFLÓRA.

Large-flowered Abelia.

Linnean Class—PENTANDRIA. *Order*—MONOGYNIA. *Natural Order*—CAPRIFOLIACEÆ.

OUR scientific Botanists are not, it must be admitted, always happy in their choice of names for the various novelties brought under their notice; and the *Abelia uniflora* is a case in point. Its specific designation, *uniflora*, would, of course, suggest the idea that the flowers were produced singly, or but one on each foot-stalk; it appears, however, that the peduncles are generally two-, and not unfrequently three-flowered, as an inspection of our figure will shew—the name is, therefore, singularly infelicitous. The misnomer may perhaps be explained by the circumstance that all the parts of the plant are rather variable in their character, and it is probable that the specimen from which the species was named, possessed only one-flowered peduncles. The leaves, for example, are opposite, usually in pairs, but sometimes ternate, or three in a whorl; and whilst some are toothed at their edges, others are nearly or quite entire; the sepals also vary in number from two to four, and the character of the pubescence is inconstant.

But whatever may be the fitness of its present appellation, it is not likely to be confounded, especially when in flower, with the other species in cultivation, from which it is very distinct.

It is an evergreen shrub of somewhat slender habit, the branches partially decumbent. The leaves are broadly lance-shaped, pointed, dark green on the upper surface, but pale beneath. The flowers are produced from the axils of the leaves, and, as already stated, vary in number from one to three on each peduncle. The corolla externally is white, tinged with pale purple, with a yellowish throat, and resembles in its form that of many plants of the order *Scrophulareaceæ*, especially some of the Pentstemon family; it is singular that this resemblance extends even to the arrangement of the stamens, which, instead of being five in number, as in the other species of the genus, and most of the Caprifoils, are didynamous, as in the Order just referred to. It is scarcely necessary to add, however, that there is no real relationship between the two Orders.

The genus, *Abelia*, thus affords us a striking example of the advantages possessed by the Natural system of Botany over that founded by Linnæus; for although the different species agree in every essential point of their structure, yet the exigencies of the Linnean system would require that the present plant should be arranged with the *Didynamia;* whilst the others being *pentandrous*, would, of course, be placed in the fifth Class.

The calyx, or at least its free portion, is also a noticeable feature in this plant. Its tube adheres to the seed-vessel through its whole length, producing what is termed an *inferior* ovary, which is fluted, and slightly hairy; and at its base will be observed three small leaf-like bodies termed bracts; the limb or spreading portion consists of two broad wing-like sepals, nerved, and of a reddish-brown colour; in a few of the flowers they are three or four in number. The fruit is a three-celled dry berry, one of the cells containing only a single seed, the others being polyspermous; this peculiarity is common, however, to several genera of the Order. In the other species of *Abelia* it is only the solitary seed which ripens, those of the many-seeded cells being abortive; but we are unaware whether it is the same in the present plant.

This pretty shrub is another of the Chinese importations of Messrs. Standish and Noble of Bagshot, to whom it was sent by Mr. Fortune. Some of the specimens at Bagshot have borne exposure three winters uninjured, and it may therefore be looked upon as perfectly hardy; at all events the question will be speedily settled, for the present rigorous season will subject it to a severe test, and we will endeavour to keep our readers informed of the result.

Its cultivation is unattended with any difficulty; it thrives in peat and loam, and may be increased by cuttings of the half-ripened wood; like the other Abelias, it is benefitted by occasional 'stopping.' In the open ground it flowers about July. The exact height it will ultimately attain we cannot state, but it will probably not exceed three or four feet. Although so recently introduced, it will shortly be obtainable at a very moderate price, but such plants will be, of course, of somewhat diminutive size.

Most of our readers are acquainted with the *A. floribunda*, a Mexican species, with long narrow tubular blossoms of a rosy-crimson, generally cultivated in the greenhouse, where it flowers for some weeks during the spring and summer; although less hardy than the *A. uniflora*, it would probably bear our mild winters in dry soils; this species is also known under the name of *Vesalia floribunda*.

There are three other species; but only one of these, the *A. rupestris*, is, we believe, yet in cultivation. It is a nearly hardy plant, of weak trailing habit, with pink and white flowers of an agreeable fragrance; we believe it will be found hardy in the southern countries.

Of the two remaining species, one, the *A. serrata*, is said to be nearly related to the *A. uniflora*, but at present only dried specimens are known in this country; the other, *A. triflora*, from India, is supposed to be distinct, but our information on this plant is scanty.

The Abelias are named in honour of Dr. Abel, a physician, who accompanied Lord Amherst on his memorable embassy to China.

The Order, *Caprifoliaceæ*, comprises some of our most desirable hardy shrubs. Not to speak of the various species of Honeysuckle, with their charming poetical associations, it will be enough to name the beautiful *Weigela rosea*, the *Leycesteria formosa*, the Laurestinus, and other species of *Viburnum*. Of the *Weigela* we need say but little, as it is now well known as one of our handsomest deciduous shrubs; a new species or variety, the *W. Middendorffiana*, with yellow flowers, has been recently introduced, but it has not yet blossomed in this country, and its merits are therefore unproved.

The genus, *Viburnum*, has recently received several highly interesting additions from China, but they are of sufficient importance to merit a notice by themselves, which we hope soon to afford them.

ARNÉBIA ECHIÓIDES.

Echium-like Arnebia.

Linnean Class—PENTANDRIA. *Order*—MONOGYNIA. *Natural Order*—BORAGINACEÆ.

THE flowers of many plants of the Borage tribe are so ornamental, that it cannot but be regretted that the general coarseness of their foliage opposes itself to their extensive adoption in our mixed flower borders. This objection must not, however, be exaggerated, for in many of the species the characteristic in question is by no means so obtrusive as to justify their exclusion, and in proof of this, we need only cite the the beautiful Pulmonarias; the yellow Onosmas; the Alkanets, so valuable from the abundance of their large blue flowers; the neat little *Omphalodes verna*, and *Myosotis azorica*; and last, but not least, the very pretty plant whose name stands at the head of the present article.

The perfectly hardy character of nearly all the plants composing the Order will be a powerful recommendation to some cultivators; and although they will, like most other plants, vary in their luxuriance, according to the nature of the soil, the majority of them will flourish in earth of only ordinary quality.

In speaking of the *Arnebia*, it will be necessary to point out the features which distinguish it from the other plants of the Order, and it may therefore be advisable first to note the leading peculiarities of the *Boraginaceæ*. If a flowering specimen of any plant of the Order be examined, for example, one of the Alkanets (*Anchusa*), though almost any other will do equally well, it will be seen that the corolla is monopetalous, or composed of only one piece, the limb or edge being divided into five equal lobes; that the stamens are five in number, placed in the tube of the

flower, alternately with the lobes; that the seed-vessel is so deeply divided as to appear to consist of four distinct nut-like bodies, from the midst of which the style arises; and, further, that the leaves are placed *alternately* on a *round* stem.* The arrangement of the flowers on one side of a spike, curled inwards like a crook, a form of inflorescence termed by Botanists *gyrate* or *scorpioid*, is another peculiarity which will not be overlooked.

These are not the only features which will meet the eye in the Alkanets, but those we have named are common to nearly all the plants of the Order.

The distinction between the different genera consists in the presence or absence of connivent scales at the mouth of the tube; in the greater or less expansion of the limb of the flower, and in the presence or absence of perforations at the base of the nut-like lobes of the ovary.

In the Alkanet, the throat will be found closed with five converging shaggy scales, or *laminæ;* and these are present also in the different species of Borage, Bugloss, *Myosotis*, *Cynoglossum*, and *Symphytum*. In our native Comfrey, *Symphytum officinale*, the scales are of a somewhat different character to those of the Alkanet, being edged with glittering, semi-transparent callosities, which in a strong light have a very interesting appearance.

In the Echiums, Pulmonarias, and Lithospermums, these scales are absent, the throat of the flower being quite open; and it is to this section of the Order that the *Arnebia echioides* belongs.

This plant has been bandied about from one genus to another by different Botanical writers, until it has acquired a somewhat lengthened list of synonymes. By Linnæus it was termed *Lycopsis echioides*, but in that genus the mouth of the flower is closed by scales, and the nuts are hollowed at their base; by Bieberstein it was classed with the Alkanets, but these too have the throat furnished with scales, as we have already seen; and by Fischer and Meyer it was placed among the Lithospermums, under the name of *L. erectum*. It is with this genus that it has the greatest affinity, and there seems indeed no good reason for removing it thence. The genus *Arnebia* is doubtless sufficiently distinct from *Lithospermum*, the *two*-lobed stigma of the latter being replaced in the former by one with *four* lobes of a subglobose form. But it is singular that this feature, which is almost the only point of difference between the two genera, is absent in the species under consideration, its stigma being bifid. The flowers are larger than in most of the Lithospermums, and the corolla is rather more salver-shaped, but these differences appear insufficient to justify its separation from that genus.

What its exact affinity may be, is, however, a question in which perhaps our

* In the Lipworts *(Labiatæ)* the ovary is also four-lobed, but they are very readily distinguished from the Borage tribe by their *square* stem, *opposite* leaves, and irregular flowers, which have the stamens didynamous.

readers will find but little interest. That it is a very attractive plant when in flower, will be obvious from our figure, especially when cultivated in a good-sized clump. Its fusiform woody root resembles that of the Alkanet, but the stems do not exceed six or eight inches; they are erect, and covered with short hair, as are the leaves. These are all sessile, the lower ones of some size, the upper ones becoming gradually smaller. The calyx is deeply cut into five blunt, narrow segments; the corolla is almost salver-shaped, with a hairy tube, and five rounded lobes, alternating with which are five well-defined purple spots. These spots sometimes disappear under cultivation, and this is most likely to occur in soils of a stimulating nature. The stamens which are nearly sessile, are placed at various distances down the tube, as in the Phloxes and Verbenas.

The plant is a native of the mountains of Caucasus, and also of Armenia; it was introduced to the Kew Gardens a few years since by Dr. Fischer of St. Petersburg. It is quite hardy, and may be grown either in the open ground or in a pot; the flowers are produced in June and July. Increase is best effected by seeds, which are generally ripened, its tap-roots scarcely admitting of division.

The *Lithospermum canescens* is an allied plant deserving mention; and although its flowers, which are also orange-coloured, are much smaller and less showy than those of the *Arnebia*, yet, as it will grow in hot sandy soils where few other plants will thrive, it may perhaps prove equally acceptable. It is a North American species, and is the *Batschia canescens* of some authors.

Our indigenous *Lithospermum purpureo-cæruleum* is a favourite plant with many amateurs, and it may easily be raised from seeds, which are kept by the London Florists. It is a very suitable plant for rock-work, and succeeds well on a wall.

The Onosmas are also well adapted for the sunny side of the rockery, on which they make a pretty appearance.

Reference has already been made to the Lung-worts or Pulmonarias, so called from their spotted leaves, which have been fancifully supposed to bear some resemblance to a diseased lung; the best species are *sibirica*, *virginica*, and *maritima*, the last a native of Great Britain; they require a light soil.

The Azorean Forget-me-not, *Myosotis azorica*, is a very beautiful little plant, but we regret to say it is only half-hardy; it may, however, be kept through the winter, in a pot on a window, in the absence of any better accommodation. In too rich a soil, its foliage becomes coarse, and overpowers the flowers. It is increased both by seeds and division.

The *Echiums* are many of them exceedingly handsome, but unfortunately the best species require protection in winter, and they are therefore rarely seen; seeds of the *E. grandiflorum*, a pink-flowered species, are, however, generally to be met with at the Seedsman's, and it is well worth cultivation. The hardy annual *E. violaceum* is more generally known, and is of very easy treatment.

The several species of *Anchusa*, to which reference has so frequently been made, are desirable for the back row of the mixt border, or for the shrubbery; *italica*, *incarnata*, *Barrelieri*, and *paniculata*, are among the best.

There are some other desirable hardy plants in this Order, but enough has been said to show that they are by no means deserving the neglect which they have experienced since the introduction of the modern style of gardening.

The *Boraginaceæ* are destitute of any marked properties, and the whole are believed to be innocuous; they are of some value in an œconomical point of view, the roots of several of the species, especially the *Anchusa tinctoria*, *Lithospermum tinctorium*, and *Echium rubrum*, yielding a red colouring matter, much used for colouring oils, and also in dyeing; the first-named plant is largely cultivated for this purpose.

GENTIÁNA BAVÁRICA.

Bavarian Gentian.

Linnean Order—PENTANDRIA. *Class*—MONOGYNIA. *Natural Order*—GENTIANACEÆ.

THE Gentians are usually supposed to be difficult of cultivation, and it must be confessed they are rather more fastidious in their requirements than some other plants; but with a trifling amount of care there are few localities where they will not succeed, except, perhaps, in the heart of a crowded city. In towns of only moderate size we have, however, seen the *Gentiana acaulis* flourishing perfectly, and that too in soils of the most diverse character. They are impatient of stagnant moisture, especially in winter, and they suffer from full exposure to the mid-day sun during the hottest months of the year; it is probable that inattention to these points is the chief cause of failure in their cultivation, and of their consequent rarity in our gardens.

With regard to soil they are by no means so particular as is commonly supposed. They will thrive in peat; in a mixture of peat and loam; and also in friable loam containing a little sand. Rich highly-manured soil is objectionable, and in wet adhesive loams they will live but a short time; but in either case it will only be necessary to supply a small quantity of the compost of peat and sandy loam, with *drainage* beneath it, in order to place the plants in the condition requisite to ensure success.

The exposition should be such that the plants are screened from the sun during the hottest part of the day, only the morning and evening rays being allowed to reach them, especially in dry arid soils; but the situation should be as light and airy as possible—they will neither bear to be smothered by other plants, nor endure the

drip of trees. During long continued rains in autumn and winter, it will be a good plan to cover the clumps with a large pot, as they are more impatient of wet than cold; but they should not be kept covered longer than is necessary.

With these trifling precautions all the species may be grown to perfection, and the beauty of their flowers will well repay a little care in the selection of soil and site.

The genus is chiefly represented in our gardens by the dwarf Gentian, *G. acaulis;* but the species are so numerous, that Dr. Griesbach, who has written a monograph of the Order, enumerates no fewer than 154 as known to Botanists. Of these, however, not more than fifteen or twenty species are kept by English Florists, and even that number could hardly be obtained without some trouble.

They occur in nearly every part of the world, Africa and New Holland excepted, chiefly in the temperate regions, and at some elevation, often near the limits of perpetual snow. The few species in cultivation in this country are nearly all natives of Europe or North America.

Those indigenous to great Britain form a group by no means the least interesting of the genus. The *G. Pneumonanthe* is one of the most charming plants of our English Flora, and well deserves to be transferred to the borders by those who are fortunate enough to discover it in their botanical rambles.

Another little gem is the rare *G. nivalis,* found only in Scotland, in a few localities. This species, and the *G. Amarella, G. Germanica,* and *G. campestris,* are but of annual duration; the three last are far more generally distributed than *nivalis,* being found in most of the English counties.

The *G. verna,* also indigenous, but rare, is a beautiful species, not unfrequently met with in cultivation, and is sometimes kept by the Florist. It is quite dwarf in its habit, and resembles in this respect, as well as in the colour and form of its flowers, the *G. Bavarica* figured in our plate.

We have chosen this species as an example of the genus, not only for its intrinsic beauty, but also from its being one of those least known. It is not, as its name would apparently imply, confined to Bavaria, for it is found in most of the alpine regions of the South and Centre of Europe.

Our readers will observe that the form of the corolla differs considerably from that of the better known *G. acaulis,* that of the latter being bell-shaped or campanulate, whilst the former is salver-shaped or rotate; the foliage is also very much smaller, and it belongs, in fact, to a different section of the genus. The flowers are produced singly at the extremity of the shoots, and are of the most intense blue, with a well-defined whitish spot at the top of the tube, where the divisions of the limb unite. The small thyme-like leaves are of a bright glossy green, those at the lower part of the stem being very closely placed. In the *G. verna,* to which we have already observed, the plant is related, the inferior

leaves are more dilated, so as to form a sort of rosette at the base of each stem. It is a very beautiful little plant, and cannot fail to become a favorite when more extensively known and cultivated. Like all the dwarfer species, it requires to be planted in clumps to produce much effect, or it may be used as an edging to small peat beds.

The *G. bavarica* is somewhat rare; the only nurseryman, to our knowledge, in possession of it is Mr. R. Stark, of the Edgehill Nursery, Edinburgh, of whom the *G. verna, alpina, gelida,* and several other interesting species, may also be obtained.

Some of the taller species of Gentian are very ornamental, perhaps even more so than the dwarfer ones, and they are less rare than *bavarica.* Of those found in Europe and Asia Minor, *septemfida, cruciata, asclepiadea,* and *purpurea* may be recommended; and to these may be added *Catesbæa* and *Saponaria* from North America, all with blue or purple flowers; they vary in height from one to two feet, and flower at a later period of the summer than *acaulis, verna,* and *bavarica,* which gives them an increased value. Of *Saponaria, asclepiadea, verna,* and *Pneumonanthe,* there are white flowered varieties, which produce a pretty effect grown in contrast with the true species. The yellow Gentian, *G. lutea,* is a handsome plant, taller than any of the species yet named, and is easily cultivated; there are also several other species with yellow flowers, and one, *G. incarnata,* with pink blossoms, but the last is exceedingly rare; with this exception, all the species we have named may be obtained of one or other of the London Florists. The whole of them may be easily raised from seed when procurable. The *Gentiana lutea* is the *Astereas luteus* of some Botanists, but the grounds of distinction are not generally recognised as sufficient to justify its separation from the true Gentians.

The flowers of the Gentians present several features worthy of remark. In some of the species, five small segments, or teeth, alternate with the five larger divisions of the limb of the corolla. In *G. asclepiadea* and *G. ochroleuca,* these intermediate segments are short, rounded, and undivided; in *G. verna, G. Catesbæa,* and others, they are bifid; while in the handsome *G. septemfida* (so named from its corolla being usually seven-lobed), they are prettily fringed. Others have the throat of the flower bearded, as may be seen in *G. caucasea,* and the indigenous species, *G. Amarella* and *G. campestris.* The pollen of most of the species forms a pretty microscopic object, being generally composed of three grains, or occasionally three-lobed.

The leaves of many of the Gentians are strongly three-nerved, but there are so many exceptions to this rule, that it can hardly be depended upon as a mark of distinction from other plants; in all the species they are opposite, and quite destitute of lobes or teeth.

The bitter tonic properties of the plants of this genus are well known, and it is remarkable that almost every member of the Order shares them to a great degree.

The *G. lutea* furnishes the roots used medicinally in this country, but many of the other species fully equal it in their tonic properties, and are successfully substituted for it in the regions to which they are indigenous.

The name of the genus is probably derived from that of Gentius, a King of Illyria, who is said by Pliny to have discovered the virtues of some of the species.

SALPIGLÓSSIS COCCÍNEA.

Scarlet Salpiglossis.

Linnean Class—DIDYNAMIA. *Ordèr*—ANGIOSPERMA. *Natural Order*—SCROPHULARIACEÆ.

Among the numerous striking phenomena displayed by the vegetable world, one of the most interesting to the Florist is the remarkable tendency exhibited by many plants to 'sport' their colours; in other words, to produce seed which gives rise to plants bearing flowers of different tints to those of the parent. The inducing cause of this variation is, and will probably remain, one of those insolvable mysteries before which our limited intelligence must bow; all that we know is, that in some genera and species the disposition to 'sport' is manifested more strongly than in others, and that advantage may be taken of this by the Florist to increase the variety of tints prevailing in such species. We do not here refer to the change of tint produced by hybridization, whether natural or artificial, but to the spontaneous variations in colour which are known to occur in some plants, when all possibility of cross-impregnation is removed.

The *Salpiglossis sinuata* (and under this head we include the so-called species, *picta*, *straminea*, *atro-purpurea*, and *Barclayana*, which by Dr. Lindley and Mr. Bentham are regarded only as varieties of *sinuata*,) is one of those plants in which this mutability of hue is strongly developed. Already the varieties in cultivation included examples of nearly every imaginable tint, but red or scarlet has hitherto been wanting among them; this colour is now attained, affording us another proof of the incorrectness of the theory propounded by some Botanists, that the three primarytints cannot be evoked in the same species.

The *Salpiglossis coccinea* is, without contradiction, a most valuable addition to our list of half-hardy annuals, and will, we hope, form a permanent variety; though we confess our inability to explain how it is that the result of a 'sport' should itself assume a constant character. In its general habit and characters, it resembles the other varieties; like them attaining a height of one-and-a-half to two feet, with

erect branching stems, clothed with clammy hairs. Its colour is 'a clear vivid tender scarlet,' relieved by darker veins of the same tint.

Its cultivation is precisely that of the other varieties; the seeds require the aid of a hot-bed, and are best sown in March, in pots of light sandy loam; they should be thinly distributed, and as soon as the seedlings are an inch or two high, abundance of air should be admitted if the weather is sufficiently mild to allow of it, for the Salpiglots are by no means tender, and will not bear 'coddling.' When the young plants are large enough to handle without injury, they may be transferred in small patches to larger pots of light, rich, but *well drained* soil. If, however, the seedlings have come up thickly, they will need transplanting separately, or thinning out. In either case they should, when repotted, be returned to the hot-bed, and be kept close for a few days; after which, about the end of April, they may be placed in a cold frame, and gradually hardened off before planting out in May. A light rich soil, composed of a little leaf mould and thoroughly decayed manure, mixed with sandy loam, suits them best. They will form a very beautiful bed, where the 'massing' system is adopted, but are equally valuable for planting in clumps in the mixt borders, and will flower through the summer.

We have termed the *Salpiglossis coccinea* an annual; but although it may be treated as such, there can be but little doubt that it is, with the other varieties, really of perennial duration, and, like the Petunias, may be perpetuated by cuttings. The *Salpiglossis picta* and *atropurpurea* have been preserved through the winter in the open ground, covered by a pot during frost; but unless in very favourable localities, they would hardly survive any but our mildest winters. Where the means of preserving the seedlings through the winter, either in a cold frame or greenhouse, are at hand, the plants will flower earlier and stronger if raised in autumn.

The older varieties, of which we have spoken, especially *picta*, are not a whit less interesting than *coccinea*; there are also yellow and blue-flowered varieties, and one with pure *white* flowers, which is very pretty; seeds of this, as well as of *coccinea* and all the varieties named, may be had of the principal London Seedsmen.

The Salpiglots form a connecting link between the *Scrophulariaceæ* or Fig-worts, and the *Solanaceæ* or Night-shades; the tendency to a didynamous arrangement of the four perfect stamens shews their relationship to the first Order, whilst the presence of a fifth stamen, in a rudimentary form, it is true, marks its near approach to the latter.

The generic term, *Salpiglossis*, is derived from *salpiggos*, a trumpet, and *glossis* a tongue; in allusion to the trumpet-like form of the flowers, and flattened style. The wild species and varieties are natives of Chili.

THE GENUS AQUILEGIA.

THE rage for novelty which possesses certain classes of Florists, and above all, the 'bedding' mania, threaten with extinction many of our most interesting herbaceous subjects; for whatever may be the beauty of a plant, it has, now-a-days, but little chance of meeting with attention unless it happens to be a continuous flowerer.

We are persuaded, however, that there are many whose love of flowers is uninfluenced by these conventional considerations and other caprices of fashion; to such we venture to recommend, among other plants to be hereafter mentioned whose merits have equally been overlooked, the very pretty herbaceous genus *Aquilegia*. A few of the species are of sufficiently recent introduction to satisfy even the greatest stickler for novelty; but it is rather on their beauty, hardiness, easy management, and adaptability to every situation, that we would found their claims to attention.

Of the numerous species now known, nearly the whole are of sufficient interest to merit a place in the borders; but as our space is limited, we must content ourselves with noticing a few of the best; these are, we think, *alpina, fragrans glandulosa, jucunda, leptoceras,* and *Skinneri.*

Alpina, the first named, is perhaps one of the finest species of the genus, at least it produces the largest and most showy flowers; they are as much as three inches across, with very spreading sepals, and of the deepest blue; the plant is comparatively dwarf, and the foliage rather small. It is a native of Switzerland.

Fragrans is one of the few yellow species, and is a beautiful plant, with sweet-scented blossoms, as its name implies. It does not much exceed a foot in height, and requires to be kept somewhat dry in winter, by having an empty pot turned over it. It is a Himalayan species.

Glandulosa resembles *alpina,* but has its petals more acute; there appear, however, to be several varieties sold under this name; the true *glandulosa* has self-coloured *blue* flowers, without any admixture of white, and is a very fine species; being a native of Siberia, it is quite hardy, but likes to be dry in winter.

Jucunda—and most truly is it named *joyous-looking*—is one of the finest of the group. It is allied to the preceding, but differs from it in having white, or nearly white petals, the sepals being deep blue; they are further distinguished by the shape of the petals, which in *jucunda* are much less acute than in *glandulosa.* This, too, is a Siberian species, and is injured by excessive wet in winter, though in summer it requires to be freely supplied with moisture.

Leptoceras is a beautiful North American species, remarkable for the length of its

spurs. The flowers are as large as those of *alpina*, but produced in a panicle; they are of a creamy white, with a tinge of blueish green. There is another species in cultivation under the same name from Siberia, with violet and straw-coloured flowers, but it is dwarfer, and we think less handsome than the North American plant.

Skinneri is one of the very few South American species, being a native of Guatemala, and it is therefore likely to suffer in very severe weather. It may, however, easily be grown in a pot, and plunged into the borders, which will allow of its being removed and protected during hard frost. It is a very handsome species, the flowers with very long spurs, of a brilliant red colour at the lower part, and green tips.

To these may be added many of the varieties of the common *A. vulgaris*, some of which are almost equal to the preceding species, and they include every shade of blue, brown, purple, white, and pink.

All the species succeed best in rich sandy loam, though they will grow in anything worthy to be called garden-soil. The finest plants we ever saw had sprung up, self-sown, in an old anemone bed, in which a good layer of cow-dung had been originally buried; and although they were only varieties of *vulgaris*, they made a most effective display of flowers, in masses two or three feet across. Single specimens, whether of these or any other plants, produce but a meagre effect.

The Columbines are so inclined to sport their flowers, and intermingle so freely, that it is almost impossible to raise them true from seed when they are grown together; for this reason, if the true species are required, it is best to purchase roots, which may be had of most Florists. The varieties raised from seed are, however, quite as ornamental; and it is certain, that, with a little attention, many might be originated between the different species which would be even more highly coloured and attractive than those at present in cultivation. All of them will flower the second year from seed, which may be sown in the open borders in April.

BRIEF NOTICES OF NEW AND RARE PLANTS.

ALSTROMERIA PLANTAGINEA. (*Amaryllidaceæ*).—A very fine species introduced from Brazil some years since to M. de Jonghe of Brussels. It is a herbaceous plant, with simple erect stems one-and-a-half to two feet high, bearing a large umbel of bell-shaped flowers of deep orange, lined with yellow, tipped with green, and spotted with dark brown bars. It is sufficiently hardy for cultivation in the open air, at least during the summer months, and requires only the treatment of the other species.

CHEIRANTHUS MARSHALLII. (*Cruciferæ*).—This beautiful plant is no longer a novelty, and is, doubtless, already in the possession of many of our readers. To such as have not acquired it, we venture strongly to recommend it as one of the most desirable of spring flowers. Its blossoms are

produced in long spikes, and are of a beautiful orange colour, rather paler than those of the *Erysimum Peroffskianum*, one of its reputed parents. They are deliciously fragrant, with a strong scent of violets; and on this account it will be a favourite pot-plant for the window in early spring. It is as easily increased or cultivated as the common wall-flower, and may be purchased for a trifle of any Nurseryman. Strange stories have been told of the origin of this plant, its introducer affirming it to be a hybrid between *Cheiranthus ochroleucus*, and the annual *Erysimum Peroffskianum;* but it is extremely improbable that two genera so distinct in the structure of their seeds, will hybridize, and we therefore attach but little credence to the statement, until it shall be confirmed by fresh experiments.

Comaclinium aurantiacum. (*Compositeæ*).—A very beautiful half-hardy perennial, with the general appearance of an African Marigold, but with large scarlet flower-heads, resembling those of the *Zinnia*. It was raised from seeds found in the earth accompanying a lot of Orchids from Central America, by Mr. Ortgies, foreman in Mr. Van Houtte's hot-houses. It flowered last autumn in the open air at Ghent, and will therefore be likely to prove useful for summer decoration. We observe that it is already in the hands of English Florists, but its price is at present rather high. It appears in some catalogues under the name of *Tithonia splendens*..

Dielytra Chrysantha. (*Fumariaceæ*).—If less striking than the beautiful *D. spectabilis*, this novelty will be a very acceptable addition to our hardy perennials. The foliage is much more divided than in *spectabilis*, and is of a glaucous tint, resembling that of the Garden Rue. The flowers are produced in stiff erect branching panicles which rise above the leaves; they are very numerous, rather more than an inch in length, and of a bright golden yellow colour, but are less drooping in their habit than those of *spectabilis*, many of them, are indeed, almost erect. It has been raised from Californian seeds by Messrs. Veitch, of Exeter, and flowered in their nursery for the first time last September. If it proves to be an autumn flowerer, its value will be increased. We may also hope that hybrids between it and *spectabilis* will soon be obtained. It is figured in *Paxton's Flower Garden* for January of the present year.

Leptosiphon luteus (*Polemoniaceæ*).—Although the name of this very pretty annual is to be found in most of the Botanical dictionaries, it does not appear to have been actually introduced to this country till very recently. Messrs. Veitch of Exeter have had the good fortune to obtain it through their collector in California, and we may therefore hope its brilliant yellow flowers will, before long, be familiar to our readers. One of the varieties produces pale lemon-coloured blossoms, in another they are as dark as an orange. It is as easily cultivated as the common *L. androsaceus*.

Malcolmia littorea (*Cruciferæ*).—Every body knows the little *Malcolmia maritima*, or Virginian stock, though why it should have received this name is not very clear, seeing that the plant is a native of Europe. The *Malcolmia littorea* is a much finer species, recently introduced from Portugal by Mr. Wellwitzsch. It is probably a biennial, but in this country is best treated as an annual, as it will hardly endure our winters. It grows about a foot high with narrow, blunt, stalkless leaves, which, as well as the stems and branches, are covered with a whitish pubescence. The flowers are large for the genus, and are produced in terminal, many-flowered racemes, of a bright pink-purple, varying in depth in the different stages of development as in *M. maritima*. It may be treated as a hardy annual, and will flower during the summer and autumn. It is found not only in Portugal, but also as far north as Nantes, and southward it extends along the western shores of the Mediterranean. It has also been detected in Barbary and Morocco. [Figured in *Bot. Mag.* for September, 1852.]

Salvia hians (*Labiatæ*).—The *Salvia hians* is by no means new to this country, but, like many other species, it is very rare; and we are therefore glad to find that seeds of it have been lately introduced by Major Madden from Simlah, to the Glasnevin Botanic Gardens. It is a beautiful hardy herba-

ceous species, producing terminal and lateral spikes of violet flowers, with a pure white centre to the lip. Mr. Bentham considers this plant to be the *S. plectranthifolia ;* but, according to Dr. Lindley, the differences between it and that generally known as *S. hians* are so slight, that at most it can only be regarded as a variety of that species. [Figured by a woodcut in *Paxton's Flower Garden* for January, 1853.

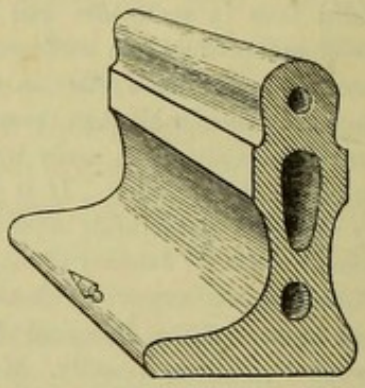
MISCELLANEA.

HOGG'S EDGING TILES FOR GARDEN WALKS.

The expense of the dwarf box in gardens of any extent, and the frequent attention it requires, have often suggested the expediency of employing some more permanent material as an edging. Several attempts have been made to produce a substitute in earthenware, but none of them have met with success, as well from the comparatively high price of the tiles, as from the difficulty of keeping them in their position.

Mr. Hogg has devised an edging which is free from both these objections. He states :—

'I have had experience of them for nearly twelve months, and I have found them answer all the purposes an edging is intended to supply, and that, too, at a cost more than one-half less than dwarf-box, and nine-tenths less than many other edgings. They are composed of the same clay, and are manufactured at the same works as the patent hollow bricks, and, from what I have seen of them, they appear to become harder on exposure to the weather. Cheapness is another great qualification. They can be supplied in any quantity at 10s. 6d. per hundred, or about 1¼d. each. They allow the borders to be cultivated close to them, and any extent of the soil disturbed or removed. The shoe which passes under the walk being covered with four inches of gravel, when that becomes "bound," the tiles are literally immovable, and no wheel-barrow or roller can displace them. They also afford ample drainage for the walks, and under no pretence whatever do they harbour slugs.'



The tiles are 4⅞ inches broad, 6⅜ inches deep, and 12½ inches long. In forming curves, very short lengths of the same kind are employed. Dr. Lindley recommends them as being "hard, good-looking, a good colour, and cheap." The accompanying fig. will give a tolerably correct idea of one of the tiles. It will be understood that the tile is sunk to the shoulder, so that only about 2½ inches of its depth appear above the surface. It is necessary to observe that the article is "registered." Mr. Hogg's address is 13, Gelston Road, Brompton.

THE NEW DAHLIAS FOR 1852.

Having seen the following varieties, which were sent out last May, under several systems of treatment, and also having grown the most of them myself, I will record my impression of their merits. First, in the estimation of all should stand Annie Salter, a chaste and beautiful shaped variety, delicate peach lilac, and has the advantage of being constant. Sir R. Whittington comes next, a noble full-sized crimson, with great depth of petal. Triumphant, a capital flower, the habit being very fine, but has not the boldness of petal of the two former. Dr. Frampton, a Radziville flower, is very good, but somewhat undersized. In shape it is undeniable. The same may be said of Lizzy, which

is more attractive in colour, yet uncertain as well as small. Edmund Foster, crimson, is liable to the thrip, therefore the centre not clean at all times, but is of first-rate form, and of the right stamp. Sir F. Thessiger, is good late, the early blooms come ribbed, of medium size. Scarlet King is a little too open, particularly if grown strong, is too flat on the face. Douglas Jerrold, yellow tinged, good habit, petals want width; but the worst fault as a show flower, is, the back goes before the centre is up. Malvina disappointed me early, but late it is a desirable flower, the same with Morning Star, which promises yet to be a favourite. White Defiance is a good formed flower, and tolerably constant, but low in the centre, and pencilled, not pure white. Tom has a good stout petal, and appears constant, but was too late to speak to its general character. Queen of Whites can be improved upon; yet taken for all in all, is the best white up to the present time. George Villiers is a good acquisition to the dark purple class, and is very constant. Alice, so much looked to, has been a failure, inasmuch as two-thirds of the plants produced single, or semi-double flowers, but when a good bloom was caught, it was exceedingly striking, yet there is too much centre for the size of the flower; and although the outline is perfect, the face is flat. Sparkler and Albert, will not do as show flowers, the latter may as a border variety. Niobe is a large promising flower, white and lavender. Louisa Glenny, although good, is small, and too uncertain for general use. Ariel is also too uncertain. John Davis, large and very coarse without novelty. Victoria, neat and pretty, but not enough of it. Absalom, a passable orange salmon, which must be grown again. Granta's Gem, large salmon buff, too quilly, but caught at times. Beauty of Versailles, purple, is behind the flowers of the present day. Aurora, too thin and uncertain. Una, blush, too open. Compacta, small salmon rose, but very uncertain. Robert Montgomery and Phantom, but indifferent. Of Fancies there is not much to say. Glorie de Kain is a great acquisition; white, striped and spotted with purple; very constant, and good shape. Spectabilis is also a good striped variety, yellow buff ground, striped red. Laura Lavington, although not always tipped, is a good variety, the shape being fine. Miss Ward is of the yellow ground class, good in form and full, not always tipped. Mrs. Merry, showy, but coarse. Nancy, good quality, but thin and hard eyed. Cricket, good quality, of indistinct colours and queer centre. Kossuth, good shape but rather too uncertain. Miss Bathurst, much too thin. Flora M'Ivor, a good useful flower. Lilliput Von Bayreuth, red and white, a good flower for exhibition. La Peon, striped of average form. Claude, a useful flower, between Mrs. Wallis and G. Clayton.—J. Edwards, Wace Cottage, Holloway, in *The Scottish Florist and Horticultural Journal.*

FORMATION OF WOOD BY ROOT BUDS.

The mode in which the wood of plants is formed has often been the subject of discussion; by some botanists it has been regarded simply as a deposition of matter between the bark and the old wood; by others it has been held, that it is formed by the *downward descent of bud-roots* between the bark and the previously formed wood. This view is now very generally adopted, explaining, as it does not only the growth of exogenous plants, but also that of endogens; and it offers, in addition, the only rational explanation of our modes of propagating plants by budding. That this theory is the correct one is proved by the economy of the *Ficus Benjamina*, and that of the true Banyan. Both of these plants are remarkable for the profusion of roots thrown down from their branches. The main stem of some of them does not form one solid mass, as in other trees, but is a congeries of thick branching roots, which come down from the lower end of the large branches surrounding the original shoot or stem. The long horizontal main branches have not so conical a shape as in other trees; for the roots which are thrown out by each bud, instead of being sent down between the bark and the, previously formed wood, are thrown out along the whole course of the branch, in masses which resemble enormous horse-tails; and hence the necessity which the branches of such trees have for the supports which are formed by those roots when they reach the ground.

FUMIGATION WITH TOBACCO AND CAYENNE.

During the last few years fumigation by cayenne has been occasionally referred to in our Gardening periodicals; but we do not remember to have seen any practical instructions for its use, or any authenticated successful results. The following extract from the *Garden Companion* will, therefore, probably prove useful to many of our readers.

'Provide a strong aqueous solution of nitre, in which soak sheets of stout brown paper, and, after drying it slowly, cut it into lengths of convenient size, the largest 18 inches by 12. Next procure some strong tobacco, strew it thinly over the paper, and then with a coarse pepper-box dredge a coat of good common cayenne pepper over the tobacco; wrap up all rather loosely, exactly as in making a cigarette, paste the end over, and when dry, it is fit for use. Two or three of these suspended in a green house, or cold frame, and lighted at each end, will very quickly settle the account of green fly and thrip. Instead of a green house, a small room, with the apertures closely stopped, may be used to hold the plants. By using cayenne much less tobacco is required, the expense being reduced nearly three-fourths, and the effect of the two combined is most deadly; for it is impossible for insects to live in an atmosphere so thoroughly impregnated with the elements of suffocation.' We presume that by common cayenne ground capsicum pods are intended; much of the fine cayenne of the shops is adulterated with salt, red lead, etc., most abominably; but the coarse capsicum powder is too cheap to make it worth while to sophisticate, and is, therefore, to be got in a genuine condition.

In fumigating, care should be taken that the foliage of the plants is *dry*, or the smoke will have but little effect on the insects. Where there is neither a green house nor cold frame in which to conduct the process, and it is inconvenient to employ a room, a closet, or even a large tub, well covered, may be used for the purpose; but in these cases the cigarette should be kept at as great a distance from the plants as possible, to prevent the scorching of the leaves, and a small one, containing at most a quarter of an ounce of tobacco, will be quite sufficient. The amateur should remember, that in this case, as in all others, *prevention is better than cure*, and on no account should the fumigation of a plant be deferred until the fly has thoroughly taken possession of a plant; the moment a few are discovered, the plant should be taken out of doors, and a soft brush applied gently, by this means they may often be easily kept down; if this proves ineffectual, smoking should be at once adopted. After fumigation, the plant should be allowed to remain covered and undisturbed until the following day, by which time any aphides remaining may be readily shaken or brushed away, or removed by a slight syringing with clean water.

SEED SOWING.

As the season for sowing the hardy annuals is close at hand, a hint or two on the subject may prevent some failures. We believe that many seeds are sown at too great a depth, and in heavy soils this alone would be sufficient to prevent their germination. Small seeds only require to be pressed into the surface, but it must be admitted that in this case they are liable to be washed up by heavy rains; to prevent this the patches should be covered with a layer of moss, or, as this would require to be covered with a pot to prevent it from being scattered, perhaps a compact furze bush, cut to suitable form, will be preferable; it should be secured to the ground by a peg. This will not only ward off the dashing rains, but also afford a material protection against frost, at the same time, that it allows air to enter. The hardiest annuals are unable to resist the effects of a sharp frost in their earliest stage, and it is no wonder, therefore, that many of them disappear soon after emerging from the ground. It is important, however, to observe that the furze bush should be removed early to prevent the seedlings from being drawn. The slugs and snails often commit sad havock among seedlings; they may easily be trapped with slices of the common white turnip, which should be laid along the borders, and examined every morning; hundreds may thus be destroyed in a few days.



Forsythia viridissima



Echeveria retusa



Camellia japonica



Wulfenia carinthiaca

FORSÝTHIA VIRIDÍSSIMA.

Deep green Forsythia.

Linnean Class—DIANDRIA. *Order*—MONOGYNIA. *Natural Order*—OLEACEÆ.

AMONG the numerous valuable plants discovered by Mr. Fortune on his first visit to China, and subsequently introduced to this country, two are remarkable for the profusion of their large yellow flowers, produced, in the case of one, in the very heart of winter, and in that of the other in early spring. Our readers will readily understand that we allude to the *Jasminum nudiflorum*, and the *Forsythia viridissima*.

It is doubtless some drawback on the merits of these fine shrubs, that in both the blossoms appear before the leaves; but winter flowers are so acceptable, even when, as in these instances, unaccompanied by their usual foliar attendants, that this circumstance has not prevented them from attaining a considerable place in the estimation of the public.

Both are highly ornamental objects for a wall, when this can be spared; for although the shrubs themselves are quite hardy, the flowers of the *Forsythia* sometimes suffer from severe frost, when grown as a bush or standard, as in the case of many winter-flowering plants; and the shoots of the Jasmine are of such tenuity, that some support is rendered necessary by *this* circumstance alone.

But, great as may be the value of the latter, it is not our text on the present occasion; and we must therefore now dismiss it, and confine our remarks to the plant selected for illustration.

The *Forsythia viridissima* is a free growing shrub, reaching ultimately the height of eight feet, or even more, with somewhat angular branches, which when mature are of a dark brown tint. The leaves are opposite, generally lance-shaped, acute, and toothed at the margin from the middle upwards, but entire near the base; they are, when full grown, of a clear, deep green colour, to which circumstance the specific name alludes. In the axils of each leaf, a small bud is formed, which as the autumn advances becomes gradually more conspicuous, until, when the leaves have fallen, these buds assume so prominent an aspect, as to form a marked feature in its winter physiognomy. They remain dormant until March, when they gradually unfold themselves, and disclose a profusion of large bright yellow blossoms, emitting a delicate balsamic odour, in which respect they have an advantage over those of the *Jasminum nudiflorum*, which are scentless. The flowers are produced sometimes in pairs, but often singly, on short foot-stalks so slender, that the blossoms are generally drooping; they are, as already intimated, of considerable size, somewhat

campanulate in form, with a short tube plaited within, and a limb cleft into four spreading obtuse segments. The stamens are two in number, with filaments so short, that they are quite concealed in the tube.

In the diandrous character of its flowers, the *Forsythia*, and, indeed, all the plants of the Olive tribe, approaches the Jasmines, the two tribes having been formerly united; but the pendulous ovules of the *Oleaceæ* sufficiently distinguish them from the latter, which have, moreover, a *five-cleft* corolla, and seeds containing but a very small quantity of albumen, whilst those of the Olive tribe abound in this substance.

The Forsythia is easily cultivated, and as easily increased, the most ready mode of propagating it being by layers; but cuttings of the ripened wood, about a foot or more long, taken off in autumn, and planted in sandy loam, will root freely.

A soil of this character is also best suited for established plants; in rich moist earth it produces long-jointed shoots, and continues its growth later in autumn than is compatible with the due maturation of the wood. A situation against a wall is to be preferred for it, because in this position the shoots will be subjected to a greater amount of heat, which will materially assist the ripening process. It cannot be too often repeated that in this consists the whole art and mystery of acclimatizing the plants of warmer regions than our own, though in this instance we have to deal with a plant from a district where the winters are certainly much severer than in any part of Great Britain. The summers are, however, of an equally extreme character, and the shrubs and other plants of the North of China are therefore well prepared by the roasting they undergo, to endure the subsequent reduction of temperature. As a further illustration of this principle, we may remark that in the neighbourhood of New York, where, as our readers know, the winters are of a rigorous nature, the *Forsythia* flowers freely as a bush or standard; and this is to be attributed solely to the elimination of all watery juices by the warmth of an American summer.

This mention of Standards reminds us that the *Forsythia* is grown in this form by Messrs. Standish and Noble of Bagshot, and probably by other Nurserymen. When in flower, these *trees* have an extremely interesting effect, especially if planted amidst shrubs of an evergreen character. When grown as a bush, an exposed situation should be avoided; a warm corner, or a south exposition, sheltered by tall evergreens, will protect the flowers from the cutting March winds, and preserve them in beauty for a longer period.

All the plants of the Olive tribe succeed when grafted on each other; and it appears worth suggesting whether some advantage might not be obtained by grafting the *Forsythia* on one of the dwarfer species of Ash, or even on the Phillyreas and *Fontanesia*.

The Forsythia blooms whilst comparatively small, and may now be had cheap

at almost every provincial nursery. It was introduced, as we have already stated, from China, in 1845 by Mr. Fortune, who discovered it in company with the beautiful *Weigela rosea*, in the garden of a Mandarin, near Tinghae, and subsequently, growing wild in the province of Chekiang.

One other species is recorded in books, the *F. suspensa*, from Japan, but it is very little known, and we are even ignorant whether it exists in this country. It was on this species that the genus was first founded, in honour of William Forsyth, a Horticulturist of some note, formerly Gardener at Kensington Palace.

ECHEVÉRIA RETÚSA.

Blunt-leaved Echeveria.

Linnean Class—DECANDRIA. *Order*—PENTAGYNIA. *Natural Order*—CRASSULACEÆ.

IT would be difficult to suggest a class of subjects better adapted to the purposes of the Window Gardener than those included in the three natural families, *Cactaceæ*, *Mesembryaceæ*, and *Crassulaceæ*, which, with a few other plants, are popularly grouped together under the general denomination of Succulents. Differing considerably in the structure of their flowers, the plants of these three Orders yet agree in the possession of a cuticle of so dense a character, and containing so few exhaling pores, that the atmosphere of a sitting-room, so injurious from its aridity to most others, is borne by them with absolute impunity. For the same reason, they are much less liable to suffer from neglect in watering; it is certainly easy, as in the case of most other plants, to injure them by too frequent supplies of fluid nutriment, but it is difficult, especially in the winter season, to give them too little. But, however accommodating in this respect, there is one point on which they are inexorable—in demanding the sunniest exposition that can be afforded them, and *that*, in this climate, will, after all, be mere moonshine, we were going to say—in comparison with that many of them are accustomed to *at home*.

Of the orders to which reference has been made, one, the *Crassulaceæ*, or House-leeks, contains three genera which are especially deserving of the commendation bestowed on the entire group—we allude to the Crassulas, Larocheas, and Echeverias; the two first are old-established favorites with all cultivators, but the last, if we except the *E. secunda*, which is not unfrequently met with, are less common. Several of the species have the additional recommendation of producing their flowers in winter, and of this number is the *Echeveria retusa*

which is not only one of the most recently introduced, but also, we think, one of the handsomest species.

In its general habit, the *E. retusa* agrees with the other members of the genus, but the radical leaves are neither so regular in their form, nor arranged in so perfectly rosette-like a manner, as in *secunda* and most others. When young, they are acute, but become ultimately extremely blunt and irregularly scolloped or crenate, and bordered with brownish-purlpe

The flower stem, which is also stained with purple, but of a brighter tint, grows from a foot to eighteen inches high, the blossoms being produced at its summit in a dense, drooping, branched panicle, which becomes gradually more erect as the flowers develop themselves. These are externally of a rich crimson-scarlet colour, covered with a delicate bloom, and internally if an orange-yellow; they continue expanded some days before fading, and as strong plants will produce several flowering stems, a succession of blossoms is maintained for two or three months in winter, a season when flowers of much inferior interest to the *E. retusa*, are generally highly valued.

Its cultivation is of the simplest character; sandy loam, enriched with a little leaf mould, or even sandy loam by itself, if not of too sterile a nature, will be found sufficient for its requirements; it is hardly necessary to state that the pots should be well drained to one-third of their depth at least, for this is an indispensable condition to success in the treatment of succulents.

It may be more important to observe that the flowers of the *Echeveria retusa* being produced in winter, it will require more water at that period than those species which flower in summer and autumn; during its period of growth, which succeeds that of blossoming, it may also be kept in a moderately moist condition; but after this is completed, which will occur about the end of July, water should be withheld, and to facilitate the ripening process, the plant may then be stationed out of doors in a sunny corner, for a month or six weeks at least, but must be protected from rain, though slight showers will do no harm. This exposition will be but a poor imitation of the dry season of the tropics, but it will at any rate be more conducive to the production of flowers, than a permanent occupation of the window. If the plant be then removed about the middle of September to the sitting room, and cautiously watered, it will hardly fail, after the lapse of a few weeks, to throw up its flower-stems.

Increase is easily effected, either by the offsets, which may be severed and treated as cuttings, or by the stem-leaves, which are readily detached, and will root freely if, after being dried for a day or two, they are pressed into a pot of sandy soil. The leaves of some of the species will throw out fibres from the back if simply laid on the soil, as in the case of the Gloxinia, and other plants; and it is to be presumed that those of *retusa* will root in a similar manner. Flowering plants are,

however, produced more speedily from offsets, and as these are formed in some abundance, the leaves need only be employed when a considerable number of young plants is required; in either case, they are best taken in spring, or early summer, so that the whole of the warmest months of the year may be available for the rooting process.

In addition to those features common to all the plants of the House-leek tribe, the Echeverias are remarkable for some peculiarities too curious to be overlooked.

The most striking of these is seen in the mode of attachment of the stem leaves; in all the species they are so slightly adherent as to be easily removed, but in the *E. retusa* this peculiarity is carried to a climax, the leaves being hinged only by the skin of the upper surface, the *base* at the *under* side being quite free; this is very evident while the stem is incurved in its early stage, the base of the leaf situated at the bend, projecting in a heel-like form.

The inequality of the sepals, or divisions of the calyx, is another noticeable point in the *E. retusa;* but we believe this anomaly exists in most of the Echeverias. The other characteristics of this genus, besides a five-parted spreading calyx, are a corolla composed of five petals, cohering at the base, so as to form a monopetalous flower; ten stamens, the five which are opposite the petals having their filaments dilated at the base; and five *distinct* carpels, each of which terminates in a short tapering style.* At the base of each of these carpels, a fleshy protuberance or gland occurs, which communicates a swollen appearance to the exterior of the base of the flower; these glands are seen in nearly all the plants of the Order; they probably contain some starch-like matter, which becomes soluble at the time of the maturity of the flower, and serves to nourish the carpels and young ovules, and perhaps the stamens also.

The species of *Echeveria* are not very numerous, and but few are kept by professional Florists, though several of them are highly ornamental when in flower.

One of the most remarkable is the *E. grandifolia*, a species of a far more robust character than *retusa*, the flower-stem often reaching the height of four or five feet, with radical leaves a foot in length; the whole plant except the flowers, which are reddish yellow, is of a pale glaucous blue tint. The *E. gibbiflora*, not unfrequent in private collections, resembles in its habit and aspect the preceding, and grows fully as large; its foliage is, however, much broader and more blunt, and is covered with a white pulverulent substance. The *E. coccinea* is a handsome plant, with flowers of a brighter red than either of the species just named, and like them,

* This correspondence in the number of sepals, petals, and carpels, is a distinguishing mark of the House leek tribe, and, with their *distinct* carpels and fleshy leaves, makes their recognition an easy matter. The stamens are usually *twice* the number of the other parts of the flower.

flowers in autumn; but it is one, we fear, our readers will not be able to procure through the trade. The other species are mostly of dwarf habit, and are all more or less ornamental; though, with the exception of *E. secunda*, they are by no means common, at least among window gardeners.

The *E. secunda*, and other summer flowering species, will succeed on rockwork, or in a dry sandy border; but none of them are sufficiently hardy to endure entire exposure, and they are therefore generally treated as pot plants.

With one or two exceptions, all of them are natives of Mexico, from which country the *E. retusa* was introduced about seven years since, by the collector Hartweg, who transmitted seeds to the London Horticultural Society; we believe the plant may now be procured of most of the principal Florists for a moderate sum.

The genus was named by De Candolle, in honour of M. Echeveri, a Mexican Botanical artist.

CAMÉLLIA JAPÓNICA.

Japan Camellia.

VAR *Fra Arnoldo da Brescia.*

Linnean Class—MONADELPHIA. *Order*—POLYANDRIA. *Natural Order*—TERNSTRÖMIACEÆ.

As a general rule, it is not our wish to admit more than one window-plant, properly so called, into each plate; but the scarcity of hardy subjects at this season obliges us, for once, to depart from our usual plan; and we could scarcely make an exception in favour of a more worthy subject than the splendid Camellia Fra Arnoldo da Brescia.

The noble genus of which it is so fitting a representative, might fairly have claimed an earlier notice in these pages, for of the hundreds of exotics which now grace our collections, the Camellia stands confessedly without a rival. It is not to be denied that the most perfect control over its growth and management are attainable only with the aid of a greenhouse or some closed structure, but if window-grown specimens cannot compete in all points with those produced under more favourable conditions, it is nevertheless certain that, with only moderate care, such results may be obtained, that the window-gardener need not envy the possessor of a greenhouse, unless it be for the greater space enjoyed by the latter, and the consequent facilities for the growth of a larger collection.

The greenhouse treatment of the Camellia we leave to those of our contemporaries more especially devoted to that branch of Horticulture; the following remarks will therefore have reference solely to its management as a window plant, though

we scarcely need add that in all essential points, the treatment is the same in both cases. Put into a synoptical form, the different stages of its culture may be thus briefly expressed: period of flowering—interval of rest—growth of shoots—formation and setting of flower-buds—potting—comparative rest.

We will suppose the plant to have passed the first or flowering period, upon the window of a moderately warm apartment. As soon as the flowers have fallen, the pot should be removed to a *cool* airy room, without a fire, and allowed to remain in a comparatively dry condition, until the leaf-buds manifest a tendency to commence growing. This will occur naturally about the end of April, and the plant must then be removed to a warmer room, and supplied freely with pure water. At this stage a moist atmosphere will be of great assistance to it, though in a sitting room, or indeed in any ordinary apartment, it is difficult to obtain a medium that is at once both *warm* and *damp*. Something may be done by sprinkling the plant frequently with water, and if the surface of the soil in the pot is covered with moss, kept constantly damp, the dryness of the air of the room may be to a great degree counteracted. The plant must on no account be placed where it will receive the direct rays of the mid-day sun, from which the young and delicate leaves would receive injury; a window of south aspect will therefore be objectionable, but almost any other will do. If no other can be had, then the plant must be removed from the front of the window when the sun shines brightly, or in some way or other screened from its influence.

All this may involve a little trouble; but is is really only at this period that the window gardener will labour under any disadvantage, and once the annual growth of the plant accomplished, the rest of the treatment is of the easiest description. The development of the new shoots generally occupies six or eight weeks, at the end of which time the flower-buds will be formed, and the further growth of the plant must then be checked, by removal to a cooler apartment, or the open air. If after the blossom buds are formed, a high moist temperature is still maintained, the plant will be stimulated to make a second growth, the incipient flowers will in fact produce a fresh crop of leaves and shoots; our object must now be to assist in maturing the flower buds, and ripening the wood already produced. This will be best effected by placing the plant either under a north wall or hedge, or in some other situation where it will receive an abundance of air, little or no *direct* sunshine, and free supplies of water, both at the roots and overhead. The pot should on no account be placed on the bare ground, a tile, slate, or layer of ashes should be interposed to prevent the entrance of worms.

There is a considerable difference of opinion among Camellia growers as to the best period for potting, some preferring the spring before the plant commences its growth, whilst others, and we believe the greater number, consider that this operation should be postponed until after the shoots and flower-buds are formed, For

ourselves, we believe the question is unimportant, and may be left to the convenience of the amateur; at no intermediate period, however, should the roots be disturbed; it must be either before any active growth occurs, or not until after its completion. In the latter case, this will be about the month of August, when the plant has already been exposed for a few weeks to open-air influences.

The soil best suited to the Camellia is a fibrous loam, such as would be produced by the decay of turves from a good pasture; but any loam of a friable mellow character may be used: for old, strong plants, it may be employed in an unmixed state; but for young plants, a third of sandy peat or heath-mould should be added, and the same compost may also be successfully adopted in all cases; some eminent cultivators are of opinion that they flower most freely in peat and loam. If the peat does not contain a considerable proportion of sand, a handful or two should be added to the compost. The pot in which it is intended to transfer the plant should, if possible, be new, or at least perfectly clean, and a size larger than the old one; at the bottom over the opening one good hollow crook should be laid, around it a number of smaller ones, and over these half an inch of fragments of the size of large peas; to prevent the particles of soil from filling up and obstructing the drainage, a layer of moss may then be arranged over it. The plant should next be removed from its previous receptacle, and the old drainage fragments taken off the ball of earth; the roots should then be carefully examined, and any of them which appear black and decayed pruned off; a little of the surface of the soil should also be carefully pared away if the plant has not been repotted the previous autumn, otherwise this will be unnecessary, except at the top of the ball. The plant may then be placed in its new pot with fresh soil beneath and around it, taking care to maintain the stem in a perpendicular position, and the collar of the plant at its previous level.* After repotting, it may be allowed to remain in open air until frost becomes possible, that is to say, about the end of September. We have named the month of August as the best for repotting, but a later period may be chosen without any bad results, especially for those intended to flower in March or April. In either case, from the end of September, their proper place, in the absence of a cold frame, will be a room of *cool*, equable temperature, for the Camellia will not endure sudden changes, and any attempt to accelerate the expansion of the flower-buds, by removing it at this stage to a warm apartment, will cause the buds to drop.

This naturally leads us to the remark that early flowers, generally so much coveted in the case of the Camellia, can only be obtained by stimulating the

* In the care of large plants annual potting may be dispensed with; it will be sufficient to top-dress them with a little fresh soil, which should contain a portion of decayed manure. The drainage must, however, be ample.

growth of the plant in its *first* stages. The earlier the shoots and blossom-buds are formed, the earlier will be the expansion of the flowers; and to this end, the plant, instead of being allowed to rest after flowering as we have already advised, should be at once excited into growth by a warm moist treatment; by shortening more or less the interval of rest, any desired succession of blossoms may be obtained. We do not, however, recommend the mere window gardener to excite his Camellias into premature growth, unless he has at command a good forcing pit, and need not therefore further enlarge under this head.

From the time of the removal of the plant from the open air, not only should it be kept at an equal temperature, but also uniformly moist. We have as yet said nothing of the use of liquid manure, but it is now time to remark, that from the period of repotting to that of the expansion of the flowers, and during the whole season of blooming, this may be used with great advantage; some growers advise its use at all stages of the plant's progress, but we think nothing is gained by its employment previous to the setting of the flower-buds; nobody thinks of giving his rose-trees liquid manure before the flower-buds are visible. The kind of liquid manure is unimportant, but it should not be too strong; from October till the flowering period, it may be given once a week, and that, in a cool room, will be all the fluid nutriment the plants will require.

The most critical period in the management of the Camellia occurs when the flowers are about to expand. It is well known that the simple transference of a plant in bloom from a cool greenhouse to a warm over-heated apartment, will often cause many of the blossoms and buds to fall prematurely, and the same result takes place if the temperature is suddenly lowered to any extent. When, however, the plant has passed the autumn in a room, there is less risk of this occurring, for it becomes in some sort acclimatized, and might be safely removed from a room without a fire, to one a few degrees warmer. A change of temperature is not the only cause of the dropping of the flowers; if the soil becomes too dry the same result follows, and more especially if the buds are very numerous or crowded.

We had intended to have added a few remarks on the treatment of sickly Camellias, but are reluctantly compelled to defer them until our next number. We must, however, find space for a word or two on the beautiful novelty selected for illustration. It is a recently-imported Italian variety, having been raised by M. Lechi, one of the most successful of continental Camellia growers. Our figure is much reduced, and it is therefore necessary to add that the flowers are full-sized; the imbrication is of the most perfect character, each series of petals being traversed by a marbled stripe. The leaves are comparatively small, and are remarkable for the unusual length of their slender petioles; as is general in the lighter varieties, the colour is a pale, but pleasant green. It is not yet in the possession of all the Florists, but may be had of most of the London ones.

We will take the earliest opportunity to give a short list of the best of the older varieties; in the meantime, we hope the foregoing outline of the management of these splendid shrubs may be of some assistance to those of our readers who are fortunate enough to number a Camellia among their window plants.

WULFÉNIA CARINTHIÁCA.

Carinthian Wulfenia.

Linnean Class—DIANDRIA. *Order*—MONOGYNIA. *Natural Order*—SCROPHULARIACEÆ.

THE number of newly-introduced plants of all classes is so considerable, that we are sometimes tempted to forget that a part of our duty is to assist in making known the most interesting of the older inhabitants of our gardens.

Among these, there are not many possessing greater claim to attention than the beautiful little plant whose name appears at the head of our page. To some of our readers, the *Wulfenia carinthiaca* is probably, an 'old familiar face,' but it is much less extensively grown than might, perhaps, be inferred from the mere date of its introduction. In the front ranks of the mixed border, its spikes of bright blu flowers produce a charming effect, especially when grown, as it may be, in a good patch, or if several plants of it are grouped together. It may be termed a spring flower, for it usually commences blossoming in May, and continues in bloom until July.

The *Wulfenia carinthiaca* is a perennial plant of dwarf habit, its foliage, which is all radical, not exceeding six inches; the flower scapes, however, often grow to the height of from twelve to sixteen inches, or more, before the blossoms are all expanded. The leaves are obovate, blunt, with doubly crenate margins, and when full grown, are spread flat on the ground; the small leaflets attached to the flower scape are more acute and sessile, with their margins rolled back.

The spike of flowers is at first drooping, but afterwards becomes nearly erect, though there is generally a slight inclination to one side. The flowers are bright blue, with a yellow throat, on short peduncles, closely arranged, and are somewhat remarkable for their oblique position; the calyx is five-parted, with unequal acute segments; the corolla is ringent, or gaping, two-lipped, the upper lip short, and generally entire, the lower one bearded in the mouth, and three-lobed, the side lobes being the largest. The stamens are but two in number, and are inserted in the tube, with their anthers closely pressed against the upper lip.

It will succeed in any light rich soil, free from stagnant moisture, which is injurious to it, especially in winter. In severe weather it should be covered with

an empty flower-pot, and in long-continued rains in winter, the same precaution may be adopted with great advantage. In unfavourable localities it may even be advisable to pot it in autumn, and preserve through the winter in a cold frame, or turf pit, though this precaution will hardly be necessary south of the Tweed. It may be increased by division in spring and autumn, and also by seeds which it generally ripens; if a few of these are saved annually, its protection will then be a matter of less importance, as young plants are readily raised from seed, and, like a large proportion of the *Scrophulariaceæ*, will often flower the first season.

In our last number, we had occasion to point out one of the grand defects of the Linnean system of Botany, that of associating, as it does, in the same class plants of the most opposite affinities, whilst on the other hand, it sometimes separates those belonging to the same genus. No two plants can be more diverse in their character than the *Wulfenia* and *Forsythia*, figured in the present number; though being *diandrous*, they are, as our readers will see, both members of the second Linnean class.

There is one other species in cultivation, the *W. Amherstiana;* but not having yet seen the flowers, we defer for a month or two any appreciation of its merits. The genus is commemorative of *F. Wulfen*, a German Botanist, author of a work on the plants of Carinthia.

BEDDING PLANTS.

Our readers will have already gathered from some remarks in the previous numbers of this work, that we are by no means very zealous partizans of what is now by common consent termed, 'the bedding system'; for however well adapted such a style of planting may be to grounds of large extent, its adoption in small gardens is incompatible with that variety which, in our opinion, constitutes one of the most interesting features in any collection of plants.

That there is less variety in a given space is not, however, the only objection that might be urged; it is evident that the larger the mass, the more important it becomes that the plant or plants of which it is composed should flower throughout the season, or at least during several months, for any interruption of bloom would leave a blank far more conspicuous than in the case of those plants disposed in smaller groups; this necessarily precludes the cultivation in large masses of all those plants which are not continuous bloomers, and thence has arisen the disuse of an extensive class of highly interesting subjects, many of them of great beauty, but which 'will not pull well in harness.' Tried by the standard by which bedding plants are now-a-days judged, the splendid *Cantua dependens*, *Mitraria coccinea*, and

even the *Dielytra spectabilis*—three of the most brilliant of recent introductions,—would be found wanting; for although the last will bloom for a considerable period, it is generally out of flower at the time most of the autumn bedding plants are in their glory.

Now, it is one of the advantages of the mingled bed or border system, that it excludes no class of plants from cultivation; all are available, from the earliest bulb which tells us spring is born, to the Chrysanthemum, 'the last rose of summer,' and contribute in their turn to the interest of the scene. It is true that the beauty of some of our early flowers is often shortlived, but

'The fading of one hope's delight'

is quickly followed by

'Another's gentle birth';

and if the arrangement of a bed of mixed subjects, in such a manner that no vacancy to any extent shall occur throughout the entire summer and autumn, may be even more difficult than the harmonious distribution of colours on a larger scale, it will we think be admitted, that not only a combination of this kind is quite attainable, but that, if properly made, it would produce an effect which, if inferior in a mere colorific point of view, would be far more interesting to the true amateur, than an acre of scarlet geraniums or verbenas.

It is, however, rather against the abuse of the bedding system, than the principle on which it is founded, that we venture to raise our voice—for that a better effect is produced by groups of some size than by single specimens of any plant, is incontestable; but this principle may be carried out without necessarily sacrificing three or four square yards to a single variety or species, and is as applicable to the mixed border as to the geometrical parterre.

For small gardens, we therefore venture to recommend the adoption of clumps or masses of only moderate size, whether the plants be arranged in a mixed border, or form part of a smaller bed. We have given in our previous numbers lists of the best hardy and half-hardy annuals, suitable either for the beds or borders, and we now append a supplementary list of some of the most desirable plants for clumping; in addition to the more tender ones usually employed for this purpose, it comprises some valuable hardy subjects, and will therefore be useful to those of our readers who may be enquiring for a selection of these.

Abronia umbellata.—This is a very pretty Californian perennial, nearly hardy, with heads of pale purple flowers, of a vanilla-like fragrance. It is of weak, procumbent habit, but does not succeed so well when allowed to trail on the ground as against a wall or dry bank; in such situations it will give satisfaction. Requires sandy peat, and is increased both by seed and cuttings; flowers in August and September; seedlings will bloom the first season.

Alonsoa incisifolia.—A well known half-hardy herbaceous plant, and a very free bloomer; flowers orange scarlet, height one to one-and-a-half feet; increased readily by cuttings or seeds; the last sown early flower the same season.

Alstrœmeria.—This is a beautiful genus of plants, the most useful and generally procurable varieties are those known as Van Houttes; they vary considerably in tint, but are mostly of an orange yellow colour; are quite hardy, and grow two to three feet high; increased by division of the tubers, and by seeds; rich sandy loam. See a figure in the March number of our first volume.

Antirrhinums.—These we need only name, the varieties are endless, but none are more striking than the beautiful *A. Hendersonii*, figured in our September number, which will be within the reach of most amateurs this season.

Anagallis.—Everybody knows the Pimpernels; they are very useful trailing plants, with blue or red flowers; of the latter, *rubra grandiflora* (Parksii) is the best, and of the former, *Phillipsii*, *Brewerii*, and *cærulea grandiflora*. Seeds or cuttings; ordinary soil.

Armeria.—These are not unfrequently classed with the Statices, but are distinguished by their flowers being collected into globular heads. The *A. cephalotes*, alias *A. pseudo-armeria*, is a beautiful hardy plant, with pink flowers, and is easily raised from seed, which often ripens, and is, at any rate, always to be had of the Seedsmen. It will do in any ordinary soil, but likes a rich, free loam. It does not bear transplanting, and the seedlings, raised on a window or in a gentle heat, must, when an inch or two high, be planted at once where they are to remain. *A. plantaginea*, another fine species, has white flowers. This may be had of Messrs. Low and Co. of Clapton Nursery.

Bouvardias.—These are, in our opinion, among the most desirable of summer plants, from their long continued habit of flowering; *splendens* and *aurantiaca*, both with orange-scarlet flowers, are two of the best, and where these cannot be procured, the old *triphylla* may be used. They do best in peat; or sandy loam and leaf mould, and grow from one to two feet or more high. Increased by cuttings of young shoots, and also by cuttings of the roots.

Cœlestina ageratoides.—This is best known as an *Ageratum*, from which it can hardly be distinguished, except that the latter are all annual; this is a half-hardy perennial, with heads of lavender-coloured flowers pleasantly scented; one of the best plants of a neutral tint, very prolific of flowers, and increased with the greatest ease by cuttings.

Calceolarias, shrubby.—The habit and treatment of these is well-known. They like cool and damp situations; increased by cuttings and slips in autumn: the following are good and cheap:—*Albiflora*, pure white; *amplexicaulis*, lemon, fine; *sulphurea splendens*, one of the very best yellows; *Shankleyana*, large crimson-brown, good; *Sultan*, same colour, very fine; *Kentish Hero*, rich brown, an old variety, but an excellent bedder. A Calceolaria, name at present unknown, has stood the late severe weather without any protection, in a garden near our own.

Campanulas.—*Carpatica* is much praised by some, but the white variety is more interesting; they are both quite dwarf, hardy, and flower the first year from seeds. *Nobilis* and *N. alba* are good hardy plants, the first with blueish purple flowers. *Coronata*, figured in our number for September last, is a first-rate hardy plant for the border, but does not keep in bloom sufficiently long for bedding. *C. Vidallii* is also a fine plant, but is not quite hardy; flowers cream-coloured. *C. Persicifolia* and its white and double varieties, are good plants; and there is a very common species. *rhomboidea*, also, with white double flowers.

Convolvulus Sibthorpii.—This is a beautiful *hardy perennial* twiner, of rather dwarf growth, with rose-coloured flowers and handsome foliage. It is not much known, but should be in every garden; it is sometimes sold as *C. Italicus*, and is very nearly allied to *C. Althæoides*, which is quite equal to it, and more common; the latter is also quite hardy in dry soils, or with the protection of a few leaves.

Cuphea.—The flowers of these are small, but they are esteemed for the length of time they keep in bloom. *Platycentra*, *miniata*, and *strigillosa*, are half-hardy perennials; *silenoides* and *lanceolata* are annuals with comparatively large purple flowers. We recommend to the notice of our readers the new *C. purpurea*, a hybrid between *miniata* and *viscosissima*; seeds of which may be obtained of most of the Florists; Carter, 238, Holborn, and Waites, 181, Holborn, both possess the variety, which may be treated as a half-hardy annual.

Delphinium.—The perennial species of this genus are all highly interesting plants, with flowers of the deepest blue, and often a rich metallic lustre. The whole are quite hardy, and of erect habit, but vary in height. We prefer the single-flowered varieties, but tastes proverbially differ. *Barlowii* is an excellent old dwarf variety; *grandiflorum* and its white, pale blue, and double varieties are good and cheap. Of the newer and more expensive kinds, *Hendersonii*, two feet, *Wheeleri*, three to four feet, and *magnificum*, are all first-rate plants.

Dielytra spectabilis.—We have already pressed this remarkable hardy plant on the attention of our readers, and will therefore only repeat that it is one of the most desirable of all herbaceous plants. Easily increased by cuttings, which may be planted in sandy loam, in the shade under a handglass, or in pots; likes a free rich soil, in which it will grow luxuriantly, and flowers from June to August: it ought now to be procurable everywhere at a low rate.

Dodecatheon.—All the species and varieties of this genus are beautiful dwarf, hardy, perennials, flowering in spring, and well adapted for clumping in the front of the borders or beds. A moist situation and a mixture of peat and loam, suits them best. The best are *D. Meadia*, and *D. integrifolium giganteum*, but all are desirable.

Dracocephalum.—The *D. speciosum* is a fine, erect-growing hardy perennial, producing an abundance of large rosy flowers in summer; it is really a good plant for the borders. The other species have nearly all flowers of a blue or purple-blue tint; one of the best is a variety of *D. argunense*, termed *eximium*; *superbum* and *altaicum* are also desirable species, readily increased by seeds, and succeed in any ordinary soil.

Funckia grandiflora.—A comparatively new species, with beautiful fragrant white flowers, produced at the end of the summer. It is a *first-rate* plant, quite hardy, and requires only good garden soil; cost about 1s. 6d. *Albo-marginata* and *cærulea* are two older species, which should also be obtained the first has lilac, and the second blue flowers.

Fuschias.—Too well known to need further notice; for the open air the old species and varieties are the best; such as *coccinea*, *gracilis*, and *Riccartonii*; the new *globosa perfecta* is a great advance on the original species of that name, and the two miniature varieties, Pet and Darling, are beautiful little plants for bedding.

Gaillardia.—Shewy hardy perennials, with orange and yellow flowers, of the Composite order. Moderately rich soil suits them best, as they are apt to run to leaf. *Aristata* and *coronata* are as good as any we have seen, though there are many varieties.

Geraniums.—The number of these is so great, that the amateur is likely to be at a loss to select the best. For small gardens, or any other indeed, there are none better than the old Punch, Tom Thumb, Tom Thumb's Master, and Frogmore, which are all of dwarf habit and scarlet flowers. Of the salmon-coloured varieties, Judy and Beauty of the Parterre, are the best; they are both dwarf, and the latter has handsome foliage. Of the pink ones, Ingram's Princess Alice, Pet Superb, and Tom Thumb's Bride, are three good varieties. Flower of the Day and Henderson's Golden Admiration, are scarlets, with handsome variegated foliage, that of the latter edged with yellow. The new Amazon is a fine plant for the centre of a group or bed. Geraniums do best in rather poor soil, and *should not be allowed to flower before turning out;* up to that period they should be constantly stopped.

(To be concluded in our next.)

MISCELLANEA.

RECTIFICATION ON THE SUBJECT OF THE SKIMMIA JAPONICA.

In our account of this beautiful evergreen shrub, at page 6 of the present volume, we stated, on the authority of Dr. Lindley, that it was identical with a Himalayan plant described by Dr. Wallich under the name of *Limonia Laureola*. We have since learned that the *Skimmia japonica* of Messrs. Standish and Noble is quite distinct from that from the north of India; the two plants both belong, however, to the same genus, *Skimmia laureola* being now substituted by Dr. Lindley for the former name of the Himalayan species. This latter, although introduced some years since, has never yet flowered, whilst the *Skimmia japonica* blossoms freely when only two inches high, and fruits at *six inches*, as we stated in our article. The two species may be readily distinguished by their leaves; those of *S. japonica* are, as our figure shows, 'lanceolate, rather wavy, and acuminate'; those of *S. Laureola* (alias *Limonia Laureola*) are of a *flatter* form, pointed, but less tapering; the *scent* of the foliage is also distinct—that of *japonica* emits, when bruised, an apple-like fragrance, but in *Laureola* the scent resembles that of Rue and Fraxinella. The rectification of the error is of some importance, as we gather from Messrs. Standish and Noble's communication to Dr. Lindley in Paxton's *Flower Garden*, that some Nurserymen are selling *S. Laureola* for the *S. japonica*, a substitution which, if ignorantly made, would not the less cause great disappointment to the purchaser.

APPLICATION OF ERICSSON'S 'REGENERATOR' TO THE VENTILATION OF GREENHOUSES.

Although the E. F. G. is addressed chiefly to those who are presumed to be without a greenhouse, we think it quite probable that the following communication of a highly respected friend may prove interesting to many readers, on account of the principle involved. The due ventilation of plant houses is justly regarded as one of the most important points in their management, supplies of fresh air being indispensable to a healthy and vigorous vegetation among all but Cryptogamic plants. During the summer months this can be afforded without difficulty, but in the winter and spring seasons, the incautious admission of cold air from the exterior is often attended with an injurious reduction of temperature. This is sometimes prevented by allowing air to enter only by apertures over the flue surrounding the house, by which it is warmed before coming into contact with the plants, but even where this arrangement exists, it is probable that other ventilators might be employed with advantage, when the external temperature is not sufficiently low to render fire-heat necessary. What follows we give in our correspondents own words.

'It is with theview of realising the important floricultural desiderata above mentioned (of fresh air, unaccompanied by too great a reduction of temperature), that I am induced to propose the application to such buildings, of the very simple and beautiful philosophical contrivance which is now so well known, on account of its intimate association with the Caloric Ship, and which has been called by Ericsson the "Regenerator." It consists of a number of *laminæ* of fine copper or iron gauze, placed in opposition, so as to constitute any required thickness; Ericsson employing a thickness of a foot, or foot and-a-half, for the series which form the "Regenerator" of his Caloric-Engines. Much fewer plates would, however, suffice for the purpose to which I refer; indeed, not more than a hundred united *laminæ* of moderately fine copper-gauze would, I conceive, be required. Now, the principle of the "Regenerator" is simply this:—the heated air in passing through the innumerable interstices presented by the metallic nettings becomes robbed of the whole, or nearly the whole of its caloric: whereas, the cold air entering to supply its place, takes up or receives the amount of heat previously thus abstracted, and consequently, but a very small quantity disappears, or is practically lost. Suppose then, the roof of a greenhouse to be fitted with such a "Regenerator," and it follows, that while sufficient air might be admitted to afford the necessary ventilation, an equal temperature would also be established in the building. For as it has just been stated, the heat lost by the air in passing out, would

be recovered by the atmospheric current entering the greenhouse to restore the equilibrium. And I would here anticipate an objection which will probably occur to some, viz. that in the "Regenerator," as applied to the Caloric ship, and I may add, in Jeffries "Respirator," the principle of which is identical with that of Ericsson's machine, the two currents of air are forced alternately through the series of gauze, whilst as applied to ventilation, both this motive force and alternation would be wanting. To which I would reply, that although the impulsion of the air through the ventilating gauzes might be less forcible than in the case of the Caloric ship, it would be quite as much so as in the "Respirator," where the gentle action of the lungs is the only expelling power. That there will be two opposite currents of air through the same set of gauzes can hardly be doubted, for in almost every instance ventilating apertures give passage to two diverse streams of air. It would, however, be essential I think to the success of the experiment with the gauzes, that all apertures and chinks should be as closely stopped as possible, in which case the vacuum caused by the escape of the heated air through the gauze ventilators, could be supplied only by the entrance of cold air through the same medium.'

PERILLA NANKINENSIS.

Some of our readers may have met with the above name in the Seed Lists of the present season, but as no information respecting it is given, we think that the few particulars which follow may prove of interest. On the authority of Messrs. Vilmorin-Andrieux and Co., Paris, the eminent Seedsmen, we learn that the *Perilla Nankinensis* is an annual belonging to the Lipworts, growing two to three feet high, and producing, in October and November, flowers of a rosy violet colour. It is, however, chiefly remarkable for its foliage, which is of a *blackish purple* tint, with a brilliant metallic lustre, and from which peculiarity it forms a striking object, above all when contrasted with paler foliage. The seeds are best sown on a hot-bed, and should be planted out in May. As it flowers very late, it may be desirable to plant it where it will receive plenty of sun, or it may fail to ripen its seed. We believe many of the Seedsmen have seeds of this plant, but to save our readers some trouble, we will state that it can be procured of Messrs. E. G. Henderson and Son, Wellington Nursery, St. John's Wood, and of Mr. Carter, 238, Holborn.

CALLA ÆTHIOPICA AS A HARDY PLANT.

It cannot be too widely known that this beautiful plant, the *Richardia Æthiopica* of modern Botanists, succeeds admirably in the open borders, and appears, indeed, to much greater advantage under such circumstances, than when its roots are confined in a pot. Although a native of the Cape of Good Hope, it is hardier than is usually supposed, and if planted deep (*i.e.* from eight to ten or twelve inches below the surface), and covered with a heap of ashes in winter, its tuberous roots will rarely suffer from frost. To succeed with it, whether in pots or the open border, it is sufficient to remember that it cannot have too much water in summer, or too little in winter. Although, therefore, it will grow in any good garden soil, it will be most luxuriant in moist localities; where the soil is dry, the roots should be planted deep, and a shallow basin, or hollow, formed around the base of the stem for the reception of its daily supplies of water in summer; and in warm weather this must be given with an unsparing hand. In return for this attention it will throw up a much greater number of flowers than it can ever be persuaded to do in a pot; but they will be produced at a later period than when grown under glass, as it remains dormant until the spring; and it is important that it should do so, for otherwise it would be destroyed by frost. In the open air it generally ripens its seeds, when permitted to do so, and may be easily increased by them. In situations where it would be difficult to preserve through the winter in the open air, it might be planted in a *large* pot, and plunged in the border, the edge of the pot being kept two or three inches below the surface of the soil; on the approach of the cold season, the pot might then be removed to any place where it would be out of reach of frost, and would require no attention whatever through the winter months.



Malva involucrata.



Soldanella montana.



Deutzia gracilis



Lapageria rosea.

MÁLVA INVOLUCRÁTA.

Involucred Mallow.

Linnean Class—MONADELPHIA. *Order*—POLYANDRIA. *Natural Order*—MALVACEÆ.

THE frequent changes of nomenclature have long been the opprobrium of Natural History in general, and of Botany in particular; and there can be no doubt that these incessant variations, together with the unfortunate propensity of some Botanists to attach to newly discovered plants names of the most barbarous and dissonant character, have done much to retard the study of the science. Let us, however, at once admit that these changes, although occasionally the result of caprice, are mainly due to the necessarily imperfect and progressive nature of all human acquirements. Thus it sometimes happens — and when the number of independent observers in the same field of science is considered, this will excite no astonishment—that the same plant is discovered by different Botanists, each of whom claims the honour of conferring its distinctive appellation; in other instances, two observers appear to have been equally possessed by the desire of perpetuating the memory of some individual eminent for his attainments in, or services to science, and have, unknown to each other, affixed his name to different plants, as in the case of *Hugelia,* named in compliment to Baron Hugel, which, in this country, has been applied by Bentham to a plant of the Phlox tribe; but in France, was bestowed by Reichenbach on one of the *Umbelliferæ,* known here as the *Didiscus cæruleus.* Not unfrequently it is found, on a close examination, that plants previously included in the same genus, differ in some of their characters; and where this is really the case, no one can question the propriety of separating them, whatever may be the inconvenience attending on a change of names; but as Botanists are by no means agreed in their estimation of the value of minute differences, it often happens that distinctions which, by one authority, are considered sufficiently important to justify a separation, are by others regarded as of no value; or it may be, that while the difference is recognized, the name itself is ignored as inappropriate and another attached to it, the result being that the same plant is found in our catalogues under four or five different synonymes, to the infinite bewilderment of all but he adept in botanical studies. Even when the new genus may have been at first adopted, the subsequent discovery of some intermediate species has often shewn the separation to be untenable, and the old name has been finally reverted to as the most appropriate.

The history of the genus *Nuttallia* (commemorative of the distinguished American Botanist, Nuttall) affords us an illustration of some of the above remarks.

This name was first applied by De Candolle to a plant belonging to the Hollyworts, though this application of it was but little known, and scarcely recognised; it was afterwards bestowed on certain North American plants of the Mallow tribe, which appeared to differ from the true Mallows in the absence, or deciduous nature of the involucre found beneath the calyx of those plants; but this genus having been, by general consent, abandoned in its turn, the name is now conferred upon a group of *Rosaceæ*, of which one species, the *N. cerasiformis*, a Californian shrub, with white flowers, has been already introduced to our gardens.

The interesting plants hitherto known as *Nuttallia pedata*, *N. digitata*, *N. papaveracea*, *N. cordata*, *N. grandiflora*, with the plant now figured, are therefore transferred to the genus *Malva*, from which they differ in no essential point. The whole of these North American Mallows are exceedingly interesting plants, but from various causes they are yet scarce in this country. In fact, with the exception of *pedata* and *grandiflora*, which are kept by a few Nurserymen, the others, as far as we can learn, are only procurable from private collections. This scarcity may be in part due to the difficulty with which cuttings are obtained, and partly to their being natives of the Southern States, and, therefore, liable to perish in severe winters.

The present species, *involucrata*, is from Texas, but is likely to prove quite hardy. It produces from a central root several decumbent branches, eighteen inches to two feet long, the extremities of which have a tendency to grow erect. The leaves are all on long petioles, and deeply divided, and from the axils of the upper ones are produced numerous showy flowers, on erect stalks. Beneath each flower is an involucre, composed of three narrow lance-shaped spreading leaflets, about two-thirds the length of the calyx, by which this species may be readily distinguished from the other plants hitherto known as Nuttallias, which have no involucre. The calyx itself is divided into five narrow acute segments, and as well as all the other parts of the plant is very hairy. The petals are broad, wedge shaped, blunt, and slightly jagged at the extremity; of a deep reddish-purple colour, with a whitish yellow spot at the base of each, which forms by their union a cream-coloured ring in the centre of the flower.

In all this there is nothing remarkable, nor in what follows, beyond what is common to the other *Malvæ;* but, as the first plant we have brought under the notice of our readers belonging to this Order, we may appropriately point out the staminal tube formed by the cohesion of the numerous filaments, a feature so characteristic of this Order, and the slender spreading styles and stigmas of the same number as the carpels composing the ovary. This consists in the genus *Malva*, of a number of small compressed bodies, each containing a single seed, arranged around a central axis; forming aggregately a flattened disk-like fruit (the 'cheeses' of our younger days) which separates, when ripe, into distinct

portions. Sometimes these carpels are fewer in number than in *Malva*, as in *Hibiscus*, where they are only five, and contain not one, but several seeds each; and in the shewy annual *Malope trifida*, the one-seeded carpels, instead of being disposed in the same plane, are collected into a spherical head; but in all the genera, the monadelphous stamens effectually distinguish the plants of this Order from any others likely to be met with in the open borders.

Mais revenons à nos moutons, or rather, our *Malva involucrata*, on which we have yet a word or two to say. This plant is at present confined to the Kew collection, but as we may hope that it will before long be in the hands of some of the Florists, and thence reach the public, it may be worth while to state that the Mallows of this section prefer a moist but drained peat soil, or at least one containing a portion of peat. Such of them as ripen seed—and we hope the *M. involucrata* will be of this number—may be readily increased by them; those of them which do not mature seed, can only be propagated by dividing the crown of the root in spring, the divisions being potted in light peaty soil, and placed on a gentle heat to cause them to emit roots. The whole of them should be afforded a slight protection, especially in very wet or severe winters, and as they are deciduous, the roots might even be taken up and potted with but little trouble.

The trivial name, *involucrata*, of the present species, was given whilst it was still known as a *Nuttallia;* and as the plants so-called were mostly destitute of this organ, it was more appropriate than atpresent, now that the plant is united to a genus in which the possession of an involucre is the rule, and its absence the exception.

Our gardens are indebted to the Mallows tribe for a considerable number of ornamental plants, some of which are of great interest. Of this number, are the stately Hollyhocks *(Althæa rosea)*, the various species of *Hibiscus*, of which *Moscheutos* and *roseus* are quite hardy, but require a moist situation to induce them to flower; and the plants included in the genus *Abutilon*, which although usually treated as greenhouse subjects, succeed in the open borders during the summer months, and flower abundantly. The varieties of the *Malope trifida* are also well deserving of cultivation, and the annual *Malva mauritiana* is scarcely less shewy. The *M. campanulata*, a half-hardy perennial species, may also be treated as an annual, for it will flower the first year from seed, if they are sown early on heat. There is one plant of this Order which we have sought for in vain, and notice here for the sake of drawing the attention of our readers to it; it is the *Kitaibelia vitifolia*, a native of Hungary, growing about five feet or more high, and having large foliage, in form resembling that of the vine. The flowers are large, white, and produced during the summer and autumn. It is said to be a very picturesque plant, and would be valuable for the back of the borders or the shrubbery. Possibly some of our subscribers may be able to put us on the track of this stranger from Magyar land.

SOLDANÉLLA MONTÁNA.

Mountain Soldanella.

Linnean Class—PENTANDRIA. *Order*—MONOGYNIA. *Natural Order*—PRIMULACEÆ.

IN the association of such frail and diminutive forms as the Soldanellas and other plants of the mountain's side, with the Titanic grandeur of Alpine scenery, it would seem as if Creative wisdom had designed to impress us with the truth, that its power is as strikingly displayed in the organization and economy of these minute existences, as in the colossal majesty of the 'everlasting hills.'

Modest as are the dimensions of the *Soldanella montana* compared with the other subjects of our plate, we shall find that it fully equals them in interest; foliage and flower, corolla, stamens, and style, all present something worthy of notice; the first for its neatness, the latter for their curious structure. The leaves, as our figure shows, all spring from the root, and are of a kidney-like form, with several strong diverging nerves or ribs, and footstalks, densely clothed with short white hairs; the last feature distinguishes this species from the *S. alpina*, in which they are quite smooth. The scape supporting the flowers is also pubescent, but less so than the pedicels of the flowers, which are from four to eight in number. The corolla very much resembles in its form that of some of the Campanulas, but unlike them, is cleft into eight or nine segments of unequal size, several of which are again more or less notched at the extremity. This feature is characteristic of all the Soldanellas; in the *S. alpina*, the flowers are even more finely cut than in the present species. The stamens are five in number; each is attached to a short broad scale inserted at the bottom of the tube of the corolla, and resembling it in colour; the filament itself is flat, and projects beyond the anthers in a tapering awl-like point; in the *S. alpina* this point is bifid. We regret that our artist should have overlooked our request to show one of the stamens on an enlarged scale, as well as the interesting germen, or immature seed vessel, which will be found, on a close examination, to have five transparent gland-like bodies or warts, seated around it in an oblique plane. When the stamens are *in situ*, they closely surround the ovary, the scales forming by their union a sort of dome, as in the Campanulas. The style is of simple character, but is remarkable for projecting considerably beyond the mouth of the flower even before its expansion. The seed vessel opens when ripe by several valves at the summit. The whole plant does not exceed five or six inches, and several of the species are even smaller.

The chief others are *alpina*, *Clusii*, *minima* and *pusilla*, all with flowers of a similar tint to those of *montana*; but of *pusilla* and *minima* there are white, or

nearly white varieties. The plant sometimes sold as *crenata* is, we believe, only a variety of *montana*, and differs from it only in its leaves being scolloped at the edges, or *crenate*. *Montana*, the one figured, is, we think, the most desirable of the genus; it is less delicate than some of the others, and also more prolific of flowers. Although we have spoken of it in connection with Alpine scenery, it is a native not of the Swiss, but of the Bohemian mountains, being almost the only species found out of the Helvetian territory.

The cultivation of this species is attended with less difficulty than of those found at a greater elevation; but we cannot promise that it will succeed long in the open border without a little care.

It must be borne in mind not only that the Alpine summers are shorter than our own, but also that the snowy covering which, in winter, wraps the plants of those regions like a shroud, whilst moderating the action of the cold, further preserves them from the stimulating influence of the light; their period of rest is therefore considerably longer than that enjoyed by lowland plants. An exact imitation of these conditions cannot be expected, nor indeed is it necessary; but the nearer we approximate to them, the greater will be our success in the cultivation of these plants.

In the case of the *Soldanella montana*, it will be sufficient to plant it in a shaded border, where it will receive the morning and evening sun during the summer months, but little at any other period. (See page 38 of the present volume.) In autumn it should be screened by an empty pot from heavy rains, which would retard its period of rest, and in winter the root should be covered with a layer of cut furze or even chaff, over which a large pot must be whelmed to preserve it in a *dry* state. By this simple means the plant will be kept from severe frost, excessive damp, and be retained in a dormant condition until the return of spring renders the removal of the covering safe. The soil best suited to it is turfy peat, or peat containing a little loam, a mixture in which all Alpine plants delight. Where there is the convenience of a frame facing the north, it may be treated as a pot plant, and will then flower a little earlier than in the open border. It may also be grown on the north side of the rockery, in peat soil, in which situation it may be as easily protected in winter as in the open border. It is increased by division of the roots in autumn, or by seeds, which should be sown as soon as ripe, and the seedlings potted off whilst young.

Soldanella is derived from *soldus*, a shilling, in reference to the almost circular form of the leaves of some of the species.

DEÚTZIA GRÁCILIS.

Slender Deutzia.

Linnean Class—DECANDRIA. *Order*—TRIGYNIA. *Natural Order*—PHILADELPHACEÆ.

WITH one exception, all the shrubs we have hitherto figured have been of an evergreen character; and considering the strong claims this class of plants has on the Horticulturist, our preference was, we think, fully justified.

Amongst the recent additions to those of a deciduous nature, there are, however, several of so much value, that we must no longer defer to notice them; and, perhaps, one of the most interesting of these novelties is the elegant little *Deutzia gracilis;* its graceful habit, the abundance of its snow-white flowers, and the readiness with which they are yielded even by very small plants, entitled it to rank with deciduous shrubs of the first class. The free flowering habit of this and one or two other species, is indeed so remarkable, that a cutting of the young wood struck in summer will produce flowers in the following spring, when the plant is but a few inches high; and facilities are thus afforded for their cultivation in pots, which greatly enhances their value.

The genus *Deutzia,* originally represented in our gardens by *scabra* only, now includes at least seven additional species, viz. *crenata*, *canescens*, *sanguinea*, *undulata*, *corymbosa*, *staminea*, and *gracilis*, all hardy, white-flowered, deciduous shrubs. The best known, and we may add one of the most valuable, is the *D. scabra,* so named from the asperities of the leaves; its habit is more robust than that of *gracilis*, and its foliage and flowers of a larger size. *Crenata* is a fine species, of somewhat taller growth than the preceding, with which it is sometimes confounded; it may be distinguished by its larger flowers, and by the teeth at the margin of the leaves being *rounded,* or crenate, those of *scabra* are sharp and saw-like; this species is not much cultivated at present, at least in this country. *Canescens* is so named from the branches and under-surface of the leaves being covered with a whitish down; of its merits we know but little. *Staminea* is an abundant flowerer, but is somewhat dwarfer than those we have mentioned. *Corymbosa* was highly spoken of at its first introduction, but it has proved a shy bloomer, which is the more to be regretted, as its flowers are very sweet-scented. With *sanguinea* and *undulata* we are acquainted only by name; that of the first alludes rather to the reddish purple colour of the ripened shoots than to the tint of the flowers, which are, we believe, white, like those of the other species.

From those now enumerated, *gracilis* differs in nothing but its slender habit; its foliage is more acute than that of *scabra,* and is entirely destitute of the roughness

peculiar to that species and *crenata*. The utmost height it will attain we are ignorant of, as most of the specimens are yet small; but it will, probably, not exceed three or four feet. Its cultivation, whether in pots or the open ground, is of the simplest character, the chief point requiring notice being the mode in which the shrub is pruned. All the Deutzias produce their flowers on *the wood of the previous year;* if, therefore, the ordinary mode of shortening the shoots were adopted, most of the flower buds would be pruned off; the young shoots should therefore be left untouched, but the old wood must be thinned out in autumn, as well as all cross shoots which interfere with the regularity of its growth. The taller growing species, such as *scabra* and *crenata*, may be trained to a single stem, all suckers and the lower shoots being cut away.

Where there is a choice of soils, a mixture of peat and loam will be found to suit not only *gracilis*, but all the species; in the absence of these, any good friable soil, in a well drained site, may be used. Increase may be effected, either by layers, or cuttings of the half-ripened wood under a hand glass, in the open border; a slight bottom heat will be advisable when the cutting is not taken until late in the season. Most of the species throw up suckers, which offer a ready mode of increase, and it is probable that *gracilis* may be multiplied in the same way. In the open ground this species flowers about the beginning of June; but when grown as a pot plant, it may be had in bloom at almost any period of the winter and spring, where there are facilities for forcing. With no better accommodation than that afforded by a good window, it might easily be made to yield its flowers, six weeks earlier than in the open borders. The temperature of an ordinary apartment will be sufficient to excite it into growth; but it must be confessed that the dry atmosphere of a room is somewhat injurious, both to the foliage and flowers; it should, therefore, when in bloom, be kept cool and moist. Specimens cultivated in pots should be re-potted after flowering, and exposed during summer and autumn in the open air; they will require to be pruned in the manner explained for the larger plants.

The *Deutzias* are very closely allied to the genus *Philadelphus*, of which one species, the common Syringa, or Mock Orange (*P. coronarius*), is generally found in the shrubbery. In the Syringas, the sepals and petals are each four; the stamens numerous (more than twenty), and the style one; in *Deutzia*, both sepals and petals are five in number, the stamens ten, and the styles three; there are, therefore, abundant marks of distinction. The stamens are alternately longer, the shortest being opposite the petals, and all of them are curiously winged, and somewhat forked at the summit, or rather three-toothed; the anther being seated on the central tooth; in *D. staminea*, this peculiarity is so marked, as to have suggested the specific name, *broad*-stamened. Nor is this the only noticeable feature, for a close examination will reveal the presence of a yellowish ring within the circle formed by the stamens, termed by Botanists the disk.

The leaves of *scabra* are remarkable for their roughness, and under the microscope this is seen to be owing to hairs of a stellate form, which are supported upon a short stem, the whole presenting a mush-room like appearance. According to the Dutch Botanist Kæmpfer, the wood of this species is much prized by the Japanese cabinet-makers for making pegs of the finest quality, it being very hard and tough. And if, gentle reader, you may chance to be of the fair sex, it will perhaps interest you to know, that when Orange blossoms are scarce, the flowers of the same species may be employed as a substitute in the formation of the Bridal wreath—a hint for which we expect nothing less than a pair of white gloves.

To complete our sketch of these interesting shrubs, we have only to add, first, that *gracilis*, and most of the species are natives of Japan and China; *corymbosa* and *staminea* are from the Himalayah; secondly, that the not very euphonious generic appellation was conferred in honor of a Dutch patron of Botany, John Deutz, of Amsterdam.

LAPAGÉRIA RÓSEA.

Rose-coloured Lapageria.

Linnean Class—HEXANDRIA. *Order*—MONOGYNIA. *Natural Order*—SMILACEÆ.

IN presenting our readers with a figure of this princely member of the vegetable kingdom, we must accompany it with an expression of regret, that its rarity and consequent high price will probably for some little time confine it to the collection of the wealthy amateur. If, however, it be true, as is sometimes held, that the pleasures of anticipation are scarcely inferior to those of fruition, we run no risk of incurring the reproach of prematurely embellishing our pages with a faint reflection of this beautiful plant; it will at least originate a hope, and give a definite form and character to those imaginings which the description of new accessions to our garden treasures is so calculated to excite.

The first question which will naturally occur to every one with regard to this gem, will be, 'Is it hardy?' and on this point our information, as far as it goes, is, we think, satisfactory; though, as may be supposed, there is at present an indisposition to risk so valuable a plant in those experiments which can alone decide its hardiness. Messrs. Veitch and Son of Exeter, who were amongst the earliest importers of the *Lapageria*, have had a plant exposed two winters without any other protection than that afforded by a north-west wall, and in spite of the severity

of the past season, these gentlemen inform us that the roots are uninjured, and appear likely to make strong shoots in the ensuing summer; this, it must be borne in mind, is in the mild climate of Devonshire. We are not aware whether the plant thus exposed has yet *flowered*, but other specimens in the possession of Messrs. Veitch have blossomed in perfection both in pots, and also planted out in the conservatory border. A specimen planted against a wall at the Royal Gardens, Kew, grew luxuriantly during the last summer, and late in the autumn showed flower; but it was deemed advisable to remove the plant to a cool greenhouse. For a brief interval it must, therefore, remain an open question, whether the flowers will be produced sufficiently early in the season to permit of their full development without some protection; but that the plant will be found hardy enough for summer cultivation in the open air there is no doubt, and the experiments of Messrs. Veitch are, we think conclusive, that the roots will endure the winters of our southern countries.

In the absence of more positive evidence, the character of the climate of Chili, of which country it is a native, would afford us some clue to the degree of hardiness possessed by this plant; but unfortunately we have no information of the precise locality where it was found, whether near the coast, where frost and snow are almost if not quite unknown, or at a greater elevation on the slope of the Andes. All we know is, that the *Lapageria* was sent to the Royal Gardens from Concepcion, though it was probably brought from the interior. Many of the Chilian plants which occur at some distance above the sea-level are quite hardy; as examples, we may cite some of the species of *Alstrœmeria*, and the beautiful *Lardizabala*, figured in our first volume, which has borne the past winter with less injury than the common Laurel. The plants of Northern Chili, and those found near the coast, are more tender, and will not resist our winters.

The Lily-like flower of this fine plant will no doubt at first suggest the idea of its close relationship to the *Liliaceæ*, and if this organ alone be considered, it would be difficult to distinguish it from the plants of that Order; a glance, however, at the reticulated foliage will show that it differs not only from the Lily-worts, but from nearly all other endogenous plants. Our readers are aware that the two great divisions of Flowering plants, *i.e.* the Exogens and Endogens, are characterized, among other features, the first by their reticulated foliage, jointed to the stem, or branch, as in the oak; the second by leaves having only parellel veins, and foot stalks which are not articulated, as in the Lilies and Grasses. But in nature there are no abrupt transitions, and accordingly we find that these two groups are closely connected with each other by Orders which share the features of both. The Sarsaparilla tribe, to which the *Lapageria* belongs, and the Yam tribe, *Dioscoreaceæ*, are of this intermediate character, forming a small group having leaves with a netted venation, like those of Exogens, but with flowers

completely endogenous in their structure. By some Botanists these two Orders are arranged as a sub-class of monocotyledonous plants, under the appellation of Dictyogens (*diction*, a net), in allusion to the character of the venation.

The *Lapageria* is of climbing habit, the stems reaching to the height of six feet or more; they are smooth, branched, naked near the ground, and here and there scaly. The leaves are somewhat leathery in their texture, shining, pointed, with five nerves, between which are smaller reticulations. The magnificent bell-like flowers are produced singly in the axils of the upper leaves, on long stalks, which are clothed with numerous small scales or bracts of a yellowish tint. The divisions of the perianth are arranged in two series, three being outermost, and three innermost, and alternate with them, as in the Lily; the outer divisions are somewhat gibbous, or swollen at the base, and marked with a deep blue spot; the rich crimson colour of the flower is elegantly relieved by numerous white spots about the mouth and throat. In its six stamens, single style and superior ovary, it agrees with the *Liliaceæ*, but the ovary is composed of but a single cell, and ripens into a large, pulpy, many-seeded berry, which in Chili is much esteemed as a fruit; it has not, however, been yet produced in this country.

Messrs. Veitch's plants are cultivated in a mixture of turfy loam, peat, and decayed leaves, which appears to suit them exceedingly well. Although less prolific of flowers when treated as a pot plant, than if allowed more space for its roots, it is satisfactory to know that it will in any degree submit to pot-culture, as this circumstance cannot fail to enlarge the circle of its admirers. Unless seeds should be ripened in this country, the only mode of increase will be by division of the roots when in a dormant state.

We learn from Dr. J. Hooker that the roots of this plant are employed by the Chilenos as a substitute for the Sarsaparilla, which leads us to infer that it occurs wild in some abundance; the use of its berry as a fruit also tends to the same conclusion. Our figure of the flower is about one-third the natural size. There is a species or variety with white flowers, the *L. alba* of Decaisne, but we are unaware whether it is yet introduced.

We advert for a moment to the genus *Smilax*, or Sarsaparilla, which gives its name to the Order to which the *Lapageria* belongs, less for the purpose of reminding our readers of the medicinal uses to which the long slender roots of many of the species are applied, than to point out that several of them are sufficiently hardy for cultivation in this country, and their *evergreen* climbing habit gives them some value for covering walls. The flowers of all are insignificant, and rarely produced. They are not often kept by the Nurserymen, but Messrs. Loddiges of Hackney, and Messrs. Standish and Noble of Bagshot, are in possession of some of the species. *S. rubens* from North America is an interesting plant, from the reddish colour of its tendrils.

So interesting a plant as the *Lapageria* well deserved to be associated with the memory of the amiable Joséphine, 'La bonne et modeste femme du Général Bonaparte,' whose family name was, as most of our readers are doubtless aware, de Lapagerie. It is another *Souvenir de Malmaison.*

HARDY AQUATICS.

The claims of the Ornamental Aquatics for a share of the public favour seem at last to be recognized, and from being the most neglected, they appear likely, by one of those reactions so common in the history of Horticulture, to become the most eagerly sought for of plants. This impetus is in a great measure due to the introduction and successful cultivation of the noble *Victoria regia*, a plant whose beauty is such, that a mere sight of it may well constitute an epoch in the life of the observer; and of which we are even tempted to say, what the Andalusians boast of Seville, 'who has not seen it, never a marvel saw.' Unfortunately this 'Queen of the Waters' requires for its successful growth appliances of which few individuals can boast, though we are aware that it has been cultivated in the open air in the neighbourhood of London, in water artificially heated, and covered at night to prevent too great a reduction of temperature. Even with these precautions, however, the specimen in question was much inferior to those grown in the covered *Aquarium;* and instead therefore of extending our remarks on this plant, we shall at once proceed to notice such of the hardier aquatics as are both easily cultivated and readily attainable.

With some exceptions, those in general cultivation are such as grow wild in Great Britain; for although few countries are without their aquatic flora, the difficulty of transporting seeds or roots has prevented their extensive introduction. Our space is too limited to allow us to give in the present number detailed directions for the construction of a receptacle for aquatic plants, though these will readily suggest themselves to the mind of the intelligent cultivator. We will therefore suppose the reader to be already in possession of a piece of water of greater or less extent, fit for the reception of the plants, and to require nothing more than a list of some of the most ornamental, with a short description of their habits. Although between those which are strictly floating aquatics, and those which emerge to a considerable extent, there are many intermediate gradations, it will be convenient to divide them into two groups, the first containing those which are either floating, or which rise but slightly above the surface; the second, those of a greater height.

* PLANTS MORE OR LESS SUBMERGED.

Nymphæa alba. (White Water Lily.)—This is by far the finest of our indigenous aquatics, and is one of the most easily managed. Our readers are too well acquainted with it to need any description of it. It likes plenty of room, and several feet of water. The roots only require to be sunk in an old basket. The species *pygmæa*, from China, and *odorata* from N. America, are beautiful plants, quite hardy, but we are not aware whether they are obtainable in this country.

Nuphar lutea. (Yellow Water Lily.)—Equally desirable with the preceding, although the flowers are smaller. Requires the same treatment. The North American *N. advena* is still more beautiful, and quite hardy if planted in water of sufficient depth to prevent frost reaching it. This species is grown by Mr. Stark of Edinburgh, and probably by all Florists who keep aquatic plants.

Nelumbium luteum. (Yellow Water Bean.)—This is a very beautiful plant, but rarely seen, and

being from Carolina, requires more care than the preceding. Its root-stock must be kept in dry soil in winter, and out of the reach of frost. In spring it should be planted in a box of muddy soil, and placed in a close frame, being kept in a moist condition until the leaves appear. In the beginning of June, the box containing the plant may be placed in two or three feet of water, where it will receive the fullest exposure to the sun; the beautiful large yellow blossoms are produced in August, and amply reward the cultivator for his trouble. The Indian *N. speciosum* is more handsome, but is too tender for the open air, unless it could be grown in a small tank, under a close frame. Its flowers are deliciously fragrant, and measure from six to eight inches across.

Aponogeton distachyon. (Two-spiked Aponogeton.)—This and the following plant are floating aquatics, in the strictest sense of the word, the roots being sent down from the horizontal stems. It is a native of the Cape, but will bear a mild winter, and a single root may easily be preserved from frost in a vessel of water. The flowers are white, fragrant, and produced in June or July.

Hydrocharis Morsus Ranæ. (Common Frog-bit.)—A curious and interesting plant, common in some parts of England, flowering in July. Blossoms large, white, produced from a transparent spathe.

Limnocharis Humboldtii.—A beautiful plant from Brazil, allied to the preceding, rather tender, but capable of resisting ordinary winters; flowers yellow, shaded at base with orange, on long foot-stalks. The leaf of this plant is remarkable for having a large opening at its apex, from which moisture constantly distils.

Pontederia cordata.—A very handsome aquatic from Virginia, with heart-shaped leaves, borne on sheathing petioles; flowers of a fine blue, in close spikes produced in May. The roots must be planted at least eighteen inches deep, as they suffer from frost; it will, however, grow in shallow water. *P. cærulea* is a fine plant, but much less common.

Jussieua grandiflora.—Another American plant of interest, but rather tender, and must be planted not less than one-and-a-half feet deep. Flowers yellow, in August. It belongs to the Evening Primrose tribe.

Villarsia nymphæoides. (Water-lily-like Villarsia.)—A beautiful indigenous plant of the Gentian tribe, with large yellow flowers often fringed at the edge. Perfectly hardy and easily cultivated. Many of the canals in Holland are full of this plant.

Menyanthes trifoliata. (Bog-Bean or Water-trefoil.)—Also a native plant, and belongs to the same natural family as *Villarsia*, but has white flowers, tinged externally with red, and fringed with white filaments. Shallow water, or it may be planted quite at the edge of the pond.

Stratiotes aloides. (Water Soldier.)—A common native plant, but useful from its numerous tufts of sword-like leaves. Flowers white, produced from a spathe, in July.

Thalia dealbata. (White-leaved Thalia.)—A Canna-like plant with beautiful blue flowers; being from Carolina, the roots must be planted out of reach of frost. Readily raised from seeds on a hot bed, which are generally kept by seedmen.

Calla palustris. (Marsh Calla.)—Also from America, and a very interesting plant, with the flowers enclosed in a spathe, like those of the next plant. It should be planted in twelve or eighteen inches of water.

Richardia Æthiopica. (Arum Plant.)—Commonly known as the *Calla Æthiopica;* it succeeds admirably as an aquatic, but must be planted out of reach of frost. To these may be added the Water Plantain (*Alisma Plantago*), the Flowering Rush (*Butomus umbellatus*), both very ornamental and every where attainable; the common Arrow-head (*Sagittaria sagittifolia*); the beautiful Water violet (*Hottonia palustris*), and the equally common Marsh Marigold (*Caltha palustris*); all of which are very desirable, and suitable for the margin or edge of the pond. Several of these, however, ought perhaps to have been placed in the next group, as they rise above the surface.

* * PLANTS EMERGING SOME DISTANCE.

We have included so many of these in the previous group, that only the tallest remain to be noticed. Their flowers are less ornamental than those of the preceding group, but the stately growth and waving foliage of most, renders them indispensable to any collection of aquatics.

Arundo Donax. (Cane or Reed.)—This is a noble species, much more desirable than the common reed *(A. Phragmites)*. It grows from ten to twelve feet high, and produces a large plume-like panicle of purplish flowers. It should be planted in two feet of water, for the root will suffer from frost. There is a very pretty variety with striped foliage and rather dwarfer habit, which should also be grown.

The Bull-rush *(Scirpus lacustris)* is an effective plant when its flower spikes are full grown, and the *S. triqueter* is also desirable; both are common enough.

The genus *Carex*, or Sedge, offers a few species worth cultivating, such as the *C. acuta*, *cyperoides*, *paniculata*, *pendula*, *provincialis*, and *Pseudo-cyperus*, which all occur wild; the latter species is very elegant.

The Bur-reed *(Sparganium ramosum)* offers a little variety in the spherical form of its flower heads; and the Cats-tail *(Typha latifolia)* may be added where a large selection is required.

The Sweet Flag *(Acorus calamus)* is common in many parts of England, and deserves to be grown for its curious spike of flowers, which are, however, not often produced; the Yellow Water Iris *(I. Pseud-acoris)* is handsome, and flowers abundantly.

Houttuynia cordata.—A Japanese plant, sometimes termed *Polygonum cuspidatum*, with heart-shaped leaves, and flowers produced from a white petaloid spathe or involucre. Height about two feet, and therefore suitable for the margin. The annual *Polygonum orientale* produces an exceedingly good effect planted near the edge, or even in two feet of water, as its stems attain a height of six or eight feet. It should be raised from seed early in spring, and planted out in May or June.

The Loosestrife *(Lythrum salicaria)*, and its variety, *roseum superbum*, are fine plants for the margin of a piece of water; the latter especially should be obtained; it may be had of most Florists, or can be raised from seed, which is also procurable. As a picturesque object, we may also name the common Teazle *(Dipsacus Fullonum)*.

The *Hieraclium giganteum* likes a moist soil, and although we have not tried the experiment, we have little doubt but it would answer as an aquatic, and would reach an extraordinary height.

In addition to these there are several dwarf plants of an interesting character, suited for the border or bank of a pond, such as the Forget-me-not *(Myosotis palustris)*, the *Lysimachia Nummularia*, the *Parnassia palustris*, and *P. caroliniana;* those very curious and interesting plants, the *Pinguicula vulgaris* and *P. grandiflora*, and the *Utricularia vulgaris;* this last requires to be planted *in* water, the others on the bank, a little above the level of the pond.

Did our space allow it, we might extend this list, but a sufficient number of plants has been named for a piece of water of some extent, and a collection of these only would form an exceeding attractive spectacle. We may, however, add that where a border can be made round the pond, many of the ordinary garden plants will grow luxuriantly, especially the common *Hydrangea*, the Phloxes, many of the Gentians, Statices, and above all the scarlet Lobelias, which in such a situation will present a magnificent appearance, from the amount of fluid nourishment they will obtain; they will, however, require to be removed in autumn.

Nearly all the indigenous plants named in the foregoing list may be readily obtained in most localities. The exotics are, many of them, kept by the London Florists; Messrs. Henderson of the Pine Apple Nursery, Edgeware Road, and Mr. Stark of Edgehill Nursery, Edinburgh, will be able to supply nearly all we have named, as well as the indigenous species.

BEDDING PLANTS.

(*Continued from page* 62.)

Heliotrope.—Every garden is sure to contain some variety of this favourite, but it is not generally known that one of the best is *corymbosum*, an old variety of dwarf compact habit.

Lantana.—These are all suitable for the decoration of the borders and beds in summer, but to be kept bushy, they require frequent stopping. The old *Sellovii*, with rich ruby flowers, makes a beautiful group; *crocea* and its varieties have orange-coloured blossoms. Common garden soil suits them; increased easily by cuttings of young shoots; only half-hardy, and therefore must be re-potted in autumn.

Linum.—One of the most useful of all the summer blooming perennials is the *L. flavum*, a dwarf evergreen species, with yellow flowers; it is quite hardy in dry soils. The white New Zealand Flax (*L. monogynum*) is not quite so hardy, but only perishes in severe frosts. Both the blue and the white varieties of *perenne* are worth growing, as they are quite hardy, and flower through the summer months. Many of the other species are equally good, but they are very scarce. All may be increased by seed.

Lobelias.—Less hardy, but far more shewy than the preceding. Whether in beds or borders they make a splendid appearance. We can especially recommend the two scarlet varieties, Queen Victoria and Insignis, which are first-rate. The variety *multiflora*, of the old *fulgens*, is a very beautiful plant, but not very common. The new varieties, Topaz, violet blue: Vesuvius, violet crimson; Agathocles, large violet crimson; and Ajax, violet plum, are all of novel shades of colour, They should always be planted in groups of not less than three plants of a sort, in rich light soil, and be well supplied with water; see our October number. The dwarf blue *Lobelia erinus*, and all its varieties, of which the best are *compacta*, *maxima*, and *racemoides*, should on no account be omitted; they produce a pretty effect as an edging to a bed or group of the tall varieties: half-hardy, and increased by seeds and cuttings, the latter the best for perpetuating any particular kind.

Lythrum.—One species deserves attention, the *L. roseum superbum;* it is a tall growing plant, producing in autumn long spikes of large rose-coloured flowers. It prefers a rich moist soil, and is easily increased by cuttings and seeds. Perfectly hardy.

Mimulus.—The varieties of *M. cardinalis* are many of them highly ornamental; especially *aurantius*, *atro-roseus*, and *coccineus*. They are all quite hardy, and in rich loamy soil flower the the greater part of the summer. Increased by cuttings and also by seeds, which will generally give rise to new varieties. *M. moschatus*, although usually grown in pots, is hardy.

Morina longifolia.—An ornamental hardy perennial with handsome cut foliage and long spikes of rosy flowers; it grows about two feet high, and may be easily raised from seeds, but does not usually flower the first season; plants of it may be purchased at most nurseries. We are almost afraid it is not quite hardy, but is worth a little protection.

Nuttallia.—These mallow-like plants are now united to the genus *Malva*, but we use here their old designation. There are several species, but only two to be readily obtained, the *N. pedata* and *N. grandiflora;* they require a peaty soil, but are worth any amount of trouble. The flowers of *pedata* are purple-crimson, those of *grandiflora* are lighter. Increased by division of the the roots in spring, and by seeds when they can be got. Of *grandiflora* we hope to give a figure shortly.

Œnotheras.—Excellent both for beds or smaller patches, and quite hardy. *Macrocarpa*, with large yellow flowers; *cæspitosa*, pale, whitish yellow; *speciosa*, white, and *taraxicifolia*, also white, are

four good species; the first and last are procumbent, the second is dwarf, and *speciosa* grows from one to one-and-a-half feet high; the *Œ. prostrata* is useful as an edging and has neat foliage. All are easily increased, and require only ordinary soil. See the November number of our last volume.

Petunias.—These are of great value from their prolific habit of flowering. For beds, borders, or a dry bank, they are equally suitable. A pinch of seed sown on heat or a warm window will give hundreds of plants in a few weeks, which will flower the same season. The best varieties must be increased by cuttings. Light soil suits them, and in this they are almost hardy.

Pentstemon.—These beautiful plants are favorites with all, especially *Hartwegii* and its hybrids with *P. gentianoides;* the true *gentianoides* is less valuable. *P. campanulatum* is a good hardy species, which blooms the first year from seeds; one and a-half to two feet high, with rosy crimson flowers. *P. ovatum* is the best blue-flowered species, hardiness and habit considered. *Speciosum* is a better blue, but a much more troublesome plant, being a biennial. *Murrayanum, atro-purpureum, Cobeæ, variabilis* (alias *Salterii*), are all first-rate plants; the last is only a variety of *Hartwegii;* the others are not perfectly hardy, and slips should therefore be preserved in a pot through the winter.

Phlox.—Another valuable class of plants, all hardy, except the *P. Drummondii* and its varieties. They should be replanted each season in fresh soil, as they exhaust it quickly. They are so numerous, that it is impossible to say precisely which are the best. Abd'el Meschid Khan, white and rose, purple centre; Adonis, light rose, violet eye; *alba grandiflora*, pure white; General Duvivier, white, carmine eye; Madame Nerard, fine white, bright red eye; Napoleon, flesh ground, beautifully striped with rosy violet, exquisite; Madame Viard, white, striped with rosy-purple; and La Fraicheur, white, mottled with rose, are all beautifully varieties, growing from two to two-and-a-half feet high, and flowering at the latter part of the summer; but there are many others quite as good. Increased by division, and by seeds for new varieties. The *P. depressa* is a good dwarf variety, and the old white *nivalis* is a beautiful species.

Platycodon.—This is allied to the Campanulas, and as far as we know there is but one species, *grandiflora*, with blue flowers; there is a single white variety, and another with double flowers. All of them grow about eighteen inches high, are increased by seeds and cuttings, and need only ordinary sandy loam; they are quite hardy, and well merit cultivation.

Plumbago Larpentæ. In moderately dry autumns, this will please in the borders, but wet spoils the delicate violet-blue flowers. It may be treated as a hardy perennial, and should be planted in light peaty soil; grows about a foot high, and is readily increased by division in spring, or cuttings, at any time during summer:

Potentilla.—No garden should be without several of these, their flowers are highly ornamental, and they entail no trouble in cultivation. The varieties are become very numerous, but the following are as good as any: *Menziesii*, rich orange scarlet; *insignii*, fine yellow; *Hopwoodiana*, crimson and white; and *Smoutii*, yellow and crimson, striped. They require a good free soil, and should be divided in autumn, in preference to spring.

Prunella.—These are not often seen in gardens, but there is one species at least of some interest, suitable for the front of mixt border, the *P. Webbiana.* It is a dwarf hardy perennial, producing heads of pretty purple flowers in summer, and flourishing in any common soil. *P. reptans alba* has white flowers. Messrs. Low of Clapton have both these plants, and several others.

Rudbeckia —Of these handsome Composite plants we would recommend *fulgida* and *Drummondii*, with yellow flowers, and *purpurea*, and *intermedia* purplish violet; the two last are also known as *Echinacea purpurea* and *intermedia.* All flower during the summer and autumn.

Salvia.—Most of the species deserve cultivation, especially *fulgens, splendens, coccinea*, with scarlet flowers; *patens*, and *p. alba, chamædryoides, prunelloides, bicolor*, and *hians*, with blue, or

blue and white blossoms. *Bicolor* is figured in our last volume, and is hardy; *fulgens* has also stood the late frosts with us in the open border; the others require a little protection, rich light soil suits them all.

Scutellaria.—The *S. macrantha* is a handsome dwarf hardy plant, with purple violet flowers; it succeeds very well in a shaded border; *S. japonica* is not quite so hardy, but is too pretty to be omitted. *S. coccinea*, with bright red flowers, is a taller species, requiring to be protected in a frame during the winter months. All succeed in ordinary friable soil, and may be multiplied by seeds or division.

Senecio.—The double varieties of *S. elegans* are favorite plants, and of the easiest management; there are white, rose, and purple varieties, and also one of an ashen tint, all increased readily by cuttings, and requiring protection in winter.

Stevia.—The *S. Lindleyana* is valuable for its abundant white flowers, produced in heads, but is not quite hardy. *Serrata* we find quite hardy, and we believe most of the species are less tender than is supposed, especially in dry soils; they will not bear transplanting well, and should be raised from seeds which will flower the first season.

To the foregoing list should be added, the *Asclepias tuberosa*, any or all of the *Liatris* family, the Statices, *Scabiosa caucasica*, a perennial species; the pretty free-flowering *Saponaria ocymoides*, and *Zauschneria californica;* all of them are hardy, and may be added with advantage to any collection. The *Zauschneria* must have a peaty or vegetable soil. The indispensable *Verbena* requires no notice; the pretty *Selago fasciculata* is a somewhat new half-hardy bedder, which we venture to recommend to our readers, and in warm sheltered situations the beautiful Madagascar Periwinkle *Vinca rosea* will succeed, if planted out in rich light soil, about the beginning of June.

Those of our readers who are more especially attached to the cultivation of the hardy perennials, will be able to select from the foregoing list, and that in our last month's number, many fine plants as permanent ornaments for the borders; we have named none which are not of a showy character, and of easy cultivation in any ordinarily good soil and situation. Of the best hardy and half-hardy annuals we have already given lists, and in our number for May, 1852, will be found a notice of some of the best half-hardy climbers, to which our readers may refer with advantage. From time to time we will give supplementary lists.

PHÆDRANASSA CHLORACRA.

Although this fine Amaryllidaceous plant has been some years in cultivation, it is only rarely that it produces its flowers; it grows vigorously, and yields an abundance of offsets, but from some cause or other, the blossoms obstinately refuse to shew themselves. Accident, that prolific source of discovery, has just shewn that this failure is attributable to the bulb being generally completely buried, which favours the production of numerous offsets, by which the parent bulb is so much exhausted, as to be incapable of throwing up its flower spike. It appears that an amateur Florist at Brussels received last year a bulb of the *Phædranassa*, which he preserved during the winter in a dry state, and early in spring it was planted *on* the soil of a pot; the roots soon protruded themselves, and at the commencement of April the plant displayed its brilliant flowers. In this experiment, we have the key to the culture of all those bulbs which manifest a disposition to increase rapidly at the expense of the flowers. But it is important to observe that as the plant is only readily increased by offsets, some provision must be made for securing a supply. This may be effected by covering the bulb completely with soil, as soon as the flowers begin to fade, or even before, or the pot may be plunged in the borders, at such a depth that the bulb is covered. In autumn the whole should be removed, and the offsets separated, and preserved in a dry state during the winter.



Tropaeolum Smithii



Chamaestes lanceolata



Swainsona Greyana



Cuphea cordata

TROPÆOLUM SMÍTHII.

Sir James Smith's Indian-Cress.

Linnean Class—OCTANDRIA. *Order*—MONOGYNIA. *Natural Order*—TROPÆOLACEÆ.

IF the *Tropæolum Smithii* cannot boast of such glowing tints as the *T. speciosum*, figured in our first volume, it has at least the advantage of being more hardy, and its annual character will contribute to bring it more rapidly into cultivation, than in the case of some of the tuberous rooted and other perennial species. It is not improbable that, preserved from frost in winter, it would prove of perennial duration; but as it flowers copiously the first season, and ripens abundance of seeds, it will be, in any case, most conveniently treated as an annual.

In its succulent climbing habit it agrees with the general character of this genus; its foliage is larger than in the majority of the species, but is of the same *peltate* form which is so peculiar to the Tropæolums, that is, the stalk is attached, not to the end of the leaf, but near the centre of its inferior surface; the limb is divided into five oblong, pointed lobes, similar to those of the *T. tuberosum*. The flowers are produced singly from the axils of the leaves, on long, looped, and twisted peduncles; the calyx is of a dull red, and terminates in a long and nearly straight spur, tipped with green; and the petals are five in number, the two upper ones being the smallest, and attached directly to the interior of the calyx, the three lower and larger ones by short claws or stalks. In most of the species it is the two upper petals, which are the largest; *Smithii* and *speciosum* are exceptions. In their deeply cut fringed edge, the petals recall those of the 'Canary flower' (*T. aduncum*), the *Pagarille* of our French neighbours, from which they differ not only in their ground colour, but also in being elegantly veined and tipped with red.

In our article on the *T. speciosum*, we pointed out a departure from the original type of the genus in the presence in that species of stipules at the base of the petiole, which we then supposed to be peculiar to it; but they occur also in the *T. Smithii*, as our figure will show. The Tropæolums can therefore no longer be designated with propriety as *exstipulate* plants; nor is this the only point in which the character of the genus, as originally defined, will need modification. Most of the species produce their flowers singly from the axils of the leaves, as in *T. Smithii;* but in the remarkable *T. umbellatum*, introduced a few years since, they are borne in a terminal umbel, thus exhibiting another approach to the Geranium family, to which they are very closely allied, and of which stipulate leaves and umbellate flowers are two important features. We may remark too, *en passant*, that not only

are some of the characteristics of the *Geraniaceæ* found among the Tropæolums, but conversely, one peculiarity of the latter occurs in the former; we allude to the spur, which is present in the true Pelargoniums, not, it is true, in the same projecting form, but adhering to the pedicel.

The *T. Smithii* is a native of the mountains of Columbia, where it was found by Mr. Lobb, Messrs. Veitch's collector, at an elevation of 9,000 feet; in what province is not stated. This species is one of those to which the name *peregrinum* was applied by Linnæus, though it appears certain that the plant to which that appellation was first given by him, is the one at present known as *aduncum*, or the 'Canary Flower.'

Nothing can be simpler than its treatment, for, being quite hardy, the seeds may be sown in the open borders; as, however, they are somewhat rare, it will, for the present, be advisable to sow them in pots in a frame, the young plants being subsequently turned out against a trellis; in a word, its cultivation is precisely that of the pretty annual *T. aduncum*. It may also be allowed to trail, and will speedily fill a bed of some size, but it is less desirable for this purpose than the varieties of *T. majus*. In the absence of seeds, it may be multiplied by cuttings of short lateral shoots, planted under a hand-glass, but no necessity for this mode of increase is likely to arise.

The *T. Smithii* is in the hands of most of the leading Florists; those amateurs who may prefer to raise it from seed can obtain them of Mr. Carter, Holborn, whose catalogue is the only one in which we have seen them named this season.

Although there are many seminal varieties of the *Tropæolum majus* and *T. minor*, we are not aware that a single artificial hybrid has yet been produced in this genus, which is the more remarkable that we believe few plants would intermingle more freely; and in the case of the annual species, the results would be ascertainable in a very short period. To those who may have sufficient leisure to attempt the experiment, we would suggest a cross between the common yellow *T. aduncum* (often absurdly called *T. canariense*) and the scarlet *T. speciosum*, which would probably give rise to a variety of the former with spotted, striped, or more highly coloured flowers. The tints of the *T. Smithii* might also, there is but little doubt, be deepened by the same means; and as the process is sufficiently easy, we strongly urge those of our readers who may possess these plants to follow up our suggestion. The stamens of the flower to which it is intended to apply the pollen should be cut out with a pair of scissors as soon as it expands; and to protect the stigma from accidental contact with the pollen of contiguous flowers on the same plant, the blossom should be tied over with a fragment of fine muslin. Two days afterwards, the pollen from the plant with which the cross is to be effected, may be applied by dusting or rubbing the anthers on the stigma, and the muslin should then be replaced until the flower begins to fade; for greater security, the pollen may be

applied two or three times, at intervals of a day. Dry weather should be selected for the operation; if the pollen is wetted, it loses its fertilising properties, (see page 107, Vol. I.) We have named these three species as suitable subjects for the experiment, but any two of similar habit might be tried.

It is not, we believe, generally known that a white species has been recently added to this genus, though at present it appears to be confined to the Belgian gardens, where it was originally introduced from Chili. It is tuberous-rooted, with five-lobed leaves, and large flowers of a pure white, the claw of the petals being of a bright yellow colour; this plant is the *T. albiflorum* of Van Houtte. We may add here, that the plant known in England as *T. azureum* has been removed to a new genus by Professor Morren of Liege, by whom it is termed *Rexia cærulea;* but we are unaware of the grounds upon which this separation has been made; the only important differences between this plant and its congeners consisting in its blue colour, and nearly regular petals.

The *Tropæolum tuberosum* is an interesting species, which would deserve to be more generally grown were its flowers produced in greater abundance. It succeeds best in a good friable loam, of rather close texture; in loose rich soils it grows vigorously, but is less prolific of flowers. We have seen a very pretty effect produced by training this plant over a bed, upon a stout wire, a root being planted on each side of the bed. Its tubers are nearly hardy, in mild winters and well-drained soils; but a few should be dug up and preserved in a dry state, as a precaution against loss.

We shall have some other interesting species of this genus to notice before long; and with regard to the *T. Smithii,* we have only to remark, that it is named by De Candolle in compliment to Sir James Smith, formerly President of the Linnæan Society, and author of 'English Botany,' and many other botanical publications.

For a notice and figure of the charming *T. speciosum,* a plant which cannot be too highly praised, see Vol. I.

CHÆNÉSTES LANCEOLÁTA.

Lance-leaved Chænestes.

Linnean Class—PENTANDRIA. *Order*—MONOGYNIA. *Natural Order*—SOLANACEÆ.

THE proximity of the South American province of New Granada to the Equator would, at first sight, render it highly improbable that any plants from so torrid a latitude would be suited for notice in a periodical devoted to hardy and half-hardy

plants. But it is now well understood that the hardiness in this climate of exotic plants, depends less on the *latitude* than on the *elevation* at which they occur; an altitude of a few thousand feet, even under the Equator, being sufficient to introduce us to a climate as temperate as our own, and, still higher, to a region where perpetual congelation reigns.

It will, therefore, no longer appear astonishing that some of the plants peculiar to the Columbian territory should prove nearly hardy in this country. We are not informed of the precise elevation at which the *Chænestes* was found, but it is stated to have been discovered by Mr. Purdie, the collector for the Royal Gardens at Kew, among the mountains of Quindiú. This mountain pass of the Central Andes skirts the foot of the Nevado de Tolima, the highest mountain north of the line, being about 18,000 feet above the sea-level; and it is to be presumed, therefore, that the temperature where this beautiful shrub occurs is not much higher than that of our more northern latitudes.

We are, however, happily relieved from conjecture as to its hardiness, a plant exposed by us last summer having borne the recent severe weather with comparatively little injury, except the loss of its leaves, and the destruction of the late growths, and unripe wood, for the maturing of which the mild, wet autumn of 1852 was peculiarly unfavourable. The only protection afforded was a peck or so of ashes over its roots, and a single mat around its stems; both of these, however, were applied late in the season, after the arrival of frosts. The plant was unfortunately exposed against a west wall, where it received but little sun in autumn, and the soil was of a retentive character; as it has resisted the late winter under so many unfavourable conditions, we therefore entertain but little doubt that in ordinary seasons, well-drained soil, and a southerly or south west exposure, it will prove almost hardy; though under any circumstances it will require the protection of a mat or screen to preserve the old wood from injury. In the case of those shrubs which flower on the shoots of the current season, as the *Fuschia*, *Clematis*, and *Leycesteria*, the loss of the previous year's wood is a matter of no moment; but in those which, like the *Habrothamnus* and *Chænestes*, produce their blossoms only from the old wood, its preservation is absolutely essential.

The *Chænestes* is naturally an evergreen, but loses its foliage when fully exposed. It is of very rapid growth, the shoots often extending four or five feet in a single season; the foliage is somewhat coarse, as in the case of many other plants of this tribe; and when fully developed, the leaves are not unfrequently six to eight inches long. While young they, as well as the branches, are covered with downy, stellate hairs; but this pubesence disappears as the wood ripens. The umbels of flowers are produced from the axils of the leaves on the upper part of the branches, and consist frequently of twenty blossoms or more, each of which is attached by a slender, drooping stalk. The calyx is somewhat tubulous, with five unequal, blunt

teeth, and cleft laterally; this last feature appears to be peculiar to the genus. The corolla is about two inches long, of a deep rich purplish blue, and of a tubular, slightly curved form, funnel shaped, and spreading at the mouth, with a whitish downy margin, between the five lobes of which intermediate teeth are generally present, so that it presents the appearance of being ten-toothed. The stamens are five in number, and the style one; the latter being, as might be anticipated in a drooping flower, rather the longest; the ovary ripens into a bright red, pulpy, two-celled berry, containing numerous wrinkled reniform seed. The plant blossoms in summer and autumn, and produces its beautiful purple flowers in some succession, until they are injured by the arrival of frosts.

It is very closely allied to the genus *Habrothamnus;* from which it differs in the shape of the corolla, and the lateral fissure of the calyx, as well as in the anthers being affixed to the filaments by the back, and not by the base. From the *Iochroma tubulosa* (formerly known as *Habrothamnus cyaneus*) it differs in the mode in which the mouth of the flower is folded before expansion, or, as it is termed botanically, its *estivation.* In *Chænestes* and *Habrothamnus* the margin is folded inwards, between the five teeth, which are thus brought into contact in a valve-like manner. The embryo of the seed is also straight, or nearly so; whilst in *Iochroma* it is spiral, as in most of the *Solanaceæ.* These may appear somewhat minute and unimportant marks of distinction, but it is on such differences, when constant, that genera are founded. The plant formerly known as *Lycium fuschioides* belongs to this genus, which includes some other species at present known only to Botanists.

The *Chænestes* may be easily increased by cuttings, which are afforded in abundance; they may be taken at almost any period of the summer and autumn; in the latter case they will require the protection of a cold frame, but in the warmer months they will root in the open borders under a hand-light, though a little bottom heat will accelerate the process. It will succeed in almost any soil, but a light, porous, well-drained medium is to be preferred, as being more conducive to the ripening of the shoots than those of a more retentive nature. It may even be desirable in some cases to plant it in poor sandy loam, which would check its growth, and diminish the size of the foliage, which is sometimes redundant. Numerous suckers are generally thrown up by the root, some of which should be thinned out; and if the removal be deferred until they are a few inches long, they will be available for the propagation of the plant. If trained to the wall, the shoots should be disposed in a fan-like form, and as the old wood is less productive of blossoms than the shoots of the past year, a portion of it may be pruned out each season; the plant has, however, been so short a time in cultivation, and has been in our possession but a single season, that we make this suggestion with diffidence, though we have little doubt further experience will confirm its propriety.

The narcotic and noxious properties of the Order to which the *Chænestes* belongs are well known, and are doubtless shared by it, though we are not aware that it possesses them to such a degree as to render a caution necessary; its berries are of an attractive hue, but they are hardly likely to be produced in this climate when the plant is cultivated in the open air.

The name of the genus is derived from *chaino*, to gape, in allusion to the spreading mouth, as contrasted with the contracted form it exhibits in *Cestrum*, *Habrothamnus*, and some others.

SWAINSÓNIA GREYÁNA.

Capt. Grey's Swainsonia.

Linnean Class—DIADELPHIA. *Order*—DECANDRIA. *Natural Order*—LEGUMINOSÆ.

THE *Acacia grandis*, our first illustration of the Leguminous Tribe, described at page 115 of the previous Vol., although an exceedingly interesting and beautiful plant, would give the uninitiated reader a very imperfect idea of the general structure of the Order in its Papilionaceous aspect. In the *Swainsonia Greyana*, the peculiar conformation of the corolla which has given rise to this name is well displayed. We must not, however, look for more than a faint correspondence between the *name*, and the *thing*; for botanical terms are somewhat fanciful, and, strictly speaking, the flowers of the *Cuphea cordata*, our next subject, are more suggestive of a butterfly than those of the *Swainsonia*, or any other plant of the Order.

The five petals composing the flower in this division of the *Leguminaceæ*, are of an irregular, unequal form. The upper one is usually the largest, and is termed the *vexillum*, or standard; in the *Swainsonia* it is very conspicuous: the two lowest are much narrower, and are united by their inferior edges so as to form a narrow, pouch-like organ, very much flattened at the sides, within which are concealed the stamens, and immature seed vessel or pod; this is appropriately styled the *carina*, or keel: external to it are two petals of a similar size and form, but not adhering by their margins. These are termed the *alæ*, or wings. All these details may be very distinctly seen in our figure of the *Swainsonia*.

The arrangement of the stamens in this family is as peculiar as that of the corolla. In a majority of the genera they are divided into two unequal parcels, whence the name *diadelphia*; nine of the ten which characterize their flowers

being united by the filaments into a flattened sheath which surrounds the young pod, except at its upper edge, where the tenth stamen is found distinct. The flowers of the *Swainsonia* conform to this type; in a few plants of the Order, however, the entire number of stamens are united in one bundle, and are then termed *monadelphous*; such are the Lupines, the Laburnum, and the *Galega* or Goat's-rue. In other cases they are all distinct, as in the handsome *Piptanthus Nepalensis*, the Baptisias, and Gompholobiums.

The simplest form of the ovary of Leguminous plants is that of a two-valved, single-celled, many-seeded pod, lengthened out into a slender style with a terminal stigma; in a few plants, the style is nearly straight, but in most cases it is more or less curved or bent back upon the ovary, with which it sometimes forms an acute angle, as in the *Swainsonia*. The variations in the form of the seed vessel and curvature of the style are endless, and their observation opens up to the student of Botany and the lover of nature's works, an infinite source of gratification and instruction.

We must not, however, dwell longer on the general structure of the Order, but devote our remaining space to that member of it now more immediately under consideration. The *Swainsonia Greyana* is a half-shrubby plant, two feet or more high, pubescent, with obscurely striated, branched stems, and pinnated leaves, with eight pairs of blunt oval leaflets, and an odd terminal one; sometimes the leaflets are much fewer. The flowers are produced in axillary spikes often nearly a foot in length, and always longer than the leaves; each blossom is supported on a short pedicel, with a bract at its base. The calyx is cup-shaped, with a five-toothed margin, *and a bract on each side at the base*, which is, we believe, peculiar to this species. The standard or upper petal is very large, of a pale purple colour, with a large semi-circular spot in the centre, which contributes greatly to the beauty of the plant; the two *alæ*, or wings, are rather shorter than the *carina*, which is dark purple; the colour of all the parts of the flower deepens with age, as in most of the plants of this Order. Of the monadelphous stamens and recurved style we have already spoken, and have only to add that the last named organ is longitudinally bearded on its upper edge, now become inferior by the curvature. The pod is slightly turgid or inflated, smooth, and borne on a stalk, which ultimately lengthens considerably.

The genus is allied to the Coluteas, which are, however, very readily distinguished by their curious inflated, bladder-like seed-vessel, as well as by the two callosities on the standard. In *Sutherlandia frutescens* the style is bearded on both edges, and in *Lessertia*, which is nearly related to *Swainsonia*, the style is bearded *transversely* at the end.

The Swainsonias are not numerous, but four or five species being at present in cultivation. Of these, the best known is the old *S. galegifolia*, with sweet scented

flowers of a bright red colour, and of a similar habit to our plant; there is also a white variety of this species. The *S. coronillæfolia* has rosy purple blossoms, and is well worth cultivation, but is less generally seen. The *S. pallida* is an exceedingly pretty variety or species, we are not quite certain which, with pale rose-coloured flowers. All of them are natives of New Holland, the *S. Greyana* of the neighbourhood of Port Adelaide, and are therefore too tender to bear full exposure; but they succeed well in the open border during the summer months, where they will flower for a considerable period. The whole are very desirable plants, but the present species is certainly the handsomest of the genus, its long spikes of purple flowers producing an extremely showy effect. They will need to be removed from the ground in winter, but a good, dry cold frame or pit will be a sufficient protection; in the south of Ireland, and other favoured corners of the kingdom, we have no doubt that they would bear exposure, if planted against a wall, and matted up; we believe *galegifolia* has been thus grown. As, however, their protection in a frame or cold pit entails no greater amount of trouble than in the case of the Verbena and other plants of that class, we would advise their removal from the ground in autumn.

They may be increased by seeds, which sometimes ripen, and shonld be sown in a strong heat; cuttings of the young shoots will also root under a glass, with the assistance of a slight bottom heat, and if struck early in the spring, will form flowering plants the same season. The soil best suited to all the species is a light sandy loam, with a small proportion of heath-mould; if grown in pots, they should be well drained. The species named, including *Greyana*, are kept by the London Florists, and probably some of them may be had at the chief provincial nurseries.

The genus was named in compliment to Isaac Swainson, a patron of Botany and Natural History, who lived in the last century.

CÚPHEA CORDÁTA.

Large red-flowered Cuphea.

Linnean Class—DODECANDRIA. *Order*—MONOGYNIA. *Natural Order*—LYTHRACEÆ.

THE *Cuphea cordata* is one of the most remarkable plants of a remarkable genus, and combining, as it does, the botanical features which invest with so much interest this group of plants, with flowers of a very showy character, we have selected it as an illustration of the genus in preference to some of the species which are rather more hardy, and perhaps better known.

The most striking pecularities of the Cupheas are the irregularity in the number and size of the petals, and the mode in which the membranous seed-vessel and calyx-tube are ruptured laterally by the deflexed placenta before the seeds are ripe; but all the details of the flower will be found of interest. In many of the species the *calyx* is the most conspicuous part of the blossom; in all it is tubular, strongly ribbed, more or less curved (as seen in our figure), with a projecting heel or blunt spur; the mouth is rather spreading, its margin divided into six teeth, of unequal size, the upper one usually being the largest, as in *C. silenoides* and *C. lanceolata.* Between the six teeth referred to, there are sometimes intermediate smaller ones; these are well seen in *C. silenoides*, where they assume the form of scales, fringed with short, spreading, clammy hairs. In nearly all the species it is highly coloured, as in *cordata* and the well-known *platycentra*, but in a few green predominates, as in *lanceolata.* The normal number of the petals is six, but they are occasionally either wholly abortive, or so minute as to be scarcely discernible; this is the case in *C. platycentra;* in *strigillosa* only the two upper ones are present, in a very diminutive ear-like form. In those species in which six occur, the two upper ones are much the largest, as seen in *lanceolata, silenoides, verticillata, purpurea,* and in our illustration *cordata*, where they are so conspicuous, and arranged in such a manner, as to give the flower the appearance of being winged.

Although placed in the Linnæan Class *Dodecandria*, the stamens are not invariably twelve; in *C. decandria* there are but ten; in *C. cordata* they are eleven in number, and in some of the species as many as fourteen are found; they are generally inserted in the throat of the calyx, as in *cordata*, but sometimes arise from the bottom of the tube, as in *silenoides.* In *cordata* they will be seen to project considerably beyond the mouth of the calyx.

The seed-vessel, which is the most curious feature of this genus, has its walls composed of a thin membrane, the seeds themselves being attached to a central partition by short, but very evident stalks; after the flower has partially faded, but long before the seeds are mature, the capsule and the calyx tube in which it is enclosed are burst longitudinally on their upper side, and the *placenta* or central portion of the capsule to which the ovules are attached, assumes an erect position, leaving them completely exposed, where they continue to increase in size, and remain adherent until quite ripe. There is something exceedingly curious in this premature exposition of the seed, and, as far as we are aware, it occurs in no other genus of plants. The seeds of all the species are of a flattened disk-like form.

The number of species of this genus known to Botanists is considerable, but only a few of them are in cultivation, or readily attainable. Several of them are destitute of horticultural interest, being mere weeds, such as *viscosissima, parviflora, procumbens,* and some others. Of those worth cultivating, and, at the same time, procurable without difficulty, we will briefly notice the best.

C. lanceolata.—This is usually described as a greenhouse biennial, but as it flowers the first season, it may be treated as a half-hardy annual, like the next species. It grows a foot or more high, and has long pointed, wavy foliage, which, as well as the whole plant, is clothed with soft clammy hairs. The flowers are dark purple, the two upper petals being much larger than the four lower ones. It flowers in summer and autumn, and may be used for grouping in the borders; generally ripens plenty of seed. First introduced many years since from Mexico.

C. silenoides resembles the preceding, but has smaller foliage; flowers, deep crimson purple, the two upper and largest petals much paler at the margin. The whole plant, especially the calyx, is thickly covered with glandular hairs. It is an abundant flowerer, and it might be worth while endeavouring to brighten its colour by crossing with the *cordata* or *miniata*. Preserved in the greenhouse it becomes perennial, but is generally treated as a half-hardy annual. From Mexico.

C. miniata.—A small branching evergreen, with rough foliage and terminal spikes of flowers, which have the calyx very hairy, and two large bright red petals attached to the upper margin of the tube. It is rather more tender than *platycentra*, but may be cultivated in the open border, in summer, like that species.

C. purpurea.—This plant is said to be a hybrid obtained by M. Delache of St. Omer, between *miniata* and *viscosissima*, but its appearance would hardly confirm such a statement. It is hairy, but not glandular; the flowers are large and very handsome, of a bright rose colour, with a violet tinge. The two upper petals are nearly as large as those of *cordata*. It is a greenhouse perennial, but may be advantageously cultivated as a half-hardy annual; seeds vegetate readily on a slight hot-bed. We hope to figure this species in a short time.

C. strigillosa.—One of the hardiest of the genus, having lived through the late severe winter in the open ground without any protection, in a dry sandy soil. The flowers are remarkable, more for their number than for their brilliant colour, but it deserves cultivation if only for its hardiness; in groups it produces some effect. From the Peruvian Andes.

C. platycentra.—This species is deservedly popular, and is, perhaps, the best of all for bedding purposes, with the exception of the new *purpurea;* it is remarkable for flowering whilst in a very small state, and indefinitely. Flowers tubular, consisting only of calyx, of a bright vermillion, with the upper lip white and the lower nearly black. It must not only be kept from frost, but also in a growing state during the winter; it does well in a warm sitting room at that season. The name of this species is sometimes translated 'broad-centred', but erroneously, the meaning being 'broad-spurred'. Now the spur of this species is in no way remarkable, and it turns out that its real name is *ignea*, or fiery-red, the true *platycentra* not being yet introduced. There is a white variety recorded, but we have not seen it. From Mexico.

C. verticillata.—A very distinct species, with oval leaves arranged in whorls of three or four; they are somewhat rough on the upper surface, but downy beneath. The flowers, which are axillary, have from five to eight petals, the two upper ones being very long, and of a fine violet tint. From Peru. Messrs. Low and Co. of Clapton possess this species. There are one or two others of interest, but we must defer noticing them, that we may have space for a word on the

C. cordata.—This species has been named, we suppose, on the *lucus a non lucendo* principle, for its leaves are lanceolate rather than heart-shaped. Those at the base of the plant are of some size, but gradually become smaller as they approach the flowers, and assume a bract-like form. The flowers are produced in loose terminal racemes, each bearing from two to four blossoms, of a bright scarlet tint. The two upper petals are remarkably developed, the four inferior ones are very small and narrow, and of a pinkish hue. Like many of the other species, when first introduced it was treated as a stove plant; but, like them, it is found to succeed in a much lower temperature. It is, however, rather less hardy than the so-called *platycentra*, and does better on a window than in the open ground.

One object we have in view in figuring it, is to call the attention of amateurs to the desirability of crossing this species with one of the hardier members of the genus. We believe that all of them will hybridize with each other, and probably varieties might be originated, possessing flowers as showy as those of *cordata*, with the hardier character of *strigillosa*, *silenoides*, *platycentra*, and *purpurea*. We would suggest that this last species or variety should be tried as the *porte-graine*, as the seed-bearing plant is termed by our neighbours, the pollen of the *cordata* being employed as the fertilizer, or the experiment might be reversed with equally satisfactory results. The annual *silenoides* and *lanceolata*, might also communicate greater hardiness to this plant. See the directions given under the head of *Tropæolum Smithii*.

The Cupheas are all readily increased by cuttings under a glass; the *platycentra* especially roots with great facility. *Cordata* may be thus multiplied, or by seeds which will ripen under glass. The cuttings are best struck in light sandy peat, or other vegetable soil, but when established, a portion of fibrous loam should be added. It may be tried in the open air in warm situations, but the flowers will be smaller than when grown under glass. The other species, *platycentra*, *miniata*, and *purpurea*, are better adapted for bedding, especially the last-named. In winter it must be kept in a growing state on a warm window or greenhouse.

This species is a native of Peru, whence it was introduced some years by Messrs. Veitch of Exeter, who will be able to supply plants of it, probably by post. Messrs. E. G. Henderson and Son of the Wellington Nursery, St. John's Wood, London, are also in possession of it. The bruised flowers and leaves are applied

by the Peruvians to wounds and dislocations; and taken internally, the flowers are said to be anti-epileptic: its properties are probably analogous to those of the allied genus, *Lythrum*.

Cuphea is derived from *kyphos*, curved, in reference to the curved calyx.

ON THE EFFECTS OF THE PAST WINTER
ON SOME RECENTLY INTRODUCED OUT-DOOR PLANTS.

[COMMUNICATED BY MESSRS. STANDISH AND NOBLE, BAGSHOT, SURREY.

The past winter, and more especially the spring, has put to the test, and very severely too, the hardiness of out-door plants in general. Many species have been wholly destroyed, or at least severely damaged, which in former years withstood much more severe weather unscathed. This, which on a superficial view would appear a paradox, is readily to be accounted for after a more careful examination.

The continuous mild and wet weather that obtained up to the second week in the present year, not only prevented plants from maturing their wood, but, on the contrary, kept them in a vigorous and growing state. While in this condition, frost set in, the circulation of the sap was suddenly arrested; parching winds succeeded, and the natural result was that such shoots were destroyed, exhibiting the appearance of having been burnt up by severe frost. We do not, of course, insist that all the damage sustained by out-door plants in the past winter is to be attributed to that cause; but we are confident that much of it may be with perfect justice. And, of course, plants in the condition described are very much more susceptible to the influence of frost, and consequently suffer more from its effects then, than after an autumn favourable to the maturation of their wood. That the accomplishment or prevention of this, is, in a great measure (with cultivated plants) under the control of the planter, is now patent enough, and we need not therefore enlarge upon the subject.

There can be no doubt that much caution is necessary and advisable in pronouncing any plant not hardy, because it may not have proved so in certain situations, and under certain conditions. We are constantly witnessing anomalous results in this respect: the various Horticultural publications of the hour have recorded many such: and it would be productive of the best results to the department of gardening to which such an enquiry would more particularly refer, if some one possessing the necessary qualifications would investigate them, and record the results of the enquiry.

With these preliminaries, we proceed to give our readers some brief information

of the effects of the past winter on a number of plants that are likely, either from their beauty or rarity, to become generally admired. *Berberis Darwini*, the beauty of which has been so much praised—and it is worthy of it all—is perfectly hardy, and is now pushing out its charming flowers in thousands, neither frost nor wind have affected it in the least. *Symplocos japonica*, a rare and recently introduced shrub, which appears to be a half evergreen, is perfectly established as a hardy plant, and is now breaking its buds vigorously. *Skimmia japonica* is in bloom, and not a leaf is damaged, although the plants put out for experiment are but small, barely six inches high; no further proof need be given of its hardiness. The *Abelia uniflora*, too, is in that respect all that could be desired. *Cerasus ilicifolia* in a very exposed place has suffered the loss of many of its leaves; but this we think has arisen more from the effect of severe wind, than from frost alone. It may be considered hardy, and so may *Escallonia macrantha;* the only damage it has sustained is the death of some of the old leaves. The plants are now looking healthy, and pushing vigorous shoots.

Of the three species of *Ceanothus*, viz. *rigidus*, *papillosus*, and *dentatus*, the two latter have suffered most. They follow in degree of hardness, as we have placed them. It may be worth while to say, that the plants alluded to are in the *open border*, destitute of any protection. *C. dentatus*, which in many instances has lost all its leaves and young shoots, is now breaking freely from the old wood. *Viburnum plicatum* is wholly untouched. The plants first imported from China, and having been three years in the open borders, are now clothed with young shoots, and exhibit numerous heads of flowers. *Cupressus funebris* has passed the ordeal well; no doubts need be entertained of its hardiness. The beautiful little *Azalea amœna*, after bearing all the vicissitudes of the past year, is just bursting into bloom. It looks as hardy as one could wish, and has not, from the influence of the weather, lost a leaf. The three new kinds of *Ilex*, *microcarpa*, *cornuta* and *furcata*, are also in robust health; they are perfectly hardy. *Daphne japonica* and *D. hybrida* are both unhurt. In one or two instances where succulent young growths were subjected to the severe frost and parching winds, the leaves were somewhat damaged; but such cannot be considered as in any way detracting from their hardiness. They may be planted in the open border, without fear of damage from severe weather. *Indigofera decora* has stood the frosts well, and is now breaking strongly.

Now of the *Sikkim Rhododendrons*, about which so many doubts have been expressed. Small plants of nearly all the species have been placed in the open ground for experiments, and, judging from their appearance while we write, we have no hesitation in pronouncing them quite hardy. They are grown side by side with ordinary hardy hybrid kinds, and they have endured the past severe weather with equal impunity.

It is only fair to observe, that most of the plants above-mentioned were scarcely in a condition to be judged fairly by, from their being on the whole so recently planted out, and mostly very small. This, however, only goes to establish still stronger their complete hardiness; for it is well known that where a plant has become well established, and of considerable size, it is in a much better condition to resist the vicissitudes of the seasons, than where it is only recently planted out of doors, before experiencing such influence.

[In our own neighbourhood, the results have been much less injurious than the intensity of the cold on several cccasions would have lead us to expect, the thermometer having more than once fallen as low as 7° or 8° Fah. The beautiful *Arbutus magnifica* in a moist soil suffered the loss of its foliage, and most of its flower buds, but is now growing vigorously; as the specimen was small and absolutely unprotected, there is no doubt it may be pronounced hardy. The *Cerasus ilicifolia* has also lost its old leaves, but is otherwise uninjured. A small plant of *Ceanothus papillosus*, only about fifteen inches high, was fully exposed in the open borders, and has survived. The *Lardizabala biternata* (a small plant) was somewhat nipped, but had it been placed against a wall, we have no doubt it would have escaped entirely. A young specimen of *Garrya laurifolia* perished, though it resisted the first severe frosts; it had only been exposed one season; when fully established it is hardy. The *G. elliptica* is quite uninjured. *Leycesteria formosa* received little or no damage in a dry subsoil, and the *Coronilla glauca* escaped without material harm, though the extremities of its immature shoots were cut, as may be supposed. In another garden, at a short distance, an older specimen was killed, after flowering profusely in autumn, to which circumstance its loss is no doubt attributable.

Among the herbaceous plants, many survived which are sometimes supposed to be tender. *Salvia fulgens, rosea, azurea, glutinosa,* and *bicolor,* have all resisted the frost. *Chamædryoides* has not yet pushed, but we think it is living. *Liatris heterophylla, Œnothera speciosa, Linum flavum,* and *L. monogynum,* Chilian Alstræmerias, *Pentstemon atro-purpureum, campanulatum, Buckii, azureum, ovatum; Armeria cephalotes,* have all passed through the ordeal, if not entirely unscathed, at least with only trifling injury. The old *Calceolaria rugosa* has proved hardy both in our own garden and also a neighbouring one, but the more succulent varieties perished. One result astonished us not a little: a pot containing a tuber of the old *Begonia Evansiana* (discolor) was accidentally left out the whole winter, and in April was discovered to be perfectly sound; this plant is therefore quite hardy. The Pompou Chrysanthemums were some of them killed to the ground, but are now pushing up shoots. The *Tacsonia manicata* was also, we regret to say, destroyed; but the plant was young; we still believe it will bear exposure when three or four years old; till then, it is best pruned in, and potted in autumn.—Ed.]

BRIEF NOTICES OF NEW OR RARE PLANTS.

BRYONIA ABYSSINICA. (*Cucurbitaceæ.*)—Everybody knows the common Bryony of our hedges, *B. dioica*, with its greenish white flowers and small red berries produced on different plants. The *Bryonia Abyssinica* is a far more remarkable plant, and has the immense advantage of producing its male and female flowers on the same plant. Its habit resembles that of most other plants of the Cucumber tribe, to which it belongs. The root is perennial, like that of the common Bryony, but the stems are of only annual duration, four-edged, and bearing smooth, alternate leaves of a palmate lobed form, each of which is accompanied by a tendril, by which the plant attaches itself. The flowers are yellowish, and usually in pairs from the axils of the leaves; they possess, however, but little attraction, and resemble in their structure those of the common species. They are succeeded by an oval berry, which, when full grown, is as large as a moderate sized plum; at the first stage of ripeness they are of an orange yellow colour, which deepens as the fruit approaches maturity, until it ultimately assumes a clear red tint; as the berries are not all ripe at one period, a considerable variety of shades is seen upon the same plant which greatly enhances the effect. For a trelissed arcade, or any other situation where climbers are grown, it will prove highly ornamental when in fruit. The plant appears to be easily cultivated, and although a hardy perennial, will flower and fruit the first season if sown early on heat; it grows from eight to ten feet or more high. We hope during the present season to be able to give our readers a figure of this novelty.

SANDERSONIA AURANTIACA. (*Liliaceæ.*)—A remarkable new bulb from d'Urban and the Swart-Kop Hills, near Natal, discovered by the gentleman whose name it bears in 1851. Its stems and foliage resemble those of the *Polygonatum*, or Solomon's Seal, but the flowers are very different. They are large and drooping, hanging singly from the axils of the upper leaves, on stalks two inches long; of an orange colour, and a sub-globose campanulate form, with six shallow vertical furrows; at the bottom of the flower are six nectariferous cavities, which project externally, forming so many short, but distinct incurved spurs; stamens six, style one, stigmas three, nearly as long as style; ovary three-celled, many-seeded. Sir W. Hooker is doubtful whether it should be classed with the Lily-worts, or with *Smilaceæ;* it appears to connect the two Orders. Figured in *Botanical Magazine for May*, 1853.

DAPHNE JAPONICA. (*Thymelaceæ.*)—Although this species is not entirely *new*, it has hitherto been classed with greenhouse plants. The experience of the past winter proves, however, that it is quite hardy, and it will be a most valuable addition to our evergreen shrubs. It has handsome variegated oval foliage, and produces in April an abundance of reddish purple flowers, which are very fragrant, at the summit of the branches. It will succeed in almost any soil, and grows rapidly; height, from three to four feet. It should be in every garden, being far more ornamental than any other hardy species.

POTENTILLA STRIATA FORMOSSISSIMA.—A very interesting new variety of this handsome genus, remarkable both for the colour and size of its flowers. They are said to be two inches in diameter, of a fine yellow ground, streaked with crimson; something in the way of *Smoutii*, but much finer. It is supposed to be a hybrid, between *insignis* and *Menziesii* or *Russelliana*.

PETUNIA PHÆNICEA, variety, *Prince Camille de Rohan.*—A striking seedling variety, obtained by M. Van Houtte in 1852. Its flowers are very large, of a fine form, deep crimson ground, *bordered with a broad band of a fine green colour*. Said to be an extraordinary plant. Both this and the preceding plant are to be had of the London Florists.

To the Editor of the English Flower Garden.

Sir—Some of your readers may be glad to be informed that Messrs. Cunningham, Fraser, and Co. of the Comely Bank Nursery, Edinburgh, have the following rare and interesting plants, besides many others:—*Jeffersonia diphylla; Helleborus abchasicus; Puschkinia scillioides; Cyananthus lobatus;* a fine blue species of *Lathyrus; Linum tauricum; Salvia nemoralis* [*nemorosa?*] *Salvia indica; Scabiosa caucasica* and *argentea; Silene regia*, a beautiful plant which cannot be too extensively grown, of a colour rivalling the *Lobelia fulgens; Batschia (Lithospermum) canescens; Geranium argenteum*, a very interesting plant; *Aster Sikkimensis*, and many others. You would confer a favour on your readers by informing them where other rare plants may be obtained. I find that the *Abelia floribunda* is quite hardy in Lancashire; the experience of the last winter has sufficiently proved it. A Subscriber. *(Wigan.)*

[We shall most willingly insert such information as will enable our readers to obtain rare plants not usually kept by Nurserymen, but it would be obviously unfair to name one party in preference to others, in the case of those plants generally found in the hands of the trade. We have inserted the above paragraph, but several of the plants there named, although not often seen in the garden of amateurs, are generally kept by the London Florists, though not by provincial ones. The two *Salvias*, *Silene*, *Geranium*, *Batschia*, *Linum* and *Puschkinia* are, however, much more rare, and we thank our correspondent for his information.—Ed.]

Sir—As you requested Subscribers to your *most* useful little Periodical to keep a register of those delicate plants which have survived this inclement season, I venture to contribute my mite, very trifling though it be. I should state that our garden is on the chalk stratum, open to winds from the east, but sheltered by a hill from the west. The Laurestinus and Portugal Laurel, many of them present that appearance so truly described by the French as 'brulé,' whilst No. 8 preserved its leaves in perfect verdure. Our magnificent Banksia Rose is as much covered with buds as usual, and the Bourbons and Chinas appear even healthier than usual. *Cuphea strigillosa*, quite hardy, is springing up very strong; *Salvia splendens* [query *fulgens*, the *splendens* being much more tender, Ed.] unsheltered, is also shooting; *Verbenas*, partially sheltered, only two or three alive; *Mitraria coccinea*, only a glass over it in March during snow, quite hardy; *Escallonia macrantha* equally so; *Abutilon striatum*, only a mat in March and snowy weather, and uninjured; *Plumbago Larpentæ* unprotected and unhurt; *Coronilla*, the yellow shrubby species [probably *glauca*, Ed.] no protection, quite hardy; *Dielytra spectabilis*, the same; *Lilium lancifolium*, also hardy; *Lardizabala biternata*, (figured in your May number, 1852) covered with a mat, much nipped, but not killed; *Zauschneria californica*, *Anemone japonica*, and *Œnothera prostrata*, all quite hardy, the two first perfect weeds.
A Subscriber. (*Guildford.*)

TO DESTROY ANTS IN FRAMES AND GREENHOUSES.

Mr. W. B. Jeffries, of the Ipswich Nursery, has obligingly favoured us with the following efficacious mode of effecting the destruction of these industrious little pests. There are some grave objections to the use of arsenic and all other deadly poisons, but where the ants cannot, as often happens, be tracked to their hiding place, it is almost impossible to remove the evil in any other way. A strong solution of white arsenic is to be made by pouring a cup of boiling water over a good pinch of the powder, if sufficient time is allowed, and the liquid stirred; this will be much safer than boiling, for obvious reasons. A sweet paste is now to be made with a little of the solution and some thick honey, to which a small portion of treacle may be added to colour the mixture, so that it may be more easily recognized. It is to be spread on pieces of slate, and laid near their tracks, or the places infested by them, and should be repeated until they disappear. Too much precaution cannot be taken in using the mixture, especially where there are children or animals in the neighbourhood.



Œnothera Speciosa.



Azalea Amœna.



Aquilegia Alpina.



Melittis Speciosa.

ŒNOTHÉRA SPECIÓSA.

Showy Evening Primrose.

Linnean Class—OCTANDRIA. *Order*—MONOGYNIA. *Natural Order*—ONAGRACEÆ.

In the list of hardy perennials whose merits entitle them to a place in every garden, few deserve to occupy a more prominent position than the perennial species of the genus *Œnothera*. Their flowers are, it is true, individually short-lived, but for this disadvantage there is ample compensation in their long succession, as well as in the hardiness, showy character, and easy culture of most of the species, nor must we forget the pleasant fragrance emitted in the evening by their blossoms.

In our previous volume several of the most desirable members of the genus were noticed under the head of *Œnothera prostrata;* and of one of the species then referred to we now give a figure, which, although very inadequate from its reduced dimensions to convey a correct idea of the beauty of the plant when in flower, will yet serve, aided by a few remarks, to bring its merits more effectively before the reader than any mere description.

The *Œ. speciosa* may, without the slightest reserve, be termed perfectly hardy; if any evidence of this were required, it would be found in the fact that it not only out-lived, unprotected, the very unfavourable winter and spring of 1853, but does not appear to have suffered the least injury. There are soils in which it will not flourish, and in these it is just possible that it would not resist long or severe frosts; but wherever it thrives in summer, we have no doubt that it will endure in winter any amount of cold we are likely to experience in these latitudes.

Its habit is quite erect, the stem at the base being somewhat shrubby; in favourable soil, such as a mixture of peat and light loam, which it prefers, it will grow nearly three feet high, but does not generally exceed two feet, and in dry soils and seasons may be even less. The stem, and also the foliage, in a less degree is covered with a short white pubescence. The leaves are lanceolate, blunt, more or less toothed, and near the base they are rather deeply cut; the upper surface is often spotted here and there with brown. The flowers are produced at the extremities of the shoots, both terminal and lateral, in drooping racemes composed of a considerable number of buds, which are developed in succession. The calyx tube, which in several of the species forms so conspicuous an object, is in this plant very short. When first expanded the flower is pure white, with a clear yellow eye, and, unlike those of most of the genus, they are usually

developed early in the morning, and remain open during the day, ultimately assuming as they fade a rosy-purple tint. They are among the largest of the genus, a diameter of from two to three inches being no uncommon size, especially on strong shoots. The petals are reversely heart-shaped, with a crenulate margin, and strongly marked with numerous transparent branching veins. Its flowering season commences about the end of June, and generally extends through the two following months.

With us the plant does not ripen seed, owing, no doubt, to the dryness of the soil; but as seeds are always to be had of the Seedsman, this is evidently a question of locality only. It may easily be raised from seeds when obtained, and the young plants will generally flower the first season. Were none ever perfected, it would, however, be a matter of but little moment, for in the numerous suckers thrown up around the plant, there is abundant provision for its increase. These are sure to make their appearance in autumn, but are best left undisturbed until spring, when the whole colony, as well as the old plant, should be dug up, the strongest shoots only being replanted; the smaller suckers would, however, make good plants if allowed a place for one season in a reserve bed. It may also be increased by cuttings under a hand light in a shady border; but this method of propagating it need only be resorted to when a large number of plants is required.

The *Œ. speciosa* will grow in any free soil, and does not refuse to yield its flowers even in very sandy loams; it is, however, as already hinted, most luxuriant in peat, or a mixture of peat and light loam. In cold heavy soils it does not succeed well, unless a portion of peat or leaf-mould is well incorporated with the soil at the time of planting.

This species is, we believe, a native of Louisiana, and was first introduced into England about the year 1820, but is still much less commonly grown than some others of the genus.

The chief botanical features of the Œnotheras were noticed under the head of *Œ. prostrata*, to which we beg to refer our readers. We also there briefly adverted to the species *taraxicifolia*, *cæspitosa*, and *macrocarpa*, which with *speciosa* are among the most ornamental of the genus, and when but a small selection is desired, these four, with the dwarfer *prostrata*, or *riparia*, as it is more generally termed, may be recommended in preference to any others. There are, however, many other interesting species, of which our space will permit us to notice a few.

The *Œ. Drummondii*, from Texas, although but half-hardy, deserves to be classed with these. It is of erect habit, and grows from twelve to eighteen inches high; the leaves are oblong, fleshy, sinuate, and finely toothed, and clothed with soft down; it produces through the summer numerous large yellow flowers. Cuttings root readily, and if struck in a pot can remain undisturbed until the following spring. Where it is inconvenient to preserve them from frost in

winter, seed should be saved each season, and the plant treated as a half-hardy annual.

The *Œ. glauca* is a species undeservedly neglected. It is of moderate height, and, as its name implies, of a peculiar milky green tint. The flowers are large, of a pale yellow, succeeded in autumn by a four-winged fruit, of a fine red colour. This species is not often kept by Florists, but may be had of Messrs. Henderson of the Pine Apple Nursery, Edgeware Road.

The *Œ. tetraptera* (four winged) is generally treated as an annual, but is really a perennial, though it rarely outlives our winters. It grows about one-and-a-half feet high, and has lanceolate foliage, deeply cut near the base; flowers white, of some size, changing as they fade to pink, and rosy purple, and followed by a four-winged fruit. It should be sown early, and being a Mexican species, it will even be advantageous to raise it on a little heat, planting it out in May.

The *Œ. rosea* is another half-hardy perennial species, usually cultivated as an annual. It does not much exceed a foot in height; the leaves are oval-pointed, and the lower ones are eared at the base. Flowers pink, produced in spikes throughout the summer. It generally ripens abundance of seed, some of which may be sown in autumn, with the other hardy annuals, and if sheltered with a few evergreens, the seedlings may perhaps survive in mild winters, and will be stronger than spring-sown plants; seeds should, however, be reserved, as a precaution against loss. There are some other fine species which we hope to notice or figure in the course of the summer; but our experience of them is at present too limited to authorize us to speak with confidence of their merits.

It is pretty generally known that some of the Œnotheras furnish edible roots, but the precise details will probably be new to most of our readers. The *Œ. biennis*, termed by the French *Jambon des jardiniers*, though for what reason we are entirely ignorant, is often cultivated for this purpose in Germany. The seedlings are planted in spring in manured soil, in quincunx, and the young plants are carefully hoed and watered during summer. In autumn the roots are either dug up and preserved for use in a cellar, all the outer leaves being removed, or they are allowed to remain in the ground, and dug up as wanted. They are eaten either boiled, or as a salad; sometimes they are added to soup, and occasionally served with white sauce. The roots are said to be very digestible, and are recommended by the German physicians; we have, however, but little inclination to substitute them for our English *légumes*, and accordingly hand them over to our friends the Vegetarians, to whom, seeing that their *cuisine* is not overstocked, they may prove an acceptable novelty.

AZÁLEA AMŒ́NA.

Dwarf Crimson Chinese Azalea.

Linnean Class—PENTANDRIA. *Order*—MONOGYNIA. *Natural Order*—ERICACEÆ.

ALTHOUGH by common consent the Azaleas and Rhododendrons of our Gardens are, nominally at least, spoken of as if belonging to distinct genera, they constitute in reality at most but different sections of one and the same genus; and even the slight distinctions which originally obtained between them bid fair to become speedily obliterated by the hybridization of the various species. The earliest introduced Azaleas were characterised by their *deciduous* leaves, and *five* stamens; the Rhododendrons being, on the other hand, distinguished by their *evergreen* foliage and *ten* stamens. The discovery, however, of the Chinese Azalea, *A. Indica*, and its varieties, with persistent foliage and stamens nearly as numerous as those of the Rhododendrons, at once suggested the identity of the two genera; and this fact soon received full confirmation from the easy manner in which they were made to intermingle by cross-breeding. Since this period numerous hybrids have been raised between Azaleas and Rhododendrons; and if more has not been effected in this field, it is no doubt attributable to the superior results obtained by the admixture of the true Rhododendrons with each other, the evergreen character of which renders them far more valuable for ornamental purposes than the deciduous Azaleas or than any hybrids between these and the Rhododendrons. The evergreen Chinese Azalea *A. Indica*, being too tender for out-door cultivation in this country, and therefore restricted to the greenhouse, of which it is a justly esteemed ornament, the only species hitherto seen in our shrubberies are the deciduous Azaleas from North America, and the Caucasus.

We have, however, the gratification to announce the introduction from the North of China of a new species, perfectly evergreen in its character, with flowers of a singularly interesting form, and so hardy that there can be no doubt its employment as an out-door shrub will be limited only by its rate of increase. This species, the *A. amœna*, is figured in our plate for the present month. It is one of the dwarfest of all the Azaleas yet discovered, but as the specimens in this country are but small, we are unable to give its natural dimensions. Its leaves are of a small and Box-like form, and covered with hairs similar to those of the *A. indica*, but of a coarser character. The young branches are also clothed with long thin white scales, which disappear in the older shoots, or are metamorphosed into brown hairs. The flowers which in colour are a fine rosy crimson, are remarkable for being of the form popularly known as 'hose-in-hose,' as seen in many cultivated

varieties of the Polyanthus, and in the *Campanula coronata*, figured in our first volume, the calyx being, in all probability converted into an external corolla. The stamens are but five in number, in which respect it differs from the *A. indica*, and approaches the deciduous species. As to its perfect hardiness, our readers need only turn to the article in our previous number by Messrs. Standish and Noble, the importers of this pretty shrub, to be satisfied on this point. It has braved unhurt the severities of the past season, and has subsequently flowered profusely.

With regard to its history, Mr. Fortune, its discoverer, states that it was found in a nursery near Shanghae, having been originally brought from the city of Soo-chow-foo in the interior; though whether it there occurs wild, or is a garden production, we are not informed, the latter appears the most probable. No double flowers are known to occur wild, the numerous ornamental plants of this character in our gardens being invariably the result of cultivation.

The treatment of this species may be assimilated to that of the older hardy Azaleas, or, in other words, to that of the common Rhododendrons. It requires good fibrous sandy heath-mould or peat, plenty of water during the growing season, and a situation not too much exposed to the mid-day sun. Although perfectly hardy, its compact dwarf habit well adapts it for pot-culture, and as it is found to force readily, it will probably take its place in the greenhouse by the side of the *A. indica*. Apart from its value as an ornamental evergreen, considerable interest attaches to this plant, from the opportunities it will afford of originating, by hybridization with the greenhouse varieties, as well as with the hardy deciduous species, a new race of hardy evergreen Azaleas, which may vie in the splendour of their tints with the more delicate varieties at present cultivated.

It is not generally known that the white variety of the *Azalea indica* is much hardier than is commonly supposed. We have not ourselves exposed a plant during the winter, but in Belgium the experiment has been attended with some success, and as our winters are usually milder than those of the northern part of the continent, it may be worth while risking a specimen or two for the sake of determining what amount of cold this plant will bear.

Although we have spoken of the hardy deciduous Azaleas, as inferior for ornamental purposes to the evergreen Rhododendrons, they are nevertheless very desirable plants for the shrubbery, or for clumps of American plants, and possess at least one attraction not usually shared by their allies, in the delicious fragrance of the blossoms of most of the species; some of the species and varieties have flowers of a rich orange or yellow, a colour which, if not altogether unknown amongst Rhododendrons, is by no means common.

There is, first, the well-known *A. pontica*, from the Caucasus, with oval leaves, fringed at the edge with hairs, and more or less pubescent on its two surfaces.

The flowers are yellow in the species, but there are varieties of many other shades; they are somewhat viscous or clammy, and are produced in heads at the extremities of the shoots before the leaves appear. The *A. viscosa* and *A. glauca* from North America develop their leaves and flowers together; the blossoms of the former are covered with glutinous hairs, and are generally white; those of *glauca* are also white. In the *A. nudiflora*, another American species, the flowers are red, and destitute of the clamminess peculiar to the preceding; they appear, however, before the leaves. Of this species there are numerous varieties, of every shade of colour except yellow and orange. The *A. calendulacea*, also from the Western Hemisphere, has several varieties of a fine orange colour, particularly those known as *chrysolectra*, *grandiflora*, and *triumphans*. The Belgian Florists have recently turned their attention to these showy plants, and many new and striking varieties originated by them are now obtainable through the trade, which are well worthy the attention of amateurs of this class of plants; they are best known as Belgian Azaleas.

Nearly thirty years since a beautiful species, the *A. sinensis*, with a quasi-evergreen habit and fine yellow flowers, was figured by Sweet, accompanied by the statement that it was probably as hardy as the *A. pontica;* whether this opinion proved unfounded, or whether the suggestion was never put to the test, we do not know, but one thing is certain, that the plant continues to be classed with the greenhouse species; this is, however, by no means conclusive as to its tenderness, for we know that many plants have been kept for years in our greenhouses, of whose hardiness there is now no doubt, and it is to be desired that this fine species should be tried out-doors; if hardy, it would be a very great acquisition to our evergreens.

To the botanical features of the Azaleas we have not sufficient space to allude on the present occasion; the Heath-worts to which they belong, are easily distinguished from nearly all other plants, by their anthers opening by pores at their tips, and not by longitudinal fissures, as in most other Orders.

The name of this genus is derived from *azaleos*, dry; not, we think, in allusion to the localities where they are found, as is sometimes supposed, but rather to the dry, naked, stick-like appearance of many of them, especially in winter, when denuded of their leaves. So far from being natives of dry places, nearly all of them occur in moist localities.

It may be necessary to remark, that there are several old varieties of the *A. nudiflora* and other deciduous species, of the same name as the present plant, but the evergreen character of our illustration, as well as the form of the flowers, will at once distinguish it from all others.

AQUILÉGIA ALPÍNA.

Alpine Columbine.

Linnean Class—POLYANDRIA. *Order*—PENTAGYNIA. *Natural Order*—RANUNCULACEÆ.

COULD all the exotic herbaceous plants become, by accident, extinct in this country, and be then subsequently re-introduced after the lapse of twenty or thirty years, we doubt if any of them would excite greater interest than some of the finest of the Columbines. Few of our hardy perennials can boast of a more curious structure, and the habit of all is ornamental, often very graceful; nor are brilliant, intense, or delicate tints by any means deficient among them. But so much does familiarity with any object blind us to beauties which could not otherwise fail to strike us, that we suppose we run some risk, in this age of bedding plants, of having the correctness of our taste called in question in thus avowing our predilections for this genus.

In justification of these feelings, let us place before our readers a flower of the magnificent *Aquilegia alpina;* observe its fine deep azure blue tint, and its extraordinary size, measuring three inches across its expanded sepals, or wings, as we may most appropriately term them, and then say whether such a plant deserves the neglect it has, for so many years, experienced. We will, however, do the floricultural community the justice to believe that the absence of this and such species as *Skinneri, glandulosa,* and others from their gardens, is, probably, not attributable to any want of appreciation of their merits, but rather that they are so rarely brought prominently into notice by the Horticultural publications which profess to guide the public taste, that amongst the numerous claimants for admission to the flower-borders they are overlooked.

We have chosen the *A. alpina* as an illustration of the genus, both because it is undoubtedly one of the finest species, and also one of those which are least known. It is of dwarf habit, not usually exceeding one foot in height. The stem is slightly pubescent, but not glandular. The leaves are much smaller than the *A. vulgaris* and the more robust species, but are of the same biternate form, each leaflet being divided into several blunt segments; the uppermost ones are only three-lobed, and sometimes quite entire, narrow and pointed, those below them presenting an intermediate form. Each stem produces about three flowers, of a beautiful dark blue, and larger than those of most other species. The sepals are of a very broad oval form, tapering towards the point, which appears as if snipt off; they are attached between the petals by a narrow claw nearly half an inch long, and in colour are of rather a darker blue than the petals, but brown at the tip. The

petals themselves present the well-known tubular form for which the Aquilegias are remarkable, terminating in a long hollow spur, the point of which is hooked inwards, and more or less pubescent, but destitute of the viscosity which is seen in *glandulosa* and some others. The stamens are less prominent than in that species; they are arranged in concentric series, the outer ones being the shortest; the innermost ring immediately in contact with the ovaries is always abortive, being of a flattened membranous form and destitute of anthers. This peculiarity is however generic, and may be seen in *vulgaris* and all the species.

We may here observe that the spur of this genus is but another form of the nectary; in all the species it will be found to contain a sweetish fluid near the tip, which is, however, to be regarded with suspicion, nearly all the plants of the Ranunculus tribe being more or less poisonous, though the Aquilegias probably partake of these properties in a smaller degree than most other genera. Several sections of this Order exhibit a strong tendency to an irregular formation of the different parts of the flower; in some, as in the present genus, it is the petals which assume an abnormal form, and in the Hellebore they are also tubular and nectariferous, though not prolonged behind into a spur; in the Larkspur and Monkshood, both sepals and petals undergo modification, the heel being formed by the upper sepal. Few, if any of our readers are ignorant that all the different organs composing a flower—calyx, corolla, stamens and pistil—are regarded by Botanists as only modifications of the leaf, and in the separate carpels or *follicles* of the Aquilegias, we have a good illustration of the manner in which the simplest form of seed-vessel may be produced by the folding of a leaf, the back of the carpel representing the mid-rib or principal vein, the inner angle of the carpel to which the seeds are attached, being formed by the union of the two edges of the leaf. In the common annual *Nigella*, which is closely related to this genus, we see the first approach to the compound seed-vessel, the carpels being partially adherent at their base.

The *Aquilegia alpina* is, we scarcely need say, quite hardy, and requires little or no precaution in its cultivation. It enjoys a rich light soil, but is by no means fastidious, partial shade and free supplies of moisture in summer are desirable, the latter, indeed, is indispensable. The plant being of dwarf habit, the best effect is produced by grouping two or three roots; it may be readily increased by seeds, and the young plants will flower the second season; but as the plant blossoms in June when many other species of Columbine are in flower, we would advise that a single blossom should be tied over with a piece of fine muslin from the time of expansion until the petals have dropped, or the seed may become hydridized by the admixture of the pollen of different species. This precaution is desirable with *all* the best species, for they intermingle so readily, that there is some difficulty in procuring them true to colour. Many of the hybrids might, however, prove as

attractive as the true species, but we confess to a desire that all the original types of the genus should be preserved. We rather suspect that the *A. alpina* is sometimes sold for *A. jucunda*, an allied and equally beautiful species; that, however, as defined by Dr. Fischer, has white petals, and the carpels are more numerous; the peduncles of the flowers are also longer than in *alpina*. The *A. alpina* is less generally kept by the trade than many other species, but may be had of Messrs. Henderson, of the Pine-Apple Nursery, Edgeware Road; nearly all the Edinburgh Florists also possess this plant, and, indeed, many of our herbaceous plants seem to have retreated northward.

In our notice of the genus at page 20 of the present volume, we alluded to several fine species of Columbine, including the plant now figured. To that list we may here add a few others, equally worthy of cultivation. The *A. Wittmanniana* is a very beautiful species of rather recent introduction. It grows about eighteen inches high, and produces, in June, large flowers of a fine porcelain blue. This plant may be had of Messrs Henderson, of the Wellington Nursery, St. John's Wood. The *A. Canadensis* is much less rare than the above, but is not so common as it deserves to be. It is somewhat diminutive, but has an elegant appearance when in flower; the blossoms are of a reddish orange, a colour not often found in this genus. The styles and stamens of this plant project considerably beyond the mouth of the flower, and the spurs are straight. There is a variety with pale yellow blossoms, which is of equal interest with the true species. The curious *A. pubiflora* (woolly-flowered) is deserving of notice, but, unhappily, we are unaware where it is to be obtained. Some years since, a fine hybrid variety was obtained between the *A. sibirica* and *A. vulgaris*, having flowers striped with purple and white, and named after the lady by whom it was originated, *Garnieriana;* it is a desirable plant, and is commonly kept by some of the London Florists. To these we may add a recently introduced species from the North of India, the *A. Kanaoriensis*, closely allied to the *A. vulgaris*, but with straight spurs; it is a pretty plant, but on the whole less desirable than many we have noticed. It may be gratifying to some of our readers to learn that the *A. Skinneri*, referred to in our first notice of these plants, proves quite hardy; we were ourselves doubtful if it would endure excessive cold, such as that of the past spring, but it has resisted with the thermometer nearly at zero, and no fears, therefore, need be entertained for it in future.

The term *Aquilegia* is derived from *aquila*, an eagle, whose claws the nectaries, or spurs, are imagined to resemble. It is curious that the English name of this genus, Columbine, is applied by the French to another division of Ranunculaceous plants, the Thalictrums, or Meadow-Rue, the Aquilegias being known in France as *Gant de Notre Dame*, or *Ancolie*.

MELÍTTIS SPECIÓSA.

Showy Bastard-Balm.

Linnean Class—DIDYNAMIA. *Order*—GYMNOSPERMIA. *Natural Order*—LABIATÆ.

FROM the paucity of strictly hardy subjects during the winter and spring months, we have been obliged to admit into the plates of the last few numbers a greater number of half-hardy plants than we wished, and perhaps than many of our Subscribers themselves desired. Now, however, that the season for the hardier plants has fairly arrived, we intend to figure a larger proportion of this class of subjects; and of this intention we offer an earnest in the present number, all the figures being those of plants perfectly hardy, and which require little or no care in their cultivation. This remark is especially true of the fourth illustration, which will doubtless be recognized by some of our readers as an indigenous plant. This, however, is no valid reason for refusing it a place among cultivated ones, for assuredly there are many exotics commonly seen in our gardens of a less showy character than the *Melittis speciosa*. We have never had the good fortune to meet with the plant in a wild state, our botanical rambles not having extended to the southern counties where alone it occurs; but we entertain little doubt that it has rarely been seen by collectors, without exciting a desire to transfer it from the shady haunts in which it delights to a more conspicuous position in the flower borders. Its flowers are, next to those of the Salvias and Phlomis, among the largest of any of the *Labiatæ*, or Lipworts, and, were it increased by seed instead of the ordinary mode of dividing the roots, there is every probability that a further increase of size might be effected, and perhaps its colour deepened or brightened, especially as there appears a natural disposition in the flowers to vary their tint.

The *Melittis speciosa* is, then, a hardy, herbaceous perennial, growing about twelve to eighteen inches high, with long, oval, pointed, and toothed leaves, in opposite pairs, soft to the touch, and possessing a slight balm-like odour. The flowers are produced in the axils of the leaves, in groups of three to six, and usually at every joint in the case of strong plants. The calyx is large, of an inflated cup-like form and two lipped, the upper lip generally three-toothed, the lower one divided into two large teeth or lobes. The corolla protrudes often an inch or more from the calyx, and like that is two-lipped; the upper lip is slightly convex and entire, the lower one three-lobed, and, when the flower is fully expanded, reflexed downwards. The ground colour is pale flesh, the centre of the lower lip being of a dark plum purple, with the extreme margin whitish.

When first expanded the colour is of considerable depth, but loses something of this by a full exposure to bright sunshine; the plant should therefore be cultivated in a partially shaded border. The didynamous stamens and four-lobed ovary, being peculiar to nearly all the Lipworts, call for no especial notice. Its flowering season occurs in June, and continues two or three weeks.

It prefers a rich free loam, and is readily increased by division in April, just as it commences its growth. It may also be multiplied by seeds, which are always ripened if the plant does not suffer too much from drought after flowering; they should be sown on a gentle heat in spring, and the plants afterwards turned into the borders where they are intended to remain. When in flower, the stems require a slight support, as the numerous blossoms often cause the plant to droop so much that they are partially concealed by the foliage. As it dies down to the ground in autumn, a label should be placed near the root, that it may receive no injury when the borders are dug.

We have given this plant under the name it was received by us, and by which it is known in the trade, but it differs so little from the common *Melittis Melissophyllum*, that it certainly does not merit a distinct name, the wild specimens of that plant varying considerably in the breadth of the leaves, and the tint of the flowers. There is one variety to be had with variegated foliage.

Melittis is derived from *melissa*, a bee, in allusion to the flowers being frequented by that insect.

OUR JUNE FLOWERS.

THERE is, perhaps, no other period of the year in which a garden of mixed hardy perennials present so favourable a contrast with those arranged on the more fashionable bedding system as in 'the leafy month of June.' Later in the year, we will not deny that the effect produced by the half-hardy bedders is often more striking, though not more interesting, than that displayed by a good mixt border, but early in the season it is often extremely meagre, especially when, as sometimes happens in unfavourable springs, the plants are not turned out until the end of May.

An enumeration of all the plants flowering in June would occupy far more space than our limits will permit, and also include many of doubtful value, but a reference to a few of the most desirable of those which have come under our notice, and which are proved to be hardy, may not be without interest for our readers. The past winter has left unmistakeable traces of its severity in the vacant places which are here and there perceptible, and deprived us of some long cherished favourites; but those who will accompany us in a stroll around our floral domain will find, we think, an ample harvest.

And with what more truly ornamental plant can we commence our sketch than with the lovely *Glycine sinensis* which droops so elegantly over the entrance to our 'retreat'? Its purple tresses hang so thickly as almost to conceal the leaves and stem, although it is but a comparatively young

specimen. It is marvellous that such a plant as this should be absent from any garden where ornamental subjects are appreciated; perhaps the idea that it requires a wall may have deterred some amateurs from obtaining it; but the fact is, that the plant is as hardy as the Hawthorn, and if it is sometimes trained to a wall, it is only for the sake of the support thus afforded to its slender shoots. In no situation does it make a more ornamental appearance than when trained on a stout iron rod, bent in an arch-like form over the garden path; and every one of our readers who has not this plant should forthwith obtain it for such a purpose.

And here is a worthy companion to the *Glycine*, in the *Clianthus puniceus*, well-named the Glory Pea, though this *does* require a wall, and richly deserves it, or even a double matting when necessary. With this protection it passed safely through the last winter, and considering the intensity of the cold on several occasions, that is saying a great deal. Those who have only seen this plant grown under glass, where it is almost sure to be attacked by red spider, and assume an appearance anything but ornamental, can hardly form an idea of the fresh green fern-like aspect of the foliage, and the depth of colour of the flowers, when treated as a hardy plant.

A little further on we find the *Abelia floribunda*, a shrub scarcely less ornamental, when in flower, than the *Clianthus*, and certainly hardier, though it is not to be trusted except against a wall. With such a protection it has stood exposure as far north as Edinburgh; no one therefore need hesitate to treat it as a wall plant in the English counties. The long, rich rosy-tinted flowers of this beautiful shrub, and their profusion, cannot fail to make it a favorite wherever it is once grown. But here is a Caprifoil which even those who have not a walled garden may grow, the *Weigela rosea*, one of the most ornamental of all our deciduous shrubs, and so common that we need not describe either its appearance or culture, further than that it likes a generous penetrable soil, and should be pruned in, rather severely, in early spring.

This pretty *Adenocarpus intermedius* deserves a moment's attention. It is covered with yellow pea-shaped blossoms, and is hardly distinguishable from a *Cytisus* until the pods are ripe, when, if the seeds are examined, a curious waxy gland will be seen on each side of the *hilum*, which at once marks it as distinct from the genus *Cytisus*, with which, however, it was formerly allied. And contrasting with the preceding is the somewhat rare *Indigofera Dosua* also belonging to the *Leguminaceæ*, which although perfectly hardy and capable of resisting twenty or thirty degrees of frost, is, strangely enough, still classed by the trade with green-house plants. Its elegant pinnated leaves, and spikes of rosy purple flowers, produced very freely, have a very pretty effect. It grows, with time, five feet high, and likes a good soil. We must give those of our readers who are unacquainted with this pretty plant an opportunity of judging by a figure. Several other ornamental shrubs of this natural order are now in flower; here is the *Coronilla glauca*, looking a little pinched from the nips it got from Jack Frost! but still manifesting its vitality by a few dozen heads of blossoms; the *Cytisus purpureus*, with its slender shoots pointing downwards; the *C. sessilifolius*, with evergreen leaves, and erect spikes of yellow blossoms which quite cover the bush, and the *C. nigricans*, of a rather dwarfer habit, and smaller spikes of flowers. And last, but not least, we must name the elegant Rose-Acacia, *Robinia hispida*, with its bunches of delicate pink flowers and graceful foliage; its wood is, however, so brittle, that we have never been able to preserve it unbroken for any length of time, in spite of precautions.

On no account must we omit to point out the charming *Ceanothus dentatus*, now loaded with its clusters of blue flowers, and pleasing every body by its neat compactly arranged foliage. Wherever there is space upon a wall this highly desirable evergreen shrub should be planted. And of a similar colour though different habit, is the *Sollya heterophylla*, just bursting into bloom; though *that* has not been fully exposed, and is but just placed out, but we have not much doubt that with a mat it would have outlived the winter. We must not however linger among the shrubs, or we shall

hardly be able to notice the dwarfer plants; with a nominal reference, therefore, to the beautiful Kalmias and Rhododendrons, to the *Deutzia scabra*, the *Buddlea globosa*, which survived the winter in our neighbourhood though a good deal cut; and the yellow revolute Jasmine (a plant worthy a place in every garden), all of which are in flower at some period of June, we pass on to another class of plants.

There are some highly ornamental bulbs in bloom at this period; as being one comparatively little grown we will notice first the *Pancratium Illyricum*, a most beautiful hardy plant, producing generally ten or twelve large white deliciously fragrant flowers on each stalk. It commences blossoming in May, but continues into the next month, so that we may claim it as a June bulb. Another first-rate hardy bulb now in bloom, which is unaccountably absent from most gardens, is the *Camassia esculenta*, with a spike of beautiful purple blossoms, often eighteen inches high. It is comparatively cheap, easily grown, and as easily increased. All who have not this fine plant should procure it in autumn, when it may be had in a dormant state, of most of the London Seedsmen. Mr. Carter is sure to have it in stock. A more common, but equally interesting bulb is the *Scilla Peruviana*, often, but erroneously termed the Blue Star of Bethlehem, though, except in colour, it differs so little from several of the Ornithogalums that we can hardly be surprised at the misnomer. Several of the Lilies are now expanding their showy blossoms, chiefly the common white, *L. candidum*, than which few plants are more ornamental; the Monadelphous Lily, *L. monadelphum*, a very beautiful and somewhat rare species, with pale yellow flowers, spotted with red; the orange Lily, *L. bulbiferum* or *aurantium*, one of the most widely diffused of all the species, and the different varieties of the Martagon Lily, many of which are very handsome. The majority of the species, however, flower in July. The *Allium roseum* is a pretty, hardy Lily-wort, of some interest, about eighteen inches high, with pink flowers, and the yellow *Allium Moly*, with its white variety, is also quite hardy, and as cheap as a Hyacinth. They should be planted in groups of at least three bulbs. The *Czackia Liliastrum*, sometimes classed with the Anthericums, is very pretty, its white flowers recalling those of the Lilies, but on a smaller scale; and the *Phalangium liliago*, which resembles the preceding, is a desirable plant of the easiest cultivation; they are not, strictly speaking, *bulbous* plants, but belonging to the Lily-worts, are appropriately mentioned here. Then there is the common *Asphodelus ramosus*, or *Baton royal*, with its tall spike of crowded white flowers, which in sunshine open in a star-like form, and are marked externally by a brownish line in the centre of each division of the flower; the yellow Asphodel, *A. luteus*, is also in bloom.

These clumps of the English Iris, *I. Xiphioides*, now full in flower, have a very refreshing appearance, and would make a delightful bed, where there is sufficient space. The colours of many of them are splendid, and one cannot but regret their blooming season is rather short. The lurid Spanish Irises, which are varieties of the same plant, are some of them remarkable for their singular tints, and a few, at least, should be seen in every garden; they, as well as the English Iris, are running into innumerable shades of colour, and are very hardy; the bulbs of both descend deep in sandy soils, and should be dug up and replanted each autumn, as soon as the leaves have decayed; they are injured by being kept long out of the ground. The *Bobartia aurantiaca* proves perfectly hardy, and its orange-coloured flowers are very showy, though short-lived; as a cheap and easily grown bulb, it deserves especial mention, but to produce much effect it should be planted in clusters. The genus *Sisyrinchium* contributes several very interesting plants to our list of June flowers. The *S. odoratissimum*, which is generally classed with the greenhouse species, has proved quite hardy, and is a very free flowerer, each stem producing several spathes, containing eight to ten blossoms of a yellowish white tint, striped with purple. The *S. anceps*, of a pretty blue, is also quite hardy, and the white *S. grandiflorum* is a good border plant, but dwarfer than the two others. The *S. Bermudianum* has borne ordinary winters, but not possessing

this plant we do not know whether it has resisted the late season, and should be glad to learn from any of our readers who may have it. The handsome *Gladiolus Colvillii* is much more ornamental than the *G. communis*, and is quite as cheap and easily grown. It is valuable on account of flowering at so early a period of the summer, before the *ramosus* and *gandavensis* breeds are in bloom.

The Amaryllids are now represented by the *Ismene amancaes*, or Peruvian Daffodil, a beautiful plant with yellow flowers, quite hardy, but best kept out of the ground in winter, damp being injurious to it. *Ismene calathinum*, with its white blossoms, affords a pretty contrast to the first species, both may be had, in a dry state, for about a shilling each. The *Alströmeria tricolor*, although not exposed in winter, but preserved in a pot in a frame, deserves mention, for its exceedingly pretty white flowers tipped with yellow and purplish-brown The *A. Van Houttei* is not quite out, and we must, therefore, leave that for a group of July flowers.

We have not referred to the half-hardy Irids, such as Ixias and Sparaxis, as those in bloom have all received more or less protection; they are, however, well worth this precaution, and are among the most showy of all our June flowers.

At the head of the list of the hardy herbaceous plants now in blossom we must place the *Dielytra spectabilis*, now, alas! threatened by some meddlesome Botanist with a new name—*Dicentra*; this beautiful plant has been so often noticed in these pages that we need only refer to our past recommendations of it. The *Campanula nobilis* is very remarkable for the large size of its bluish-purple flowers, marked with chocolate, but the white variety of this plant is still more striking, and deserves to rank with the very best of our hardy plants. The *C. latifolia* is a beautiful species with numerous large blue or white flowers in spikes; and the Peach-leaved Campanula *C. persicifolia*, with its double blue or white varieties, is a very ornamental, though common, plant just beginning to bloom. An allied genus *Adenophora*, scarcely distinguishable from the Campanulas, gives us this month the *A. coronopifolia* and *A. verticillata*. The first is a pretty dwarf blue flowered species, quite hardy, and growing in any ordinary soil; the second is much taller, and has also blue flowers. Here is a patch of our favourite Dodecatheons, with their umbels of elegant rosy flowers so curiously reflexed. As perfectly hardy, dwarf, and easily managed, these beautiful little plants richly merit recommendation. Moisture in summer is, however, indispensable, and a partially shaded situation, as well as vegetable soil, is very desirable. And the *Globularia vulgaris*, or Blue Daisy, requires precisely the same treatment; this interesting plant is by no means so common as many of less value; it flowers for weeks together.

Highly ornamental is the rich blue *Pentstemon ovatum;* owing to the dry weather its blossoms look smaller that usual, but are very numerous; it has borne, uninjured, a season which has destroyed many commoner varieties. The *Aquilegia jucunda* now spreads its delicate violet-blue sepals, exhibiting the white-lip of the cone-like petals; there is sad confusion among several species of this genus, the plant in question having been sent us as *glandulosa*, or *alpina*, by an eminent firm. What can be more striking than this fountain of blue spray, the *Anchusa Italica*, though so common as to be a perfect weed wherever it once takes root? This plant succeeds well even in very sandy soils, and appears to suffer less than many plants from dry weather. Even this very ubiquitous member of the Composite tribe of plants, the *Centaurea montana*, is, in our opinion, deserving of more praise than it commonly receives; and the *Stenactis speciosa* is now covered with scores of its large showy lilac blossoms. This plant is one of the earliest of its tribe, and in good rich loam will flower for a long period.

The very sandy loam of the border seems favourable to the growth of that pretty fragrant trailer with pink flowers, the *Crucianella stylosa*, which we have never seen do well in soils of an opposite character. It increases so fast as to require to be very frequently divided. One or two young

plants of that old favourite, the *Linum flavum*, are now glittering with their bright yellow blossoms, having fortunately escaped the frost, although in rather damp soil; whilst older plants in a much drier situation perished. The blue *Linum montanum*, and the blue and white varieties of the common perennial Flax, are also in flower. The *Potentilla Menziesii* displays its fine orange scarlet blossoms, side by side with the handsome *Geranium pratense* with bluish violet flowers. This species, and the dwarf-spreading *G. sanguineum*, are both very ornamental, the latter succeeds well in sandy soils, and is excellent for covering a bank. Another beautiful dwarf plant for the front of the borders, the Dandelion-leaved Œnothera, is now expanding its large white flowers with each returning evening, and the yellow *Œ. prostrata* has just commenced flowering. The interesting little *Oxalis floribunda* makes an exceedingly gay appearance in the sunshine, with its numerous bright pink flowers! It is so hardy, and blossoms for so long a period, that we venture to recommend it as a plant of some value for the front rank of the beds or borders. And although so common, we must not overlook the different varieties of the Jacob Ladder, *Polemonium cœruleum*, those with pale violet blossoms are the most ornamental, and contrast prettily with the pinnated foliage. These two new Borage-worts will prove very useful as early bloomers,—the *Batschia canescens*, with rich orange flowers, and the *Cynoglossum montanum*, with dense racemes of bright blue blossoms. The last grows about one foot high, the other is rather dwarfer; both do best in poor soils, as in rich composts the leaves become too luxuriant and conceal the flowers. The double Rockets, *Hesperis matronalis*, are all in bloom; the white and crimson varieties are beautiful plants when grown in a rich soil, and the *Cheiranthus Marshallii* is a fitting companion to them, though not double; if the flower stalks of this plant are removed as soon as the blossoms begin to fade, it will often yield a second crop at the end of the summer.

For a dry, sandy bank, where few plants will grow, still less flourish, the common dwarf Sun-rose, *Helianthemum vulgare*, is a valuable plant; indeed it succeeds much better in sandy loam, than in any richer material. The *Saponaria ocymoides* is a charming little trailer, most prodigal of its pink flowers, and the *Silene Schæfta* is almost equal to it. Both are excellent plants for the rockery. Of different habit, and more specious, is the flaunting Oriental Poppy, *Papaver orientale*, with large orange coloured blossoms; its crumpled petals are marked at the base with a large black spot; the little *P. alpinum* is a much humbler species with neat white flowers. The *P. bracteatum* is perhaps even more showy than the *orientale*, and is easily distinguished by having a large bract just beneath the calyx. The Poppies do not bear transplanting. A very remarkable species of *Primula* is now finely in bloom in the border; the *P. Sikkimensis*, with an umbel of drooping yellow flowers, nearly eighteen inches high. This plant we noticed briefly at page 18 of the present Vol. It is a beautiful hardy plant, and one of the least delicate to cultivate. The *Corydalis nobilis* is a pretty Fume-wort, with delicate cut foliage, and racemes of rather large yellow flowers, tipped with dark purple; the little yellow *C. lutea* is more common, and becomes a perfect weed in light soil, springing up from self-sown seeds.

One species of *Salvia* is already in bloom, and appears likely to flower throughout the summer, the blue and white *S. bicolor*, more than once recommended by us as a good hardy species, and deserving more attention than it receives. The *Gentiana septemfida* has just opened its large blue bell-shaped flowers, but it is often later in the season before it blossoms; this species is a good and cheap hardy plant, and purchasable at any of the London Florists for a shilling. As tastes proverbially differ, every amateur may not discover merit in the *Erodium hymenodes*, whose clusters of pink flowers are now glittering in the sun, the two upper petals looking as if covered with spangles. It is very hardy, although an African plant, and flowering for half the year has, we think, strong claims to notice. The *Mimulus luteus* and its varieties, several of which are now in bloom, will unite all suffrages; they may indeed be classed with the most valuable of our hardy

plants; it must be a cold winter that would destroy them. They are much more likely to be killed for want of water in summer, especially in light sandy soils. The *cardinalis* varieties are later bloomers. There are several species of that pretty genus *Veronica* in flower; first we have the *V. gentianoides*, with smooth, oval, entire, evergreen leaves, in tufts at the base of the flower stem, and very pale flowers, veined with blue; then there is the *V. latifolia*, with spikes of a deeper blue, and serrated leaves; the *V. spicata*, also blue; and the fine *V. virginica*, nearly three feet high; the leaves of this species are in whorls, and the flowers are white, in spikes a foot long; there is a pink variety sometimes confounded with the species. A beautiful border plant is the red-stamened variety of the *Thalictrum aquilegifolium;* the handsome purple-tinted leaves, and the large panicles of brush-like flowers, make it very ornamental when in bloom. *T. glaucum* is yellow, and of taller growth; and as a dwarf species, there is the white *T. alpinum*, much less showy, however, than the two just named. Here is a yellowed-flowered Leguminous plant we had nearly overlooked, the *Thermopsis fabacea*, which as being both showy and hardy, is worth a place in most gardens; the stamens of this plant, unlike most others of this Order, will be found distinct. The beautiful herbaceous Pœonies we point out, for the sake of introducing a warning; on no account should the gardener be allowed to remove their foliage after flowering, an error commonly committed by the less intelligent of the blue-aproned gentry, who require vigilant superintendence.

We have been obliged to omit some interesting plants, our space being exhausted; but we have reserved one as a *bonne bouche*. Let us see, gentle reader, if you can guess its name. It climbs, has delicate succulent stems, and leaves divided into six lobes, with a minute fringe at the base of the leaf-stalk; its flowers are produced singly from the axils of the upper leaves, and are of a bright vermillion tint, with a spur of the same colour, and embrace with their slender stalks any friendly support within their reach. The problem is not a very difficult one, truly; still there may be readers of the English Flower Garden who are unacquainted with the original of the portrait, and, therefore, for them we will add that the last named of our June flowers is—the *Tropœolum speciosum*.

AQUILEGIA CALIFORNICA.

Although aware of the introduction of this species of Columbine, we refrained from noticing it in the earlier part of the present number, not having then seen its flowers. Messrs. Cunningham, Fraser and Co., of the Comely Bank Nursery, Edinburgh, have since obligingly forwarded us specimens, which enable us to speak of it in very favourable terms. It appears to grow about eighteen inches high, the stems and petioles being tinged with purplish-brown, and the leaves of a similar form and size to those of the common species. The petals are of a bright orange-scarlet, with *straight* spurs inflated at the tip, and are remarkable for the shortness of the outer lip of the mouth of the tube; the sepals are of a duller red. The stamens project considerably from the mouth of the flower, as in *Canadensis*, to which species it seems allied, but its foliage is larger, and it is altogether a finer plant. We are not aware that this plant is to be had in London, but it may be obtained cheaply of Messrs. Cunningham and Fraser, or any other of the Edinburgh Florists.

NEW MODE OF BUDDING ROSES.

In budding Roses it is usual to cut out the wood and bark to which the bud is attached, and then to remove the wood by carefully picking it out from the shield, an operation not always accomplished without difficulty. The following plan of preparing the shield has been suggested, and appears worthy of attention. An incision is to be made around the bud so as to enclose a portion of bark of the same size as the ordinary shield, and if this is done at a period when the bark separates easily from the wood, the shield and bud may be readily detached by an adroit use of the fingers, and the thin end of the budding knife. A little pressure applied to the bark, around the base of the bud will assist in loosening it, but it is of more importance than when the ordinary mode is followed, that the proper moment should be chosen, which can only be known by trial.



Cyclobothra alba



Adenophora verticillata



Salvia Canadensis



Lantana Drummondii

CYCLOBÓTHRA ÁLBA.

White-flowered Cyclobothra.

Linnean Class—HEXANDRIA. *Order*—MONOGYNIA. *Natural Order*—LILIACEÆ.

THIS curious and interesting bulb is one of a considerable number of Lilyworts, whose very existence appears almost ignored by the great proportion of amateur Florists; and as the intimate connection between supply and demand holds equally good in Horticulture as in other branches of trade, they are likely, in consequence, to be speedily lost, if they have not, indeed, already disappeared.

The genus *Cyclobothra* includes seven or eight species, all of which have at some time or other been in cultivation in this country; the present member of the genus appears, however, to be the only one now attainable, and that only through a single source, Mr. Groom of Clapham Rise.* They are closely allied to the *Calochortus*, of which one species, *venustus*, was figured in an early number of this work, and they are equally related to the more common Fritillaries of our garden. The differences between the *Cyclobothra alba* and the *Calochorti* seem to be extremely small, for in the present species there is some departure from the type of the genus as founded by Sweet, on the *Cyclobothra barbata*.

The Fritillaries, as everybody knows, are characterized by a six-parted perianth, each division of which is furnished at its base with a hollow cavity or pit, of a circular form, and smooth in its interior.

The genus *Cyclobothra*, as defined by Sweet, differs only, as far as the flower is concerned, in the situation of the nectariferous pit, which is placed at a greater distance from the base, and in the interior of the segment as well as the nectary being densely bearded.

In the *C. alba* the nectary is of a different form, and is found only on the three inner divisions of the flower, the sepals being of the narrow form and purplish-green tint seen in *Calochortus*. The two genera may be said to pass into each other through this plant, for although the *Calochorti* are stated to be destitute of a nectary, there are in *venustus* and *luteus* distinct traces of this organ, especially in *luteus*, and the petals are bearded at the spot where they occur.

The *Cyclobothra alba* is a bulbous plant growing about a foot high, with one radical leaf of considerable length (much longer than is represented in our figure), and from three to five shorter ones upon the stem, from each of which proceeds a lateral shoot bearing two flowers (sometimes, however, there is but one), with a pair of leaf-like bracts at the base of the peduncles. It is only strong bulbs

* Mr. Charlwood of Covent Garden, occasionally offers for sale the dry bulbs in autumn.

which will produce the number of blossoms shown by our artist; usually there are but six upon the same stem. The flowers are drooping, of a globular form, and about one and a-half to two inches in diameter. The three petals are externally convex, aud have their edges closely approximated, being rarely separated to a greater degree than shown in our figure. In colour, they are of a silky white, with a tinge of green near the base; they are bearded on their inner surface with long white hairs, which under the microscope have a flattened, ribband-like form. The three sepals are of a membranous texture, oval pointed form and of a pale green with a tinge of purple.

The stamens are six in number, with yellow anthers, attached by their base to the filament, as in the Tulip. The ovarium is oblong, bluntly triangular, with intermediate furrows, and terminated by three short spreading stigmas, Seeds of an oval form, not winged. It flowers from Midsummer to the middle or end of July.

We revert for a moment to the curious nectariferous cavity which, as already observed, is of a different form to that of the *C. barbata*. In *alba*, it appears as a linear or oval depression in the petal, at a short distance from its base, traversed horizontally by four or five fringes, the intervening spaces being filled with a sweet fluid. Our artist has represented an enlarged section of this organ, which will serve to convey a tolerable idea of its structure. Under the microscope it presents a beautiful wax-like appearance, and the whole petal appears to be traversed by yellowish glandular ducts.

The *Cyclobothra alba* is quite hardy, but the bulbs suffer from excessive wet; when planted in the open borders, it should therefore be covered with a small hand light, or empty pot, during long continued rains in autumn and winter. It does well in a mixture of peat and sandy loam, and should be planted in a warm well-drained border. If the bulbs are removed from the ground after the foliage has withered, they must be replanted not later than the end of October, as they usually commence their growth at an early period. It may also be grown in pots, and in this case may be protected in a frame during the winter months. Seeds are generally ripened, by which, as well as by offsets, it may be increased. The seeds are best sown as soon as ripe, but in that case the young plants must be kept in a frame through the winter. If the seed is preserved until spring, it will, however, vegetate without much trouble, aided by a little heat. The *C. barbata*, of which we have more than once spoken, is remarkable for producing numerous bulbils in the axils of the leaves, by which it may be propagated, but they do not occur in the present species; whether they are found in the other members of the genus we are unaware.

Beside the *C. alba* and *C. barbata*, there are four others; *monophylla*, *lutea*, and *pulchella*, with yellow flowers, and *purpurea*, with purplish green blossoms, but if

not quite unattainable, they are very rare. All are natives of California and the frontier between Mexico and that province. The species figured is not expensive, at least when its rarity is considered; from 2*s.* to 2*s.* 6*d.* will purchase a bulb.

Cyclobothra is derived from *kyklos,* a circle, and *bothros,* a well or pit, in reference to the nectary occurring on each petal.

ADENÓPHORA VERTICILLÁTA.

Whorl-leaved Adenophora.

Linnean Class—PENTANDRIA. *Order*—MONOGYNIA. *Natural Order*—CAMPANULACEÆ.

OUR readers will hardly need to be apprised of the relationship of the plant to which we now direct their attention, for it presents unmistakeable evidence of belonging to the family of Bell-worts. The genus *Adenophora* was, indeed, formerly included with the true Campanulas, but has been separated from them by Dr. Fischer on grounds which we will briefly state.

The leading features of the genus Campanula have already been pointed out at page 136 of Vol. I, and it will therefore be sufficient to observe that the Adenophoras differ chiefly in the presence of a curious cylinder or annular gland, varying in size in the different species, which surrounds the base of the style. In some of the species it is inconspicuous and of a membranous character, as in *coronopifolia*; but in others it is quite fleshy, and, in the case of *A. verticillata* and *A. latifolia,* from one-sixteenth to one-eighth of an inch in length. This glandular body is concealed beneath the dilated filaments, which connive closely at their base, as in the genus *Campanula.* If to this evident distinction we add that, in *Adenophora,* the style usually projects beyond the mouth of the flower to a greater degree, and is much more attenuated at its base than in *Campanula,* and that the seeds of the former are much larger, we have named the only differences between the two genera which are of any importance. The five-cleft, superior, calyx and corolla; five stamens with their filaments dilated at the base, and generally fringed with hairs; and the trifid stigma, are common to both.

The latter organ is furnished with the same brush-like apparatus for collecting and retaining the pollen, referred to under the head *Campanula coronata,* the anthers discharging their contents whilst the flower is in bud, as in the allied

genus. There is this difference, however, that whilst the hairs of the Campanulas are thickly set, without any degree of regularity, those of the Adenophoras are arranged in ten rows, as may be easily seen by viewing the *end* of the style through a Stanhope lens before the stigmas diverge. The pollen is of the same globular form, and covered with asperities, by which it attaches itself to the hairs of the style.

The genus appears to be almost exclusively Siberian, all the species, with one or two exceptions, being found in Northern Asia. They are not, we believe, very commonly grown; but merit attention, both for their ornamental character and their perfect hardiness.

The species we have figured, *verticillata*, is, perhaps, one of the most interesting. It grows from two to three feet high, the stems being exceedingly slender. The leaves vary considerably in form, those near the base being almost orbicular, with long attenuated foot-stalks; those higher up the stem are lanceolate, sessile, or nearly so, and arranged in whorls of from four to six; near the summit of the stem they are occasionally alternate. The flowers are also usually arranged in whorls, which terminate the stem, so that the specific name, *verticillata*, though apparently given in reference to the disposition of the leaves, is equally applicable to that of the flowers. The corolla is somewhat tubular, with five pointed lobes, and is of a delicate pale blue; the filaments of the stamens are dilated at the base, and bearded as in other species; and the style is cleft at its extremity into three short blunt lobes, which become ultimately reflexed. This species is one of the earliest introduced to this country. It flowers in June and July.

There are nearly twenty other species described, several of which fully equal the *verticillata* in interest. Two of them are quite dwarf, and suitable for the front of the borders, the *A. coronopifolia* and the *A. denticulata;* the others vary from two to four feet in height. The *A. suaveolens*, *A. latifolia*, *A. stylosa*, and *A. marsupiiflora*, are all worth cultivation, and may be had of some of the leading Florists, notably of Messrs. Henderson of the Pine Apple Nursery, who also possess the *verticillata*.

The treatment of all the species is similar—they require nothing beyond the ordinary garden soil of rather sandy texture; where peat is at hand, a little may be employed with some advantage. Their increase is effected either by division of the root, or by seeds, which are ripened in abundance, and often to be had of the Seedsman; plants thus raised will generally flower the second season

The name of the genus is derived from *aden*, a gland, and *phoreo*, to bear; in allusion to the cylindrical glandular body surrounding the base of the style, to which reference has already been made, and which is shown separately in the plates, on a somewhat enlarged scale.

SÁLVIA CANADENSIS

Canadian Sage.

Linnean Class—DIDYNAMIA. *Order*—GYMNOSPERMIA. *Natural Order*—LABIATÆ.

THE Florist who estimates the value of a plant by the size of its individual blossoms, may be inclined, on a first glance at our figure, to regard the *Salvia Canadensis* as of little moment. This impression would, however, speedily be removed were a strong plant in full bloom brought beneath his notice, though it cannot claim to rank with some of the inter-tropical species, such as *patens*, *fulgens*, *splendens*, and some others. But if its flowers are of more modest dimensions, and its tints less brilliant than in those species, it is, as might be inferred from its northerly origin, much hardier, and commences flowering several weeks earlier.

We might even take higher ground, for, although its blossoms are small, they are produced so abundantly, that when the plant has become strong, a considerable mass of bloom is presented to the eye; the terminal spikes are generally a foot or more long, and the whole length of the stem is clothed with lateral shoots, each of which bears a spike of flowers.

Our specimen is about three feet high, but in strong soil an established plant will exceed this. It is of an erect branching habit and exhibits the square stem and opposite leaves peculiar to the Lipworts. The latter are of a narrow elliptical form, blunt at the tip, edged with roundish teeth, and almost stalkless or sessile; they present the *rugose*, or wrinkled surface, so common in this genus, and the midrib is often stained with bright purple. The flowers are produced in long spikes composed of from ten to forty whorls of six blossoms each, arranged in threes, with two broad purplish bracts beneath each verticil. The upper lip of the calyx is minutely three toothed, the lower one deeply two-cleft. The shape of the corolla is pretty acurately shown in our figure, but the middle lobe of the lower lip has its margin more reflexed inwards, in a cucullate form. Its colour is a delicate violet blue, or puce, and when seen in a mass the effect is extremely pleasing. Externally, both corolla and calyx appear studded with minute white points, which under the Stanhope lens assume the form of whitish opaque glands, containing an essential oil, to which the black currant-like odour of the flowers and foliage is due. The whole plant, but especially the stem, is clothed with a short, whitish pubescence.

Its cultivation is that of most herbaceous plants of this class—the soil it most affects being a strong rich loam. We have, however, grown it in light sandy

loam, and, owing to the abundant rains of the last few weeks, it has succeeded well, but in dry seasons it would probably become weak unless freely watered.

At present it has shown no disposition to ripen seeds, nor do cuttings strike very freely; it may, however, be readily increased by division of the root in spring, just as the plant commences its growth. Its flowering season commences about midsummer, and it continues in bloom until the middle of August, or even later; it not unfrequently happens, especially in wet seasons, or if the plant is copiously watered, that a second crop of shoots is thrown up by the roots after the earliest flowers begin to fade, and a succession of bloom is thus maintained until late in the season.

All that we know of its history may be comprised in a few words. Our specimen was obtained last season from Messrs. Garraway, Mayes, and Co. of the Durdham Down Nursery, Bristol, under the name of *nova*; but we have since ascertained that its true name is that given at the head of the present notice. When, or by whom it was first introduced to this country, we have been unable to discover. The plant is by no means commonly kept, the only parties to our knowledge in possession of it are Messrs. Garraway and Co., and Messrs. A. Henderson and Co. of the Pine Apple Nursery, Edgeware Road, London. Its price is very moderate. It is *said* to be a good bee-flower, as, like most of the Salvias, the corolla secretes a clear sweet fluid at its base; we have not observed, however, more than an occasional visitant from the hives upon our plant.

We have been fortunate enough to obtain recently several of the older hardy Salvias, some of which will, we hope, prove sufficiently interesting to deserve figuring, or at least noticing in an early number. Of those which have already flowered we may notice the

S. hians (gaping sage), a shrubby species with very pretty flowers, about an inch long, of a delicate pale violet tint, the centre of the lower tip being yellowish white, spotted with violet. It is of dwarf habit, and we believe quite hardy. It may be obtained of Messrs. Low and Co. of the Clapton Nursery for a small sum, and is well worth procuring.

S. rugosa is another neglected plant, of taller and larger growth than the preceding. Its pink and white flowers are borne in long spikes, and are of a very pleasing character. Although a Cape species, it is hardy, and may be had cheaply of Messrs. Henderson of the Pine Apple Nursery.

S. nemorosa is less rare than the two previous species, but is by no means common. It grows about three feet high, and produces long spikes of flowers, of a similar tint to those of *Canadensis*, but rather larger. It is very hardy, and if cut down when its first flowers are faded, will produce a second series of shoots.

S. verticillata is an interesting species of a hardy character, with blue flowers of medium size. It usual height in good soil is about two feet. It is in

the catalogues of Messrs. Dickson of the Chester Nurseries, and Messrs. Garraway and Co. of Bristol. We give the names of Nurserymen with some reluctance, as it is quite possible that others are also in possession of the same plant, and to name only one or two may appear invidious; but we are induced to do so, because in the case of rare species it is evidently useless to recommend them, unless our readers are enabled to procure them without incurring the trouble of personal enquiry. All the four species we have just named are of easy cultivation in good soil, and readily increased by cuttings and divisions.

It is, perhaps, a part of our duty to name not only the more desirable plants, but also those which are to be avoided; and we may therefore with propriety state that the *Salvia azurea*, seeds of which are sometimes to be obtained, flowers at so late a period, that when grown in the open border its blossom buds invariably drop long before expansion; we have exposed plants raised from seed and also roots obtained from the nurseries, and in both cases with the same unfavourable result, though the roots themselves are perfectly hardy. This species cannot therefore be recommended for open-air cultivation.* There is, however, an allied species of similar habit, which may take its place, the *S. angustifolia*, with clear blue flowers in spikes; it is quite hardy in ordinary winters, though a Mexican plant, and blooms at least two months earlier than *azurea*. This species may be had at the Pine Apple Nursery.

Of several other rare and interesting Salvias, we hope to give an account in an early number.

LANTÁNA CÁMMARA.

Balm-leaved Lantana.

Linnean Class—DIDYNAMIA. *Order*—ANGIOSPERMIA. *Natural Order*—VERBENACEÆ.

THIRTY years since, the open-air cultivation of the Lantanas would have been deemed a project extremely chimerical, and when the striking contrast between our own climate and those where they are found is considered, it is not surprising that a comparatively high temperature should have been regarded as indispensable to their successful treatment. Closer observation of the habits of plants, and a more extended acquaintance with the influence of temperature, has shown, however, that many tropical plants of evergreen habit may be

* This remark does not apply to a variety recently introduced, under the name of *azurea compacta*, of which we have, at present, no knowledge.

cultivated with perfect success in cooler latitudes, becoming in this case deciduous; a further reduction of temperature, short of actual frost, inducing an herbaceous character, the stems dying down to the ground annually. Thus the *Cuphea strigillosa*, and the Bouvardias, if kept in the temperature of the stove, continue in growth, and preserve their foliage during the whole year; in a cool greenhouse from which frost is excluded, they become deciduous, losing their leaves in winter but preserving the vitality of their stems; whilst in the open air the roots alone are able to resist the cold and wet of our winters.

It is on the same principle that the Lantanas, though less hardy than the plants just referred to, may be made available for decorating the beds or borders in summer; and for this purpose they are likely to become established favorites. Some of the species are straggling in their growth, but many of them combine the, in general, free-flowering character of the genus, with a neat compact habit; and of this number is the plant we have selected for our illustration.

The leading features of the genus are a square stem (in *L. Selloviana* it is round), usually very hairy, and often covered with short recurved spines, the presence or absence of which assists in distinguishing the species; and opposite oval-pointed leaves (sometimes in three's), toothed at their edges, more or less wrinkled, and generally rough on both surfaces. The hairs to which this roughness is due appear under the microscope to be seated on a transparent gland, which probably secretes a fluid, to which the peculiar and sometimes unpleasant odour of the species is owing. Flowers produced in the axils of the leaves, in hemispherical or oblong heads, seated upon a conical receptacle. In most of the species there is a small bract beneath each blossom, such as is shewn in our figure. The corolla is tubular, slightly curved, with a spreading four-lobed limb, and inserted in a short, minute, tubular, calyx. The stamens are four in number, two of them being seated just within the mouth, the others about the middle of the tube, as in the Verbenas. The style is of microscopic dimensions, terminated by a hooked stigma, and is just such an apparatus as fairy fingers might wield, could we suppose the elfin world to occupy itself with the mysteries of crochet-work. The seed vessel ripens into a fleshy, dark purple drupe, or berry, containing a hard, two-celled nut; one of the cells is often more or less obliterated. The more tender species do not ripen seed unless grown at a stove temperature; *Selloviana, delicatissima, grandiflora,* and some others, however, produce it in abundance. In the Verbena, which is very closely allied to *Lantana,* the fruit consists of four cohering seeds, covered by a thin shell, which separates when ripe, and leaves the nuts exposed; this feature, and the five-lobes of the corolla, constitute the chief differences between the two genera.

The Lantanas are, with two or three exceptions, peculiar to tropical parts of the

New World, and the number of species is considerable, though only a part of them are in cultivation. They are common in Mexico, the West India Islands, Brazil, and other parts of South America, one species, the *L. Selloviana*, being found as far south as Buenos Ayres.

The *L. Cammara* we have figured is one of the most desirable species, as well for the large size of its corymbs and their bright colour, as for its compact habit of growth. The stems, although very rough, are unarmed with spines, and the leaves of a darker, glossier green, and less flat than in many species of a similar colour. The flowers are in hemispherical heads, of about one and-a-half inch in diameter, the blossoms, when first expanded, being of a clear, bright, but pale orange, which subsequently deepens to dark orange-red. Our figure was taken from a specimen growing out of doors, where its numerous corymbs, produced within a small compass, have a very showy effect. This species, like most of the others, is of as easy cultivation as the Fuschia, growing freely in sandy loam with a little peat or leaf-mould, but any good, friable soil will do. It requires protection in winter, and should be potted from the ground in autumn, and preserved in a place to which frost has no access; an ordinary window is sufficient where there is no better accommodation. It will need little water while dormant, just enough to keep the soil and fibres of the roots from becoming quite dry. It is readily increased by cuttings of the young shoots, which may be taken off any time from June to August, and struck under a glass, in a pot of sandy soil. A little bottom-heat will aid the rooting process, but is not indispensable. If taken later in the season, they do not become sufficiently rooted before the arrival of winter. When the plants begin to push in spring they must be freely watered, and where they are wanted in flower early, it may be advisable to place them in a close frame for a few weeks. In May, or the beginning of June, they may be turned into the open borders, after a few days' partial exposure to harden them. This species makes an admirable pot-plant for the window; its foliage, so far from being unpleasantly scented, as in *crocea superba* and *mutabilis*, is to us rather agreeable.

There are several other species almost equally desirable. That just referred to, the *crocea superba*, is a fine plant, and produces flowers of a similar colour, but we think less clear and rich; and its shoots are often long-jointed. *Mutabilis* is another species very commonly grown, with soft Balm-like leaves, of an unpleasant odour; the heads of flowers are like those of our figure, but smaller, and contain fewer blossoms. The *L. grandiflora* is a fine species with flowers changing from yellow to pinkish lilac; its stems are armed with strong curved prickles. Perhaps, after the *L. Cammara*, the most interesting species for open-air cultivation is the *L. Selloviana*. The stems of this plant are round and slender, often long-jointed when grown under glass, but more compact out of doors. The leaves are rather small, of an oval form, and from their axils are produced, on long foot-stalks, numerous

flat corymbs of flowers, of a beautiful rosy-purple colour, with a white eye when first expanded. The old wood of this species should be carefully preserved, as it is chiefly from it that the flowers are produced, in which it differs from most of those we have grown. It is considerably hardier than the others, but will not endure frost. Trained against a wall, it produces a charming effect, and will eventually reach some size, if the old stems are preserved when the plant is dug up in autumn. It also does well in a bed, planted in a mixture of peat and loam; in pure loam it will not succeed, but leaf-mould may be employed as a substitute for peat.

The Lantanas are by no means expensive: all those we have named may be had for a trifling sum in most localities.

The appellation *Lantana* was formerly given to one species of *Viburnum*, but its application to the present genus is unexplained.

PLANTS FOR AN ARCHED TRELLIS.

In a recent inspection of an interesting garden in our neighbourhood, we were much struck with the admirable effect produced by a judicious employment of climbing plants trained arch-wise over the paths and parterres, and inwardly resolved to call the attention of our readers, at the earliest moment, to the advantages and charms of such an arrangement.

We must, however, state in the outset that it is only in gardens of some size that this mode of training can be adopted to any extent, for as the object in view is the augmentation of the general effect, and not the concealment of the dwarf plants, it follows that the end will hardly be obtained if the arches are too numerous, or too obstructively disposed. The smallest garden will, however, offer space enough for the introduction of a few climbers trained in this form. Most of our climbing plants unfortunately lose their leaves in winter, and the trellises then present a naked appearance; we think, however, that it would be quite practicable to cover a few of them with ivy, which could be kept closely clipped, and would be speedily concealed in summer by the rapid growth of many of the herbaceous climbers.

Among the plants more especially adapted to this purpose we may name, first the *Periploca græca*, which, although deciduous and producing flowers of an inconspicuous character, is remarkable for the luxuriance of its handsome foliage, and is of very rapid growth. It is perfectly hardy, and increased with facility by cuttings.

The *Aristolochia Sipho* is an equally useful plant, with highly curious flowers of considerable size, but they are not generally produced freely; its fine leaves,

however, give it a value which is unaffected by this circumstance. This too is quite hardy, and succeeds in almost any soil.

The *Eccremocarpus scaber* is a well-known herbaceous climber, producing an abundance of tubular orange flowers throughout the summer and autumn. It is very suitable either for training on a single rod, or for covering a series of arches. It is quite hardy in light dry soil, but in wet soil needs a little protection.

Several of the blue-flowered *Clematis* afford a pretty contrast to the tint of the preceding. That we would particularly recommend is the *C. Hendersonii;* but the varieties of the *C. viticella* and the *C. crispa* are almost as good.

The *Ampelopsis quinquefolia,* although so common, ought not on this account to be overlooked, for there is much character in its foliage and habit, and the bright red tint it assumes in autumn is a sufficient compensation for its insignificant flowers. The Honeysuckles will afford several most interesting plants, and none are more desirable than the common *Lonicera Caprifolium,* and its Italian variety, *L. semperflorens,* which blooms for a longer period. The delicious fragrance of both is well known. The evergreen species, *L. sempervirens,* is scentless, and on this account is less grown. The Trumpet-flower, *Tecoma radicans,* and the allied *Bignonia capreolata,* are both showy, hardy, ligneous climbers, nearly evergreen, producing when well established a profusion of flowers, especially the latter species; it is, however, not quite so hardy as the *Tecoma,* but only suffers in severe winters.

But the most truly ornamental plant of this class is, without doubt, the *Wistaria (Glycine) Sinensis,* of which we have already spoken in high praise. In no situation is it more effective, than when trained over an arch, at a height of seven or eight feet from the ground: and the new *white* variety of this splendid plant is equally beautiful. The *Lardizabala biternata* will, no doubt, be eventually available for this purpose, though at present it is too rare, and the plants too small, for us to affirm that it will endure the winter, unless protected by a wall, though there is but little doubt it will prove sufficiently hardy. And lastly, we have the numerous varieties of the Ayrshire and Evergreen Climbing Roses. These charming plants are indispensable in every garden, and are among the cheapest of all the hardy climbers. Of the Ayrshire Roses, which are deciduous, the Ayrshire Queen, dark purple crimson; Dundee Rambler, white, edged with pink; Queen of the Belgians, creamy white; and Ruga, pale flesh, large double flowers, are four good varieties. Of the Evergreen section, the well known Felicité Perpetuelle, with creamy white flowers; Leopoldina d'Orleans, white, shaded with rose; Myrianthes Renoncule, blush, edged with rose; and Princess Marie, rosy pink, may be regarded as among the best. The Multiflora roses, Grevilleii, and Laura Davoust, may also be added, and many others which our space will not permit us to name; and to these, the Hop, the *Cobæa scandens,* the *Calystegia pubescens,* and the different species of climbing annuals, such as the Canary Flower and Major Convolvulus, can be appended when a considerable number are required.

With regard to the arrangement of an avenue of climbers, we would suggest that those which are chiefly remarkable for their foliage should alternate with the species possessing conspicuous flowers. The mode of training is too simple to need any detailed explanation. In the case of a single arch, nothing more is necessary than a stout iron rod, of sufficient length that, when fixed, the top of the arch will be from seven to eight feet from the ground; the two extremities of the rod being each secured to a square block of wood, partially buried in the ground, and charred outside to prevent decay. A series of these arches can be easily converted into an arcade by attaching horizontal rods, or a net-work of wire; and in whatever way they are combined, a coating of paint will be desirable on the score of preservation.

Not only may every path be thus converted into a 'hanging garden,' but even the beds may have occasionally their attractions enhanced by a union of the perpendicular, with the ordinary style of gardening.

A JULY BOUQUET.

The heavy rains of the past month have been so peculiarly unfavourable to the growth and expansion of the flowers of the bedding plants, that it is again to the permanent occupants of the mixed border that we have been chiefly indebted for our floral display. We are by no means sure, indeed, that, under any circumstances, our Bouquet of Hardy July Plants would not have borne away the palm from those of a more tender character, of which our readers will be able to judge from the gleanings we propose to lay beforethem.

We cannot boast this month of a *Wistaria* or a *Clianthus*, but among the shrubs are a few subjects scarcely inferior to these. The beautiful *Escallonia macrantha* must, perhaps, take precedence of all others, and of this we can only repeat here, with especial emphasis, the consecrated formula that 'no garden should be without it.' Its blooming season is, however, by no means limited to July, for it not unfrequently commences flowering in June, and continues in blossom through the summer. Hardy, cheap, and highly ornamental, what more could the amateur desire? Two species of *Andromeda* have been conspicuous objects for several weeks past, from their numerous racemes of wax-like blossoms of the purest white,—the *A. speciosa* and the *A. pulverulenta*, the last with leaves covered on their under side with a white bloom. They are both gems of the first water, and perfectly hardy, though we observe they are classed as greenhouse species in a modern Dictionary of Plants. The *Spiræa Douglassii* and *S. venusta* have contributed their numerous heads of pretty rosy-purple flowers, and the former will apparently remain in bloom a month longer at least; the elegant *S. ariæfolia*, with its large plume-like mass of whitish blossoms, has proved even more attractive. The *Leycesteria formosa*, though less showy than any of the preceding, has, nevertheless, claims of its own which make it a favourite with most persons; its habit is very graceful, and the purple berries, by which its neat white flowers are succeeded, prolong its attractions until a late period of the summer.

It is, however, among the herbaceous plants that we shall find the most prodigal display of beauty. As a little known, but highly ornamental hardy subject, we will notice first the *Horminum*

pyrenaicum, a Lipwort, with tall spikes of flowers, of the deepest and richest blue. It flowers for a considerable part of the summer, and being quite hardy in any dry soil, it is singular this fine plant should be so rarely seen. The old *Armeria cephalotes*, though generally in flower early in June, has this season prolonged its bloom into the present month. Most of our readers are acquainted with this beautiful plant, which may be briefly described as a gigantic Thrift; it is quite hardy, and easily raised from seed, but unfortunately this is seldom ripened, at least with us; we have examined many heads in succession, without finding a single perfect seed. It is doubtless to this that the scarcity of the plant is owing, for it cannot be increased by division; cuttings we have never tried. The gay little *Cuphea strigillosa* may fairly be said to have taken its place among our hardiest perennials, for here it is covered with its scarlet and yellow flowers, and our specimen is by no means an exceptional one, as we learn that it has proved equally hardy in soils of a much moister character. And what is even more surprising, several self-sown seedlings are springing up around our plant! The *Bouvardia triphylla* has frequently been exposed with slight protection, but after the past severe and peculiar winter, we were certainly quite unprepared to see a plant, which had been by accident left out, springing up vigorously at the beginning of June; it is now about to unfold its brilliant tubular scarlet blossoms. We are afraid the result might not have been the same in any but light sandy soil, but it is something to know that it will endure severe frost, in even the driest locality, unprotected. The *Dracocephalum argunense*, one of the finest of the Dragon's-heads, is very attractive from its large bright blue flowers; this hardy genus is well deserving the attention of the amateurs of herbaceous plants, and we hope next month to notice them more fully. This trailing bush, with light blue flowers, *should* have been a *Dracocephalum*, which genus it somewhat resembles, but unfortunately for the reputation of the Seedsman, it *would* turn out to be a Hyssop (*Hyssopus officinalis*). We dare say many of our readers have been the victims of similar mistakes though, we believe, they are more the result of ignorance than of intentional deception.

In an early number of the present volume, we expressed our fears that the very pretty Azorian Forget-me-not (*Myosotis azorica*) could not endure full exposure to our winters; we are, therefore, both gratified and surprised to find that it proves quite hardy, and it is by no means the least attractive of our July flowers. Belonging to the same Order we have the rare and interesting *Mertensia davurica*, a dwarf plant, with drooping panicles of bright blue tubular blossoms. It is the *Pulmonaria davurica* of some authors, and the *Lithospermum davuricum* of others. The double white Campion we have noticed elsewhere, it will be found very useful as a cut-flower. The Flax family presents us, in addition to the species in flower last month, with the *Linum maritimum*, a pretty dwarf plant, with erect leaves applied closely to the stems, and terminal clusters of orange-yellow flowers. And the curious and showy Portuguese Toad-flax (*Linaria triornithophora*) is very conspicuous for its large violet flowers, with a yellow-veined mouth and long spur. It blossoms freely throughout the early summer months, and does best in dry soils, where it is quite hardy, but may be readily increased by seeds. This species and the dwarf *L. alpina*, which blooms in May, should be grown by every body.

The *Pentstemon campanulatum* and its variety, *atro-purpureum*, are both pretty hardy plants, now in bloom. The latter is generally reputed tender, but with us is quite hardy; its roots at least have always survived frost. The *P. barbata alba* (better known as *Chelone*, though it is in fact a true *Pentstemon*) is rarely seen, but it is a much better white, and, altogether, a more desirable plant than the so-called *P. gentianoides alba*, or any other which has yet come under our observation. The *P. digitalis* flowering this month, is however almost equal to it, and perhaps rather hardier; both are highly ornamental plants of easy attainment. The Salvias contribute some of the most ornamental of all our July flowers. There is the magnificent *patens*, with its large blue blossoms; the well-known *fulgens*, with long spikes of a bright scarlet; the *S. Canadensis;* the *S. lusitanica*,

with broad lyrate leaves, and rather large purple violet flowers, with a white throat; the indigenous *S. pratensis* of a similar colour, but much narrower leaves; the *S. nemorosa*, and the very pretty *S. hians*, of both of which we have spoken at page 118. The *Stachys coccinea*, nothwithstanding its somewhat weedy appearance and unpleasant odour, is worth cultivation in light rich loam, in which its flowers are of a brighter scarlet than in poor, dry soil, where, however, it is safer in winter, as it sometimes perishes from the combined effects of cold and wet. With us it generally sows itself each season.

The *Gentiana asclepiadea*, an erect growing plant about one foot high, is a July bloomer, and its dark blue flowers are very pretty; the white variety of this species is also worth cultivating. The yellow Gentian is much taller, and planted at the back of a partially shaded border, in a mixture of peat and loam, makes an effective group. The flowers are large, with a spreading star-like limb, to which its new name, *Asterias lutea*, refers. Many very beautiful Campanulas enliven the borders this month with their abundant white or blue flowers. The *C. carpatica*, and its white-flowered variety, are both beautiful, hardy, free blooming plants, with shallow cup-like erect flowers. The *C. nitida*, of which there are both blue and white varieties; the *C. lactiflora*, white, and the *C. punctata*, with large, drooping, yellowish-white flowers, spotted with brown, are less common; the first is quite dwarf, the second about three feet, and the last one foot high.

The reign of the Composite plants has now fairly commenced. Among the taller-growing species we may cite the *Coreopsis grandiflora* and *C. Atkinsonii;* the very handsome *Echinacea intermedia*, with large purple violet flowers; the curious Globe Thistles (*Echinops*), of which the *E. Ruthenicus* and *E. Ritro* are common examples, both with tubular blue flowers collected into a globular head, surrounded by a spinous involucre; and the Rudbeckias, of which *fulgida*, with a yellow ray and dark purple disk, may be recommended, as both shewy and dwarfer-growing than some others; the *R. Drummondii* is also a fine species now in bloom, its six ray florets are orange, with a brownish purple mark at the base of each. The common double Feverfew, *Pyrethrum Parthenium* needs no recommendation, for, judging by its ubiquity, its claims are fully recognised. It is much to be desired that the attention of some amateur with leisure should be called to the *Pyrethrum roseum*, which would, we have no doubt, eventually yield double flowers, if increased from seed, and such a variety would be an immense acquisition. Who will be the first to try the experiment? The *Catananche cærulea* and *C. bicolor* are useful plants in sandy soils, where they succeed much better than in more tenacious ones. The *Stevia purpurea* is not of much moment, but this too is of some value in light soils.

One of the most splendid July groups are the Delphiniums, which are in perfection this month. The common *D. elatum* is very handsome, and the *D. alpinum* is no less so. The dwarfer *D. Barlowii*, with double flowers, is a great favorite with many; we prefer, however, the single ones. The new *D. Wheeleri* is a first-rate variety of tall habit. From these altitudes we will descend to the modest *Androsace lanuginosa*, a very pretty trailing plant, with heads of lilac flowers, belonging to the Primrose tribe, of which this common but useful yellow trailer, the *Lysimachia nummularia*, is also a member; where the surface of a bed requires to be quickly covered, we know few plants better adapted to the purpose than this. The fine *Œnothera macrocarpa* now attracts attention by its remarkable tubular flowers, and the species figured last month. *Œ. speciosa* is a beautiful object, being covered with its fine white blossoms. We must, however, hurry to the Endogenous plants, but not without a word in favour of the very pretty *Oxalis elegans*, figured in our last volume. This little plant will please all who honour it with their notice, its numerous purple flowers are produced for two or three months together, and it increases very fast by the roots. The yellow *O. crenata*, though chiefly grown for its edible tubers, is very ornamental as a border plant, but its roots are but half-hardy.

The July bulbs of the Endogenous class must be dismissed with only a brief notice. Of one interesting plant, the *Cyclobothra alba*, a lengthened description has been given in the present number. To that we may add, the pretty *Calliprora lutea*, with an umbel of yellow blossoms, easily grown and increased; the two Brodiæas, *congesta*, with purplish, and *grandiflora*, with blue flowers, similar in form to those of the *Calliprora;* the handsome *Hemerocallis flava*, with delicately scented, bright yellow blossoms; and, above all, the splendid early *Gladioli* of the *Blandus* and *Cardinalis* section; they are the dwarfest of the tribe, and are excellent as cut flowers. The *Gladioli* are increased so readily by seed, that it is surprising that both the early and late sections of this genus are not more extensively grown. The Alströmerias are in their greatest beauty this month; the species *aurea*, *hæmantha*, *Van Houtteii*, and the little dwarf Chilian varieties being now fully in bloom. And lastly, we have a fitting pendant to our list of July flowers in the noble genus *Lilium*, of which the greater part of the species are now in bloom.

BRIEF NOTICES OF NEW OR RARE PLANTS.

Geranium Argenteum. *(Geraniaceæ).*—This species was recently referred to by a correspondent as an interesting plant, and as it is not generally known, a brief description of it may therefore be acceptable to some of our readers. It is a dwarf plant, scarcely exceeding four inches in height, of herbaceous character, with leaves about an inch and-a-half in diameter, of a circular form, very much cut and lobed as in the common *Geranium molle;* the footstalk and both surfaces of the leaf are clothed with short silky hairs, which communicate to them a silvery tint. The flowers are borne in pairs on peduncles as long as the leafstalk, and are about an inch across, of a pale flesh colour. veined with red, as in *G. striatum;* and are produced for a month or two in the middle of the year, A large clump would, we have no doubt, have a pretty effect; still it can hardly be termed with propriety a showy plant. It is usually supposed to be but half-hardy, but as it endures the winters of Edinburgh, it will certainly suffer little or no injury from those of England proper. It is a native of the south of Europe.

Lychnis dioica alba plena. Double White Campion. *(Caryophyllaceæ).*—This pretty variety of one of our indigenous plants is, we suspect, but little known, and as good white flowers, especially double ones, are *desiderata*, we give it a place here among our desirable subjects. It differs in nothing from the white *L. dioica* of our hedges (the *L. vespertina* of some Botanists), but in its very double white blossoms, which resemble a white Pink, or a small Rose. It is perfectly hardy, and flowers for a considerable period of the summer. It succeeds in any ordinary soil, and may be easily increased by division of the roots; should be replanted every second year, or they are apt to dwindle.

Pittosporum Tobira. *(Pittosporaceæ).*—A beautiful evergreen shrub, deserving of the highest commendation as a wall-plant, and will probably succeed as a standard in the southern counties. It endured the last winter, in a locality north of London, against a wall. The foliage is of a dark glossy green, and of leathery texture; the flowers are white or cream-coloured, in umbels, exhaling an odour resembling that of the Orange blossom; they are produced for several months in summer. There is another species little less valuable—the *P. undulatum*, with oblong wavy foliage, which gives out. when rubbed, an aromatic odour; the flowers are of the same colour as in *Tobira*, and also fragrant, but are produced earlier in the season. Both species strongly merit the attention of amateurs. Of *Tobira*, there is a pretty variety with variegated foliage; it is a native of China; *undulatum* is of Australian origin.

THE HUMEA ELEGANS, BY R. MACDONALD, DRUMMOND CASTLE.

This is one of the most useful plants that are cultivated, and although introduced to this country upwards of fifty years ago from New South Wales, it is not often met with, comparatively speaking, with plants of more recent introduction and of much less beauty. This is to be regretted, as by the singularly graceful way in which it produces its numerous pendulous spikes of grass-like flowers, it is rendered one of the most useful ornamental plants we have, either for the green-house or flower-garden during the summer and autumn months.

Being a green-house biennial, a little seed should be sown early in July by those who wish to have it in bloom during the early part of next season, in a five-inch pot filled with light sandy soil, and slightly covered with the same, and if placed in a frame where there is a little bottom heat and shaded from the sun, it will soon vegetate. When sufficiently strong remove the pot or pots to a cold frame for a few days previously to their being potted, when the number of plants required may be put in three and-a-half inch pots, replacing them again in the frame within three or four inches of the glass, which should be kept rather close and shaded from the sun for a few days.

When established they should be inured gradually to the open air, so that the glass may be dispensed with as long as the weather remains favourable; by which treatment they will receive the benefit of the night dews and of gentle rains, which will make them strong short-jointed plants, that will keep growing through the winter, and bloom during the early part of summer. They will require to be liberally shifted into larger pots as they increase in growth, using the soil rougher as the pots increase in size. About the latter end of October they should be removed to the front stage of the green-house, or any other house where they will have the benefit of light and air, and protection from frost. During the winter, if their pots should become full of roots, shift them into larger pots, so as to enable them to have plenty of fresh roots for the spring growth.

In spring, after they have received their final shift, and the pots have got full of roots, they will require to be frequently watered with clear manure water, to keep their foliage in a dark green healthy state, as so much of their beauty depends on this being attended to. Very nice plants from five to six feet high may be grown in twelve-inch pots, which have a very fine effect planted near fountains, or singly on grass. But they may be grown larger, or smaller, to suit the place they are intended for, by giving them more or less pot room. Before planting them out in June good large pots should be made for their reception, that will admit of some good rich soil being placed about their roots, which will keep them much longer in a healthy condition, and will save much time in watering them afterwards by retaining moisture, much longer than if planted in poor light soil. When planted they should be supported with strong neat stakes, as invisible as possible, as they are very brittle.—*The Scottish Florist and Horticultural Journal, July*, 1853.

DYCLYTRA *v.* DIELYTRA.

A correspondent of the *Gardener's Chronicle* states, 'that the *quæstio vexata*, as to the comparative claims of these names, is solved beyond all possibility of doubt, on reference to the original paper in which the genus was proposed. In the second part of the first volume of "Römer's Archiv. für die Botanik," p. 43, 1797, is a paper on the genus *Fumaria*, by Dr. Moritz Balthazar Borckhausen of Darmstadt. Amongst other genera he proposes that of *Dielytra* for *Fumaria cucullaria*, L., resting its characters on the peculiar structure of the corolla, and the six distinct stamens. He adds especially, "I have named the genus from *dis*, two, and *klytron*, a spur, because the flower is so clearly distinguished by its two spurs."' We observe with regret the French Botanists have partially adopted *Dicentra*, another synonyme of Borckhausen's, for the so-called *Dielytra spectabilis*, an example which will not, we trust, be followed in this country. The establishment of some Court of Nomenclature is becoming more than ever necessary.



Dicbytra chrysantha



Bravoa geminiflora



Funckia albo-marginata



Venidium calendulaceum

DICLYTRA CHRYSANTHA.

Golden-flowered Diclytra.

Linnean Class—DIADELPHIA. *Order*—MONOGYNIA. *Natural Order*—FUMARIACEÆ.

GREAT as are our objections to uncalled-for changes of nomenclature, it being now clearly proved that the word *Diclytra** is that originally chosen by Borckhausen to characterise this genus, we have no alternative but at once to discard the now familiar *Dielytra*, and to adopt in its stead the rival designation. Both names are almost equally appropriate, though their meanings are slightly different; *Dielytra* signifying 'two sheaths,' in reference to the stamens and style being enclosed in a double envelope; *Diclytra*, 'two spurs,' in allusion to the projecting heels of the two outer petals; but the law of priority decides the question. The difference between the two names, whether in spelling or pronounciation is, however, so slight, that no inconvenience is likely to result from the change.

The new accession to the genus which we now figure, although inferior in beauty to the well known *D. spectabilis*, will, nevertheless, become in time, we have no doubt, quite as popular; its different tint, and later period of flowering, giving it a distinct and independent claim for public favour.

It is a hardy herbaceous perenial, growing two feet or more high, with foliage twice or thrice pinnate, the ultimate segments being narrow, smooth and pointed. Their colour is a glaucous green, resembling that of the common Rue. The flowers are borne in long terminal, erect panicles, much branched, and are of a rich golden yellow, which contrasts very pleasingly with the greyish foliage. At the base of each pedicel is a small broad bract; the calyx, as in all the plants of this and the allied genera, is very small, and consists of two broad blunt sepals, at the base of the flower on each side, near the junction of the outer petals. These are much less inflated at their base than in *D. spectabilis*, and are also less reflexed. The two inner petals are very broad at their tips, and are remarkable for a curious wing-like inflated appendage or ridge which extends along the back of the petal. This crest occurs in the common *D. formosa*, and some others, but in a much smaller form.

The internal economy of the flower presents the usual features of this Order. The stamens are in two parcels of three each, the filaments being more or less distinct, and not united into a band as in *Corydalis* and *Fumaria*; near the base they are slightly curved, but less so than in *spectabilis*, where they conform themselves to the inflated spur. The stigma is very broad, and ends abruptly,

* See page 128.

as if the extremity had been cut off, which explains the flattened form of the two inner petals at their tips.

Everybody who has examined the common Fumitory, is acquainted with the mode in which these tips are united, so as to retain the anthers in immediate contact with the stigma. In most of the Diclytras, the edges of the petals appear to grow so firmly together, that some force is often necessary to separate them, and they never open spontaneously in the species we have examined. To ensure fertilisation of the stigma, this organ is furnished with two blunt processes, or horns, one of which is inserted between the anthers, and when their valves contract the pollen escapes, and is thus brought into contact with the stigma, without any change of position in either organ. Under the microscope, the stigma of the Fumarias and Corydalis present a trident-like form. The *D. spectabilis*, on account of the larger size of all its parts, is, however, the best plant for examination with a view to a comprehension of the structure of the Order. This species was figured in our first volume.

The *Diclytra chrysantha* is a native of California, where it was originally discovered by the Botanists accompanying Captain Beechy's exploring expedition, but was first raised in this country by Messrs. Veitch, from seeds sent by Mr. Lobb, their collector. It flowered with them last September, and will probably be soon at the disposal of the trade. It appears to be quite hardy, and is increased by the same mode as the other species; a dry warm situation should be chosen for it. Our information with respect to its habits and requirements is, however, at present limited, owing to the short period it has been in this country. As in the case of most plants readily increased by cuttings, it will, we hope, speedily be placed within the reach of the floricultural public.

There is an old species of this genus of considerable value, but it has been hitherto so little in demand, that we dare say it is more expensive than the newer *D. spectabilis*—we allude to the *D. eximia*. It is less robust than *spectabilis*, and its leaves are smaller, but the flowers are borne in a long drooping raceme as in that plant, and are of a similar colour. The outer petals are not so much reflexed, and the beak formed by the union of the inner ones is much shorter. Most of the London Florists have this plant in their catalogues.

Before quitting the Diclytras, it may be worth while to point out that *spectabilis* may be had in flower, down to a late period of summer, by the very simple expedient of cutting it partly down as soon as the earliest flowers are faded; this will cause the production of fresh shoots from the root, which will flower in August and September. Where there are several plants of it, they may thus be made to bloom, in succession, from the end of May to the end of September. We have no doubt it is within the range of probability that hybrids between this species and the plant we have

figured, may be raised; and, if the experiment is tried, it will be absolutely necessary to resort to the plan we have suggested for obtaining late flowers of the *spectabilis*, which blooms naturally at an earlier period than the *chrysantha*.

The allied genus, *Corydalis*, contains two species, which are especially deserving the notice of the amateurs of herbaceous plants, both on account of their ornamental character and the early period at which they flower. They are the *C. nobilis* and *C. bulbosa*. The first-named is tap-rooted, with stems about a foot high, and rather large leaves deeply cut. The flowers are produced in close racemes, and are of a yellow colour, tipped with dark purple near the extremity; they have a faint but pleasant odour, which is an unusual circumstance in this family. It is not particular as to soil, but prefers a light rich sandy compost, into which its roots can descend freely. Like most other tap-rooted plants, it does not well bear removal, but may be increased by cuttings of the roots. The *C. bulbosa* is rather dwarfer than the preceding, and its foliage is smaller. The flowers of the species are pink, but there are several varieties varying in colour from pure white to purple. They all of them ripen seed, which should be sown as soon as ripe; the roots may also be occasionally divided. This species is the *C. solida* of some Botanists. The *Corydalis fabacea* is a good hardy plant, but appears to have become very rare in this country. Its flowers are purple. The species of this genus most commonly met with is the little *C. lutea*, with yellow flowers, produced nearly the whole year. In rich sandy soil it makes a handsome tuft.

BRAVÓA GEMINIFLÓRA.

Twin-flowered Bravoa.

Linnean Class—HEXANDRIA. *Order*—MONOGYNIA. *Natural Order*—AMARYLLIDACEÆ.

THE remark we ventured to make in speaking of the *Cyclobothra alba*—that some of the most interesting of the Lilyworts were scarcely known, even nominally, to a great portion of the flower-loving community—applies, we think, with equal force to many plants of another extensive natural order of Endogens, the Amaryllids. Of this number is the *Bravoa geminiflora*, a bulb which, although cultivated in this country for the last ten or twelve years, and attainable for a trifling sum, is as rarely seen as the *Cyclobothra*. It must, however, be

admitted, that the flowers of the *Bravoa* are hardly proportionate in size to the stature of the plant; but, notwithstanding this drawback, its graceful habit, and the ease with which it may be cultivated, warrant us in speaking of it in very favourable terms. From the small portion of the flower-stem and leaf which our limits enable us to present, they would hardly be supposed to be those of a plant three to four feet in height; it is, however, only when grown under a glass that it becomes so tall.

The *Bravoa geminiflora* may be described as a half-hardy plant, producing a tunicated bulb, about the size of a moderately large hyacinth root, but more elongated. From this bulb proceed three to four pointed leaves, eighteen to twenty inches or more long, and from one and a-half to two inches broad; they are keeled at the back, and usually quite erect. The scape or flower-stem springs directly from the bulb, and is not uncommonly from three to four feet high, of a round tapering form, and bearing several pointed half-sheathing bracts arranged alternately, at distances of five or six inches from each other.

The raceme of flowers terminates the stem, and consists in our plant of about sixteen pairs of blossoms, at the base of each of which is a small trifid bract; in the early stages of their growth they are quite erect, and pressed close to the scape; but as they expand, the tube of the flower becomes gradually curved outwards, until at length its mouth points downwards. Each flower is about an inch or an inch and quarter long, of a cylindrical form, and divided at its mouth into six short, rounded lobes, which, when the flower is fully developed, are slightly spreading; at this period their tint is a delicate salmon or flesh-colour, tinged with green at the base, where the perianth coheres with the seed-vessel. The six stamens and single style terminated by a three-lobed stigma, present no peculiarity calling for any special notice.

The *Bravoa* may be cultivated either as a window bulb, or in the open border, where it succeeds perfectly in a warm aspect and suitable soil. The only objection to its cultivation in the window, is its liability to become 'drawn' from deficiency of light and air; but, in all other points, no plant can be more manageable. It should be potted in a good friable loam, with which a little silver sand should be mingled, unless the soil contains naturally a fair proportion of silicious matter. This is necessary to ensure the requisite porosity; but, unless a considerable proportion of good loam is also present, the growth of the plant will be weak. The bulb should be planted with its neck level with the surface of the soil, in a four or five-inch pot, which will be found amply sufficient, except for the largest bulbs. During the winter months, when the plant is dormant, the soil may be kept nearly dry, but when in activity, it requires to be freely watered. It usually commences its growth about the end of April or beginning of

May; and, in a warm window, will make rapid progress, producing its flowers about the end of July. After the blossoms have faded, the pot should be placed out of doors, in a sunny situation, to ripen the bulb; and when the foliage has decayed, it may be returned to its winter quarters, which may be any airy place inaccessible to frost.

In the open ground, its treatment may be inferred from what we have just stated. If planted out in April, while dormant, it should be covered with a hand-glass to protect it from spring frosts; if kept on the window, or in a cold frame, until the middle of May, it may then be plunged into the borders without this precaution. In this situation, its height will be less than under glass, and the colour of the flowers somewhat deeper than that of our figure. It is easily increased by offsets, which may be separated every second or third year, and also by seeds, which may be ripened in the greenhouse or window, if the plant is grown on after flowering. Mr. Groom of Clapham sells it at a moderate price.

The *Bravoa geminiflora* is a native of Mexico, and is, we believe, the only species at present introduced. Its name was conferred in honour of the Mexican-Botanist, Bravo.

It is worthy of remark, that, although it proves sufficiently hardy for open-air culture in summer, when first introduced it was treated as a stove plant.

FÚNCKIA ÁLBO-MARGINÁTA.

White-edged-leaved Funckia.

Linnean Class—HEXANDRIA. *Order*—MONOGYNIA. *Natural Order*—LILIACEÆ.

THE genus *Funckia* includes several interesting hardy plants of easy culture, which deserve to be more generally grown than they appear to be; and, with a view to draw attention to them, we figure this month one of the neatest species, though there are one or two others which equal, if not exceed, it in interest, either for their larger or more deeply-coloured flowers.

The Funckias were formerly included with the genus *Hemerocallis*, or Day Lily, of which several species are common in most gardens; they differ, however, from those plants in several important features—so much so, that it is singular they should ever have been confounded with them. The foliage of all the species of *Hemerocallis* is linear, and often two feet or more long; that of the Funckias, ovate

or lanceolate, and in no case more than six or eight inches long, including the petiole; the flowers of the Day Lilies, as is well known, last but a single day, while those of the Funckias remain expanded a much longer period; and in colour there is a marked difference, all the latter being either blueish lilac, varying in intensity in the different species, while that of the *Hemerocallis* is reddish orange or yellow. A glance at our figure will at once render these distinctions evident.

The *Funckia albo-marginata*, which we have selected as an illustration of the genus, is a hardy herbaceous perennial, producing numerous radical lance-shaped leaves in a tuft; each leaf is from two and-a-half to four inches long, with a channelled petiole of about the same length; while young, the margin is slightly tinged with yellow, but it ultimately becomes pure white, increasing considerably the attractions of the plant. The scape, or flower-stem, is about eighteen inches high, and bears from ten to fifteen blossoms of a pale violet blue, and about two inches in length, including the short peduncle. Each blossom arises from a pointed bract, one-third longer than the peduncle. Although the bracts are arranged spirally round the stem, the flowers face only in one direction; whilst in bud the flower is inflated in its upper half, and when expanded displays six spreading lobes. Both stamens and style are what is termed *declinate*; that is, instead of occupying the centre of the flower as in most plants, they all incline to one side, which in this case is the lower one; while in bud they are quite straight, but after expansion the extremities both of stamens and style curve inwards, as in the Alströmerias. The *anthers* of this species are yellow, a circumstance by which it may be distinguished from most of the others, as we will presently explain. It blooms with us in August, continuing in flower three or four weeks, several spikes being produced in succession. It grows free in ordinary garden soil, and is quite hardy throughout this country. In most seasons it ripens plenty of seed, from which it may be increased; but the readiest method of propagating it, is by dividing the roots in October.

This plant appears to be the *F. lanceæfolia picta* of some of the London Florists, and the *lanceæfolia variegata* of others. The name by which we have described it is that given it by Sir W. J. Hooker, and it is certainly distinct from the *lanceæfolia*. The leaves of that species are longer, and proportionately narrower, than those of *albo-marginata*, of a much darker green, and very glossy on both surfaces. The flowers are rather smaller, of a paler lilac, and do not open so freely, with anthers of a *pale dirty green colour*.

The *F. ovata* may be named as a desirable species. Its foliage is much larger than that of the plant figured, of a dull green on its upper surface, but glossy beneath. The flowers are of a deep violet blue, considerably darker than in any of the other species, but rather smaller than in *albo-marginata*. The anthers

are brownish, speckled with purple, and upon the style (which is white, as in the other species), are two purple spots on the upper side, close to the stigmas. This species was formerly known as *Hemerocallis cærulea*, and is one of the oldest plants of the genus.

The so-called *Funckia cærulea* is distinct from *ovata*, and has but little claim to its *cærulean* designation, its flowers being of a paler tint than those of our figure. The foliage is broadly cordate-ovate, pointed at the tip, strongly nerved, and glossy beneath. The anthers of this species are of a *lavender-blue;* it is less desirable than some others.

The *F. undulata* has, as its name implies, wavy foliage, rather smaller than in most of the other species; its flowers are of a similar tint to those of the figure, but paler. The variegated variety of this species, *F. undulata variegata*, has very pretty foliage; in most of the leaves the whole of the central portion is white, the margin and veins being green; in some the two colours are more equally mingled; its flowers are pale, but it is well worth growing for the sake of its foliage.

Perhaps the finest species of the genus is the *F. grandiflora*, with white flowers of some size. This plant produces large ovate-lanceolate foliage, of a delicate green tint, and about the month of September numerous spikes of Lily-like blossoms, of a beautiful white; they have the great additional recommendation of being fragrant, in which respect they differ from all we have yet named. The snails and slugs are so extremely partial to this plant, and in a less degree to all of them, that great watchfulness is necessary to preserve it from their ravages; the use of lime is attended with many disadvantages; its obtrusive tint may be disguised by the admixture of soot, but it is not easy to preserve its causticity; the most certain precaution is to visit the plant with a lanthorn at night, the period when these pests of the gardener are most actively engaged in their destructive operations.

All the Funckias are natives of Japan, and require similar treatment to that already recommended for the species figured. With the exception of the *F. cærulea*, most of them are of comparatively recent introduction. The genus is named in honour of Henry Funck, a German writer on Cryptogamic Botany.

Before concluding this notice we may remark that the allied genus, *Henerocallis*, contains several very showy plants, which well merit cultivation. Even the common *H. fulva* makes a very showy appearance in the borders, whether in flower or not; from the graceful arrangement of its long drooping foliage a good clump of it is often quite a study for an artist. The dwarfer *H. flava* is, however, more suitable for small gardens; its flowers are of a delicate yellow, and very pleasantly scented. The *H. disticha* is a very fine plant, with large orange-red flowers; it appears to blossom most freely when its roots are confined in a pot, but it is quite hardy, as are all the species. They have

the disadvantage of fugacious flowers, but most of the species yield a considerable number. We have only to add, that nearly all the species of *Hemerocallis* and *Funckia* are of very easy attainment, and are among the cheapest of hardy plants.

VENÍDIUM CALENDULÁCEUM.

Mary-Gold-like Venidium.

Linnean Class—SYNGENESIA. *Order*—NECESSARIA. *Natural Order*—COMPOSITÆ.

To the long list of ornamental annuals contributed to our gardens by the extensive natural order of Composite plants, the *Venidium calendulaceum* proves to be a not unimportant addition; and, perhaps, among the recently introduced species few will be found of a more showy character.

Its specific name is so far appropriate, that some of our readers may suspect it to be an old acquaintance under a new designation; but, although it certainly resembles, in colour and form, some of the Mary-golds, botanically it is sufficiently distinct. In the Calendulas, of which the common Marygold may be taken as a type, the involucre surrounding the flower-head is composed of many narrow, pointed, erect leaflets, nearly equal in size, and arrngaed in one series. In the genus *Venidium*, the scales of the involucre are of two kinds; those composing the innermost series, immediately next the florets of the ray, are of an oval form, with a thin transparent colourless margin; external to these are several rows of imbricated scales of a narrower form, and covered with shaggy hairs, especially at the tip, which is reflexed.

The seed is also of a different structure to that of the Calendulas, as our figure will show. The Venidiums are more closely allied to the old genus *Arctotis*, with which some of them were formerly incorporated; but in *Arctotis* the seeds are furnished with a chaffy *pappus*, an appendage which appears to be wanting in *Venidium*.

The present species is a dwarf annual plant, not often exceeding, even when in flower, five or six inches in height; the radical leaves are of a broadly ovate, almost orbicular, form, with a sinuate margin, and long foot-stalks, more or less winged at their edge; the whole leaf, but especially its margin, nerves, and petiole, being clothed with long white, clammy, spreading hairs. The leaves at the base of the flower stalk are of a similar form, but rather

narrower, and have their petioles more winged; those higher up are sessile, becoming more pointed as we approach the flower.

The blossoms, as will be seen by our figure, are produced singly on terminal peduncles, of which each plant yields a considerable number—as those which spring directly from the root fade; others are developed from the axils of the stem-leaves.

The circumference of the flower-head is composed of about fifteen to twenty strap-shaped florets, arranged in a single series, and of a fine light orange colour; they bear no stamens, but only a short style terminated by a stigma, divided into two broad black lobes; the florets of the disk, or central portion of the flower, are tubular, and contain both stamens and style; before the tubes open, the disk is green, but as they expand, it assumes a blackish purple tint, which is due to the black tips of the segments of the florets. The character of the scales of the involucre has already been explained, as well as the absence of the pappus, so peculiar to most Composite plants; the *receptacle*, on which the florets are seated, is slightly pitted, but otherwise quite smooth, or naked, as it is termed in botanical parlance. When fully expanded, the flowers are about an inch-and-half in diameter; they will open in diffused light, but usually close about two o'clock, a circumstance which their showy character leads us to regret.

Although placed in the Linnæan division, *necessaria*, of the Class *Syngenesia*, the florets of the disk contain both stamens and style as already stated; but, singular enough, it is only the florets of the ray which produce seeds, at least, if we may judge from the experience of a single season. The same thing occurs, however, in the common Marygold, though, in that plant, the style of the central florets is of a different form to that of the outer ligulate florets.

The *Venidium calendulaceum* requires only the treatment of most other half-hardy annuals from the same locality. It might, perhaps, succeed if sown in a warm border at the end of April; but the plants will be much finer, and bloom earlier, if raised on a good hot-bed, with the Zinnias, Asters, etc. The young plants should be transferred to the open ground early in May, for, unless allowed plenty of room, they are apt to be forced into flower while small. A rich, light sandy soil appears to suit it exceedingly well; and, with regard to situation, a warm sunny border is indispensable, as it is quite dwarf, it should be planted next to the edge of the border.

There are several other species, chiefly of perennial duration, all of them, as well as the present plant, being natives of the Cape of Good Hope.

The name of the genus is unexplained.

A GROUP OF HARDY COMPOSITE PLANTS.

In an Order comprising nearly one thousand distinct genera, a considerable number of ornamental subjects might naturally be supposed to exist; but although some of our most valuable autumnal plants are undoubtedly contributed by this tribe, their numbers bear but a small proportion to the host of worthless weeds with which they are associated. The beauty of many of them, however, makes us forget the uninteresting characters of a large proportion, and did this Order contain no other ornamental plants than the Dahlia and Chrysanthemum, it would have strong claims to the attention of the Horticulturist. We have no intention of occupying our pages with remarks on the management of these well-known plants, our purpose being to point out a few of those species which may, with more propriety, be termed hardy herbaceous perennials.

The botanical features of the plants of this Order are too apparent to need any detailed description; they are at once distinguished from those of nearly every other Natural Family, by the flowers being collected into a head, and seated upon a common receptacle, which is surrounded by several leaf-like segments, sometimes united by the edges, and termed an involucre; a further characteristic is the union of the five anthers of each floret into a tube, whence the name *Syngenesia*, the filaments themselves being distinct; these two features occur in no other Order. The Scabious tribe, *Dipsaceæ*, have their flowers produced in a head, but the anthers in that order are not syngenesious. The Order is now generally divided into three or four sub-orders, founded chiefly on the different form of the florets composing the head. Under the name of *Cichoraceæ*, are included those genera in which all the florets are ligulate, or strap-shaped, as in the *Catananche* and Hawkweed. *Labiatifloræ* contains a single genus, *Mutisia*, in which the central florets are tubular, and those of the circumference two cleft or *bilabiate*. The genera having all their florets tubular, as in the Centaury and common Thistle, are designated collectively *Carduaceæ* or *Cynaraceæ;* whilst those in which the central florets only are tubular, and those of the circumference ligulate, are termed the *Corymbiferæ* or *Asteraceæ*. For our present purposes a much simpler division may be adopted; discarding all botanical arrangement we will first name the tall species, or such as exceed the height of two feet, and secondly, those of dwarfer habit.

Perhaps among the taller Composite plants, none better deserve the compliment of being first named, than the splendid Mexican Thistle, *Erythrolæna conspicua*. It frequently reaches the height of seven or eight feet, producing numerous branches, with spinous foliage, often two feet in length, near the base of the

stem, but becoming smaller upwards. The flowers owe their ornamental character to the bright orange-scarlet tint of the scales of the involucre, and from the number of heads which the plant produces, the effect, when in bloom, is very striking. It is easily raised from seed upon a hotbed, and the young plants should be subsequently planted out where they are to bloom; in very hard winters it will be advisable to place a hand-light, or a few evergreen branches, over the plants, and being only a biennial, seeds should be sown every season.

We may next name the genus *Rudbeckia*, which comprises several fine plants of easy culture. There is first the *R. Drummondii*, growing about two and a-half to three feet high, with leaves deeply divided into lanceolate segments, and large flower heads, with six broad, oval, reflexed, strap-shaped florets at the circumference, of a yellow tint, but marked at the base with rich brown. It is readily increased by seeds or division of the roots, and succeeds in any good soil. The *R. fulgida* is rather dwarfer, and is quite as ornamental; the rays of the flower are bright yellow, and the central portion or disk a purple-brown; this species is a very free bloomer, and seeds sown early will produce flowering plants the same season. The old *R. pinnata*, now termed *Obeliscaria pinnata*, is one of the most robust of the species, and is remarkable for the conical disk of its large yellow flowers, which are fragrant; its usual height in good soil is from four to five feet, and it blossoms for many weeks in summer. The *R. hirta*, *R. speciosa*, and *R. Newmannii*, are all showy plants, the two last are somewhat dwarf.

The Rudbeckias, with purple and lilac flowers, are now included in the genus *Echinacea*. The *E. intermedia* is a beautiful hardy perennial, producing in summer and autumn large flowers of a dark purple colour, from four to five inches in diameter; it is of easy cultivation, requiring only common soil and an open situation; readily increased by division, and sometimes ripens seeds. The *E. purpurea* resembles the preceding, and with the species *heterophylla* and *serotina* may be added to any collection with advantage. All are kept by the London Florists.

The Globe Thistles, *Echinops*, have a picturesque effect in the mixt border or shrubbery. Five or six species are commonly kept by the trade, of which the *E. Ritro* or *pauciflorus* and *E. Ruthenius* are perhaps the best. The leaves are much divided, very spiny, and white beneath, with flowers produced in a globular head, surrounded by a curious spinous involucre; the florets are all tubular, and of a beautiful blue-colour. Of *E. Ritro* there is, we believe, a pretty white-flowered variety, and the blossoms of *E. spinosus* are also white. They are increased by division, and also by seeds, which are, however, rarely kept by the Seedsmen.

The *Telekia speciosa* is less grown than it deserves to be; its stems are from four to five feet high and produce through the summer numerous large bright yellow

flowers. It is quite hardy, but a warm situation should be allotted to it; it may be increased by divisions of the root, or by seeds.

The perennial species of *Coreopsis* are mostly deficient in the rich brown tint of the annual *tinctoria* and its varieties, but are several of them very showy plants, and one, the *C. Atkinsoniana*, is scarcely inferior to any. Its flowers are about two inches across, and usually marked at the base of the rays with rich brown, but the disk is generally yellow. It is commonly supposed to be perennial, but does not often last more than three years; is readily raised from seed. This plant, like the annual *tinctoria*, is now often termed *Calliopsis*, but they differ very slightly from the true *Coreopsis*. Of those species with flowers entirely yellow, one of the best is perhaps the *C. grandiflora*, which is really a fine plant; in good soil it will reach four feet; the species *auriculata*, *præcox*, *tenuifolia* and *verticillata* are, however, all worth cultivation and may be had of most of the principal Florists; they are all readily multiplied by division or seeds. We think it very probable that some interesting hybrids might be raised between the yellow species and the more deeply coloured annual *C. tinctoria*, for we do not believe the very slight differences in the character of the *pappus* would prove any bar to their union.

The Asters are many of them highly interesting plants, though the species commonly grown are by no means of this character, and, in fact, are often downright rubbish. They vary considerably in height as well as in their season of blooming, and are all of the easiest culture in good soil. One of the most striking is the New England Aster, *A. Nova Angliæ*, growing five feet high, and yielding from August to October an abundance of large violet blue flowers. The red variety of this species is very showy, and should be universally grown. The *A. patens* is a handsome plant. growing from one and a half to two feet high, with large flowers of a blueish purple tint. The *A. spectabilis* is about the same height, but has narrower leaves; its flowers are a fine blue and are very showy. The flowers of *A. grandiflorus* are also blue; they have a pleasant citron-like odour, and are produced very late in the season when most of the others are out of bloom. Of the new *A. Sikkimensis* we hope to give an account in an early number. Among the dwarf species of Aster, are several pretty plants suitable for rockwork or the front of the border. The *A. Amellus* and *A. Amelloides*, both with fine blue flowers; the *A. bicolor*, *A. Reversii*, and *pulchella* are of this class, and with the taller species we have named, may nearly all be had of the London Florists. There are many other good species, but they are very difficult to procure.

The *Ligularia speciosa*, an old plant, has recently appeared in some of the Seedsmen's lists, and may be grown where a large selection is desired; its flowers are yellow, and produced in June.

None of the Composite plants are more interesting than those of the genus *Liatris*. The roots of most of the species are tuberous, but, with a few exceptions,

they are quite hardy. We may at once observe, that in poor dry soil they make but an insignificant appearance; they require a light rich compost, containing a large proportion of vegetable matter. Among the finest is the *L. scariosa*, with a flower-stem from two to three feet high, long linear foliage, and large heads of flowers, of a fine reddish purple-colour; the scales of the involucre are bordered with reddish purple. The *Liatris sphæroidea* is quite as ornamental, but is much less common; its flowers are of the same colour as the previous species, and have, like that, long projecting styles, which produce a very graceful effect. The *L. spicata* has its flowers so closely arranged that, when fully expanded, they appear to form one continuous mass of bloom. The sweet-scented *L. odoratissima* is rather tender; its flowers have a vanilla-like fragrance. They may all be raised from seed, which should be sown in light peat soil; the fleshy tubers may also be divided occasionally. The genus *Centaurea* will contribute a few really good shewy plants. Besides the common *C. montana*, there are the *C. macrocephala*, *C. macrophylla*, and the *C. atrosanguinea*, all with bluish-purple flowers; the yellow *C. glastifolia*, the double-white variety, *alba plena*, and the *C. candidissima*, with handsome foliage and large yellow flowers; but the species of this genus are *legion*, and nearly all are of interest. They are of the easiest treatment, and are increased by seeds or division.

Among the Composite plants of a dwarf character we may cite the well-known *Stenactis speciosa*, with purple-lilac flowers, which would be really an interesting plant were its disk of a clearer yellow; it is of value as an early flower, being generally in bloom by the end of June. There is a new species which promises to be of some interest, the *S. bellidifolia*, with shorter foliage, but we are yet unacquainted with its blossom; it is said to be of a good lilac tint.

The pink and yellow species of Milfoil are good border plants, of the easiest culture. The best of those with yellow flowers are, *tomentosa*, *filipendula*, *ligulata*, and *aurea*; the latter is sometimes known as *Pyrethrum achilleæfolium*. The only pink ones with which we are acquainted, are the varieties of the common *A. millefolium* and the *A. asplenifolia*, the latter a North American species. Some of the white-flowered species are very ornamental, especially the *A. macrophylla*, with foliage very much divided, like that of the common Southern-wood. The *Arnica montana* is a somewhat shewy plant, with bright yellow flowers, rather more than an inch in diameter; it prefers a light peaty soil, and should not be too frequently disturbed.

The Gaillardias are highly esteemed, both as border and bedding-plants; they are usually treated as half-hardy plants, especially the more recent hybrids, but we have found them hardy in dry soils. The *G. splendidissima* bore full exposure last winter in a well-drained locality, but in a wet soil it perished. All the species and varieties are very ornamental, and none more so than *G. Drummondii* or *picta*, as it is sometimes called, for the two are synonymous;

all the species have the florets of the ray tipped with yellow, and reddish crimson at the base. They are easily increased by division, cuttings or seeds, and seedlings will flower the same season.

The *Gazania rigens* is a great favourite with most amateurs, and in mild winters will bear exposure in the open borders; but, under the most favourable circumstances, it will be prudent to cover it with a hand-light, or inverted pot, in winter, It does not exceed eight or ten inches in height, and bears large handsome, solitary flowers, of an orange colour.

The fragrant Coltsfoot, *Tussilago fragrans,* is valuable for producing its flowers in mid-winter; but it is rather troublesome, unless confined in a pot, as its roots spread in every direction; thus grown, it may be removed to the sitting room when in bloom. The *T. alpina* is rather more delicate, and does best on rock-work, or treated as an alpine; it is a very neat little plant.

Although we are at present unacquainted with its flowers, we may recommend, on the authority of Messrs. Vilmorin of Paris, from whom we have obtained seeds, the *Vittadenia lobata,* a dwarf plant, producing throughout the year an abundance of pretty daisy-like flowers, at first white, but becoming ultimately of a clear pink or rose colour. We have not yet seen it in any English seed list, but it may be obtained from the quarter already named.

We may group together, in a concluding paragraph, two or three plants which we have omitted to notice in their proper places, they are the *Cineraria maritima,* with yellow flowers and white leaves, producing a curious effect; the *Catanche cærulea,* which in light sandy soils will prove of value; the orange Hawkweed, *Hieracium aurantiacum;* the *Helenium autumnale,* with large yellow flowers; and the *Pyrethrum roseum,* a plant which, as we remarked in a previous number, would well reward any attention which might be bestowed on it.

We do not profess to have named all, or even a majority of the ornamental genera of Composite plants. We have, however, referred to the most remarkable of those which can be procured in this country; many of the genera recorded in botanical works being practically unattainable; all the species named in the foregoing pages are, we think, really deserving cultivation.

NOTICES OF NEW OR RARE PLANTS.

CLEMATIS LANUGINOSA. *(Ranunculaceæ.)*—A very remarkable species from the North of China or Japan, with immense flowers of a delicate violet blue, composed of six broad sepals, overlapping at their edges. The blossoms are at least five or six inches in diameter, produced singly at the extremity of the shoots, as in the *C. cærulea* and *C. Sieboldtii,* with which it has a close affinity. It is likely to prove equally hardy, but will, probably, like those species, be seen to the best advantage when grown as a pot plant. Its flower-buds are covered with a woolly pubescence,

whence its name. The plant was introduced from China by Mr. Fortune, to the establishment of Messrs. Standish and Noble of Bagshot.

Gymnopsis Uniserialis. (*Compositæ.*)—A recently introduced half-hardy annual, from Mexico and Texas, remarkable as being almost the only plant of this extensive family, yet discovered with fragrant flowers; the leaves and flowers of many Composite plants yield an aromatic odour, but the Jasmine-like fragrance of the *Gymnopsis* is very rare, if not unique. It is a branching plant of somewhat straggling habit, with alternate triangular leaves, irregularly toothed, and downy beneath. The flower-heads are about two inches across, of a bright yellow colour; the circumference is formed by five or six broad ovate, spreading, strap-shaped florets, the centre of the capitulum being occupied by from twenty to thirty tubular florets, loosely arranged. It requires the same treatment as the other half-hardy plants of this class, and flowers in September.

Weigela Middendorfiana. (*Caprifoliaceæ.*)—Many of our readers are doubtless aware of the existence of this so-called yellow *Weigela*, but so few have seen it in flower that suspicions have arisen as to the reality of its xanthic tint. Some of the young plants have, however, yielded a few blossoms during the past season, and its yellow colour is beyond dispute, but at present the plants are so weak that a correct opinion can hardly be formed of the real value of this species. As in the case of all new plants, the specimens have been kept at an elevated temperature with a view to obtain cuttings for propagation, and this unnatural condition has, in more than one instance, led to the death of the plant. Being a native of Northern Asia, probably of Mongolia, it requires abundance of air, a comparatively low temperature, and a partially shaded situation; in a word, a similar treatment to that of the Rhododendrons, and other plants of that class. The plant resembles in its habit and foliage the well known *W. rosea* appearing to differ only in the tint of its flowers, which are of a sulphur yellow. Another species, or perhaps variety of this genus, is likely to excite some attention, the *Weigela amabilis*, differing from the *W. rosea*, chiefly in flowering at a later period; it has also the advantage of blooming freely while very small. Whether it proves to be a true species, or merely a variety of *rosea*, is of little moment in a horticultural point of view, possessing as it does these obvious advantages over that species.

CULTURE OF THE SILENE COMPACTA.

The *Silene compacta* is one of our handsomest biennial plants, and makes an admirable bed, or group in the mixed borders, flowering from the end of June to August or September. Unfortunately, in wet soils it is apt to dwindle away immediately previous to flowering—a result which may be, to a great extent, obviated by the following plan, suggested by Professor Decaisne, and successfully practised by the French Horticulturists. The seeds should be sown in the open ground, about the end of September; and as soon as the young plants have two or three pairs of leaves, they should be pricked out under a south wall, or in a cold frame; the latter is chiefly desirable, on account of its protecting the plants from excessive wet, for they suffer little from mere cold; if planted under a wall, any simple expedient may be adopted to screen them from wet in winter. About the end of March, the seedling are to be carefully dug up, and planted in pots, eight inches in diameter, filled with light garden soil, with which is mingled a quantity of old lime rubbish; this gives great permeability to the soil, and appears very congenial to the roots of the plants. One or two of the seedlings may be placed in each pot, according to their size, and the pots are then to be plunged into the ground to their rims. By this means, plants may be obtained, which in July will be covered with the bright rose-coloured flowers which make this species so ornamental. The above plan seems to resolve itself into efficient drainage, protection from excessive wet in winter, and a calcareous soil, and it is therefore probable that any modification which ensures these conditions would be as successful as the foregoing treatment. The potting might, we think, be dispensed with, except in clayey soils, where its adoption would, no doubt, be attended with con-

siderable advantage. The *S. orientalis* is an equally beautiful plant, supposed to be but a variety of the *compacta*, and requires the same treatment.

THE SIKKIM RHODODENDRONS.

The splendid figures published by Dr. Hooker of these remarkable plants excited, in no small degree, the expectations of the horticultural world, and to judge from the beauty of the few species which have yet flowered in this country, these hopes will be amply fulfilled. Although scarcely three years have elapsed since the seeds were distributed in this country, already six species have produced their blossoms, two of them, indeed, the *R. ciliatum* and *R. lepidotum*, bloomed last season; the remaining four, *Dalhousiæ*, *Edgworthii*, *glaucum*, and *niveum* having flowered in the spring of the present year. The *R. ciliatum* is a comparatively dwarf species, with small neat foliage fringed with hairs; its flowers are very large in proportion to the size of the plant, and of a delicate blush or rose, varying in depth on different portions of the same flower; it will probably prove quite hardy. The *R. lepidotum* is an exceedingly dwarf plant of less interest, its leaves and stems being covered with minute peltate scales, which are not, however, peculiar to this species. The *R. glaucum* is a far more interesting plant, with heads of moderately large rose-coloured blossoms. It flowered at Kew in April of the present year, and it proves to be one of the hardiest of the group. The *R. niveum*, so named from the snow-white tomentum with which the young leaves are clothed, has flowered with Messrs. Standish and Noble, its blossoms being produced in close heads; they are moderately large, and of a very pretty purplish lilac tint. This, too, is very hardy. But these are all thrown completely into the shade by the *R Dalhousiæ* and *R. Edgworthii*, the latter of which has flowered at the Chiswick Garden of the Horticultural Society, the former at Dysart House, N. B., the seat of the Earl of Rosslyn. *Dalhousiæ* has immense white flowers of the substance of those of the Magnolias, and leaves about five inches long. In *Edgworthii*, they are fully as large, of a creamy white, spotted in the throat with purple, and exhale an aromatic fragrance. We are not aware whether these two last will prove hardy, but it is highly probable. Ere long we hope to chronicle the expansion of the flowers of the more highly coloured species.

COLEUS BLUMEI.

Under the name of *Plectranthus concolor picta*, many of our readers may have met with this singular plant at some of the Floricultural Exhibitions of the past season, where it attracted great attention. It belongs to the Lipworts, and was introduced to Holland from Java in 1851, by M. J. A. Willink, an amateur Florist of Amsterdam. In its habit it resembles the Salvias, especially the stronger growing species, such as *gesneriflora;* the leaves are ovate, very pointed, and edged with large acute teeth; their ground colour is a pale-green, but the whole of the centre of the leaf is occupied by a large stain of a reddish-brown tint; in the young leaves the stain is small, but in the larger ones it covers at least one-half the surface. The flowers are produced in long verticillate spikes, each whorl being composed of four compound spikelets, bearing rather small flowers, resembling in form an *inverted* Salvia blossom, the lower lip being of a boat-like shape. Their colour is white and violet-blue, and although, individually, less conspicuous than those of many other Lipworts, the number and length of the spikes compensate for their small size. Its leaves alone would stamp it with the greatest interest, for their coloration is quite unique Its value is greatly increased by the circumstance, that it appears likely to succeed in the open air during summer; we have turned a specimen about a foot high into the borders, and, judging from present appearances, we have no doubt that it is as hardy as many of the Salvias. Whether it will flower in the open ground remains to be seen, but in any case its foliage will ensure it a welcome in the borders. As a window plant it will succeed admirably, and its culture is remarkably easy, cuttings rooting with great facility.



Heliophila arabouden



Leptosiphon luteus



Milla biflora



Abronia umbellata

HELIÓPHILA ARABOÍDES.

Arabis-like Heliophila.

Linnean Class—TETRADYNAMIA. *Order*—SILIQUOSA. *Natural Order*—CRUCIFERÆ.

THE plants of the Natural Order *Cruciferæ*, or Cabbage tribe, are, in general, more remarkable for their culinary and economical uses, or for their troublesome character as weeds, than for their adaptability to decorative gardening.

The beauty of the various species of Wallflower and Double Stock is, however, amply sufficient, in the eyes of the Florist, to redeem the Order from the charge of want of interest; and these, with the Rockets, Candy-tufts, and a few members of the genera *Alyssum*, *Arabis*, *Aubrietia*, and *Æthionema*, may be said to constitute its chief attraction in an horticultural point of view. To these we may add, among annual plants, the curious *Schizopetalon Walkeri*, the *Erysimum Petroffskianum*, and last and least in size—though not in interest—the little Heliophilas, remarkable as being one of the very few genera of Cruciferous plants yielding flowers of a pure blue tint. This circumstance, as well as their comparative rarity in our gardens, has induced us to figure one of the species as an illustration of the Order.

The *Cruciferæ*, as our readers know, are so named from the resemblance their four petals are supposed to bear, when fully expanded, to a Greek cross—whence the English name Cross-wort. This, however, is not their most remarkable feature, which consists rather in the tetradynamous character of their stamens. Four of these are arranged in two opposite pairs, the remaining two being solitary, and usually more or less shorter than the others. The filaments are frequently furnished with teeth or processes near the base; sometimes these occur only on the solitary stamens, as in the genus *Heliophila;* in others, only on the longer pairs, as in the little *Schivereckia podolica*, where it appears in a wing-like form on each side of the filament. The long narrow pod, or *siliqua*, is another peculiarity of this Order, and with the four petals and tetradynamous stamens, readily distinguish it from all others. Sometimes, however, the ovary instead of being lengthened out, as in the Stock and many other genera, is short and broad, as in the Candytuft, in which case it is termed a *silicule*. Perhaps one of the most curious features of the Cross-worts is the manner in which the cotyledons or seed-lobes are folded in their narrow cell, though we fear explanations would hardly be intelligible without a liberal use of wood-cuts. The convolutions of the fire-work commonly termed a serpent,

will afford some idea of the mode in which the cotyledons are packed in the genus *Heliophila*; with this difference, however, that in the latter, the folds are but three in number.

A glance at our figure will show that the various features to which we have adverted are found occurring in the *H. Araboides*. The four sepals are uniform in size, the two which are opposite the solitary stamens being destitute of the protuberance at their base so commonly seen in the Cross-worts. The petals are remarkable for a small process which occurs on one side close to the base, as shown in the sketch accompanying our figure, and the two single stamens are also furnished with a tooth-like process covered with *papillæ;* in *H. trifida* this tooth is apparently smooth. The pod of our present species is of the ordinary siliquose form, but in some other species, notably *amplexicaulis* and *pinnata,* it is beaded or moniliform, as is seen in that of the common radish.

The *Heliophila Araboides* is of trailing habit, and much branched. Its leaves, with the exception of the terminal ones, are deeply cleft into from three to five lobes, and the whole plant is more or less hairy. The flowers are produced at the extremities of the stem and lateral shoots, in heads which ultimately elongate into racemes. They are of a pale but clear pleasing blue, and are produced in abundance for a considerable period. On our specimens they do not appear to expand before noon, but remain open until a late hour of the evening, when they again close to re-open on the following day. Like most of the Cape annuals it is but half hardy, and requires to be raised on a hot bed; though in warm dry localities it may be raised in the open borders, if not sown before the end of April. It seems to prefer a sandy loam containing a portion of leaf mould, or thoroughly decayed manure, or in the absence of these, a little peat; but any good *porous* soil will be sufficient after the seedlings have passed the early stages of their growth. We find the exposition is not very important, though it certainly succeeds best in a warm sunny border, where it is most prolific of flowers. As the blossoms are small it should be planted in masses, or it may be employed as an edging to plants of larger growth; it is also well suited for rock work. As a window plant, in pots, it makes a neat, though not conspicuous appearance, affording a pleasing contrast to the red and scarlet tints of the ubiquitous Geraniums and Fuschias.

There are a considerable number of species, all of them natives of the Cape of Good Hope, and all requiring similar treatment, though *Araboides* is perhaps the most ornamental. The *H. trifida* resembles in colour the species figured, but the centre of the flower is white, and the leaves narrower, with finer segments. The *H. pilosa* has been recently advertised as a new and distinct species, but we believe

that name is but a synonyme or *alias* of the present plant. With the other members of the genus we have but little acquaintance.

Heliophila is compounded of *helios*, the sun, and *philo*, to love; in allusion to the sunny spots in which the plants of this genus are naturally found. It may not be amiss to observe that the *o* and *i* in *araboides* form two distinct syllables.

LEPTÓSIPHON LÚTEUS.

Yellow-flowered Leptosiphon.

Linnean Class—PENTANDRIA. *Order*—MONOGYNIA. *Natural Order*—POLEMONIACEÆ.

Of the numerous Californian annuals discovered and introduced by the lamented Douglass, few have so long retained their place in the public esteem, as the interesting *Leptosiphon androsaceus* and *densiflorus:* their very neat compact habit, complete hardiness, and the abundance of their starry blossoms, combine to render them among the most desirable ornaments of the borders in spring and early summer. These two species, with their varieties, have hitherto been the only attainable representatives of the genus; for, although the names of others have for years stood recorded in most of our botanical dictionaries, they served, in common with many others, but to provoke the regret that they should still be wanting in our collections. They appear to have been all detected by Douglass about the same period, and we are therefore at a loss to explain why seeds of all should not have been introduced by him, unless it be due to the circumstance of their flowering at different seasons of the year.

At length, however, by the enterprise of Messrs. Veitch—to whom our gardens are indebted for so many valuable exotics—the long-desired yellow *Leptosiphon* is placed within our reach; and combining, as it does, all the qualifications already referred to of the older species, with a more novel and brighter tint, it will doubtless be one of the most eagerly sought for plants of the coming season. Except in the colour of the blossom and length of its tube, it does not differ in general appearance from the other species, being like them of low growth, not usually exceeding, even when most luxuriant, ten or twelve inches in height, and in poor soil often much less. Its stems are slender, and stained with purple, branching, and clothed with short spreading hairs. The leaves are opposite, sessile, and deeply cleft into five to eight narrow, pointed lobes, which are somewhat fleshy in substance, and fringed with short hairs. The flowers are produced

in terminal clusters, and are remarkable for the tenuity of the tube of the corolla, which is often from one-and-a-half to two inches long, and in most of the blossoms slightly curved, the limb expanding into five broad blunt lobes. The stamens are attached by short filaments to the interior of the throat, and have their anthers *exserted*, or in other words, protruding beyond the orifice of the flower; the style, which is also exserted, is divided at its extremity into three long narrow stigmas.

Messrs. Veitch inform us that they have raised both the varieties discovered by Douglass, one with pale yellow flowers, of which our figure is a representation, the other with blossoms of a dark yellow or orange colour. In the variety figured, the eye of the flower is darker than the limb, and at the base of each segment an orange spot occurs, more or less distinct in different specimens. We have understood that, in its native habitat, it usually blooms at the end of summer; but in this country it appears likely to produce its flowers about the same period as the other species, that is, from May to July or August, according to the date of sowing. When sown early in autumn, they will bloom about the end of May, whilst those sown in spring will follow in succession. As in the case of most of the hardy annuals, by far the finest specimens are produced from autumn-sown seed; indeed, the unfavourable springs of the last two or three years render it highly expedient to adopt this period, if flowers are to be looked for with any certainty.

The Leptosiphons prefer a sandy loam, well enriched with thoroughly rotten manure or leaf mould; but for autumn sowing, a poor dry soil should be chosen, that the plants may be less succulent, and better fitted to endure the capricious severities of our winters. Agricultural writers are now very properly insisting on the advantages of thin sowing, and the recommendation is no less appropriate to our pages. The difference between plants which have come up singly, and those resulting from seeds thickly sown, is immense, and cannot fail to have struck the most inattentive Florist; nor is the contrast much less striking even when the patch has been thinned out, for it is on the conditions of the early stages of their growth that the future character and habit of most plants depends. Whether performed in autumn or spring, we would therefore strongly impress on our readers the importance of sowing thinly, and, apart from the seemingly paradoxical result of an increased return, it has an additional recommendation on the score of economy. The precise period of the autumn at which the seeds of the Californian annuals are sown, is not unimportant; for most parts of the country the middle of September appears to be most suitable; if sown earlier, they become too far advanced in their growth before the arrival of winter, and then receive a sudden check; whilst at a later period, the decreased temperature is unfavourable to germination, and such plants as succeed in passing this stage, are but too liable to perish on the first sharp frost.

We have said that the Leptosiphons delight in a generous compost; such plants

as have passed the winter in poor dry soil should, therefore, be transferred in March, with as little disturbance of the roots as possible, to a well manured border, the plants being grouped in as large a mass as the supply will permit.

Those who had the good fortune to be present at the Chiswick Exhibition, at which Messrs. Veitch's specimens were shown, will hardly need to be informed the yellow Leptosiphon readily adapts itself to pot-culture. Plants which have passed the winter in the open air will make charming ornaments for the window in spring, if dug up and potted in rich soil about the end of February or beginning of March. Spring sowings will be best effected where the plants are intended to bloom, and in rich soil.

Besides the *Leptosiphon luteus* and the well-known *L. androsaceus* and *L. densiflorus*, there are two other species recorded, viz. the *L. grandiflorus* and *L. pariflorus*, both of which are said to be of a yellowish tint, though neither of them has yet come under our notice. It may be worth while remarking that the two species, *androsaceus* and *densiflorus*, most familiar to gardeners, are not unfrequently sold for each other; but they are readily distinguished by the different length of the corolla tube. In *densiflorus*, this is very short, shorter indeed than the limb of the flower; in *androsaceus* and its varieties, it is twice or thrice *longer* than the limb. The leaves of the latter have also fewer lobes than those of the former.

The generic appellation, *Leptosiphon* (*leptos*, slender, and *siphon*, a tube), is so peculiarly appropriate to the present species, that we have employed it throughout these remarks; they differ, however, from the Gilias in so little except the greater length of the corolla tube, that it is now proposed to unite them with that genus. It should, therefore, be borne in mind that the attractive little plant here introduced to our readers, is by some authors termed the *Gilia lutea*.

MÍLLA BIFLÓRA.

Two-flowered Milla.

Linnean Class—HEXANDRIA. *Order*—MONOGYNIA. *Natural Order*—LILIACEÆ.

EXTENDED observations on a large number of plants of all hues have established the fact, that, of those yielding white flowers, a much greater proportion are fragrant, than in the case of those with red, yellow, or blue blossoms. It may be that the gift of fragrance is bestowed in compensation for the absence of colour, though the loveliness of many of our white flowers might well render

such an addition to their charms superfluous. The whole subject of odours in plants is involved in mystery; why one flower should emit its perfume during the whole of its brief existence, whilst in others it is withheld until the shades of evening descend; or to what causes are due the variations in their character, are among the hitherto unsolved, though not perhaps unsolvable, problems of the Natural World. We may, however, be well content to suppress our curiosity on these points, whilst our senses are so bountifully regaled with such sweet sights and odours as are presented to us in the flowers of a *Magnolia grandiflora*, a *Mandevillea suaveolens*, a Carnation, or a *Milla biflora*.

Among our fragrant plants, several members of the Lily tribe occupy a conspicuous position; and of their number, none perhaps are more remarkable for their exquisite odour and purity of tint, than the flowers of the last named bulb. The *Milla biflora* is one of those plants to which justice can scarcely be done on paper, especially by a reduced figure; to be appreciated it must be seen, and we can but hope that our notice may induce many of our readers to obtain for themselves this charming gem.

It is a half-hardy plant, produced from a small bulb rather more than an inch in diameter. The leaves are from four to six in number, of a rush-like form, and about a foot in length. They are channelled on their inside to within about a quarter of an inch of the tip, and are of a dark green, which near the base is mingled with purple. The flowers terminate a scape which often rises considerably higher than the leaves, and although only two occurred in our specimen, they are not unfrequently three or even four in number; a circumstance we may suppose to have been unknown to the Botanist by whom its specific designation of 'two-flowered' was first applied. The peduncles bearing the blossoms are usually much longer in proportion than those of our figure, where they are shortened for the sake of convenience. The greenish colour of the bud almost up to the moment of unfolding, would scarcely lead us to expect such an entire absence of colour within; and as expansion usually takes place during the night, the contrast suddenly presented is very striking. The yellow anthers contribute considerably to the effect; at first sight they appear to be sessile, or nearly so, but a closer examination will shew that the filaments are present, but enclosed in the walls of the tube. The mode in which the segments of the flowers cohere before expansion, in this and many other Lilyworts, deserves a moment's attention. On each side of the prominent rib or ridge occurring on the back of the three inner divisions of the flowers, a channel or grove exists, into which the edge of the outer segments fit closely, and in the *Milla* these are furnished with a hook-like termination, by which the intermediate segments are held together. The green colour of the ribs of the segments would greatly enhance the charms of the flower, but that after expansion they are concealed by their position. The flowers are not

of long duration, but its blooming period is prolonged by their opening in succession; in the case of specimens producing three or four blossoms, a period of two or three weeks will usually intervene between the expansion of the first and last. Although the interest with which we view our floral treasures undoubtedly reaches its climax at the moment of blooming, it is by no means confined to that period, but, commencing with their earliest growth, is sustained by the pleasures of hope, and followed by those of memory; but for this happy constitution of the human mind, by which the joy of a moment becomes 'a joy for ever', it may well be doubted whether the attention of weeks would be lavished to be repaid by a transient blossom.

The cultivation of the *Milla* is of the same character as that of most other half-hardy summer bulbs. It succeeds admirably in pots, and perhaps the delicacy of its snow-white flowers may render it advisable to restrict it to the window or frame. But it is sufficiently hardy to endure the open borders, where it may be planted about the end of April or beginning of May, in a mixture of sandy-loam and leaf mould or peat, at a depth of two or three inches. As sharp frost may occur about the period its leaves appear above ground, a small hand-light should be placed over the bulb until the middle of May or later, according to the temperature. When the flower stem appears, it should be secured to a slender inconspicuous rod, and about the end of July the blossoms will unfold themselves. After the flowers and leaves have faded, the bulbs should be removed from the ground, though so long as frost or excessive wet does not prevail, they may remain. The growth of the leaves subsequent to flowering should, on no account, be checked, as the longer they remain green, the greater will be the size attained by the offsets. In wet adhesive or clayey soils, this bulb will not succeed unless a considerable proportion of white sand and leaf mould are mixed with the earth of the borders. In pots its growth is generally taller than in the open ground; and it succeeds so readily that it is scarcely possible to fail in its culture. A pot of four or five inches in diameter will be sufficient for the largest bulb; it should be well drained, and the soil employed must be that already recommended for its border treatment. It should be grown on a sunny window, an abundance of light being indispensable.

This bulb is usually sold at rather a high price by the London Florists, but may be had at a cheaper rate of Mr. Saunders of St. Heliers, Jersey, by whom it can be forwarded in a dry state. There is one other species known to exist, the *Milla uniflora*, producing a flower of a pale lilac tint, and further distinguished from the present species by its stamens being alternately smaller, those of *biflora* being uniform in size. Our plant is a native of the temperate parts of Mexico, whence it was introduced about 1826.

This genus was named by Cavanilles, in honour of his compatriot, Julian Milla, head gardener at the Royal Garden of Madrid. The flowers of our figure

are about one half the natural size. We may add, as an illustration of the doctrine that 'extremes meet', that the leaves of both species of *Milla* yield an alliaceous odour when bruised, so slight is the interval separating the most delicious perfumes from those of an opposite character.

ABRÓNIA UMBELLÁTA.

Umbelled Abronia.

Linnean Class—PENTANDRIA. *Order*—MONOGYNIA. *Natural Order*—NYCTAGINACEÆ.

THE *Abronia umbellata* offers us an example of a class of plants termed by Botanists monochlamydeous; in other words, having but one floral envelope, and of which the common Marvel of Peru is a familiar illustration. In the majority of Exogenous plants, the flowers comprise both an outer and inner envelope, termed respectively the calyx and corolla; but in a certain number of Natural families the latter of these is wanting, or it may be that both are present in a united form. By those who take this view, such a flower is termed a *perianth*, though it would be more proper to confine that term to the blossoms of Endogenous plants.

To one of the most curious of these Natural families, the *Nyctaginacæe*, or Marvel of Peru tribe, our *Abronia umbellata* belongs; and although, at first sight, the relationship between the plant which forms the type of that Order and our present subject, will appear but slight, we have only to turn to the enlarged figure of a single blossom given in our sketch, to be struck with its resemblance in miniature to the flower of the plant just named. The most singular feature of the *Nyctaginaceæ* is the hardening of the base of the calyx after flowering, by which the seed becomes enclosed in a woody envelope which supplies the place of the usual integuments. Thus, in the fruit of the common Marvel of Peru, the hard external coating is not, as might be supposed by some, a true seed-shell, but the remains of the floral envelope much enlarged, and so indurated as to serve most efficiently the purpose of a covering to the grain. There is however, no adhesion between it and the seed, nor does it completely surround it, a small orifice being visible at the apex.

The same feature we shall find occurring in the Abronias, though in a modified form, as will be presently explained. Our figure, although representing with considerable accuracy the character of the flower-heads, and the shape of the

foliage, does not convey an idea of the habit of the plant, which is weak and trailing, bearing some analogy to that of the Nolanas. The leaves are opposite, fleshy, of a blunt oval form, and generally more or less sinuate at the margin. The flowers are produced in umbels, from the axils of the leaves and branches, on stalks two inches or more in length, stained with red, bearing from ten to twenty blossoms surrounded by a many-leaved involucre. The blossoms are entirely sessile, and consist, as already explained, of a coloured calyx only, the true corolla being absent. Our figure shews that at the base, enclosing the germen, the tube is slightly four-angled, a little contracted immediately above, and inflated near the orifice of the flower, which has a funnel-shaped limb, divided into five heart-shaped lobes. The five short stamens are arranged within the tube at varying distances from its mouth, and the ovary is crowned by a small simple stigma. After the withering of the upper portion of the calyx, its base swells considerably, and assumes a pendant position, the four angles already referred to becoming developed into a wing-like form. The whole plant is covered with minute viscid glands, especially the flower-stalks and the flowers themselves. The colour of the leaves is a pale glaucous green; that of the flowers a lilac pink, except the tube, which is bright red at the base, as are the leaves of the involucre. We may observe that the flowers are produced in great abundance on established plants, and in long succession, and when well grown, its appearance is highly ornamental.

This leads us to speak of its propagation and culture. Although by no means of difficult treatment under certain conditions, it must be admitted to be somewhat more delicate than many other summer occupants of the garden, especially in a young state, the roots appearing to be exceedingly impatient of stagnant moisture. The most important conditions of success are that the soil should be of a dry, porous texture, and that its branches should be kept from the ground. If allowed to trail they speedily suffer from the moisture of our climate, and it is therefore indispensable to interpose something which will effectually prevent contact with the soil. This may be accomplished either by surrounding the plant with a few bushes, chopped small, over which it may trail; or by supporting the shoots with slender willow rods; or it may be grown to perfection, trained against a south wall. Perhaps one of the most elegant modes of cultivating this pretty plant, is to arrange it as the central occupant of a circular bed, planting it in a raised basket of sandy loam and vegetable soil, and allowing its branches to trail freely. In such a position it will be seen to great advantage, and there will be little or no risk of injury from excessive moisture; if desirable, the surface of the soil in the basket can be covered with shingle, or a few cut twigs. It is not completely hardy, and should therefore be protected in winter in a frame, though, as it is more sensitive to wet than cold, it would probably bear exposure, if covered by a hand light.

It may be readily increased by seeds, which in favorable situations are produced

abundantly. They should be sown early on March, on a gentle heat, in pots of sandy loam with a little peat. Only a few seeds should be placed in each pot, as they do not bear transplanting so well as most plants, and when sufficiently advanced, which will be about the middle of May, they may, after being gradually inured to the change, be turned into the borders without any disturbance of their fibres. Sown at the period we have named, they will usually flower the first season. It may also be increased by cuttings, or, what is better, slips of the short side branches, which will root in a warm sandy border, under a hand-glass in summer; during the cooler months, a slight bottom heat will be necessary.

The *Abronia umbellata* was introduced about twenty years back from California; since which period three other species have been discovered in the same locality, *mellifera*, *pulchella*, and *rosea*, though none of them are yet in general cultivation in this country. The generic term is derived from *abros* (Gr.), delicate, in allusion to the character of the flower; this Greek root our readers will remember forms part of the designation of a very different plant to the present one—the *Habrothamnus*. We must add, by way of postscript, that although the flowers of the *Abronia* are said to be fragrant, they are, as far as our observation goes, only so in a very slight degree.

A GROUP OF HARDY BULBS.

Considering the small amount of trouble involved in the cultivation of hardy bulbous plants, and the beauty of most of their flowers, it is surprising that they should not be more generally sought after by all classes of Floriculturists. Their number is so considerable, that it would be quite possible to form a bulb garden from which the other classes of plants should be excluded though, undoubtedly, the most interesting effects result from their distribution among the usual exogenous occupants of the beds and borders. A large proportion of them produce their flowers at a season when they are rendered doubly valuable by the absence of most others; but so far, however, from being limited to this period, there is scarcely a month in the year in which several interesting bulbs are not to be found in bloom. A certain number of the commoner species are, it is true, met with in most gardens, but a much larger number are either entirely absent, or confined to the collections of the wealthy. Of the forty or fifty species and varieties of Lily, for example, how many are usually found occurring in the same garden? and of the interesting genus *Narcissus*, including perhaps 150 species, the same question may be put.

The period for planting the hardy bulbs being close at hand, we have thought that it may be useful to remind our readers of some of the most desirable of the numerous treasures that are available for this purpose; and, perhaps, with a view to assist the faculty of association, we cannot do better than refer to them under their natural distinctions of Lily-worts, Amaryllids, and Irids; the first, as our readers know, being characterised by their *superior* ovary, six cleft perianth, and

six stamens opening inwards; the second by their *inferior* ovary, and six stamens; and the third by an inferior ovary, *three* stamens, and three stigmas, more or less petaloid in form.

The Lily-worts will be most fittingly introduced by a short notice of the genus from which the Order derives its name. Of these beautiful bulbs several are sufficiently common in our gardens to render any especial reference to them needless; such as the charming white Lily, *L. candidum*, with its striped-leaf variety; the Orange or bulb-bearing Lily, and the several varieties of the Martagon, some of which are very ornamental. A few of our readers may, possibly, be unaware that there are both pure white, scarlet, and yellow varieties of this well-known plant, as well as one with double-white flowers; their odour is less agreeable than that of many species. Any light vegetable soil suits them. The *L. croceum* is also generally cultivated; it closely resembles the *L. bulbiferum*, but produces no bulbils in the axils of its leaves. Its flowers are of a saffron yellow, spotted, especially near the base, with numerous dark stains. It is by no means particular as to soil or situation; we have found it grow very well even in town gardens.

The Superb Lily, *L. superbum*, is a very beautiful species, producing a large number of blossoms of a fine orange-red, spotted with purplish-brown, with the divisions of the flower semi-reflexed. This species is of tall growth, and requires a somewhat shaded situation, and a peaty soil, or one containing a large proportion of vegetable matter, with a little sand. It should be kept free from the encroachments of other plants, and in very cold seasons its roots will be safer if slightly protected. The *Lilium Philadelphicum* is an interesting plant of dwarfer habit, with red flowers spotted with black or dark brown at the base. Its bulbs are very small, and throw out slender runners at the extremities of which the new roots are formed; it is therefore advisable to plunge them in a pot to prevent their being lost. Peaty soil is desirable.

The *L. excelsum* we have already noticed in a previous number; its nankin or fawn-coloured flowers are perhaps less brilliant than some others, but they are very large and highly fragrant. It is sometimes sold as *testaceum*, but that we believe to be a distinct species, less hardy in its character. The beautiful *L. venustum* is one of the most desirable of the whole genus; a figure and description will be found at page 25 of the present volume. The *L. Thunbergianum* closely resembles it, and is equally showy. Both are quite hardy, and succeed in any soil. The *L. Chalcedonicum*, or Scarlet Martagon, as it is often termed, is a very beautiful plant, with brilliant red flowers studded with warty papillæ. It will succeed well in the shade, and prefers a vegetable soil. The Tiger Lily, *L. tigrinum*, is perhaps one of the commonest of the species; its numerous deep orange flowers spotted with red make it very desirable. It produces bulbils in the axils of the leaves, and will succeed in any light soil. The *L. Pomponium*, or Pompon Lily, is of a similar form, but is of a much deeper tint, and produces fewer flowers, not often more than six or eight. It is not particular as to soil, but moisture and a shaded exposition are desirable.

We now come to a group which is less common than most of the preceding, but inferior to none in beauty. The Kamtschatka Lily, *L. Kamtschatkense*, is one of these; it is sometimes termed *Amblirion*, but does not appear to differ in any important point from the true Lilies. It grows about three feet high, with an erect pubescent stem and oblong hairy leaves. The flowers are of a golden yellow, with numerous purplish spots on the interior; segments more or less reflexed. They are very pleasantly scented, with an odour similar to that of the *L. excelsum*, or the Jonquil. It is quite hardy, but should be planted where it receives only the morning sun. Peaty soil should be preferred. This handsome bulb appears to be rare in this country, and those dealers who possess it seem disposed to charge a somewhat exorbitant sum for it. In Paris, however, it may be bought for so small a sum as sixpence a bulb; so that, considering the facilities for communication between the two countries, this high price seems quite inexcusable. Messrs. Vilmorin and Co., 30, Quai de la Mégisserie, we think can supply the plant cheaply. The *L. monadelphum*, so named

from the partial adhesion of the filaments of the stamens, is another somewhat rare species, though it is occasionally to be met with in the catalogues of the London Florists. It does not often exceed two feet, and has rather small pale yellow flowers, with reflexed divisions. This species is sometimes confused with the *L. Colchicum*, figured in our first Volume, but is quite distinct; its stamens alone are sufficient to identify it. Like most of the Alpine species, it dislikes a hot exposure.

The *L. Colchicum* just spoken of, is a finer plant than *monadelphum*, and its flowers are larger. It is very hardy, and one of the most beautiful of the genus, but is rather expensive at present. Another species with yellow flowers is the *L. Pyrenaicum*, though there is a variety with red blossoms. The true species is pale yellow, spotted within, with reddish brown; the stamens are bright red. Both the varieties are cheap, and easily procurable.

The *L. Canadense* deserves to be honourably mentioned: it is really a very handsome species, and not at all expensive. Height from three to four feet: and in July and August bears from one to ten flowers of a light orange tint, with reflexed divisions spotted with purple at their base. There is a variety with deep orange flowers. Light vegetable soil.

The *L. atrosanguineum* is a species we must, on no account, omit to name, its flowers being unrivalled in the depth of their tint. It is of moderate height, producing in July several reflexed blossoms of a deep blood-red colour. It is quite hardy, though a Japanese species. Its hybrids with *L. bulbiferum* are scarcely less interesting, and they are rather taller than the species; nearly a dozen distinct varieties may be had of the London Florists, and of Mr. Groom of Clapham, by whom they were raised; the varieties named Nabob, Rubens, Titian, and Vulcan, are all good. To these we must add the splendid *L. lancifolium*, or rather, its white variety, which is the only one we can venture to recommend for full exposure. *That*, we are satisfied, will bear almost any amount of frost; a pot containing a large bulb was left exposed the whole of the winter and spring of 1852-3, and was completely frozen without receiving the least injury. The varieties, *rubrum* and *punctatum*, do not appear quite so hardy, though, if kept dry, they would probably bear considerable cold. Grown, however, as pot plants, they all form noble objects for the window. There are some other magnificent species, such as the *L. giganteum*, *L. Wallichianum*, *L. Brownii*, and *L. Japonicum*, to which we do not now particularly advert, their present rarity and costliness placing them out of the reach of all but the wealthiest classes.

Closely allied to the Lilies are the Fritillaries, including the well known Crown Imperial and the dwarf *F. meleagris* and its varieties. It is to these latter we would more particularly call the attention of the reader, as they do not appear to be so extensively known as they merit. The Dutch Florists have recently introduced a considerable number of nearly every imaginable shade of colour, from pure white to yellow and dark purple, and the union of these three tints in the same flower is by no means uncommon. They are sold at a cheap rate, and may be had of most of the Seedsmen by name; if of no other Florist, Mr. Carter of Holborn is sure to possess them. Although very hardy, they may be potted for the window, being treated precisely as the Hyacinth. Besides these varieties, there are several distinct species, of which *Persica* and *Pyrenaica* are the most common.

Among the most beautiful of all the dwarfer Lilyworts is the *Camassia esculenta*. It is allied to the Squills, but, in its rich purple colour, is much superior to any of that genus. Its height is about eighteen inches, and its flowers are produced about the end of June. Although the bulbs may be planted so late as March or April, it is better to plant them in autumn, as it is perfectly hardy, and the roots are liable to injury by being kept out of the ground through the winter; at all events, they should be purchased in autumn, that the finest roots may be selected. Everybody should obtain this shewy plant. [See page 109 of

the present Volume.] The allied Squills and Ornithogalums will be found noticed in a paper in our previous Volume, to which, for the sake of economising our space, we refer the reader. We avail ourselves of this opportunity to correct an error into which we were inadvertently led in the article in question. We had received a bulb as that of a Blue Star of Bethlehem, and, as it was said to be very shewy, we ventured to recommend it; upon flowering, however, it proved to be the well-known *Scilla Peruviana*, a beautiful bulb, truly, but distinct from the Ornithogalums, the flowers of which are all either white or yellow. The very pretty *Calliprora lutea*, with an umbel of yellow flowers, as well as the *Brodiæa congesta* and *B. grandiflora*, with their blossoms, will also be found noticed at the page referred to, with some other beautiful plants, and we need, therefore, do no more than mention their names. The *Hesperoscordiam lacteum*, allied to the genus *Allium*, is an ornamental summer bulb, producing a head of white flowers. Although not often sold in a dry state, it may be had cheaply of some of the Florists; it is kept at Messrs. Hendersons, Pine Apple Nursery, Edgeware Road. We must not, however, dwell at greater length on the Lilyworts, or we shall have no space left for the Amaryllids and Irids, to the first of which we will now refer.

One of the finest hardy Amaryllids is, undoubtedly the *Pancratium illyricum*. Its foliage resembles that of the Polyanthus Narcissis; and its flowers are borne on a flattened scape from twelve to eighteen inches high. They are about ten or twelve in number, and of considerable size, pure white, and highly fragrant. The bulbs should be planted at least four inches deep, in rich sandy loam. This species is, we think, preferable to the *P. maritimum*, which closely resembles it, but flowers less freely. The *Ismene Amancaes*, or Peruvian Daffodil, formerly classed with the Pancratiums, is not quite so hardy as the preceding, but is abundantly so for summer culture in the open ground. Its bulbs should be procured at this season, and preserved in a cool dry place until the end of March or beginning of April, when they should be planted three or four inches deep in light soil. If severe frost occurs, an empty pot or handglass may be placed over them. The flowers are produced in June, on a stem eighteen inches high; they are very large, and of a pure bright yellow. The filaments of the stamens are united into a deep crown or nectary, like that of the common Daffodil, but larger. The *I. calathinum*, with white flowers, may be treated in the same manner. The prices of these two bulbs vary exceedingly; we have seen them in Carter's Catalogues at 1s. each; whilst in those of some of the London Nurserymen they are marked as high as 10s. 6d.

The *Crinum Capense* is another handsome bulb, sometimes known as *Amaryllis longifolium*. It produces in July an umbel of pink flowers, one and-a-half to two feet high; the bulb should be planted deeply in good loam, containing a little sand and peat. The plant sold as *C. Capense album* is, we think, the *C. longifolium*, which has white flowers, and is nearly as hardy as the true *Capense*. Like that, it should be deeply planted, and in hard winters some covering will be needed. Both species require an abundance of moisture while growing. They cost from one shilling to one shilling and sixpence per bulb. The *Chlidanthus fragrans* is an interesting plant; not quite hardy, it is true, but as its roots need only be planted in spring, practically it may be classed with the hardier species. It should be planted in a warm border of rich loam about the beginning of April, when it will produce its bright yellow fragrant flowers at the end of June. It increases very freely by offsets, which should be separated before planting the bulb. It may be had of most Florists for less than a shilling. Of similar treatment to the preceding, are the *Pentlandia miniata*, a pretty half-hardy red-flowered bulb from Peru, blooming at the end of the summer, and the *Phycella ignea*, with scarlet blossoms. This last is, however, rather an expensive

bulb. The *Alströmerias* must not be forgotten in our enumeration of Amaryllids. The species are not all quite hardy, but several most desirable ones are so. The *A. aurea*, *A. Van Houttei*, or *Chilensis*, *A. tricolor*, and *A. Simsii*, will bear our winters with impunity, though the two latter species will be best protected with a slight covering of leaves. The whole of the species, indeed, may be grown with slight protection in dry soils, and all are beautiful. The fig. of *A. Van Houttei*, page 32, Vol. I, will give a good idea of their general character. Among the rarer plants of this Order which deserve cultivation, the *Lycoris aurea* may be named. It produces in July an umbel of from six to ten large flowers, of a golden yellow. They are remarkable for the singular movements of their anthers, which, during warm weather, are frequently agitated for a minute or two together. Its leaves are almost evergreen, and it therefore requires a little protection in severe frost. Sandy loam suits it. It is a native of China, where several other species are found.

We must pass over a few other Amaryllids, that we may find space for a brief reference to the genus *Narcissus*, perhaps one of the most generally interesting of all the hardy plants of this Order. There is considerable confusion in the names of the different species and varieties, to which we will not here allude more particularly, as our readers might be bewildered. The most ornamental species are those termed collectively the Polyanthus Narcissus, though several species are included under that name. There is the *N. concolor*, known as Grand Primo, with white flowers, sulphur cup, and its variety Grand Monarque, with yellow cup, both splendid bulbs and very hardy; the *N. aureus*, the Soleil d'or of the Florist, with deep yellow flowers; and the *Totus albus*, *N. dubius*, with pure white fragrant flowers. Bazelman Major, white, with a yellow nectary, is an established favourite, and, with the preceding, makes an admirable show, whether in pots or the open ground. The *N. Tazetta* is not quite so hardy as the others, but is a beautiful pot bulb; this is also sometimes called the Polyanthus Narcissus. Of the species producing only from one to three flowers, there are a large number. The *N. calathinus* (the *N. odorus* of Linnæus) is a rather common plant, with about three yellow flowers, very fragrant, and indifferent to soil or exposure. This species is sometimes termed the Petticoat Narcissus, in allusion to the form of its nectary, but that term is more usually applied to the *Narcissus Bulbocodium*, which produces only a single yellow flower on each scape, with a very large conical nectary, supposed to bear some resemblance to the hoop petticoats of a former generation. The *N. poeticus*, or Pheasants' Eye, is much esteemed both for its fragrance and the delicate crimson edge of its nectary, which contrasts with the pure white flower. This species likes a strong moist soil; in dry soils it rarely flowers in perfection. The *Narcissus Pseudo-Narcissus*, or Daffodil, is quite as common, and the single flowers are very pretty; but the double varieties, which present often only a confused mass of imperfect petals, are not at all to our taste. The Peerless Narcissus, *N. incomparabilis*, with single-flowered scapes: the *N. biflorus*, white; *N. bifrons*, yellow; *N. Orientalis*, and all the varieties of the Jonquil, *N. Jonquilla*, are interesting plants, most of them well known. The very pretty little dwarf *N. nanus*, or *minor*, should be in every collection, however small, and a few roots should be potted for the window. The *N. pulchellus* (*Ganymede pulchella* of Haworth) is an elegant species, with pale sulphur-coloured blossoms: it is not common, but may be had at the Pine Apple Nursery, where the rare *N. triandrus* is also kept. The whole of the species are of easy cultivation, requiring only to be planted in rich sandy loam, and succeeding equally in pots or the borders. The snow-flakes, *Leucojum vernum*, *æstivum*, and *pulchellum*, are all very pretty bulbs with white sweet-scented flowers: the first species is now termed *Erinosma verna;* its double variety is much esteemed.

Our small remaining space must be devoted to a few of the Irids. The genus *Iris*, is, in itself, a host; but we can only now notice the splendid English Iris, *I. Xiphioides*, and the striking Spanish Iris, *I. Xiphium*. The colours of the first are now exceedingly varied and brilliant and when in bloom, nothing can surpass the effect of a large group. The Spanish Iris are rather dwarfer, and are remarkable for the curious olive tints which prevail in many varieties. Both species should be planted as early as possible, as the roots are injured by being kept long out of the ground. Light rich soil. The beautiful *I. susiana* requires a warm border and light soil, to make it flower freely. Of the Crocus we need only remark, that most of the new varieties are much superior to those commonly grown, both in the size and colour of their blossoms. The *Gladiolus* deserve a more lengthened notice than we can now afford them. The new hybrids of *Gandavensis* are among the most magnificent of the summer and autumn bulbs. The most striking are those of French origin—*Courantii fulgens*, bright crimson red; Mademoiselle Fanny Rouget, bright rose, with violet feather; Monsieur Blouet, rosy salmon, very large and open; Madame Couder, clear carmine, are four new varieties, which, although charged very high in London, may be got in Paris, of Vilmorin, for about one franc each. They are quite hardy, but may be planted as late as March. The varieties of *ramosus* are no less beautiful; they are not quite so hardy as the preceeding, but, as they succeed well when planted in spring, this is of little importance. Most of the varieties have the white feather, which is so striking in *cardinalis;* in others, however, this is replaced by a carmine stripe. One of the newest of this class is the variety Mademoiselle Sosthénie Desjardins, with large well formed flowers, of a pale flesh colour, the three lower divisions being beautifully marked with rosy-carmine. Oscar is a very brilliant flower, not unlike *ignescens* in colour, but finer. The varieties, are however, already so numerous, the French, Dutch, and English Florists having all originated many beautiful seedlings, more or less distinct, that we could easily fill a page or two with their names alone. A selection of the best will be found at page 150 of our first Volume. It is not unusual to plant *ramosus* and its hybrids in autumn, as they commence their growth early; but as this involves some amount of protection, it is often more convenient to defer planting until February or March; even then, in severe weather, a layer of leaves will be necessary. The varieties of *cardinalis* are still earlier, and must be either potted in autumn, and protected in a frame, or planted thickly in the open ground, with a good covering of fern or furze, or a hand-light. The culture of the Gladioles is so simple, and new varieties are so readily obtained, that the amateur need not be dependent on the professional Florist for his supplies. The possession of a few of the best varieties, as a starting point, is all that is necessary for originating seedlings, which may equal, in all points, the most expensive novelties.

We may observe, that all the spring-flowering bulbs we have named in the foregoing pages may be grown in pots for the window. The point on which success hinges is, that the roots should be formed slowly, at a comparatively low temperature; a result obtained by allowing the pots containing the bulbs to remain out of doors for at least six weeks, or even longer, subsequent to planting; this will retard the development of the leaves and flower stems until the pots are filled with roots, when they may be removed in succession to a warm window. This applies to the Hyacinth, Crocus, Snow-Drop, Dwarf Fritillary, Narcissus of every kind, Leucojum, Persian Iris, Squills, Dog's Tooth Violet, Winter Aconite, and *Oxalis*.

THE HOLLYHOCK.

The history of Floriculture presents us with few more striking examples of the improvements the Florist's art is capable of effecting, than in the case of the Hollyhock. The change is, indeed, so great, that it is difficult to recognise the former coarse, scraggy occupant of the shrubbery in the magnificent spikes of brilliant-tinted flowers which are now the admiration of all. The

popularity of this noble plant is fully justified, not only by its intrinsic beauty, but by the ease with which it may be grown in almost any situation. We have no fear that it will ever supersede the Dahlia, nor is it desirable that it should do so; but it will, undoubtedly, become a formidable rival, and we can even imagine that its easy management and extreme hardiness will, by some amateurs, be considered more than sufficient to compensate for the shortness of its blooming season, compared with that of the Dahlia.

Its treatment is so well known, that we need only remind our readers that the present season is the best for transplanting such varieties at they may desire to add to their collection. Like most other tap-rooted plants, they dislike removal, and this should always be effected in autumn, when possible, the blossoms being in general much finer than when the operation is deferred till spring. The soil the Hollyhock most effects is a friable loam, well enriched with rotten manure, which should be liberally applied to the soil before planting; it will, however, succeed in almost any soil but the poorest, though in very sandy soils an abundance of moisture must be supplied. Almost every Florist has tried his hand on this plant with more or less success, so that the varieties offered for sale are very numerous. For the guidance of our readers we append a list of a few of the most desirable varieties, which does not, however, include those exhibited for the first time the present season. Among crimsons, there are Bessy Bell, Crimson Perfection (Paul), General Bem (Veitch), Meteor (Bircham), Sir David Wedderburn (Currie), and Walden Gem (Chater). Of yellow Hollyhocks, the best are Ophir, Safrano, and Triumphant (Parsons), Sulphurea perfecta (Rivers), and Yellow Model (Bircham). Of deep rose tints, there are, Charles Turner, Enchantress (Chater), and Rembrandt (Parsons). Of lighter shades of rose, Joan of Arc, Mrs. Foster, Rosea grandiflora, Lady Braybrooke, Queen of Scots, and Spectabilis, are fine examples. Pourpre de Tyre, William, Mulberry superb and Purpurea, are good purples. Among the mottled varieties, Mrs. Gould, mottled crimson, Napoleon, white and purple, a very novel variety, and Defiance, mottled purple, may be named. Cream of the Valley is a fine variety, with flowers of a delicate cream tint. Bella Donna is a good white, and so is Chater's Snowball superb. Susannah, creamy white, and Lady Harland, pure white, may be added with advantage to any collection. With one or two exceptions, none of the above are expensive; this noble flower is, however, so easily raised, that there is no reason why every amateur should not be his own Hollyhock grower.

THE ANEMONE HORTENSIS.

Although the flowers of this pretty spring bloomer are considerably smaller than those of the *A. coronaria*, so much improvement has been effected in the brilliancy and variety of its tints, that it bids fair to become ultimately a rival of that splendid flower. Whether this is the result of hybridization with other species, or whether they are but seminal varieties, we are unaware; but, in any case, they deserve to be especially mentioned at this season as most desirable early flowers. The true *A. hortensis* is, as our readers know, of a reddish-purple colour; but the varieties now procurable include almost every shade of blue, purple, violet, rose, scarlet, and crimson; most of the tints, in short, which occur among the varieties of *coronaria*, are now to be found in the present species. They are, however, less double than those of *coronaria*, though we have no doubt that this difference will speedily disappear.

Their treatment is precisely that of the other species; they are best planted in autumn, not later than the end of October, in rich light loamy soil, either in clumps or beds, though for a succession a few roots may be kept out of the ground till February or March. The autumn-planted roots will bloom in April, the others in May. About fifty named varieties of distinct shades of colour may be had of most of the London Seedsmen, and they are by no means expensive.



Cyananthus lobatus.



Jasminum undiflorum.



Convolvulus Italicus.



Aster Sikkimensis.

CYANA'NTHUS LOBA'TUS.

Lobed-flowered Cyananthus.

Linnean Class—PENTANDRIA. *Order*—MONOGYNIA. *Natural Order*—POLEMONIACEÆ.

FEW of the mountain ranges which diversify the surface of our globe have contributed to European gardens a greater number of interesting plants than the magnificent Alps of Northern India. From this seemingly inexhaustible mine of floral riches have issued the colossal Himalayan Cedar, *Cedrus deodara*, which bids fair one day to replace the Oak and other timber-trees of these latitudes; an immense number of Pines, Firs, Hollies, Berberries, and evergreens of all kinds; the noble *Rhododendron arboreum*, to whose scarlet flowers our Horticulturists are so much indebted for the brilliant tints of many recent hybrids; and, above all, the splendid Sikkim species, the discovery of which might alone suffice to immortalise the fortunate Botanist to whose efforts we owe these marvels of the vegetable world. The less elevated zones, where a higher temperature prevails, contribute some of the most lovely of our stove plants, among which the Orchideous epiphytes are especially conspicuous for their beauty; whilst their summits teem with interesting forms of a less gorgeous character, it may be, but better calculated to enlist the sympathies of the lover of hardy plants. Here occur the noble Lilies, *giganteum* and *Wallichianum*; some of the most charming of the species of *Primula*, with Gentians, Saxifrages, Labiate plants, *Ranunculaceæ*—in a word, types of most of the Orders peculiar to temperate climes. The recent discoveries of Dr. Madden, referred to in another part of the present number, invest with additional interest the vegetation of this favoured spot, and justify the hope, that, at no very distant period, plants hitherto supposed to constitute the peculiar features of tropical scenery, will be seen side by side with the 'familiar faces' of more northerly regions.

The example of the Himalayan Flora we now offer our readers in the *Cyananthus lobatus*—though of a somewhat modest character compared with many of the plants just cited—is likely to prove an acceptable addition to our hardy border flowers. It must, however, rank with the dwarfest of herbaceous plants, its slender twiggy stems seldom exceeding five or six inches in length. They are clothed with small alternate bright green leaves, toothed at their edges, and hairy on both surfaces. The stems are occasionally simple, but usually more or less branched, and bear at their extremity a single flower, of a purplish blue colour, with an inflated calyx, and a deeply five-lobed corolla. The

character of the organs concerned in fructification is displayed in our figure; unlike those of most other Phloxworts, the stamens, which are very short, are attached to the base of the ovary and not to the tube of the corolla—in other words, they are hypogynous; the seed-vessel is elongated into a beak-like form, and crowned with a five-lobed sessile stigma. The plant blooms in August and September, and although the blossoms are not very numerous, they produce some effect from their large size.

As might be expected, it has proved quite hardy, and appears less fastidious than many other Alpines, being easily cultivated in sandy loam containing a little peat; an arid soil, or exposure, seems to disagree with the plant, though a sunny border is by no means objectionable, provided a fair proportion of moisture is present. It may be increased by slips planted under a hand-glass in summer, and also by seeds, which ripen in favourable autumns. Messrs. Cunningham and Fraser of Edinburgh have been successful in raising seedlings; and, although we have not yet attempted to separate the roots, there is no doubt, when strong enough, they will bear division.

Although a native of the Himalayah, it has hitherto been found only on those ramifications of the chain extending into Chinese Tartary, where it was discovered in 1843, at an elevation of 12,000 feet. It is, therefore, not strictly speaking a new plant, but has only recently become accessible; we observe that most of the leading Florists are now cultivating it, and it may be had for a moderate sum.

The generic term is derived from *kyanos*, blue, and *anthos*, a flower, in reference to its colour.

JASMÍNUM NUDIFLÓRUM.

Naked-flowering Jessamine.

Linnean Class—DIANDRIA. *Order*—MONOGYNIA. *Natural Order*—JASMINACEÆ.

THE *Jasminum nudiflorum*, if no longer a novelty, is yet by no means so extensively grown as to render a further notice of its claims altogether superfluous. Though devoid of the exquisite fragrance which characterises the flowers of many of the species, its primrose-like blossoms are so large, so richly coloured, and produced in such abundance that, even among the many rivals which summer brings, it would obtain for itself no mean standing in the list of ornamental shrubs. But, when it is borne in mind that the blossoms are developed literally

in mid-winter, in defiance of frost and snow, when the number of plants in bloom is so few that they may be reckoned in units, it will be evident that the compensation for the absence of odour, as well as for the deciduous nature of the leaves, is of the amplest character. The tenuity and flexibility of its shoots allow them to be so closely arranged upon a wall, that when in bloom, they present to the eye a sheet of yellow of the richest tint; and, if associated with the scarlet-flowered *Pyrus Japonica*, which in most situations blooms about the same period, the effect is very striking.

Though sometimes spoken of as a dwarf shrub, it soon attains the height of six or eight feet, but may be trained horizontally, so as to accommodate itself to almost any situation. The shoots are distinctly four-sided, with the angles somewhat winged, of a rich dark green colour, and very flexible. The leaves are divided into three rather small oval-pointed leaflets, which are smooth on their surfaces, but fringed at their edges with short hairs. The flowers are produced along the shoots of the previous season, their buds being formed in the axils of the foliage, as in the case of the *Forsythia viridissima;* and, like the blossoms of that handsome shrub, they are enveloped, prior to their expansion, by several brown scales, which, in the severe climate of Northern China, may be more necessary as a protection against excessive cold than in this country. The calyx is divided into six narrow pointed segments, and the corolla into the same number of lobes of a broad-oval, or almost inversely heart-shaped form; the tube of the flower is wider than in most species, and includes the two short stamens peculiar to the genus *Jasminum*. The style is longer than usual, protruding its globose stigma from the mouth of the flower. We may observe that the number of the corolla segments is very inconstant in this genus, varying from four, which is the number present in *officinale* to five in *revolutum*, six in the present species, seven in *multiflorum*, eight in *J. sambac*, and from eight to ten in *J. angustifolium*.

The foliage of *nudiflorum* is, as already hinted, of a deciduous character; and although this is to be regretted, it should be remembered that the flowers being produced on very short stalks close to the branches, would be almost, if not quite, concealed were the foliage persistant; so that, even here, we find the compensatory principle displayed. Where the absence of the foliage at the period of flowering may be considered an objection, it may be, to some extent, remedied by training the plant over a closely-clipped ivied surface; better, however, by associating it with the evergreen *J. revolutum*, though the task of training the two species on the same surface might not be accomplished without some trouble. None of the species are of easier cultivation; it succeeds in any ordinary friable soil, but, in common with the other Jasmines, likes a warm exposure. Although usually treated as a wall plant, it may be grown

as a standard, either on its own roots, or grafted on stocks of the common sorts at any desired height. Dwarf specimens suitable for window ornaments may thus be readily obtained; to keep them within compass they will, however, require annual pruning immediately after flowering. It is readily increased, either by cuttings of the ripened shoots planted in a sheltered corner, or at the foot of a wall, or by layers which may be separated the following spring. This species is a native of the northern parts of China, whence it was introduced by Mr. Fortune in 1845. It appears to bloom there at a later period of the winter than in this country, a fact readily explained by the greater severity of the climate, which retards the development of the flowers. Here it is not unfrequently in blossom as early as December, and often continues in flower to the end of February, or even later; the leaves commencing their growth soon after that period.

The genus *Jasminum* now includes a considerable number of species; and perhaps we cannot better conclude this article than by a reference to such of them as have proved sufficiently hardy as to come within the scope of the present work. The best known is the common *J. officinale*, a shrub too familiar to require any lengthened notice. Its pure white flowers are among the most fragrant of the genus. The variegated varieties, with foliage striped and edged with yellow and white, are much less known, and are very ornamental. The Cytisus-leaved Jasmine, *J. fruticans*, is scarcely less common, though of inferior value. It will often attain, against a wall, the height of six or eight feet, but, when more exposed, is not unfrequently much dwarfer; its small yellow flowers are almost scentless, but, from the compactness of its growth, it is useful for covering walls, etc. The Italian Jasmine, *J humile*, is of a dwarfer growth, but less hardy, requiring, in most parts of this country, some protection in winter; like the preceding, it has yellow flowers, which are delicately scented.

The curled-flowered Jasmine, *J. revolutum*, from Nepaul, is a far more interesting plant; its evergreen habit, and the delightful fragrance of its yellow blossoms, together with its perfectly hardy character, render it one of the most desirable of all the out-door species. It will succeed in almost any soil and in any aspect, though its flowers are finest with a warm exposure. It is also one of the fastest growers of the genus; in moist soils it will not unfrequently produce shoots six feet or more long in a single season. The *J. pubigerum*, from the same country, is an allied species, also of evergreen habit, with rather small fragrant yellow flowers. It is equally hardy, and a desirable plant; synonymous with *J. Wallichianum*. Another fine species from Nepaul is the *J. heterophyllum*, at present but little cultivated. Its foliage is large, glossy, and very handsome; some of the leaves are simple, others binnate or ternate. The flowers are yellow;

whether fragrant or not, we are at present unaware. This species, too, may be pronounced perfectly hardy; plants of it having borne the severe winter and spring of 1853, with little or no injury. Grows as tall as *revolutum*.

The *J. chrysanthum* is another Himalayan plant of the genus, with persistant ternate or quinate foliage, and yellow flowers produced in small umbels at the extremity of the young wood; we believe they are either scentless, or with but a very slight degree of fragrance; the plant is, however, somewhat rare at present, and has not yet come under our own observation. The *J. Reevesii* is, we think, but a synonyme of this species. To these we may add the *J. ochroleucum*, a plant resembling the common white *J. officinale*, but with larger flowers of a yellowish white tint; whether this is a distinct species, or a hybrid between the white and one of the yellow ones, we are unable to learn. The whole of the plants we have named are of easy cultivation, and readily increased by cuttings and layers.

The scientific name of this genus, as well as its more popular one, is said to be derived from the Arabic *ysmyn*. The older English form, Jessamine, is one of the most musical of our floral appellations, certainly more so than the modern Jasmine.

CONVÓLVULUS ITÁLICUS.

Italian Convolvulus.

Linnean Class—PENTANDRIA. *Order*—MONOGYNIA. *Natural Order*—CONVOLVULACEÆ.

THE splendour of the flowers of many of the *Convolvulaceæ* cannot but excite a regret that the majority should require, for their successful treatment, a higher temperature than can be obtained in the open air in this country. But, although the hardier members of the tribe are undoubtedly eclipsed, both in numbers and beauty, by the tropical species, they nevertheless include some highly interesting subjects, which nothing but the undeserved neglect with which our hardy plants are treated by most Florists can have prevented from becoming universally diffused. The pretty annual *Convolvulus tricolor;* the *Pharbitis hispida*, better known by its popular name of Major Convolvulus; the great Bindweed, *Calyste giasepium*, and the double Chinese Bindweed, *C. pubescens*, are all that can be said to be at all common, out of at least twenty or thirty species more or less available. The perennial section of the genus Convolvulus especially affords

several ornamental subjects, combining showy flowers, with foliage remarkable for its elegance, of which the *C. althæoides* and the *C. Italicus*, figured in our plate, may be taken as the type.

The four genera, *Calystegia*, *Convolvulus*, *Ipomæa*, and *Pharbitis*, by which the Order is chiefly represented in the open garden, resemble each other in their general aspect so closely, that it may perhaps be worth while, before referring more especially to our illustration, to point out the chief distinctions between them. They all agree in possessing the five-cleft imbricated calyx, with segments of unequal size, and the funnel-shaped corolla in one piece, plaited and twisted spirally before expansion, which are so characteristic of this tribe; but differ in the presence or absence of bracts below the calyx, the character of the stigmas, and the number of cells into which the seed vessel is divided. In *Calystegia*—of which the common Bindweed of the hedges offers a ready example—the true calyx is concealed by two large heart-shaped bracts, which in the genus *Convolvulus* are either entirely absent, or comparatively minute, and placed at some distance below the flower. These two genera are further distinguished by their ripe capsule; that of the former is one-celled, whilst in the latter the divisions are two in number; in both the stigmas are more or less linear. In *Ipomæa* and *Pharbitis* the calyx is generally destitute of bracts; the stamens are of unequal length, and the style is terminated in the first-named genus by *two*, and in the latter by *three* or even four stigmas, of a rounded granular form, the cells of the ovary in each genus corresponding in number with the stigmas, and each containing two seeds. By the character of their stigmas alone these two genera are readily known from the preceding ones, and by the number of the stigmatic lobes they are as easily distinguished from each other. The genus *Pharbitis* is of comparatively recent formation, having been separated from the Ipomæas on the grounds stated; but some of the species included in it are still popularly designated as such, as in the case of the Major Convolvulus, which, although a true *Pharbitis*, retains in most catalogues its Linnæan name of *Ipomæa purpurea*.

The *Convolvulus Italicus*—the more immediate object of these remarks—is a herbaceous perennial twiner, of somewhat dwarf habit, not often exceeding, as far as our experience of the plant goes, two-and-a-half or three feet. The leaves vary considerably in their form; near the root they are almost entire at their edge, but higher up present a lobed character, especially at the extremity of the shoots. They are slightly pubescent, but quite devoid of the silkiness present in those of *C. althæoides*, to which this species is allied. The flowers are produced *singly*, from the axils of the upper leaves, on stalks from an inch to an inch-and-half in length; they are of a deep rose colour, and very handsome, and on strong, established plants are developed in considerable numbers through the months of

July and August. It differs from the *C. althæoides*, not only in the absence of the silky hairs which characterise that species, but also in its upper leaves being less deeply lobed; the peduncles of *althæoides* are, further, *two*-flowered, and the blossoms rather smaller than in *Italicus*. It is a native of the Mediterranean regions, occurring both in Egypt, Algiers, and Italy; but is, nevertheless, sufficiently hardy to endure exposure in nearly every part of Great Britain, if the precaution is taken of covering its roots with a little dry material, such as furze or fern, in the severest weather. It should be grown in a warm sheltered border, of light friable soil; and as its roots penetrate deeply, and are liable to be broken by removal, they should not be often disturbed. We have somewhere seen it stated that this species produces seeds, but with us it has never done so, nor have we ever been able to procure any through the Seedsmen; we are, therefore, disposed to regard this statement as erroneous, at least, with reference to ordinary seasons. It may, however, be easily increased by division of the roots in autumn after flowering, or in spring, just as the plant commences its growth.

We have figured this species, both on account of its being one of the handsomest of its class, and one of the most easily procured; but there are several others of equal interest, though far less common. The *C. sericeus*, with silky leaves and pink flowers; the *C. lineatus*, a dwarf trailing species, with pale rose-coloured blossoms, by some esteemed as a variety only of *althæoides;* the *C. Chinensis*, also pink, and the *C. Malcolmii*, white, are among the best; but only the two first are generally kept by the London Florists. The *C. althæoides*, of which we have already spoken, may be procured in most localities, and may be substituted for the *Italicus*, where this is not within reach. The *C. bryoniæfolius* is an interesting Chinese species, with pink or rose flowers; but, unfortunately, it is rather tender, and therefore generally treated as a greenhouse plant. It might, we think, be tried out-doors, with some chance of success, if covered by a hand-light. There are several pretty annual species, though none of them are superior to the old *Convolvulus tricolor*, and, as they are apparently quite lost in this country, need not be further noticed.

The common Major Convolvulus *(Pharbitis hispida)* we may be excused from referring to; but there are one or two species of this genus which are so interesting, and so much less cultivated than they merit, that we must find space for their names; we allude to the *P. Learii*, *P. hederacea*, and *P. Nil*. The first is perennial, and needs protection in winter—indeed, it is usually treated as a stove plant in this country; it is, however, quite hardy enough for the open air in summer, especially in warm sheltered localities. The foliage is very large, resembling in form that of *hispida;* from the axils are produced clusters of splendid blossoms, of a dark violet or blue colour, throughout the summer months.

This plant would form a magnificent associate for the *Mandevilla suaveolens;* it is not expensive, and is readily increased by cuttings of the shoots; it requires a strong rich soil, and in dry weather should have occasional doses of liquid manure. Its roots must be removed from the ground at the end of October, and preserved in a pot in a greenhouse or frame, to which frost has no access, or even on a window, with other dormant plants. In the north of France, where the climate is in no degree warmer than that of the southern English counties—perhaps even less so—this fine plant is pretty generally employed for covering arbours and trellises in summer. The *P. hederacea* is an annual species, about as hardy as *hispida*, with lobed ivy-like foliage, and glossy flowers of the purest blue, producing a charming effect. It only requires to be sown early in May, where it is to bloom, in light rich soil. It is the *Ipomæa hederacea* of the Seedsmen, but appears to be less generally kept than formerly, though none of the annual species better deserve a place in their catalogues. The *P. Nil* is rather more tender, and must be raised on a hot bed. It is of dwarfer growth than *hederacea*, and its flowers are of a deeper blue. To these may be added the *P. barbigera*, with cordate entire leaves, and blue flowers, the calyx of which is armed with long spreading hairs, in tufts; and the *P. discolor*, a very beautiful plant, with white flowers divided by blue bands, terminated by an eye-like spot of a deeper shade. We had hoped to have been able to recommend the beautiful *P. limbata*, recently introduced by Messrs. Rollison from Java, as a half-hardy plant for the borders, but it proves to be too tender for exposure, requiring, indeed, a stove heat for the proper expansion of its flowers.

Most of the true Ipomæas are too tender for the open air, and of the few hardy species scarcely any are procurable. The *I. mutabilis*, *I. tamnifolia*, *I. lacunosa*, and *pandurata*, may all be grown when they can be procured. The plants formerly known as *Ipomæa coccinea* and *I. quamoclit*, both with scarlet flowers, are now termed respectively *Quamoclit coccinea* and *Q. vulgaris;* the latter is the most shewy species; it differs from the former in having pinnatifid leaves, and flowers usually solitary. They require to be raised on a good hot-bed, and to be planted out in May in a warm border.

We must revert for a moment to the *Convolvulus Italicus*, for the purpose of explaining that it is more generally known to the Florists by the name of *C. Sibthorpii*, under which designation it appears to have been introduced some years since, by Messrs. Low of Clapton. The true *C. Sibthorpii* is a less interesting plant, with pale blush-coloured flowers. The name of the genus is appropriately derived from *convolvere*, to twine.

ASTER SIKKIMÉNSIS.

Sikkim Starwort.

Linnean Class—SYNGENESIA. *Order*—SUPERFLUA. *Natural Order*—COMPOSITACEÆ.

AMONG the ornamental plants contributed to our gardens by this vast Natural family there are not a few whose claims to attention are founded less on the size or splendour of their individual blossoms than on their collective effect and the neatness of their growth and appearance. Of this number is the *Aster Sikkimensis;* we can hardly, with propriety, term it a brilliant plant, but it recommends itself by the breadth of colour presented by its compact corymb of flowers, by its comparatively dwarf habit, and the early season at which it blooms.

It is a herbaceous perennial, growing about three feet high, with erect, rather robust stems, tinged with reddish purple, and much branched near the summit. The leaves are of a narrow lanceolate form, sessile pointed, spinosely toothed, and occasionally stained with purple at the tip and margins. The flowers are numerously produced in close corymbs, each flower-head being about three-quarters of an inch in diameter, with the disk of a clear yellow, tinged occasionally with red, and the ray of a blueish purple. It blooms in June and July, and the popular name of Michaelmas Daisy, applied to some of the plants of this genus, is therefore in this case inappropriate. If late flowers were desired, we have no doubt, if the first shoots were removed in spring and abundance of moisture supplied, that others would be produced which would bloom in autumn, and the same expedient may be successfully resorted to in the case of hundreds of herbaceous plants. Its culture is of the simplest character in ordinary garden soil, or in a mixture of sandy loam and peat or leaf-mould, and it may be increased by division of the tufts, or by seeds which ripen freely. As its name implies, it is a native of the Sikkim Himalayah, at an elevation of ten to twelve thousand feet, whence it was introduced to the Kew Gardens a few years since. It may now be procured of all the leading Florists at a cheap rate. The shrubby stems of this plant have a pleasant fragrance. Our figure represents but a very small portion of the large corymb of flowers.

The botanical features of the genus *Aster* are an involucre composed of several rows of imbricated scales, the lower ones somewhat scattered; a naked receptacle; and a fruit crowned with several rows of *pappus* or bristle-like hairs of a simple character, that is, devoid of teeth or ramifications. Our artist has depicted one of the tubular florets of the disk or central portion of the

species figured, as well as one of the ligulate florets constituting the ray; in both cases, the pappus will be seen crowning the ovoid one-seeded dry fruit, which, never opening, is termed an *achenium*.

We very recently noticed some of the most desirable species of this genus (see page 140), and need not therefore do more than refer our readers to the article in question. To those there named we may add the *A. puniceus*, an autumnal flowerer, with fine rosy purple blossoms, forming an elongated panicle on stems four to six feet high; the *A. demissus*, a variety of the preceding, differing chiefly in its much dwarfer habit; the *A. spurius*, with stems from three to four feet high, and showy purplish blue flowers; the *A. argenteus*, a half shrubby species, of dwarf habit with foliage covered with silky-white hairs, and handsome purple flowers produced singly at the ends of the shoots; and the *A. Californicus*, with very large flowers of a pale violet, solitary as in the preceding species. The two latter are somewhat rare in this country, but are well worth the trouble of enquiring for; they are increased by cuttings, and in very severe winters may need a slight protection.

AUTUMNAL GLEANINGS.

If there be one season of the year in which the amateur of hardy plants might be thought to be exposed to a disadvantageous concurrence with the cultivator of the more fashionable half-hardy bedders, that period is undoubtedly the autumn, in the early part of which at least the Geraniums, Verbenas, and other plants of this class are in the zenith of their glory. But, although this impression is to some extent correct, we yet hope to shew, that the number of interesting autumnal bloomers of a hardy character is much greater than is usually supposed, and that many of them will suffer little by comparison with the most brilliant of the tenderer occupants of the parterre.

As a first confirmation of this position, we may cite the beautiful *Veronica Andersonii*, a plant in every way remarkable, as well for its intrinsic merits as for the illustration it affords of the results possible from the art of the hybridiser. Most of our readers are aware that this plant is a hybrid between the shrubby evergreen *V. speciosa*, and the *V. salicifolia*, both from New Zealand it is, however, far superior to either, its handsome shining elliptical foliage, and large spikes of clear violet-blue flowers, which become ultimately white, combine to render it the Queen of the Veronicas. The blossoms are slightly fragrant, and are produced from August up to the arrival of severe weather.

It is much hardier than its parents, and is easily cultivated in light loamy soil, as well as readily increased by cuttings. The *Asclepias tuberosa* is a hardy perennial of some value among autumn flowers, and far more desirable than the taller *A. Syriaca* commonly met with; its flowers are of a bright orange tint, and very showy; any soil suits it, but sandy loam and peat are best. The *Gaura Lindheimerii*, though not strictly a hardy plant, may be named in the present group; its white flowers are very abundant, and produce some effect; it is only suitable for the back of the borders as it grows five feet high; its roots should be dug up and potted, or cuttings may be taken and preserved from frost through the winter; with us it has always been destroyed when left exposed. The *G. biennis* is hardier, and we think almost, if not quite, as desirable. The old yellow-flowered *Salvia glutinosa* makes a considerable display in August and September; just before expansion the flower buds are of rather a deep yellow, but when fully developed are paler; the spikes are often from eighteen to twenty inches or more long, and the plant is very hardy in any soil, and easily increased by slips and cuttings. The new *Pentstemon Themesterii* proves to be a late flowerer, and is an ornamental plant; it seems likely to attain the height of three feet, and has a smooth succulent stem tinged with red, and covered with a delicate bloom; the leaves are of a dark green, and deeply cut, and are among the handsomest of the genus; flowers of a rosy purple colour, in lateral and terminal panicles; we believe it is quite hardy, but it has not been yet exposed by us.

The *Anemone Japonica*, and its hybrids, with *vitifolia*, are valuable autumn flowers, especially in moist soils, in which they grow rapidly, and bloom most abundantly. The brilliancy of their flowers might, we doubt not, be greatly increased by crossing with the scarlet *A. coronaria*, and the experiment is worth attempting; late flowers of the *coronaria* may easily be had by planting roots of it about the end of May. The Bell-worts are most of them summer bloomers, but two of their number must be classed with autumnal plants. The first is the *Platycodon grandiflorum*, with fleshy roots, erect stems about eighteen inches high, with sessile ovate leaves, and large solitary flowers terminating the branches; they are of a beautiful blue tint, of a flattened cup-like form, and among the largest produced by the Bell-worts. It is perfectly hardy, and increased either by seed, or division of its roots, also by cuttings. There appear to be two varieties of this plant, one flowering at a much later period of the autumn, and of a dwarfer growth, and we believe that, by some Botanists, they are considered as two distinct species. The early variety is the best. There is also a fine double white-flowered variety, which is very showy, and lasts long in bloom; they appear to enjoy a vegetable soil. The other member of the same Order to which we have referred, is the

Symphiandra pendula, a very dwarf plant, producing large flowers in some abundance, which would be showy if of a clearer and less ambiguous tint; they are neither white, cream, nor yellow, but a sort of mixture of all three tints. The Phloxes are second to none of the autumnal flowers in beauty, several of them, indeed, occupy the first rank. Not to speak of the numerous hybrids recently obtained, it will be sufficient to name the *P. decussata* or *acuminata*, with large panicles of rosy-lilac flowers, with an eye of a deeper tint; the *P. paniculata*, differing from the preceding chiefly in its smooth foliage, and equally showy; the *P. pyramidalis* (*maculata* of *Linnæus*), with stems spotted with brown, and fragrant flowers of a fine blueish lilac; and the *P. reflexa*, so named from its lower leaves being reflexed, with flowers in compact heads of a pale blueish purple colour. It should be borne in mind that this genus of plants requires a rich soil, frequently renewed, as they speedily exhaust it, and then dwindle if allowed to remain in the same spot. The species we have named will, most of them, succeed very well in town gardens, and even in partially shaded borders.

The common *Hydrangea hortensis* is a highly ornamental plant when well grown, and not, as is too general, thrust into a shady corner. An impression seems to prevail that the Hydrangea will not succeed in a situation fully exposed to the sun's influence, but nothing can be more erroneous. It *does* need an abundant supply of moisture; and in the autumnal months it is pretty sure to get it, whatever may be its situation; but, with this condition fulfilled, it will attain a much larger size, and flower more abundantly in a warm exposure, than in one more shaded, and therefore cooler.

Perhaps the largest number of autumn flowers is contributed by the extensive tribe of Composite plants. A very considerable portion of those named at page 138, under the head of Hardy Composite Plants, are in blossom during the later summer months. The Asters, Rudbeckias, Coreopsis, Achilleas, Liatris, Solidagos, Pyrethrums, Helianthus, and Helenium, are but a few which may be culled for our bouquet. As we have described the best of these in a previous number, we need not do more than refer the reader to it; some others omitted there may, however, be appropriately introduced. The *Boltonia glastifolia*, a plant growing from three to five feet high, with a large panicle of white flowers with a yellow disk, is one of these; they are often tinged with pale purple. The *B. asteroides* is dwarfer, and has narrower leaves; its flowers, too, are rather smaller, but of the same colour. Both species are quite hardy herbaceous plants. The *Pyrethrum uliginosum* is of some interest; its flowers are large and white, with a yellow centre, and blooms later than most of the other species; quite hardy, and increases fast by its underground runners. The *Helenium autumnale* is another fine hardy plant for the back of the border or shrubbery, being of tall growth; its flower-heads disposed in corymbs, are of a fine yellow,

produced often as late as November. Almost any soil or exposition suits this plant, and division of its roots furnishes an abundant increase. The *H. Californicum* is a dwarfer species, with decurrent foliage. The *Silphium laciniatum* is interesting for its foliage, which is elegantly pinnated, the leaflets being deeply cut; its habit is tall, *i.e.* from five to six feet high, and its yellow blossoms somewhat resemble those of the Sunflowers; but it is a handsomer plant. The *Helianthus atro-rubens*, *mollis*, and *angustifolia*, may, however, fairly claim admission into the borders; they are less common than some other species, but more desirable.

Two of the plants figured in our plate for the present month, the *Cyananthus lobatus* and *Convolvulus Italicus*, are autumnal bloomers, and, as their figures will testify, by no means the least interesting; being fully treated of in another place, we need not do more than register them among our 'gleanings'. And to these we may add the pretty *Plumbago Larpentæ*, which, although often treated as a half-hardy plant, may yet be classed with the hardy perennials, if grown in light dry soil, and a warm exposure; its violet-blue flowers are rather delicate, and liable to injury from the heavy rains of autumn. As a companion plant, we may name the now common *Zauschneria Californica*, which is of a hardier character, and, when well grown, very showy. It requires a friable, moist, vegetable soil, one which its roots can easily penetrate, and from which they can obtain abundant nutriment; in dry soils its flowers are few and small and the shoots become naked near the ground. That old favourite, the *Clematis flammula*, is now loaded with its fragrant starry flowers, which scent the air with their delightful perfume; our plant was in full bloom this season as late as the beginning of October, owing probably to its having received a severe pruning late in spring. The *Physostegia Virginiana* and *P. imbricata* are interesting hardy plants, blooming in August and September after the *P. speciosum*, which they resemble, but have their flowers arranged in a closer spike—those of both are of a reddish lilac; they are rather tall plants, and increase fast by their suckers. We may, without impropriety, include the more shewy *Salvia fulgens*, which, though nominally tender, is quite hardy in most localities; even the last severe season left our own specimens perfectly unscathed, as well as others in soils less favourable to the preservation of the roots.

A considerable number of hardy bulbs enliven the borders in autumn; they include, indeed, among them some of the finest of our bulbous plants. The handsome *Bomarea acutifolia*, figured in the first plate of the present volume, blossoms at this period, as well as the *B. hirtella*, a species scarcely inferior to it. The *Amaryllis lutea*, or *Sternbergia lutea*, as it is now more generally termed, is very effective in a clump of several bulbs; they each produce one large bright yellow flower, on a scape four or five inches high. This plant is also

known as *Oporanthus luteus*. The *A. Belladonna* is less hardy, and has the disadvantage of producing its flowers before the leaves, but its umbel of large, fragrant, rose-coloured blossoms is very ornamental. It should be planted six or eight inches deep, in a warm border of light sandy loam, and its leaves, which appear in spring, will then require a little covering in severe weather; the bulbs should not be often disturbed. The *Tritoma uvaria* is a splendid ornament of the borders in August and September. Although from the Cape, it will resist our winters if planted in dry sandy soil, in a warm exposure. We are acquainted with no bulbous plant more worthy attention than this handsome Lily-wort; the colour of its flowers is brighter than that of *media*, which is, however, almost equally beautiful, though blooming later in the season it is more liable to suffer injury from frost.

Some of the species of *Oxalis* are now in bloom, of which the best is *Bowei*, with large obcordate leaflets, and crimson flowers; with us it is quite hardy. The *Colchicum autumnale*, and its variegated variety, are now very showy in clumps, though their leaves do not appear till spring; they are of the easiest cultivation in any light soil. The *Bulbocodium autumnale*, now often termed *Merendera*, is a smaller plant producing a single lilac purple flower, accompanied by its leaves, which are linear and spreading. Some of the later flowering *Gladiolus* must be added to our list of autumn flowers, especially the varieties of *Gandavensis*; when the bulbs are allowed to remain in the ground through the winter, they will often flower as early as July or the beginning of August, but when not planted till March or April, they do not usually bloom before the beginning of September.

Besides the foregoing plants, and some others which, yielding their flowers only at the end of the season, are more especially entitled to the distinction of autumnal bloomers, many of those named in our previous groups will yet be found in flower. The *Ænothera taraxicifolia* and *prostrata*, the Pentstemons and Chelones, *Salvia canadensis*, and *rosea*, *Stenactis speciosa*, *Linum monogynum*, the *Crucianella stylosa*, and others, which may be said to have inaugurated the floral season, still contribute a blossom or two to swell the number of our Autumnal Gleanings.

NOTICES OF NEW OR RARE PLANTS.

Aquilegia Formosa. *(Ranunculaceæ.)*—This species appears to have been introduced into this country at least twenty years since, but it is still but little known, though one of the handsomest of the genus. Its habit is rather dwarfer than that of the common Columbine, but its flowers are quite as large; the petals are of a bright yellow tint; the calyx and spurs of a distinct vermillion

red. It approaches the *A. canadensis*, but is a much finer plant, and larger in all its parts. We believe the true species may be had of Messrs. Henderson of the Pine Apple Nursery.

Berberis Nepalensis. *(Berberidaceæ.)*—Another fine species of this handsome genus of evergreens, from the Himalayah. It belongs to the section with pinnated foliage, formerly termed Mahonias. It is a strong growing shrub, with leaves often fifteen inches in length, composed of from five to seven pairs of pale green glossy leaflets, three to four inches long, with a terminal one usually rather longer. Its foliage alone would render it a great acquisition, but it is still more remarkable for the profusion of its deep orange-yellow flowers, which are produced in long spikes, collected into fascicles at the extremities of the shoots. Like the beautiful *B. Darwinii*, it is of the easiest propagation, by cuttings of half-ripened wood, and flowers freely when only a few inches high. It is perfectly hardy in this country.

Calceolaria violacea. *(Scrophulariaceæ.)*—A beautiful addition to this interesting family, likely to prove quite hardy in this country, being from the South of Chili. It is of shrubby habit, with evergreen foliage, and flowers of a violet blue, spotted with yellow; the form of the corolla differs from that of most other species, the two lips being nearly equal in size, and representing an open mouth, on which account it has been proposed to separate it from the genus *Calceolaria*, under the name of *Jovellana*. It will, probably, prove of value for hybridizing, its colour being very unusual in the genus, if not hitherto unknown. It will, we believe, be offered for sale in the coming spring.

Gladiolus ringens. *(Iridaceæ.)*—We are not sure that this interesting plant is altogether new to this country; but it is so little known, that, probably, many of our readers will now first learn its name. Its flowers are less brilliant than those of some of the recent hybrids, but they are remarkable for their singular tints. In its habit it resembles the commoner species, and its flowers are fully as large; they are of a fine greyish blue at the base, streaked and spotted with reddish violet, the tips of the segments being of a much lighter shade, and marked on their inner surface with a longitudinal band of deep yellow. Its blossoms have the additional merit of yielding a pleasant violet-like fragrance. It appears to be a native of Port Natal, and is, probably, as hardy as the common *psittacinus* from the same locality. There can be no doubt, that, with a little attention, this plant would give rise to many new and striking varieties. Mr. Carter of Holborn imported bulbs of it last season; and he may, probably, be able to supply it this autumn also.

Prunus incana. *(Rosaceæ.)*—A very pretty shrub from the southern steppes of Russia, bordering on the Caucasus. It grows from four to six or eight feet high, with long slender branches covered with an ash-coloured bark, the shoots in their early stages being more or less pulverulent. The leaves are lanceolate, toothed, and from one to two inches in length, clothed beneath with a white cottony tomentum. The flowers are small, but very numerous, produced in sessile pairs along the previous year's wood, of a bright pink colour, and are succeeded in summer by an abundance of berries, of the colour and size of the Holly fruit. It is perfectly hardy, and easily increased by seeds or layers, or it may be grafted on the more common species. Although belonging to a fruit-bearing genus, it can only claim notice as an ornamental shrub.

THE HARDY PALMS OF THE HIMALAYAH.

The occurrence in certain geological strata of the European continent of fossil plants of the Palm, and other allied forms, supposed to require for their existence a tropical temperature, has led

to the conclusion that, in the earlier periods of the earth's history, a much warmer climate obtained in these latitudes than at the present day. This theory has recently received a formidable blow in the discovery by Dr. Madden among the mountains of Kemaon, a Himalayan province bordering on Nepaul, of several fine species of Palm, together with Bamboos, Plantains, and other arborescent monocotyledonous forms hitherto supposed to be confined to the tropics. Apart from the interest attached to these discoveries in connection with the geological hypothesis to which we have referred, their importance in a horticultural point of view is so great, that a slight sketch, in Dr. Madden's own words, of a few of the plants in question, will doubtless prove acceptable to some of our readers.

The species most likely to prove quite hardy in this country, and therefore the most interesting, is the *Chamærops Khasyana*, which is found at an altitude of from seven to eight thousand feet amidst luxuriant forests of Oaks, Hollies, Maples, and many other species of evergreen and deciduous plants of a hardy character. It occurs in immense numbers, usually in groups, and varies from thirty to fifty feet in height, the stipe (as the trunks are termed botanically), being crowned by a large tuft of elegant fan-like fronds. At the height of six feet from the ground, the stems are generally about two feet in circumference, but are of larger diameter near the summit. The flowers show themselves in April and May, and the fruits, which resemble in form and size those of the olive and are of a blue colour, ripen in October. In the localities where this species occurs, the summers are rather warmer than those of London, but the winters, are very severe, the ground being usually covered with snow from the end of November to March; and, as Dr. Madden expresses his belief that nothing but the absolute barrenness of the upper portions of the mountains where this species occurs, prevents it from growing at a higher, and consequently, colder elevation, there can be little doubt that it would flourish in the open air in this country. At a rather lower elevation is found the *Phœnix sylvestris*, or Wild Date of India, the sap of which is so largely employed for the manufacture of sugar. It occurs in two forms, one arborescent, often reaching the height of forty or fifty feet, the other dwarfer, and almost stemless, to which the name of *humilis* has been given. They occur occasionally as high as six thousand feet above the level of the sea. Two thousand feet lower the magnificent *Wallichia oblongifolia* is found, forming thick tufts destitute of any visible stem; it will probably be too tender for this country.

The only other plant which we can now find space to notice is the *Arundinaria utilis*, allied to the true Bamboos, which it greatly resembles. It is met with at elevations of from seven to nine thousand feet in tufts, the stems of which are commonly from twenty to forty feet high, presenting a magnificent appearance. Like the true Bamboos, this plant rarely flowers or ripens its seed; and when this does happen, the stems perish and fall. The wood, though light, is very solid and durable, and is employed for almost as many purposes as the Bamboo itself; the native name of this species, *Deo Ningala*, or Divine Ningala, is sufficient to shew the estimation in which it is held in India.

A species of Plantain occurs abundantly in the eastern Himalayah to the north of the province of Assam, often at an elevation of seven thousand feet, and also in the province of Kemaon, at a lower altitude. The plants we have named constitute but a small portion of those detected by Dr. Madden, but they will be sufficient to prove the importance of his discoveries, both in an œconomical and horticultural point of view. We ought to add, that one species of hardy Palm occurs in China which has already stood the test of the climate of Great Britain, and a dwarf species, the *Chamærops humilis*, or Fan Palm, is found in Italy, though the latter is of comparatively little interest.

PHARBÍTIS LEÁRII.

Mr. Lear's Pharbitis.

Linnean Class—PENTANDRIA. *Order*—MONOGYNIA. *Natural Order*—CONVOLVULACEÆ.

WE have, on more than one occasion, called the attention of our readers to the claims of this noble twiner as a summer plant for the borders; but a pictorial recommendation will, probably, prove far more effective than any verbal eulogium we could pen.

It is usually supposed to be too tender for out-door culture, being generally grown either in the stove, conservatory, or green-house, where it makes a splendid appearance, and, as might naturally be supposed, attains a larger size than in the open ground; but, like many other plants formerly grown exclusively under glass, it proves of so tractable a habit, adapting itself to a higher or lower temperature, within certain limits, as circumstances may require, that it may be fairly claimed by Horticulturists of all classes. We do not, of course, affirm that its appearance will be the same whatever may be its mode of treatment; but we have no hesitation in asserting that, with but a small amount of care, it will succeed admirably in the open air, and, if its growth be then a little less luxuriant than under glass, its blossoms are yet so large, and abundant, and of such an unrivalled tint, that it may be justly regarded as one of the most important conquests from the class of tender plants.

The *Pharbitis Learii* is a perennial species, with somewhat fleshy, but not tuberous, roots; in the green-house or conservatory, it will not unfrequently produce shoots thirty feet, or more, long, in a single season; but out-doors they rarely exceed ten or twelve feet, unless in very warm, sheltered localities; besides these principal shoots, which are strictly of a twining habit, others of a trailing or creeping character, and much more restricted in growth, are produced near the ground. The foliage is both elegant and ample; throughout a considerable length of the shoots it is of a trilobate form, as represented in our figure; but near the extremities it assumes a heart-shaped character, resembling that of the Major Convolvulus: both leaves and petioles are clothed with a short pubescence amounting almost to hispidity. The flowers are produced in clusters of three to five each, in the axils of the foliage, and often measure, even on specimens growing in the open borders, two-and-a-half to three inches across: they are of a most beautiful rich violet-blue, a tint not easily represented on paper, the sinuses which divide the corolla into five portions being of a pinkish lilac.

Like those of the common annual *Pharbitis hispida*, and most other species of the genus, the flowers are but short-lived, but they are yielded in such numbers in succession, that a constant surface of the richest colour is presented to the eye through the summer months.

Although the culture of this fine plant is attended with no difficulty, the results will, of course, depend on the amount of care bestowed upon it. The warmest corner of the garden should be allotted it, and, if planted against a wall, it will well repay the favour, though, provided the situation be somewhat sheltered, it may be trained against any of the ordinary supports for climbing plants: such as a verandah, an arched trellis, or even the tall upright pillar commonly employed for the Major Convolvulus. The soil most suited to it is a strong rich loam; where the soil is of an opposite character, or exhausted by cultivation, it would be removed to the depth of one-and-a-half to two feet, and the cavity filled up with a mixture of good loam, with one-third of its bulk of thoroughly decayed manure: if this cannot be procured but in a recent state, leaf-mould may be substituted for it. The roots should not be planted out earlier than the middle of May, and, in cold unfavourable springs, the end of the month will be better still. Should frosty nights occur after it has begun its growth, it will be necessary to protect it with a good hand-light, though, when it has once fairly started, its progress is so rapid that this covering will hardly be available. In dry weather water must be freely given, and when in flower weak liquid manure may be applied at short intervals. As it is necessary to remove the roots from the ground in autumn, in order to ensure their protection from frost, it may be planted in a very large pot, plunged to its rim in the border; if without a bottom it will be preferable, as the roots of the plant can then extend more freely in search of nutriment, whilst its absence will be little or no impediment to the extrication of the pot from the ground. It is not, however, strictly necessary that the roots should be preserved through the winter with a large mass of soil about them, but they must not be completely removed from it, nor allowed to become dry. If transferred to an eight-inch pot, and kept at a temperature not lower than 40°, no difficulty will be experienced in preserving them in a sound state until the following spring, when the plant may be turned into a much larger pot, or the open ground, as already explained.

It only remains to remark that, as seeds are rarely produced except under glass, the mode of increase is by cuttings of the principal shoots; those near the base of the plants should not be selected as they produce but few flowers; a light soil, a bell glass, and a good bottom heat, are the requisites to the success of the rooting process. Struck early in summer the cuttings will flower the same season, though less freely than in subsequent seasons. The older plants, however, make by far the finest specimens, and should always be selected for planting out.

The plant is generally kept by the London Florists, and may be procured of them for a moderate sum.

By some authorities the *Pharbitis Learii* is stated to be a native of Buenos Ayres; but by others Mexico is given as its original habitat, which is more probable. The generic name *Pharbitis* is derived from *pharbe*, colour, in allusion to the rich and brilliant tint of most of the species. Having referred to the leading botanical features of this tribe of plants, under the head of *Convolvulus Italicus*, in our previous number, we have thought it unnecessary to notice them on the present occasion. The œconomical and medicinal properties of the Convolvulaceæ are not without interest. The sweet Potato of the tropics, formerly known as *Convolvulus Batatas*, and now as *Batatas edulis*, is a plant of some importance, and is largely cultivated for its roots in many of the South American provinces; even in Europe it succeeds in the open ground—with certain precautions. The roots of many other species yield a purgative resin: the well known Jalap is produced by the *Exogonium purga*, and also by the *Batatas Jalapa*. The European *Convolvulus Scammonii*, a plant indigenous to the Levant, produces the Scammony, so largely employed in infantine disorders.

TROPÆOLUM UMBELLÁTUM.

Umbel-flowered Indian Cress.

Linnean Class—OCTANDRIA. *Order*—MONOGYNIA. *Natural Order*—TROPÆOLACEÆ.

It is difficult to understand how so interesting a plant as the *Tropæolum umbellatum* should have been kept so entirely in the back ground almost from the date of its introduction to the present moment; a figure and description in the leading Botanical serial some years since, and a brief allusion to it in the contemporary publications of the same class, are at present nearly all the popular evidences of its existence. Whether this be owing to any unaccountable caprice on the part of the floricultural public itself, or to a prejudice which those whose province it is to cater for their wants may have conceived against it (and everybody knows that either of these suppositions are quite allowable), we can only guess; this much, however, is certain—that it is in no degree attributable to any want of merit on its part, for, without attempting to exalt this species at the expense of others, it may safely be affirmed that its elegant ivy-like foliage, the

unique umbellate character of its copious flowers, and the warmth and variety of their tints, entitle it to rank among the most interesting of the species yet discovered. It appears to have been first detected by Professor Jameson of Quito, on the mountain Pilzhum, one of the Peruvian Andes, at an elevation of 7000 feet above the sea-level, and was subsequently found in the same locality by Messrs. Veitch's collector. Mr. W. Lobb, through whom it was introduced to this country, in 1846.

It is a fibrous rooted perennial of climbing habit, with smooth, flexuose or zig-zag stems tinged with reddish purple, and alternate foliage of medium size, divided usually into five obtuse oval lobes, which gives it an elegant outline, closely approximating to that of the Ivy-leaf: the petiole is long, slender, and twining; and at its base occur two small stipules, which makes this plant another exception to the character of this genus as originally defined. We may observe, too, that even the common *T. majus* has its first pair of leaves accompanied by these appendages, and it is not at all improbable that, in other species in which they are usually supposed to be absent, they may be present at the same stage of their growth. The flowers are produced in stalked umbels of three to six blossoms from the axils of the leaves on the upper portions of the shoots, and are so abundant that the foliage is almost overpowered; their ornamental effect is chiefly due to the bright tints of the calyx, which is green at the tip, orange-red in the middle, and yellow at the mouth, where it is divided into five blunt segments: the petals themselves are of a dull red colour, and, as is usual in this genus, unequal in size, the three lowest being considerably the largest; the two upper ones, which are hardly perceptible in our figure, are very small and narrow, and all of them have their margins finely toothed.

The height at which it occurs in its native region naturally favoured the supposition that it would prove nearly hardy in this country, and this has been confirmed by actual experiment, Messrs. Veitch having not only grown it successfully in the open ground during the summer months, but left it exposed with impunity through the winter season, though, to be sure, the climate of Devonshire is some degrees warmer than that of the more northerly and eastern counties. Whether it will really endure complete exposure in other places we have as yet no actual proof; but even should its roots require protection from severe frost in winter, which is not improbable, this will scarcely detract from its value as an ornamental plant for the borders in summer. It is no small recommendation of the plants of this genus, that they will not only grow in shady places, and northerly or north-westerly exposures, but in many instances succeed far better in such aspects than in warmer and more sunny ones, and in this respect the *T. umbellatum* is no exception to its congeners. For covering a north wall in airy situations it will prove of considerable

value, the more so that but few plants will yield their flowers, at least, so abundantly, in situations deprived of the sun's influence. It need not, however, be restricted to such exposures, as it does not refuse to grow in any but such as are very dry and hot. It requires the same description of soil as most of the other species—viz., a rather light, and moderately rich friable loam: very sandy soils, as well as those of an adhesive clayey nature, are unsuited to this, or the majority of the Tropæolums. We are not aware whether this species has ripened seed in this country, but it may be increased in the early summer months by cuttings inserted in pots of sandy loam, covered with a glass, and placed in a gentle heat. At most the plants —or rather the roots, for the stems are quite herbaceous—dying down annually, will need only the protection of a frame in winter, at which period they should have but little water, from excess of which they are more liable to suffer than from actual cold.

We have grown, during the past summer, two new varieties of *Tropæolum*, of which some of our readers may be glad to have an authentic account. One of these is the *T. Moritzianum ornatum*, a robust plant of rapid growth, with large smooth peltate leaves, resembling those of *T. majus*, but with a more sinuate margin, the blunt edges of which are tipped with ochreous yellow, to which circumstance the name *ornatum* alludes. These tips are seen to the most advantage when the plant is grown in the open air, as the leaves do not then attain so large a size as under glass. The flowers are very similar in form to those of the *T. Smithii*, figured at page 81 of the present volume, but are not quite so large, and the spur is entirely green; the five sepals are all, more or less, tinged with red, especially the two larger lateral ones, and are streaked with red lines on the inside; the petals are small, and like those of *Smithii*, both in form and colour, being strongly veined with red, and fringed at the edges; they scarcely project from the mouth of the calyx, which is however so wide that they present rather a pretty appearance, but are certainly less showy than some other species. A seedling plant turned into the open border, rather late in the season, grew considerably, but did not flower; others kept in the greenhouse commenced blooming at the end of summer, and will probably continue in flower some weeks longer. We have no doubt it will bloom in the open air, planted out sufficiently early, in situations not too much shaded: and, as the roots are perennial, they would also be likely to flower more freely the second season. It is but half-hardy, and should therefore be potted in autumn. The original *T. Moritzianum* differs from this variety only in the absence of the yellowish spot on the margin of the leaf.

The *T. Sheuermannianum* or *Scheuchzerianum* (for we are uncertain as to the

correct nomenclature, the plant having been exhibited under both names) proves to be but a German variety of the common *T. majus* or Nasturtion, differing only in being of a pale yellow tint, with dark brown spots on the upper petals; it is an ornamental variety, but in no degree more so than many of the common ones; and, like them, it requires to be increased by cuttings, for although seed is abundantly ripened, it does not always reproduce the variety. We observe that one of our contemporaries has stated that it possesses better foliage than the pretty annual *T. aduncum;* as the leaves are of precisely the same form as those of the common Nasturtion,our readers can judge for themselves of the propriety of the statement. The *T. Lobbianum* is an interesting plant, but yields its flowers so late in the season that it can only be recommended for green-house culture. It is very readily raised from seeds, and by frequent 'stopping' through the summer, might probably be made to assume a sufficiently compact form to admit of cultivation as a window plant. Winter flowers are so valuable that the experiment well deserves a trial. The foliage of this species resembles that of the *T. majus,* but, unlike that, is very pubescent; its flowers are of bright orange-red, of medium size, with a greenish calyx tube, and spur, and fringed petals.

For notices of several other valuable species the reader is referred to page 28, Vol. 1, and page 81 of the present Vol.

THE NEW ANNUALS.

Our readers will have observed, that in the several papers we have given in the present Volume on the most desirable plants for cultivation in the open border, little or no reference has been made to the more recent annuals beyond the more list of names at pages 12 and 28. This omission, which was intentional, we will now endeavour to supply. With a few exceptions, there is nothing very brilliant to announce, but the information we may give may not be the less serviceable to our readers.

One of the most interesting of the new introductions of this class is the *Collinsia multicolor:* we have already given both a figure and description of this species, but the former is by no means an adequate representation of its beauty, being much too pale. The flowers are really of a deep purple-lilac; and in the specimens raised by ourselves in spring, this was almost the only tint occurring in them, the speckles in the centre of the white patch on the upper lobe of the corolla being of the same hue, so that the name *multicolor* would seem to be somewhat inappropriate. Its colour may probably vary a little in different specimens: in some of them too the floral leaves or bracts are but slightly tinged with the purple-brown, as shown in our figure. It is, we think, one of the finest of the Californian annuals, and deserves universal cultivation. Of the other species introduced at the same time, the *C. bartsiæfolia,* we can scarcely say as much; indeed, judging from one season's experience, we should think it hardly worth cultivation, and

certainly inferior to the older *C. bicolor* and *C. verna*. We fear that many of our readers may have experienced disappointment with the seed of the new *Salpiglossis coccinea*, which, owing to a most shameless fraud on the part of one of the growers, through whom many of the London Seedsmen obtained their supplies, in many cases proved to be that of the older varieties. After effecting this imposition, the party decamped to Australia with his ill-gotten gain; leaving the Seedsmen to meet, as they best could, the unfair imputation of being accomplices in this deception. In the few instances in which the true seed was obtained, the plants resulting produced flowers of a tint more approaching orange than scarlet, but they are no less beautiful in this character than in their others. We have no doubt, however, that seeds correct to name will be procurable next season.

The white-margined variety of the *Nemophila aurita* proves to be a pretty plant when well grown, but we think it is much less showy than the *insignis* and *maculata*, two species which have obtained a well-merited reputation. The variety termed *atomaria cœlestis* is very interesting, the blue ground of the flower being prettily spotted with white.

Although white flowers are in themselves less effective than those of more brilliant tint, they nevertheless afford a contrast often necessary, and even indispensable in good combinations. The new white *Nolana atriplicifolia* will, on this account, be likely to become a favorite, as it will be found very useful for an edging to beds of the blue-flowered variety, as well as of other dwarf plants of cærulean tint. The white variety of the little *Kaulfussia amelloides* is also very pretty, but is only suitable for the borders, as, like the species, its flowering season is of short duration, though by a succession of sowings it may be had in bloom all the summer. The *Lobelia ramosa* has also yielded a blanched variety of itself, which may be associated advantageously with any of the pretty dwarf blue-flowered species, as well as the true *ramosa;* and, like them, it is perennial when protected from frost in winter, but readily flowers the first season from seeds.

The *Limnanthes rosea* is less showy than might perhaps be supposed from its name; but fine specimens are very ornamental. We say fine specimens, because a good deal of the seed of this plant sold for the two past seasons has been very ordinary, and quite incapable of giving rise to good strong plants. Like the commoner *L. Douglassii*, it does best when sown in autumn: if deferred till spring the seeds should be got in early, while moisture is abundant. It is very hardy. The pure white variety of *Douglassii* is also worth cultivating in large patches.

The *Schistanthe peduncularis* we cannot say much of; it is very closely allied to the Alonsoas, but its flowers are of a pale brick red, and less abundant than in the genus just named. Botanically, its flowers are interesting, but as an ornamental plant it has no claim. The beautiful little *Leptosiphon luteus* we have so recently noticed, that we need only remark that, where it is once grown, it will be sure to win for itself a high character among ornamental annuals. The *Cuphea purpurea* proves to be really a desirable variety when grown in patches of some size, and flowering at the end of the summer, may be employed for filling some of the vacancies left by the early annuals. The plants raised from seed vary considerably in their tint, some of them being a pale rosy purple, and others of a deeper and brighter shade. It flowers very freely for some weeks, and requires to be raised on a hot-bed. Respecting the new orange-flowered Globe Amaranthus, *Gomphrena Hoveyana*, or *superba*, as some of the catalogues have it, there will probably be some difference of opinion, owing to the varying result obtained by different modes of treatment. When grown with sufficient warmth, and in rich soil, it is undoubtedly a handsome plant; but in opposite conditions the flower heads are small and insignificant. They are of the same persistent character as those of the common *G. globosa;* and if cut soon after they are fully developed, they may be preserved in the same manner for a length of time. Some of the new varieties of the brilliant *Calliopsis tinctoria* are remarkably handsome, especially one

termed *marmorata*, from the peculiar marble-like mixture of various shades of rich brown and orange which occur in the flowers. When the seeds are sown in autumn, as they should be when practicable, this and the other varieties will flower the whole summer through, and the blossoms will be larger than in the case of spring-sown plants.

The *Tagetes tenuifolia*, or *signata*, is by no means a new plant, but its singularly elegant habit, and its abundant bright orange flowers, produced for a long period, induce us to make an exception for it; we never knew this plant to be grown without becoming an established favourite, and it is one of the most easily cultivated of all our annual treasures. The curious *Perilla nankinensis*, referred to in an early number of the present Volume, answers most correctly to the description there given of it. Its blackish-purple foliage produces an exceedingly striking effect when surrounded by various shades of green. We have not yet seen the flowers of this plant, but they are small and comparatively uninteresting. The *Monardella undulata* is a recent introduction from California, belonging to the *Labiate* plants; we are not quite sure whether it may not prove perennial, but it flowers the first season, and may therefore be treated as an annual; it grows about one-and-a-half feet high, and has round stems and lanceolate leaves, which, as well as the flowers, have a strong odour of peppermint, or a scent more nearly resembling that than any other; the flowers are blueish, and collected into globular heads, like those of many species of *Mentha;* they make, however, but little show, but the plant may, perhaps, be thought worth cultivating for its aromatic scent. We have grown, as an annual plant, this season, the old *Salvia coccinea*, and venture to recommend it to our readers as well worthy their attention. Its flowers are small, but of a most brilliant scarlet, and a group of seedlings will produce a very pleasing effect in the borders. Sown in March, on a hot-bed, they will flower in July and August in the open borders; the roots are perennial, but require protection from frost. Of the merits of the *Venidium calendulaceum*, our readers may judge from our recent figure of it; the *Arctotis breviscapa* is a closely allied plant, with large orange-coloured flowers, but they are not quite so freely produced as in the *Venidium;* like that, it needs a sunny exposition, and light sandy soil. In our reference to the new white-flowered annuals, we find we have omitted one of some interest, the *Silene pendula alba*, a variety of an old and favourite plant, differing from it only in having pure white flowers. The cream-coloured variety of the *Eschsholtzia californica* may also be appropriately named here; our plants produced flowers so comparatively small, that we hardly feel disposed to say much in its behalf; it is at any rate decidedly inferior to the orange and saffron coloured varieties of this now common plant.

We have, we believe, now noticed most of the annuals introduced during the last two seasons; some others of considerable interest we have reserved for figuring in our next Volume. There is one plant, however, to which we desire at once to call the attention of our readers, and, though an old inhabitant of our gardens, it is a question whether to many amateurs it may not prove entirely new—the *Wahlenbergia vincæflora*, a close ally of the Campanulas, with which it was formerly classed. It is a dwarf plant of slender, branching habit, scarcely exceeding six or eight inches in height, with almost linear and somewhat scanty foliage. The flowers are of a salver-shaped form, with a narrow tube, which gives them some resemblance to those of the lesser Periwinkle, *Vinca minor*, whence their specific name; they are nearly an inch across, drooping before expansion, but afterwards more erect; the upper surface of the flower is a pretty bright blue, the tube and under-side considerably paler. Although a native of New Holland, it may be sown in the open borders, and as the seeds are very small, like those of the Lobelias and Companulas, they should not be covered with soil, but merely sprinkled on a finely prepared surface of sandy loam and peat, which should afterwards be slightly pressed. If preserved in the greenhouse or cold frame, it becomes perennial; but it is so easily increased by seed, which it produces abundantly, that it is, perhaps, best treated as an annual plant.

ORNITHOGALUM ARABICUM.

The Ornithogalums comprise some highly interesting bulbous plants, which we may notice more at length in an early number. At present we will confine ourselves to a recommendation of the species here named, which deserves to be better known as a nearly hardy spring flower. Its bulb is about the size of that of the Hyacinth, but much more dense, and of a dirty white colour. It produces early in the year several long fleshy, pointed leaves, and in April a corymb of large white spreading flowers, each division of which is marked at the base with brown and yellow, and are very ornamental. Being from the Cape, it is not perfectly hardy, but may be grown in the open border with only slight protection in dry sandy loams, and will then flower about May. Our principal motive in now noticing it is, however, to suggest its cultivation as a window bulb, for which it is well adapted. It may be grown like the Hyacinth, either in rather deep pots of light rich sandy loam, containing a fourth of peat soil, or in water in the ordinary Hyacinth-glass, into which the bulb will usually just fit; or it will succeed well packed in a pot of damp moss. It is of little importance which plan is followed; the moss, by completely surrounding the bulb, preserves it in a uniformly moist condition, whilst the ordinary Hyacinth-glass, as everybody knows, exposes the upper surface of the bulb to the drying influence of the air of the room in which it is placed. The moss will require to be frequently moistened, as the upper portion will, of course, soon dry; but, during the early stages of growth, while the roots are forming, the pot should be kept in a cool place, and need not, indeed should not, be removed to the sitting room, until a month or six weeks after planting. The same precaution applies equally to the other modes of growth. We have only to add that the *Ornithogalum Arabicum* is as cheap as could be desired, being procurable at most of the London Seed-shops for about three-pence per bulb—it is at least sold by Carter for that sum. They are best planted for early flowers in October or November, those potted now will bloom rather later. It is scarcely necessary to observe that, after the leaves have fairly commenced their growth, they will require abundance of light, and especially when the flower stalk is thrown up.

IONOPSIDIUM ACAULE.

Under the name of the Carpet-Plant, some of our readers may be already acquainted with this neat little annual. It has received that name, we presume, from the compactness, as well as the dwarfness of its growth, which is such, that, with a little stretch of the imagination, it might be supposed capable of bearing the pressure of the foot uninjured; and a very pretty carpetting it makes for a border. It is not, as its name *acaule* would imply, always stemless, though it is usually so; the small delicate leaves arising on long stalks from the root, and producing from their axils numerous solitary flowers of a white colour, tinged with pale, blueish lilac. It flowers in a few weeks after sowing, and may, therefore, be had in bloom at almost any season. It is perfectly hardy, and makes a very pretty rock-plant, when sufficient moisture is supplied it. It also forms an interesting ornament for the window during the winter and spring months, if sown in flat pans of moist sandy loam, of poor quality. In a warm room the seeds speedily vegetate, so that, sown in the early part of December, the plants would commence flowering about the beginning or the middle of February, according to the temperature. When once plants are obtained, they may be increased by the runners which are thrown out, which will root in moist earth. Most of the leading Florists are able to supply seed; but the reader will do well to bear in mind the fact, that to many it is known only by its old name, *Cochlearia acaulis*, which ought to be discarded. It is a native of Portugal and Spain; belongs to the Natural Order *Cruciferæ*, and derives its name from the supposed resemblance to a violet, though, whether the allusion be to the leaves or flowers, we do not clearly understand.

AMPELYGONUM SINENSE.

Though not remarkable for its flowers, this comparatively recent importation, belonging to the *Polygonaceæ* or Buck-wheat tribe, is likely to prove of interest as a picturesque plant, from the curious tints assumed by the leaves and branches in the autumnal months. Its stems are somewhat shrubby, of a purplish violet colour, and articulated and tumid at the joints. The leaves are, at first, of an oval lanceolate form, almost sessile, and of a clear green. Towards the end of summer, when the sun's power declines and the nights are cool, the plant commences a fresh growth; its young shoots become more vigorous, and assume a deeper purple tint. The foliage undergoes an entire change, both in form and colour; the leaves now produced are sagitate, or arrow-headed, with petioles an inch long, and furnished at their base with a long sheathing stipule; the veins are of a purplish tint, and about the middle of the leaf two distinct zones of colour occur, having the form of an inverted V; the first and innermost zone is purplish brown, about half an inch in width; the second is green, much paler than the rest of the leaf. The young leaves at the extremity of the branches are suffused with purple, but the marks are very apparent. This singular change commences about the month of September, and continues through the following months, until arrested by severe frost, or until the branches have attained their full development, when the leaves assume a uniform green tint. Variegation is commonly supposed to be the result of disease; but, in this instance, the change of colour only occurs at the season when the growth of the plant is most vigorous. The same thing occurs in the well-known *Lamium maculatum*, the white mark or feather characterising its foliage usually disappearing in summer months, especially in exposed situations. The *Apelygonum* is incapable of resisting our winters in the open ground and is therefore termed a green-house plant by most authorities, but it may be grown in the borders during the summer and autumn months.

COLLECT THE FALLEN LEAVES.

We cannot more appropriately conclude the present Volume than by reminding the reader of the value of the Fallen Leaves and other vegetable refuse of the garden and shrubbery. Their mission fulfilled of gladdening the eye by their varied shades of green, or of yielding us a grateful shade from the sun's heat, and their physiological functions performed, they now slowly resolve themselves into their original elements, and become available for a purpose scarcely less important, if less obvious, than that they have hitherto served. The *leaf-mould* arising from their decomposition is a far more appropriate stimulant for many pot plants and bulbs than decayed manure, and, unlike that, may be used at any stage of its formation without injury. It is a common practice to dig in the leaves which fall in the shrubbery, but this should only be done where the supply exceeds the demand: all should be carefully raked together from the borders, walks, and hedges, and be preserved from dispersion in some convenient but partially sheltered corner. We do not think it a good plan to allow the heap to be so exposed that the leaves become quickly decayed; their soluble salts are then wasted away, and little remains but comparatively inert humus: in a more recent state, or when only partially decayed, they are more valuable as an ingredient in composts, and also serve more effectually to keep them open and porous. When practicable, we would advise their being preserved in a large cask or hogshead, which will exclude the worms and other ground insects from the mass, and also enable the decomposition of the leaves to be accelerated or retarded at pleasure.

INDEX.

PLANTS FIGURED.

		PAGE
Abelia uniflora	*to face page*	1
Abronia umbellata	,,	145
Adenophora verticillata	,,	113
Aquilegia alpina	,,	97
Arnebia echioides	,,	33
Aster Sikkimensis	,,	161
Azalea amœna	,,	97
Bomarea acutifolia	,,	1
Bravoa geminiflora	,,	129
Camellia Japonica	,,	49
Chænesthes lanceolata	,,	81
Collinsia multicolor	,,	1
Convolvulus Italicus	,,	161
Cuphea cordata	,,	49
Cyananthus lobatus	,,	161
Cyclobothra alba	,,	113
Diclytra chrysantha	,,	129
Deutzia gracilis	,,	65
Echeveria retusa	,,	49
Forsythia viridissima	,,	49
Fortune's Yellow Rose	,,	1
Funckia albo-marginata	,,	129
Gentiana Bavarica	,,	33
Heliophila araboides	,,	145
Jasminum nudiflorum	,,	161
Lantana Camara	,,	113
Lapageria rosea	,,	65
Leptosiphon luteus	,,	145
Lilium venustum	,,	17
Malva involucrata	,,	65
Meconopsis Wallichianum	,,	17
Melittis speciosa	,,	97
Milla biflora	,,	145
Œnothera speciosa	,,	97
Pentstemon Wrightii	,,	17
Pharbitis Learii	*Frontispiece*	
Primula Stuartii	,,	17
Salpiglossis coccinea	,,	33
Salvia canadensis	,,	113
Skimmia Japonica	,,	1
Soldanella montana	,,	65
Swainsonia Greyana	,,	81
Tropæolum Smithii	,,	81
,, umbellatum	*Frontispiece*	
Venidium calendulaceum	,,	129
Wulfenia carinthiaca	,,	49

PLANTS NOTICED OR DESCRIBED.

	PAGE
Abelias, principal species and treatment	34
Abronia umbellata	153
Adenophoras	115
Alströmerias	4, 44, 158
Ampelygonum sinense	186
Amaryllis aurea, *see* Lycoris	
Anchusas	37
Androsace lanuginosa	19, 126
Anemone Hortensis, the	160
Aquilegias, selection of	43, 103
,, formosa	174
,, Californica	112
Argemones	24
Arnebia echioides	35
Asclepias tuberosa	171
Asters perennial	140, 169
Berberis Nepalensis	175
Bomareas, best species	4
Borage-worts	35
Bravoa geminiflora	133
Bryonia Abyssinica	95
Calceolaria chelidonioides	12
,, violacea	175
Calla Æthiopica as a hardy plant	64
Camassia esculenta	109 156
Camellia, window culture of	55
Cankriena chrysantha	19
Ceanothus verrucosus	13
Chænesthes lanceolata	83
Cheiranthus Marshallii	44
Chlidanthus fragrans	157
Clematis lanuginosa	142
Coleus Blumei	144
Collinsias	2
Comaclinium aurantiacum	45
Convolvulus, hardy species	165
Coreopsis, perennial species	140
Corydalis, nobilis and bulbosa	131
Cupheas	89
Cyananthus lobatus	161
Cyclobothras	113
Daphne Japonica	95
Deutzia gracilis and others	70
Diclytra chrysantha	129
Dodecatheons	19
Echeverias, as window plants	51
Echinacea intermedia	139
Echinops, or Globe Thistles	139
Erythrolœna conspicua	138
Eschsholtzia californica alba	182
Fortune's Yellow Rose	9
Forsythia viridissima	49
Fritillaries	156
Funckias	135
Gaillardias	142
Gaura Lindheimeri	13, 171
Gazania rigens	142
Gentians, culture of, and species	39
Geranium argnteum	127
Gladioli	29, 159, 175
Gymnopsis serialis	143

	PAGE
Heliophila araboides	145
Hesperoscordium lacteum	157
Hollyhocks, list of new	159
Horn-Poppies	24
Humea elegans, culture of	128
Hunnemannia fumariæfolia	24
Hydrangea hortensis	172
Ionopsidium acaule	180
Ipomæas	166
Iris, English and Spanish	159
Ismene Amancaes	157
,, calathina	157
Jasmines, best hardy species	165
Lantanas, open air culture of	120
Lapageria rosea	72
Leptosiphons	147
Liatris, finest species	140
Ligularia speciosa	140
Lilies, a group of	155
Lilium venustum	21
,, Thunbergianum	22
,, excelsum	22
Linaria triornithophora	125
Linum grandiflorum rubrum	13
Lithospermum canescens	37
,, purpureo-cœruleum	37
Lychnis dioica alba plena	127
Lycoris aurea	158
Lysimachia candida	13
Malcolmia littorea	45
Meconopsis Wallichii	24
Milfoil best species	141
Milla biflora	149
Myosotis Azorica	37, 125
Myrica Californica	13
Narcissus, various species	158
Nemesia versicolor	14
Nuttallias	65
Œnotheras	97
Ornithogalum Arabicum	170
Pancratium Illyricum	109, 158
Pentlandia miniata	157
Pentstemon Wrightii	20
,, Themesterii	170
Perilla Nankinensis	64
Petunia Prince Camille de Rohan	95
Phloxes	172
Phædranassa chloracra	80
Pharbitis Learii	177
,, hederacea	168
Pittosporum Tobira	127
Platycodon grandiflorum	171
Poppy-worts	24
Potentilla striata formosissima	95
Primula Stuartii	18
,, Sikkimensis	18
,, involucrata	19
Prunus incana	175
Pulmonarias	37
Rose, Fortune's Yellow	10
Rudbeckias, species of	139
Salpiglossis coccinea and others	41, 183
Salvia azurea	119
,, coccinea	184
,, glutinosa	171
,, hians	118
,, var. plectranthifolia	45
,, nemorosa	118
,, rugosa	118
,, verticillata	118
Sandersonia aurantiaca	95
Silene compacta, culture of	143
Skimmia Japonica	1
,, rectification on	69
Soldanellas	67
Swainsonias	83
Symphiandra pendula	172
Telekia speciosa	139
Tritoma uvaria	174
Tropæolums	81, 180
Veronica Andersonii	170
Weigela lutea	143
Wulfenia Carinthiaca	58

MISCELLANEA.

Ants, to destroy, in frames, etc.	96
Aquatics, hardy, List of	75
Autumnal Gleanings	171
Bedding plants, List of	59, 78
Bouquet, a July	124
Bulbs Hardy, a group of	157
Cape Bulbs, treatment of	29
Collect the Fallen Leaves	186
Composite Plants.	138, 172
Dahlias, best new varieties	47
Diclytra *v.* Dielytra	128
English and Tropical floras contrasted	14
Florists' tricks	16
Formation of Wood by Root Buds	47
Fumigation by Tobacco and Cayenne	48
Half-hardy Annuals, List of	26
Hardy Annuals ,,	11
,, Bulbs, a group of	157
,, Composite Plants	138, 172
,, Palms of the Himalayah	175
Hogg's Edging Tiles	46
Hot-bed, construction of	31
Malvaceous plants	65
Oak Tribe, distribution of	31
Our June Flowers	107
Rhododendrous Sikkim, flowering of in England	144
Roses, new mode of budding	112
Seed sowing	48
Trellis plants	122
Ventilation of Greenhouses, &c.	63
Winter of 1852, effects of	92

J. M. BURTON AND CO., PRINTERS, IPSWICH.

WELLCOME LIBRARY

THE ENGLISH FLOWER GARDEN