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BRITISH BOTANICAL SOCIETY

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PAXTON'S

MAGAZINE OF BOTANY,

AND

REGISTER OF FLOWERING PLANTS.



"Flowers of all hue."

VOLUME THE THIRD.

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TO HER GRACE

THE DUCHESS OF NORTHUMBERLAND,

This Third Volume

OF

THE MAGAZINE OF BOTANY

IS,

WITH PROFOUND RESPECT, AND BY HER GRACE'S KIND PERMISSION,

MOST HUMBLY DEDICATED,

IN TESTIMONY OF

THE UNBOUNDED PATRONAGE GIVEN TO BOTANY AND GARDENING, FOR A LONG SERIES
OF YEARS, BY THE NOBLE HOUSE OF PERCY:

BY

HER GRACE'S MOST OBEDIENT HUMBLE SERVANT,

JOSEPH PAXTON.



ADVERTISEMENT.

A TASTE for Botany and Gardening has made rapid strides during the past year; the extensive circulation of botanical works written in a popular form having, no doubt, very much assisted in giving a stimulus to this delightful pursuit.

The steady increase in the circulation of the MAGAZINE OF BOTANY, is a gratifying assurance that the work has been conducted to the general satisfaction of the Public.

The plants most in esteem now by the scientific Botanist are unquestionably Celestial *Orchideæ*; but these plants, we are quite aware, are in general cultivation with but few of our Subscribers; we have, therefore, figured only a very few, though perhaps we possess the advantage of doing so to as great, or perhaps greater extent, than any other Botanical Periodical: the object of this work has been to give figures of such plants only as are worthy of general and extended cultivation, and not of those whose chief recommendation is that they are new and curious.

To ensure the earliest information respecting new and valuable plants, and the best way of managing both new and old in the vicinity of London, we have employed an experienced Florist, whose sole occupation is to go from Nursery to Nursery, and to private gardens, to collect every useful fact, which will be embodied monthly in the Magazine. This is an advantage which no other Botanical or Horticultural Work can lay claim to; and in this, and in every other way which may occur to us, we shall constantly endeavour to render the Magazine more and more useful and valuable.

CHATSWORTH,

December 20, 1836.

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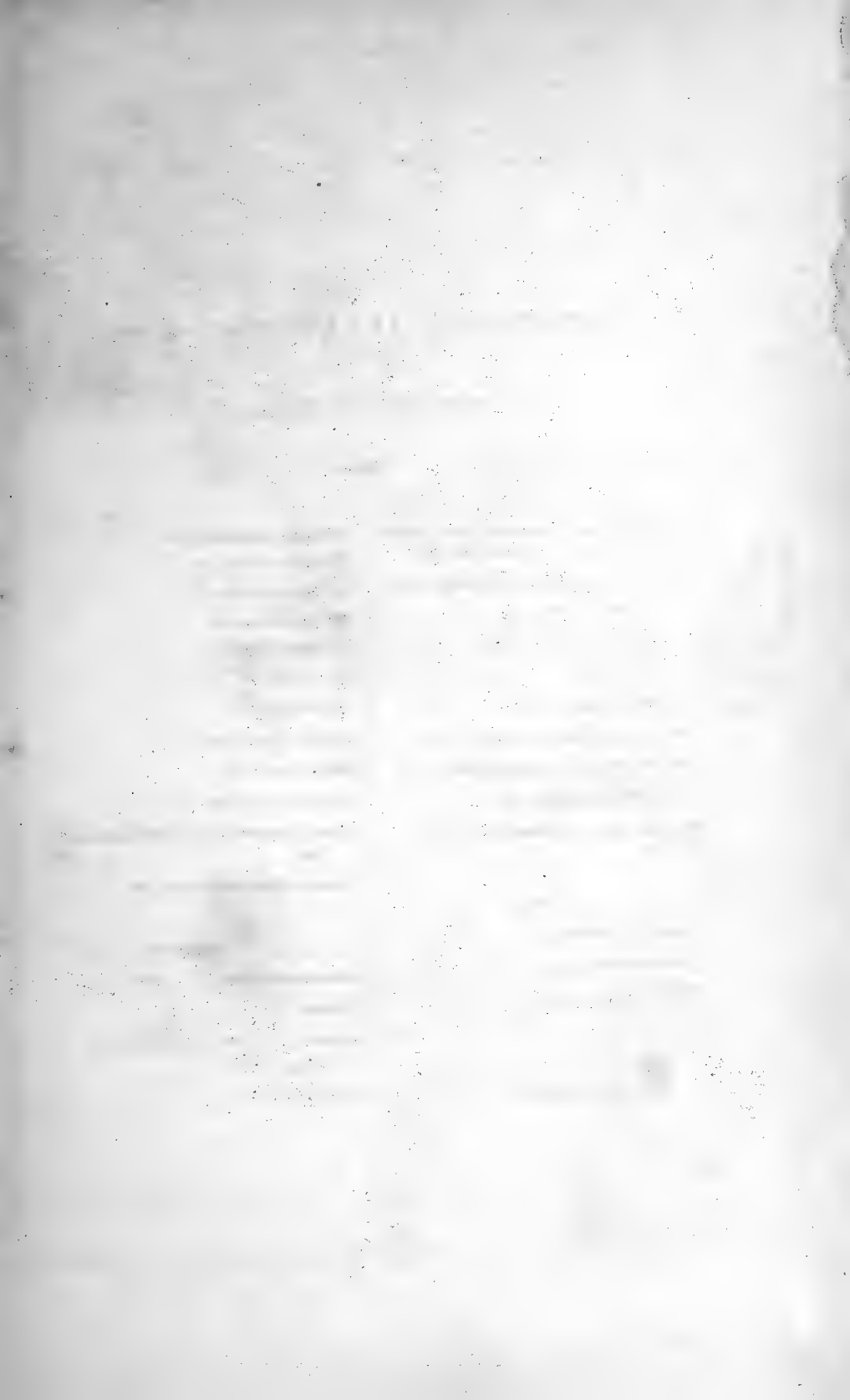
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Solanum Crispum.

SOLANUM CRISPUM.

(CURLLED NIGHTSHADE.)

CLASS.
PENTANDRIA.

ORDER.
MONOGYNIA.

NATURAL ORDER.
SOLANEÆ.

GENERIC CHARACTER.—*Calyx* five-parted, persistent. *Corolla* wheel-shaped, five-lobed, plaited. *Berry* of two cells. *Seeds* many.

SPECIFIC CHARACTER.—*Plant* a shrub, growing to upwards of twenty feet high. *Stem* smooth, very branching; branches, when young, bright yellow-green; when older, light brown. *Leaves* ovate and obcordate, waved, curled more or less, according to the situation in which the plant grows, and vigour of growth; in our specimen very little curled, rich green on the upper side, paler beneath. *Flowers* corymbose, very showy. *Calyx* green, five-cleft, acuminate. *Corolla* five-lobed, lobes obcordate, blunt, waved, and slightly curled. *Stamens* five. *Anthers* orange-yellow. *Berry* two-celled.

THE rich purple-blue flowers of this plant are produced in corymbs, and if the plant is trained against a wall makes as fine a show as the *Glycine Sinensis*, and continues in bloom a long time.

It is a native of Chiloe, where it was found growing by Mr. Anderson, who introduced it to this country in 1824. It was also discovered by Ruiz and Pavon.

The plant grows freely in any common garden soil, and is nearly hardy, merely requiring a slight shelter in very severe weather. It is increased by cuttings which strike readily planted in light soil under a hand-glass.

For our drawing we are indebted to Mr. Lowe of Clapton, in whose nursery it may be seen growing to perfection, and of whom it may be purchased.

It may also be obtained at other nurseries round London, and many in the country, as Messrs. Fisher and Holmes, Sheffield, &c., at a moderate cost.

The generic name is derived from *solari*, to console and comfort; and the specific name *crispum*, from the slight curling of the leaves and flowers.

ARISTOLOCHIA TRILOBATA.

(THREE-LOBED BIRTH-WORT.)

CLASS.

GYNANDRIA.

ORDER.

HEXANDRIA.

NATURAL ORDER.

ARISTOLOCHIÆ.

GENERIC CHARACTER.—*Calyx* none. *Corolla* monopetalous, tubular, bellying at the base. *Germen* angular. *Capsule* six-celled and six-valved. *Seeds* many.

SPECIFIC CHARACTER.—*Plant* a twining shrub, growing from six to ten feet high. *Stem* smooth, slender, twining, yellow-green, slightly tinged with purple. *Leaves* cordate, three-lobed, smooth, dark-green on the upper surface, paler beneath, lobes obtuse. *Flowers* on thick twining peduncles. *Corolla* cylindrical, at the base formed like a bag; extremity broken, lip cordate, cuspidate, extending to the length of six inches or more, dark brown, tinged with yellow, base green.

SYNONYMS.—*Aristolochia trifida*—*Lam. Encyclop.* 2. 249.

THIS species is a native of South America, where it grows in damp woods, and whence it was introduced in 1775. It is a stove climber of no mean appearance, growing freely, with little trouble, in a mixture of sandy heath mould and rich loam.

The plant from which our drawing was made flowered in the nursery of Messrs. Young of Epsom, and continued in bloom for a long time, for although the flowers are very fugitive there is a constant succession all the latter end of the summer.

Some of the species emit a very disagreeable odour, and indeed the scent of the whole is rather unpleasant. Yet, from the singular forms and colours of the flowers, almost all the kinds deserve a place in every hot-house, and perhaps none has greater claims than the present subject.

The plant strikes readily from half-ripened cuttings, planted in sand under a bell-glass, and plunged in a little heat.



The whole of the genus were formerly very popular for medicinal purposes, whence the name *Aristolochia*, or Birth-wort; indeed, the *A. serpentaria* (figure) is still used, and the roots, which are the parts used, may be purchased of the chemists.

Snake Root (*Aristolochia serpentaria*); *a*, the flower; *b*, section of the same, showing the situation of the stamen and pistils; *c*; *d*, the stamen attached to the pistils, *e*.

The *A. trilobata* may be obtained at almost any of the London and country nurseries for a trifling sum.

DSI



Aristolochia trilobata.



E. W. Smith sc.

Poinciana pulcherrima.

POINCIANA PULCHERRIMA.

(VERY PRETTY FLOWER-FENCE.)

CLASS.
DECANDRIA.

NATURAL ORDER.
LEGUMINOSÆ.

ORDER.
MONOGYNIA.

GENERIC CHARACTER.—*Calyx* five-parted. *Petals* five, clawed, and notched. *Stamens* long, all fertile. *Pod* compressed, two-valved, about four inches long.

SPECIFIC CHARACTER.—A shrub, eight to ten feet high. *Branches* round, green, spotted with whitish spots, and prickly. *Leaves* alternate, bipinnate, six or eight inches long, spreading. *Leaflets* about nine pairs, oblong, elliptical, rounded, smooth, bluish-green, paler beneath. *Flowers* large, orange-red, in a terminal corymbose raceme. *Flower-stalks* an inch long, cylindrical, pale green at the base, becoming red upwards. *Calyx* in five ovate-oblong, thin, membranaceous, orange-red segments. *Petals* five, spatulate, much larger than the calyx, bright orange-red, beautifully waved, notched, and veined. *Stamens* ten, separate. *Filaments* two inches or more long, filiform, bright crimson. *Anthers* dark red, attached by the middle. *Style* shorter than the stamens; thick at the base, and tapering upwards; same colour as the filaments.

THIS splendid ornament to our stoves is a native of both the Indies; where it is said to be planted in hedges, whence the name of *flower-fence*. It was introduced so long since as 1690 or 91, but is still a scarce plant in collections.

It requires a very strong heat to make it flower in perfection, and should therefore be placed in a hot and damp part of the stove. It does not grow very tall, but forms a very ornamental shrub; the delicate, blue, pinnated leaves, and, when in flower, the splendour of the blossoms, render it a striking and very desirable plant.

The plant grows freely in a mixture of sandy heath mould and rich loam; and is readily increased by cuttings, which strike freely in sand under a bell-glass in heat. The plant also bears seeds, which may be sown in any light soil.

The generic name was given by Tournefort, in honour of M. de Poinci, a great patron of botany.

The plant may be purchased at a moderate cost of almost any of the nursery-men in town and country.

ONCIDIUM DIVARICATUM.

(CUSHION-LIPPED ONCIDIUM.)

CLASS.
GYNANDRIA.

ORDER.
MONANDRIA.

NATURAL ORDER.
ORCHIDÆ.

GENERIC CHARACTER.—*Lip* expanded, lobed, having little knobs, or excrescences at the base. *Petals* spreading. *Column* winged. *Pollen-masses* two, and two-lobed behind.

SPECIFIC CHARACTER.—Epiphyte. *Bulbs* in clusters, flat, two-edged, one-leaved. *Leaves* thick, yellowish green, nearly oval, terminating in a small blunt point. *Scape* from one to upwards of two feet long, erect about half way up, afterwards drooping, many flowered, slender, straggling. *Flowers* yellow and red, very beautiful. *Petals* five, bright yellow, coloured deeply at the base with orange-red. *Lip* large, flat, three-lobed, notched, yellow, spotted with dark crimson. *Column* the same colour as the lip, winged.

THIS beautiful plant is a native of Brazil, and was sent to the London Horticultural Society, through the kindness of A. J. Heatherly, Esq., where it flowered for the first time in 1826.

It thrives in the stove, either in pots of turfy peat, or wood covered with moss, but the first is the best way of growing it to perfection.

The same system should be followed in potting as recommended for *Stanhopeas*, page 141, viz., to pile up the pieces of turfy peat six inches above the rim of the pot. To prevent this pile falling down, small pegs are run through each square piece of peat which constitute the walls; and, when nicely finished, the appearance is very neat.

The plant from which our drawing was made flowered in our stove at Chatsworth, in May, 1835, and continued in bloom for a long time.

The generic name is derived from *Ogkidion*, a tubercle, and is given from the peculiar excrescences observable at the base of the lip of all *Oncidiæ*; the specific name, from the loose straggling raceme of flowers.

The plant may be purchased at Messrs. Loddige's, Knight's, Lowe's, Young's, and many other nurserymen in the neighbourhood of London, at a moderate cost.



Oncidium divaricatum

MORE REMARKS ON THE CULTIVATION OF VIOLA TRICOLOR *.

THE ardour evinced in the growth of pansies, has induced us to offer a few remarks upon their culture, as practised by persons who grow them to perfection; it is not to be wondered, that they now occupy so conspicuous a station in every good garden, but that such a gem to the flower garden, almost throughout the year, should have been neglected so long; but such is the (we may say) enthusiasm now shown for them, that a periodical has commenced, published monthly, devoted entirely to Heartsease; that is, describing the choicest named kinds now in cultivation (we have not seen the work, but reviewers have spoken favourably of it). Pansies or *flos tricolor* are recommended for the flower garden, and to be grown in pots, in the oldest works on gardening we have perused; but the kinds grown a very few years since in gardens, were not better than those occasionally found now growing under the plants of a shrubbery or in corn fields; indeed we remember when the seeds of *Viola tricolor* were seldom or ever sown in the majority of gardens, or, if they were, a spot where little else would grow was the site chosen; but the pleasure of seeing the then little neat flowers was very different from the emotions felt when viewing a bed of the now existing kinds, blazing in endless variety, dazzling the eye with their countless beauties, and delighting the senses with their grateful fragrance. Who can contemplate a bed of Heartsease, where in every individual something fresh and apparently more beautiful than the last observed, arrests the attention, without feeling what their name would imply, and forgetting for the time the troubles inherent to mankind?

Amateurs and gardeners who cultivate Heartsease for competition at flower shows, take considerable pains with them, such as giving them plenty of room, very rich soil &c., but in gardens where general effect only is required we would recommend beds sown with seeds from selected kinds, by which means a beautiful effect is obtained with little trouble, without the formality of rows so much to be avoided when masses are wished for; if the weather is favourable, they will flower in about six weeks from the time of sowing, with the anticipation every day of seeing something more new and beautiful than heretofore: we only suggest this to persons not in the habit of growing named kinds for competition, but merely for effect as a group, at the same time nothing is more simple than having masses of proved good kinds, as cuttings will strike almost at any season when they can be obtained by planting them under a northern aspect; the cuttings chosen should not be the strongest shoots, but the moderate sized ones which have not flowered; the season to propagate those intended for the principal flowering is the first week in July, the cuttings struck at this time will flower in autumn, and get strong plants

* See Vol. 1. page 115.

by spring, when if intended for masses they should be planted about six inches square, but if to show each individual plant separately one foot in the rows and eight inches apart will not be found at all too much; cuttings struck early in the spring would be better if planted under an eastern or western aspect, where they would strike readily, succeed the others, and flower in profusion throughout the summer; seedlings and cuttings will come into flower about the same time; it is generally a rule with growers to sow their seeds as soon as ripe, by which means as little time as possible is lost in proving their success.

They will grow nearly in any soil or situation, but a good free loam is to be preferred, and where a bed is prepared expressly for them it should be composed of the following: three fourths good mellow loam, and one fourth dung, if the loam be not of a friable texture a quantity of clear sand should be added, the dung used should not be too much exhausted, or what is generally called perfectly rotted, but rather well prepared dung, still retaining its heating principles; the advantage derived will be, that the bed will be kept open, and long continuance of dry weather (as experienced last season) will not have the same penetrating effects; this will be found of considerable importance when the soil becomes hard and baked during dry weather.

As one of the characters of *Violaceæ* is the corolla usually withering in a short time, and as scarce any are more liable to do so than *Viola tricolor*, those who wish to have fine flowers and preserve them as long as possible, choose a situation for their bed where their plants may be partially shaded during the hottest part of the day, when this cannot be obtained, through trees or other natural causes, artificial shading should be resorted to in very hot weather; the beds should be kept low, indeed under any circumstances they should scarcely be raised above the level of the paths.

There is a method of growing Heartsease in pots, so as to have a very neat and novel effect, although we have seldom seen it adopted; it is training the plant to a single stem, until it has attained the height of one foot, or eighteen inches, which it will readily do, and then pinch off the extreme points, it will then throw out side branches with flowers in profusion, which when placed among small green-house plants or otherwise have a strikingly pleasing appearance.

The criterion of a good flower is, that its petals be broad, and lying upon each other quite flat, so that the flower may appear nearly circular, this is of the utmost importance in exhibition, although there are many beautiful kinds which are not so; it is a general practice amongst amateurs in Heartsease to bring their flowers to exhibition each covered with a small piece of glass or silver coin, which not only prevents them curling, but imparts to them that flatness in appearance so much prized and sought after; the lower petal of the corolla should be nearly as broad as the upper ones, and nearly round. The colours should be clear and brilliant, the eye small and finely pencilled, but should it have these qualities without broad flat petals, let whatever be the splendour of its hues, it is discarded as unworthy of a name, and would disqualify a stand of an hundred kinds of show flowers; the goodly shape of the flowers seems to be the object sought, in preference to purity or brilli-

ancy of colour, novelties or grotesque mixtures in colour being the ruling passions in these times of varying tastes.

The varieties are generally called according to the caprice of the individual who raises them from seeds, either descriptive of their colours (which is preferable when it can be done concisely) or some favourite or poetical name.

In conclusion we may add the oftener young plants are raised the better, as upon young healthy plants such a difference takes place in the size and colour of the flowers, as oftentimes not to be taken for the same thing; there might be a succession every month, put in from the beginning of May to July, the latest seeds produced in the autumn should be sown in March, when the young plants would receive slight protection in inclement weather.

OF THE GENUS THUNBERGIA,

MORE PARTICULARLY OF THE CULTURE OF THUNBERGIA ALATA.

THIS is a family which, in the Linnæan system, belongs to the fourteenth class, *Didynamia*, and to the second order *Angiospermia*; that is, the stamens are four in number, two of them being longer than the two others; and the seeds are enclosed in a capsule, or dry seed-vessel, which opens by means of valves. The flowers of most of the plants of this class are irregular, gaping (ringent), or have-closed lips, somewhat like those of a fish (*personatæ*). But *Thunbergia* exhibits very slight marks of these characters: its flowers are nearly regular, the border flat and expanded, and cut into nearly equal divisions.

The characters of the genus, whereby it is botanically described, are a *calyx*, said to be *double*, but this is incorrect; the two-leaved external integuments are an *involucrum*, which encloses the flower, opens to let *that* expand, and remains permanent, if the seed-vessel form and ripen; but is deciduous if it prove abortive. The real calyx is a very small organ, cut into ten or twelve minute teeth, close seated under the capsule.

Corolla campanulate, or bell-shaped; though but slightly so.

Capsule beaked, two-celled, containing two or three seeds.

In the *natural system*, *Thunbergia* is found in the order *Acanthaceæ*, which has *Acanthus* as its type. The leading characters of this order are the following:—

The joints of the stem are swollen, the capsules are elastic and fly open; the seeds are attached by little hooked processes.

We do not interfere with the authorities which have placed this family in *Acanthaceæ*; but we think that its situation ought to be reconsidered; for to us it appears that the relationship between *Thunbergia* and its congeners is somewhat remote.

When the *Encyclopædia of Plants* was published in 1829, two species only were in its catalogue, viz:—

Thunbergia fragrans, with sweet-scented white flowers; native of the East Indies; introduced in 1796, and figured in the *Bot. Mag.* plate 1881; a climber, four feet high, with heart-shaped, pointed leaves.

————— *grandiflora*, great blue-flowering *Th.*; from the East Indies in 1820; a very fine high climber, somewhat shy of flower. *Bot. Mag.* No. 2366.

Subsequently the following have been added to the List.

Thunbergia cordata, heart-leaved; from Trinidad in 1820; flowers white.

————— *Capensis*, Cape Thunbergia; the only green-house species; yellow flowers, in May and to September.

————— *alata*, winged-leaved *Th.*; from East Indies in 1823; *Bot. Cab.* 1045. See also *Mag. of Botany*, Vol. II. page 2.

————— *angulata*, angular; from Madagascar; yellow. *Bot. Cab.* 1044.

————— *coccinea*, scarlet; dingy red flowers in September; from Nepal in 1823.

————— *Hawtayneana*; idem 1826; red.

Among these the choice will fall upon *fragrans*, *grandiflora*, and *alata*; but the two first are seldom seen. The last is a general favourite, and is easily raised and cultivated, one objection, and one only, seriously attaching to it, this is found in its great liability to be permanently affected with red spider (*acarus*). We know of no remedy for this pest, unless it be in plunging and immersing an entire plant in a vessel of water for many hours. Sulphur and sulphur washes are proved to be ineffectual, though hot-water syringed repeatedly upon the leaves, may do some good.

Thunbergia alata is propagated by seeds and cuttings, also by layers at a joint if required; the first method is superior, but few persons can procure them. With the best treatment, and in the most favourable situations, the plants appear to produce no seeds till the summer be nearly over; but, about the middle of August, and thence through September, many capsules form; and these ripen in October. The seed-vessels are almost globular, with a marked and strongly developed beak: the calyx is fixed closed under the bottom of the capsule, and is hidden by the then permanent, two-leaved *involucrum*. The seeds are very curious, they are punctured or reticulated over the surface, and of a hemispherical figure, not very unlike the half of an orange. They are brown when ripe, and ought to be retained in the capsule till the end of January, when they may be sown in a pot of earth, composed of equal parts of soft loam from decayed couch-grass, black leaf-mould, and pure pit sand. The soil should be rendered moderately moist, and be pressed pretty firm into the pot over a drainage of half an inch of dry moss. Having laid the seeds evenly on the surface, an inch or more apart, cover them with the soil to the depth of one-third, or half an inch; then either plunge the pot in a leaf-bed of the stove or pine-pit, or place it in a feeder pan filled with wetted moss, standing on a shelf not far remote from the flue; keep the moss moist, and do not suffer the soil to become dry. Our seeds were sown last January (12th), and the seed-lobes appeared bearing the testa or covering integument on them by the 16th of February. They

yielded plants of the first character, which soon came into bloom: the soil for potting, in their future culture, may be, decayed turfy loam rubbed up fine, one half; black heath mould and silver sand, each one quarter. Pure black peat also will suit them, and induce great richness of verdure.

One circumstance in the culture ought to be noticed, as adding much to the value of this charming plant. If young seedling plants be carefully stopped while in sixty or forty-eight size pots, so as to prevent their twining, and be thus made to form a branchy or stocky growth, they may be bedded out in *parterre*, not earlier than the first week in June; and will with care form one of the most beautiful objects that any mass of flowers is capable of presenting. The rich verdure of the leaves, which in favourable soil assumes somewhat of the figure of a broad arrow-head, contrasts with the innumerable pure buff-coloured blooms that peep from among them; to which the open intensely purple-tinted eye of the flower affords the finest relief imaginable. There is nothing gorgeous in this display, the whole is softly delicate and chaste: we know of nothing that can compare with it.

Seed forms well on these external plants if the autumn be warm and sunny; and every capsule, as it acquires the pale brown tint of maturity, either on the exposed plants or those under glass, ought to be carefully preserved, either to be sown or distributed among friends, as we know that many persons lose all their stock in the winter, and are thankful to be re-supplied.

Nothing adds more to the charms of horticulture than that amenity or kindly fellow-feeling, which inculcates the importance of a liberal participation of one another's superfluities.

We may add, in conclusion, that cuttings of one or two upper joints of young shoots taken off under the leaves, produce roots freely throughout the summer, *in water*; and the plants thus produced, placed in small pots of vegetable soil with sand, strike off freely, if retained close under glass for a few days.

IMPORTANCE OF EARLY PLANTING THIS SPRING.

WE earnestly recommend all those who may have planting to do this spring to proceed with it immediately, if not in a forward state now: we should advise that no undertaking be commenced that cannot be completed by the first week in March at farthest. In consequence of the heat and continued dryness of last summer, vegetation ceased to perform its annual functions much earlier than the usual season. In some parts of the country deciduous trees shed their leaves as much as two months before the proper time, it follows as a necessary result that vegetation will be stimulated into action easier and much earlier after so irregular a season as last. On the continent, where the winters are dry in comparison to

ours, the effects of an arid summer is not so visible on plants the succeeding spring. The great humidity we are subject to, the constant change of temperature, together with the thermometer being for days as high as fifty-five and sixty degrees, induces an early development of the vegetable functions and particularly so in plants, the energies of which were prematurely stopped the preceding season. In an extensive tour which we made in December through a great part of the south and west of England an early disposition of growth was most conspicuous. In some very sheltered situations buds had made a movement for expansion. We need hardly inform our readers that this premature disposition to grow is anything but favourable to the plant; on the contrary, it will be the means of increasing the injury done last summer by the too sudden termination of growth. From a pretty long experience of all kinds of planting, we are convinced that all trees and shrubs should be transplanted when they are in a dormant state; indeed, a little common sense and reasoning would convince the greatest novice in these matters; and that to move a plant after it has commenced growing is a sure means of destroying part of its vital functions, and weakening its future efforts in a much greater degree than when the plant is in a state of rest; transplanting before the wood is ripe in autumn is as injurious as transplanting late in the spring. About three years since, we had occasion to remove some young apricot trees very early in the autumn; the work was performed as carefully as possible, reserving nearly all the fibres, every attention was paid to watering, but with all this attention the upper parts of the shoots began to shrivel in about a fortnight; and when the trees pushed forth the following spring they grew very weakly, and continued through the season in a very precarious state. I think the removal took place about the 20th of September. Now it is quite evident that these trees were injured by being removed before the leaves had shown a disposition to fall on being transplanted, there was no supply to support the continued exhaustion which is continually performed by the leaves. We have therefore found it an excellent practice to take off all leaves from trees when they are removed late in the autumn. We do not recommend a plant to be moved at all until it is in a dormant state, but sometimes it is obliged to be done in extensive alterations. It is very easy to know when a deciduous plant is ready for removal, by holding the shoot and drawing the hand gently upwards, if the plant is in a state fit for removal, the leaves will readily separate from the shoot. In some small plants of birch, hornbeam, &c., the leaves turn of a copper colour, but do not separate from the plants; when leaves are thus changed in colour they may with equal propriety be removed, as they have ceased to circulate the juices of the plant. Every tree or shrub that it is to be planted this spring should be taken up by the first week in the present month, and if it is not convenient to plant them immediately they may be preserved in some cool shady situation, which will retard the advancing sap considerably. We should always recommend plants to be put in their permanent situation as soon after they are taken up as possible; when they have not to be removed far, as much earth as can be conveniently got up with the plants will be of great advantage.

CULTURE OF THE GENUS PAPAVER.

ALL the species of this genus are showy plants, many of them very splendid in the size and colour of the flowers, but the blossoms are very fugitive. On the whole they are great ornaments to the flower-borders, and deserve to be cultivated in every garden.

They are of three kinds, annual, biennial, and perennial; being all very hardy, they are easy of culture, and require very little attention.



Amongst the annual species and varieties several are natives of Britain, as *P. Rhæas*, which is common in corn-fields, some of the varieties of which are great ornaments on our borders, and *P. somniferum* (figure) from which the substance called opium is extracted. The flowers of this species are white with a faint blush, but there are many varieties, some of bright scarlet, others purple, and others striped and variegated.

White Poppy (*Papaver somniferum*); *a*, the seed organ, showing the stamens attached to the receptacle; *b*, the fruit.

The seeds are known by the name of *maw seeds*, because of the use made of them by bird fanciers.

“*P. somniferum* is originally a native of the warmer parts of Asia, but is sometimes found apparently wild in Britain.”

“Many attempts have been made in this country to obtain opium from its capsules, and Mr. Ball obtained a premium from the Society of Arts for specimens of British opium, in no respect inferior to the best eastern opium.”

“Mr. Young, a respectable surgeon in Edinburgh, has also obtained it of excellent quality and in considerable quantity.”

“It was very early cultivated in Greece, perhaps, at first, solely for the sake of its seed, which was used for food. It is extensively cultivated in most of the states of Europe in the present age, not only on account of the opium for which it is reared in Turkey, Persia, and India, but also on account of the capsules, and of the oil obtained from the seeds.”

“ All the parts of the poppy abound in a narcotic milky juice, which is partially extracted, together with a considerable quantity of mucilage by decoction. The liquor strongly pressed out, suffered to settle, clarified with white of eggs, and evaporated to a due consistence, yields about one-fifth or one-sixth of the weight of the heads of extract which possesses the virtues of opium in a very inferior degree ; but the milky juice of the poppy in its more perfect state, which is the case in warm climates only, is extracted by incisions made in the capsules, and inspissated to form the true opium of commerce.

“ The plants during their growth are carefully watered and manured, the watering being more profuse as the period of flowering approaches, and until the capsules are half grown, when it is discontinued and the collection of the opium commences.

“ At sunset, longitudinal incisions are made upon each half-ripe capsule, passing below upwards and not penetrating to the internal cavity. The night dews favour the exudation of the juice, which is collected in the morning by women and children, who scrape it off the wounds with a small iron scoop, and deposit the whole in an earthen pot, where it is worked by wooden spatules in the sunshine, until it attains a considerable degree of thickness. It is then formed by the hand into cakes, which are laid in earthen basins to be further exsiccated, when it is covered over with poppy or tobacco leaves *.”

All the annual species and varieties may be sown in the open borders about the end of March, which is very preferable to sowing them in other situations and afterwards transplanting them ; as from the nature of their roots they will not bear to be removed without injury. See Vol. I. page 18.

The biennial kinds, as *P. floribunda* and its varieties, may be treated like other hardy biennials (vol. I. page 66), except that it is better to sow the seed on the border where the plants are to flower.

The perennial kinds of diminutive growth, as *P. crocea*, *nudicaule*, and its varieties, *rubro-aurantiacum microcarpum*, *Pirenaicum* and its varieties, require to be planted in very dry situations in the borders, or, which is better, on rock work, or in pots, for which from their pretty dwarf growth they are well calculated. If some precaution of this kind is not used, they are very likely to damp off in dull wet weather in winter.

The more robust perennial species, as *P. orientalis bracteatum*, require nothing further than the treatment of herbaceous perennials in general. See Vol. II. p. 199.

All the three kinds produce seeds, by which they may be readily propagated, but the perennial species are increased by dividing the roots.

Sow the seeds of the perennials at the same season as the annuals are sown, and after they have become of a sufficient size, remove them, with good balls, into the situations where they are to flower.

It is always best to preserve the seeds of poppies in the heads, because being very small they are liable to become so dried as to lose their vitality; but if they are allowed to remain in the heads they will grow after being kept several years.

* Don's Syst. Gard. and Bot. 132.

CULTURE OF THE HYDRANGEA HORTENSIS.

HAVING frequently observed during our tours, very large plants of *Hydrangea hortensis*, with very small heads of flowers, perhaps to the amount of fifteen or twenty clusters, and very often of a dingy white colour; we offer to our readers a very superior method of growing this gay plant for the house or flower garden, whereby it may be seen in perfection nearly the whole year. No plant which we know will retain its beauty longer, and suffer less injury from being kept in a room. Persons who have plants in rooms most generally injure them with too much water, in which respect the *Hydrangea* is very accommodating, it requiring a good supply; the largest heads of flowers we have ever seen grown have been produced in the method about to be described.

In April or early in May, choose cuttings of the strongest shoots, about four or five joints; trim off the leaves from that part of the stem only about to be immersed in the soil; prepare then a wide mouthed pot, nearly half filled with potsherds, the remaining portion with light sandy loam; let the cuttings be planted in this, not too close together, and place them in a frame where there is a lukewarm bottom heat; in about a fortnight they will be rooted sufficiently to pot off, which should be done immediately, using the smallest pots the roots can be conveniently got into without breaking, which will be some small and some large sixties, and again placed in the frame, and hardened to the open air by degrees. When all danger of frost is past, they may be taken out of the frame, and placed under a west aspect wall, where they should have abundance of water; about the latter end of June they will require repotting into pots a size larger, and then placing them under a southern aspect, to *ripen their wood and buds*. Much of the future success of the plants depend on this, for if the wood is not well ripened, however fine the plants may be, the flowers will be small in comparison. Should the season prove a wet one, they should be taken earlier into pits or the green-house, and kept pretty dry, which will materially assist them in maturing their buds; a succession of cuttings should be put in a month later, and treated in a similar manner; they should be placed in their winter quarters about the time of taking in green-house plants, and placed where they may have full exposure during the day and protection at night, here they may remain until wanted to force. In January or when the vinery is commenced with, or indeed any house where they will receive a moist temperature, the thermometer ranging from 60° to 65° Fahrenheit, the vinery is a very suitable place, as such waterings as are given to the vines is the very thing, of all others, that the *Hydrangea* delights in; just as they start growing they will require another shift, and nothing more is necessary except frequent waterings over the head and at the root.

The soil used is a rich light loam without any mixture whatever.

With regard to colour, we may make a few observations, but so various and numerous have been the causes assigned for turning the colour of the flowers blue, that it is very difficult to state the cause, when so many different recipes are given as all producing the same effect.

Mr. Haythorn, late gardener to Lord Middleton, recommends plenty of room, or planting them out in the borders to turn their colour; but we can only say those we have had in the border a length of time have never yet shown a symptom of blue. Others have recommended powdered alum mixed with the soil, in proportions of six ounces to a bushel of soil; this we have never tried, but have seen blue flowers which were stated to have been procured by these means. Very many have recommended bog earth, and certain it is that earth of this description obtained from a part of Wimbledon common turns the flowers blue. Sweet recommends planting out in peat borders, and states the longer they remain, the deeper blue will be the colour of the flowers. Iron filings have also been strongly recommended as certain to change their colour. A florist residing at Hammersmith was famed several years for growing blue Hydrangeas, which he accounted for in the following manner: he had a large quantity of soil brought in for general purposes, and happening to use it for his Hydrangeas, to his great surprise they became blue, which brought him a better price than the pink ones, consequently he reserved the whole of the soil solely for Hydrangeas, for which purpose it lasted several years; but there is an end to all things, the heap of soil wasted to nothing, which was his secret, and the following year as he had no more blue Hydrangeas his fame for them went also.

We can only state our having seen beautiful blue flowers in loam, as well as peat, and should say the presence of some mineral existing in the soil is the main cause; most probably oxide of iron in an unusual degree.

The second season the plant should be cut down, and three shoots only left to grow. The plants must receive similar treatment to that recommended for the young ones, and the consequence will be that heads will be obtained nearly or quite as large as they produce the first season; three heads will generally be found sufficient.

NOTES ON THE TREVIRANA COCCINEA AND MIMULUS CARDINALIS.

TREVIRANA COCCINEA. *Cyrilla pulchella* of some, and *Achimenes coccinea* of Persoon, is an elegant little plant well known under the first two names, and belongs to a tribe of plants, many of which, as *Mimulus*, *Chelone*, *Collinsia*, &c.; present to us some of the greatest attractions of the flower-garden.

But our object now is to treat on the cultivation of the first-named plant, of

which none of its tribe are more beautiful or desirable, as its splendid pyramids of scarlet flowers in September and October, when the greenhouse, as well as the parterre, begins to assume a sombre tint, cannot be too highly prized; and as we have seen some persons flower it beautifully and others very indifferently, which is evidence every one does not practise the best method, ours being extremely fine this season, and as we have pursued a method with them somewhat different to that detailed in our first volume, we offer it to our readers with confidence.

In the spring, about the middle of February, its imbricated roots will begin to vegetate, at this time turn them out of the pots and separate the roots, taking care not to bruise or break them, which requires caution, as the soil sometimes becomes hard by being kept dry since the preceding autumn. The strongest roots being carefully released from the old soil, should be potted into large sixty pots with the following compost; one half rich loam, the other half heath-mould and well-rotted cow-dung in equal quantities, with the addition of as much clear sand as will make the whole a light open soil (which will require sand equal to about one-fourth of the whole); and then placed where they would receive abundance of light, and a moist atmosphere, where the thermometer ranges from 65° to 75° of Fahrenheit. Whether this be a vinery, stove, or dung-bed, they should be syringed over every morning after the plant has formed perfect leaves, which will generally be found a sufficient watering during the early part of the season. We would recommend in this case, as in every other, never to use cold water. Water for syringing in high temperatures should always be heated to from 80° to 90°, by being placed upon the flues, or other means; indeed, we find that water heated to 120° of Fahrenheit will not injure the most tender foliage, but will check the ravages of insects in a very material degree.

As the plants fill their pots with roots they should be shifted successively to forty-eights, thirty-twos, and lastly into their flowering pots, which, if the plants have thriven, will be twenty-fours; at this time the plants should be eighteen inches high, and forming a perfect pyramid.

By striking the end shoots in August, singly in small sixty-sized pots, neat little plants covered with bloom may be obtained, which when placed among the small plants of the stove or green-house have an exceedingly neat appearance; indeed we are not certain but that by striking still later some of the youngest shoots, a succession might not be kept up during great part of the winter months; it will however be worth trying, and should we live another season it shall have a fair trial and the results be stated.

MIMULUS CARDINALIS is a beautiful scarlet species, lately introduced by the Horticultural Society of London, through the late-lamented naturalist Mr. D. Douglas, from America; we inform those not in possession of this new plant, that they may obtain it shortly, as it is a robust grower, strikes freely from cuttings, and produces seeds in abundance. The Horticultural Society are distributing it to their members, which with what we have stated regarding its habits, renders it certain that this distinct and elegant species will soon become as common in our flower gardens as the other kinds. It is not more desirable for its own beauty, than for

the splendid hybrids which may be anticipated from the mixture of a scarlet with the present vivid colours of the same genus. It has been proved that plants of the same genus will not produce mules unless closely allied; for instance, the gooseberry and currant, the pear and apple, have never been found to mix with each other, although repeatedly fertilised by persons for experiment; notwithstanding, we do not despair seeing a hybrid *Mimulus* of a shrubby habit, eclipsing all the others for beauty, raised between *M. cardinalis* and *M. glutinosus*, which would not be going farther than what has been done with *Calceolarias*. Nothing can be more interesting than seeing new plants springing up, differing widely from their parents, and surpassing them for beauty, as much as the *Mimulus Smithii* does its parents. *Thunbergia alata alba*, which is white with a still deeper coloured eye than *alata*; *Rhododendrons* also, and many other genera, have their mules, which for the beauty of their flowers, hardiness, and elegance of growth, surpass both parents in their combined merits.

NEW AND RARE PLANTS

FIGURED IN THE LEADING BOTANICAL PERIODICALS AND FLORISTS' MAGAZINE FOR NOVEMBER.

BOTANICAL REGISTER. Edited by Dr. Lindley, each number containing eight figures; coloured 4s., plain 3s., and corresponding letter-press.

BOTANICAL MAGAZINE. Edited by Dr. Hooker, each number containing eight plates; coloured 3s. 6d., plain 3s., and corresponding letter-press.

BRITISH FLOWER GARDEN. Edited by Mr. David Don. Containing four plates; coloured 3s., plain 2s. 3d., with corresponding letter-press.

FLORISTS' MAGAZINE. By F. W. Smith. Containing four monthly plates, highly-coloured; several plates with two figures; large size, 4s., small 2s. 6d., and corresponding letter-press.

Of the above figures, we have only selected such as are new or very rare; and amongst these only such as deserve to be extensively cultivated. For descriptions and figures reference must be made to the works themselves.

CLASS I.—PLANTS WITH TWO COTYLEDONS (DICOTYLEDONEÆ).

CROWFOOT TRIBE (RANUNCULACEÆ).

DELPHINIUM CHEILANTHUM MULTIPLEX. Double large-lipped Larkspur. A hardy perennial, with dark purple flowers; the flowers are double, and equal in

size to those of the double variety of *grandiflorum*, and of a still richer colour. A mixture of peat and loam will be found to suit it best, and it is increased by parting the roots. *Don's Brit. Fl. Gard.*, 309.

ESCALLONIA TRIBE (ESCALLONEÆ).

ESCALLONIA PULVERULENTA. This hardy evergreen shrub is common about Conception and Valparaiso in Chile, and was introduced in 1831, from seeds collected in that country by Mr. Cumming. We know nothing of the constitution of the present species, but we presume it will be found to be quite as hardy as the other species from the same country. The flowers are white, disposed in a terminal spike. *Don in Brit. Fl. Gard.*, 310.

FEA TRIBE (LEGUMINOSÆ).

POINCIANA GILLIESII. Dr. Gillies's Flower-fence. An erect, slender, branched tree, rising to the height of 8 or 10 feet, bearing large yellow flowers in terminal corymbs. It is abundant on banks of rivers, and in irrigated grounds about Mendoza in South America, where it was discovered by Dr. Gillies. The plant from which the figure was made, flowered in the choice collection of Mr. Knight, King's Road, Chelsea, in the end of July, where the tree has stood for several years placed near the wall of a stove. We have seldom had to record so interesting a production as the present, and one so eminently deserving the attention of the cultivator. *Don in Brit. Fl. Gard.*, 311.

THE WATERLEAF TRIBE (HYDROPHYLLEÆ).

EUTOCA VISCIDA. Clammy Eutoca. A new hardy annual, found in California by Mr. Douglas, and raised by the Horticultural Society, in whose garden it flowered this summer. It is perfectly hardy, and will grow in any common soil. The blue of the flowers is remarkably deep and brilliant, so that the plant has a handsome appearance, but its leaves are rather coarse and weedy. We know, however, of no plant better adapted for bouquets: for it will go on growing and flowering in water for two or three weeks after being gathered. *Lind. in Bot. Reg.*, 1808.

THE ROSE TRIBE (ROSACEÆ).

CRATÆGUS DOUGLASII. The Douglas Thorn. A native of North West America, where it was collected by Mr. Douglas. A hardy tree of small size flowering in May. *Lind. in Bot. Reg.*, 1810.

MADAM HARDY ROSE. This is a lovely white damask, growing beautifully, and producing a profusion of flowers of a fine warm white, remarkably double and well formed. *Smith's Florists' Magazine*, 37.

VILLAGE MAID ROSE. This is one of the most novel roses which we possess, and well deserves to be generally cultivated. Its beautifully striped leaves form a most pleasing contrast with almost every other rose, whether white or red; and, though the individual blossoms soon droop, the succession is so abundant and so

rapid, that the tree retains its loveliness to a comparatively late period of the season, Few roses are better adapted for budding on standards, and none can be a more delightful ornament. *Smith's Florists' Mag.*, 37.

MINT TRIBE (LABIATÆ).

GARDOQUIA GILLIESII. The Gillies' Gardoquia. A neat little half shrubby herbaceous plant, growing not more than six or eight inches high, flowering from June to September in the open border, and readily multiplied by cuttings which root freely in peat and sand. It requires a little protection in winter. It appears to be a common Chilian plant, for it occurs in almost every collection that has yet reached England from the neighbourhood of Valparaiso. *Lind. in Bot. Reg.*, 1812.

PRIMROSE TRIBE (PRIMULACEÆ).

PRIMULA SIBIRICA INTEGERRIMA. Entire-leaved Siberian Primrose. This plant is a native of marshes among the Altai mountains, about the middle of the range, and was received at the Botanic Garden, Edinburgh, in 1832, from Mr. Goldie of Ayr, when several specimens flowered in the cold frame and greenhouse, in March and April, 1835. The plant is dwarf, and the flowers are reddish lilac. *Hooker in Bot. Mag.*, 3447.

PRIMULA AURICULA, var. Achilles. Achilles Auricula. This kind is quite new, and may be justly regarded as a first-rate flower. It was raised about seven years ago, by Mr. Marsh of Bath, late of Dulwich Common. He has besides this several other new and superior varieties: and for this one he has obtained the first prize awarded by a select society of amateurs. The properties of the flower are very fine. The mouth of the tube is remarkably neat: the contrast between the ground colour and the brilliant green edge is unrivalled, and the paste is perfectly firm. The manner in which the flower forms its tress is good; the foliage is large; and the stem of a firm texture. The plant breeds freely by offsets, and is very constant to its character. Mr. Marsh has now a sufficient stock to be able to dispose of a few plants, at about one guinea each. *Smith's Florists' Mag.*, 43.

CHICKWEED TRIBE (CARYOPHYLLÆ).

DIANTHUS CARYOPHYLLUS, var. Emmeline. Emmeline Picotee. This is a neat and beautiful flower, producing a great number of delicate white blossoms, narrowly bordered with bright bluish purple. The petals are broad and firm, and not in the least serrated in the edge. The plant grows to the height of three feet, and furnishes a liberal supply of grass. *Smith's Florists' Mag.*, 41.

DIANTHUS CARYOPHYLLUS, var. Frederica. Princess Frederica Picotee. This is one of the choice varieties of the yellow picotee, of good form, and with the petals very regular and perfect in their margins. The ground colour is a very brilliant yellow, the spots or stripes of a dark reddish brown, and bizzarded with a darker colour, almost black. *Smith's Flor. Mag.*, 41.

CLASS II.—PLANTS WITH ONE COTYLEDON (MONOCOTYLEDONEÆ).

ORCHIS TRIBE (ORCHIDÆ).

VANDEÆ.

VANDA TERES. Taper-leaved Vanda. This superb epiphyte was originally discovered upon trees in Sylhet by Dr. Wallich, and it has more recently been met with by Mr. William Griffith, abundantly, near Medown in the Burmese Empire, also growing on trees in the woods. Nothing can exceed the flowers of this plant in delicacy of texture, or softness of colour, the deep purple of the petals softens away to the margin, and seems to melt, as it were, into the purer white of the sepals, while the rich crimson and the yellow of the lip render the brilliancy of the other parts still more conspicuous. *Lind. in Bot. Reg.*, 1809.

MAXILLARIA CRISTATA. Crested Maxillaria. This remarkably beautiful epiphyte flowered in the stove of Mr. Knight of the King's Road Nursery, with whom it flowered in the stove in July last. It is a native of Trinidad, growing on old decayed branches of trees near The Mud Lake. The striping, banding, and painting of the delicate white flowers with rich crimson produces a very rich and striking effect. *Lind. in Bot. Reg.*, 1811.

PINE APPLE TRIBE (BROMELIACEÆ).

DYCKIA RARIFLORA. Few-flowered Dyckia. This plant is a native of Brazil, and was sent to the Botanic Garden, Edinburgh, from Berlin. It is very handsome, and flowered for the first time in the stove at Edinburgh in June, 1835. The flowers are bright orange. *Hooker in Bot. Mag.*, 3449.

LILY TRIBE (LILIACEÆ).

TULIPA GESNERIANA, var. Marcellus. Marcellus Tulip. This variety is one of the choicest bizzarres, and it is now in pretty general request among amateurs. The breeder was raised from seed by the late Mr. Clark, of Croydon, and was broken by him about the same time that Mr. Lawrence of Hampton broke the celebrated Polyphemus. The flower is large and well formed. The ground colour, a clear and bright yellow; the feathering, of a rich and glossy brown; and the flame, of the same brown, but very much deeper in the tone. *Smith's Flor. Mag.*, 33.

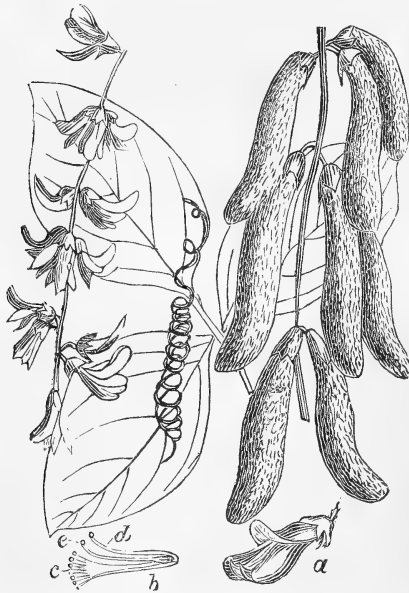
ASPHODEL TRIBE (ASPHODELEÆ):

DAUBENYA AUREA. Golden Daubenyia. A green-house bulb, native of the Cape of Good Hope, whence it was obtained by Messrs. Young of Epsom, under the name of *Massonia lutea*. It flowers in June, and is very pretty, as well as singular, so long as its blossoms remain expanded, which is about three weeks. Afterwards its placid green leaves have little to attract attention. *Lind. in Bot. Reg.*, 1813.

CULTURE OF THE GENUS MUCUNA, OR COW-ITCH.

ALL the species of this genus are tender climbing stove plants; there are, however, but a few that may be considered worthy of cultivating in a choice collection.

The kinds most deserving of notice are, *M. altissima*, which will grow forty or fifty feet high, and bears a profusion of crimson-purple flowers; *M. imbricata*, which is more dwarf, seldom exceeding in height twelve feet, and produces flowers of a similar colour to the *altissima*; *M. urens*, with buff flowers; and *M. pruriens*, with crimson flowers, both of which grow from ten to twelve feet high.



The *M. pruriens* (figure) is a well-known plant, and remarkable for the use made of the short hairs which cover the seed-pods, which if touched will penetrate the skin and cause a most intolerable itching, hence the common name, *Cow-itch*. This peculiarity in the hairs is taken advantage of for medicinal purposes.

Cowhage (*Dolichos pruriens*); *a*, the flower; *b*, the ten stamens and pistils which lie folded up in the keel-like petals of the flower. The stamens are divided into two bodies, of which, *nine* form the lower, *c*, and *one*, the upper, *d*; *e*, the pistil.

The soil best suited for the growth of these plants is, a mixture of equal parts of sandy heath mould and light rich loam.

They are propagated without difficulty by half-ripened cuttings, which should be planted in pure sand, and the pots plunged in a brisk bottom heat and be covered with a glass, any time during the spring months.

In two or three weeks they will have struck roots, and may be potted off into small pots, and treated like other young plants of a similar habit.

They may also be propagated by seeds, which are produced freely in long pods. The seeds should be sown in the spring, at the time of sowing tender annuals, and be placed in the same situations.

CULTURE OF AMARYLLIDÆ.

(Extracted from "Mantell's Floriculture.")

THE Amaryllidæ are a beautiful and interesting tribe of plants, and add greatly to the attractions of the stove and green-house during the winter and spring months.

Although the varieties of the Amaryllis are very numerous, the hybrids are in many instances preferred, as they often surpass the originals in beauty, and are found to flower more freely. Mr. William Nichol of Newick Park, succeeded in obtaining beautiful hybrids from the following varieties, by transferring the pollen of

Amaryllis rutila to	Amaryllis Johnsoni.	Amaryllis fulgida to	Amaryllis vittata.
— crocata	— vittata.	— miniata	— Johnsoni.
— Johnsoni	— miniata.	— vittata	— equestris.
— equestris	— vittata.	— Johnsoni	— reticulata.
— reticulata	— Johnsoni.	— reticulata	— vittata.
— Solandræflora	— Johnsoni.	— vittata	— Johnsoni.
— Johnsoni	— reginæ.	— Johnsoni	— equestris.
— miniata	— reginæ.	— fulgida	— Johnsoni.
— splendens	— Johnsoni.	— psittacina	— reticulata.

The seed should be collected as soon as ripe, sown in pots, and placed in a hot-bed. When the young plants have produced two leaves, they should be potted singly into the smallest sized pots, taking care not to put them too deep, but to leave the young bulbs on a level with the surface of the mould. They should be watered, and kept shaded in the hotbed frame for a few days, and as soon as the bulbs recede from the surface, they should be repotted into large 60-s, and occasionally shifted during the summer, until the plants are well rooted in 24 sized pots. By this treatment many of the young plants will flower the following spring.

The established plants treat in the following manner:—as soon as they begin to show flower, stir the surface of the mould, and give as much water as will penetrate to the bottom of the pots; then place them in the stove, and water them occasionally as the plants may require. In a few days the flower-stems advance considerably in height, the leaves shortly after make their appearance, and in a few weeks the plants are in flower.

When the flowers begin to fade, the flower-stems should not be cut off, but be allowed to die down, for if cut while in a green state it will cause the coats of the bulbs to decay.

After the leaves have attained their growth, which may be known by their dropping down to the sides of the pots, and by the tips of the leaves beginning to turn yellow, the plants should be repotted, taking care to disturb the roots as little as possible.

After being potted, place them in a hotbed frame, and supply them with water sufficient to settle the mould, shading them with a mat till another set of leaves begin to be developed.

They will now form embryo buds for the following season. The plants being established, should be gradually exposed to the sun and air, and as soon as the leaves have attained their full growth water should be more sparingly applied.

When the leaves have died down to the bulbs, the plants should be removed into a cool vinery or green-house, and if the bulbs feel firm, which may be easily known by pressing them with the finger and thumb, the watering may be gradually discontinued, and the plants be suffered to remain till they begin to show their flower-buds, when the surface of the mould must be stirred as before directed, and the same treatment pursued.

The *A. curvifolia*, *A. corusca*, *A. (Nerine) Sarniensis*, or Guernsey Lily, require the same treatment as the other varieties, and will, if properly managed, flower every year.

There are several varieties of the Amaryllis that do not root so freely as others, but if these are allowed to remain in the pots, and be carefully watered and judiciously treated, they will invariably flower in perfection.

In the management of Amaryllideæ, and bulbs in general, it is of great importance that they be not overwatered, that the offsets be carefully detached, and that in planting the pots be sufficiently drained.

The following compost may be advantageously employed, both for seedling and established plants:—three parts light turfy loam, two parts white sharp sand, and one part turfy-peat.

PROPAGATION OF CERTAIN PLANTS BY CUTTINGS,

AS RECOMMENDED BY MR. JOHN MACHRAY, OF ERROL, AND READ BEFORE THE CALEDONIAN HORTICULTURAL SOCIETY, FEBRUARY, 1826.

THERE are many plants that, from their hard texture or peculiar organisation, are very difficult to propagate by cuttings; but there are comparatively few that have not been found, under proper management, to produce those appendages which are requisite to promote the growth and prolong the existence of the species. Nature, indeed, employs other means of propagation, but her handmaid Art has proved successful in propagating many useful and ornamental vegetables, the seeds of which cannot be easily obtained in a climate where they are not indigenous, by layering, by cuttings, and by grafting. The approach which Nature may have made to propagate the species by any of these methods is very limited. The process of *layering* is the most obviously natural, next to the universal law of "every tree yielding fruit in which is the seed thereof after his kind." The mode of grafting, by which *varieties* are propagated, may have first been adopted from the appearance

of cross branches uniting, after long continued and severe pressure against each other; but the origin of striking by *cuttings* is not so easily accounted for.

The compost for striking the cuttings of the *Aster argophyllus*, *Pyrus Japonica*, *Aucuba Japonica*, the striped-leaved Bramble, and the broad and narrow-leaved Myrtles, should always be of an open nature, and at the same time contain as much nutritive matter as is requisite to communicate sufficient vigour to the young plants when rooted; let it be composed of one-half light brown loam, one-fourth vegetable soil, and one-fourth river sand, well mixed and put through a sieve. The best time for planting them is from the middle of August till the middle of September, when the shoots have acquired sufficient firmness.

Plant the cuttings on a south border under hand-glasses, about six inches from the wall, and so situated as to be partially sheltered from the afternoon sun, but fully exposed to that of the morning.

After marking the place for the glass, take out the natural border earth to the depth of eight inches, and that space fill with the above compost, treading it gently down, then put in the cuttings, prepared in the common way, with a small dibble.

The cuttings should be of a last summer's growth, and be made from four to six inches long, and be placed from one and half to two inches apart from each other, according to the strength and size of the cuttings.

After they are made firm give them a good watering, close them down with the hand-glass, and shade from the heat of the sun in September and October, but keep off the mats during the winter months, and put them on again in March. Continue to shade occasionally till August following, and give gentle waterings from the beginning of May.

By the end of June the cuttings will have struck root, and by the end of July they will have acquired from six inches to a foot long of young wood. During this period they will require more frequent watering and shading throughout the day.

Admit no air from the time they are planted until the end of the following July, except what is unavoidable during the time of watering. About the 12th of August they may be potted; and it will strengthen the plants to have a little air admitted every day, by little and little, for about a fortnight before potting.—*Mem. Cal. Hort. Soc.*

OPERATIONS FOR FEBRUARY.

AZALEA.—The greenhouse kinds will now commence flowering and continue till May. When they are in flower, a good supply of water is requisite to enable the plants to support them: inattention to this will cause the flowers speedily to fall. See Vol. I. pages 129, 126, and 127; Vol. II. pages 145 and 121.

ANNUALS (Tender) about the middle of this month may be sown in a mixture of light rich loam and leaf-mould or peat, taking care to cover the seeds very lightly;

to excite germination they should be plunged in a moderately heating hot bed, and carefully watered with a fine rose or syringe.

BRUNSVIGIA.—Toward the latter end of this month examine the bulbs and repot them, in light turfy loam mixed with equal parts of peat and sand, let it be well chopped and mixed together, but not sifted. See Vol. I. pages 163 and 164.

CALADIUM BICOLOR, which have been kept dry during the winter, should now be excited by giving a moderate supply of water.

CLEOME.—About the end of the month, the annual species should be sown in large feeders, filled with light rich soil, and placed in a warm frame or pit. See Vol. I. page 122.

DAHLIAS, when propagation is intended to be carried to a great extent, a few of the roots should be plunged in a tar bed, or frame, where they will soon begin to grow. Seeds may also be sown in feeders in very light open soil, and placed in a hot bed till up. See Vol. I. page 104.

It is astonishing to what an extent the cultivation of Dahlias is now carried, a list to the extent of three hundred new kinds is offered for next season. Amongst a variety of new ones, which we saw last autumn, were several excellent flowers raised by Mr. Forsyth, of Antaby, near Hull.

GLORIOSA SUPERBA that were potted last month, as directed Vol. I. page 97, should now be attended to, and towards the end of the month will require repotting.

KALMIA LATIFOLIA and **GLAUCA** brought into a forcing-house with a moderate heat will soon come into flower.

LILY OF THE VALLEY.—This interesting little plant will flower freely if taken into the greenhouse early in the month. Placed in a warm situation it will presently flower. As soon as the flowers appear, remove it into an airy part of the house. So treated it will continue in flower for a length of time.

MIGNONETTE sown last autumn, and preserved through the winter in a cold frame, should now be very carefully attended to as regards the application of water, air, &c.

PINKS.—Some of the common kinds, if not already placed in heat, should be so immediately, and if carefully watered will soon have a pretty appearance.

RHODODENDRONS.—If desired to flower early, some of the common kinds should be brought into a moderate heat. Syringing every morning is advisable in order to excite the growth of the shoots.

ROSE TREES in pots now brought into the forcing house, (a peach house or vinery, will do if the heat do not exceed sixty degrees), they should be syringed over now and then in order to excite the buds to push; if so treated, they will flower about the middle of April. See Vol. I. page 23.

TREVIRANA COCCINEA should now be attended to as directed vol. I. page 169.

TULIP BEDS. Choose a fine day for examining the bulbs, and any that are found cankered, (which will be known by the sickly appearance of the leaves,) the affected part should be taken off, and the wound exposed to the sun will soon heal.



YUCCA ALOIFOLIA.

(ALOE-LEAVED YUCCA.)

CLASS.

HEXANDRIA.

ORDER.

MONOGYNIA.

NATURAL ORDER.

LILIACEÆ.

GENERIC CHARACTER.—*Corolla* bell-shaped, six-parted, spreading. *Ovarium*, three-sided. *Capsule*, three or more celled, with a small hole at the end of each.

SPECIFIC CHARACTER.—*Evergreen*, from three to four feet high. *Leaves* lanceolate, smooth, spreading, terminating with a very fine point. Flowers produced, in small clusters, forming a loose spike from one foot and a half to two feet high, of a whitish green colour, marked with a streak of purple down the centre of the outside of each petal.

THIS plant is a native of South America, and has been known in this country for many years. We are obliged to our esteemed friend, Mr. Campbell, for the opportunity of figuring this species: also for many other beautiful specimens he has kindly communicated to us, and under whose management it flowered profusely about August last, in the Manchester Botanic Garden. The plant when in full bloom stood from nine to ten feet high; the spike of flowers measuring four feet.

It is nearly hardy, but prefers the protection of the green-house or conservatory, where, when in flower, (in which state it is only seen to perfection,) it has a most magnificent appearance. The copious display of delicate flowers set in panicles round a column four feet high, contrasted with the deep green leaves at their base, form a pyramid of beauty and attractiveness.

The soil in which it thrives best, is rich loam, to which with advantage may be added a little pulverised peat, and if mixed carefully with the former, which must not be sifted, will enable the rootlets to perform their office without having to encounter those obstacles often met with by the loam getting too stiff, as it is sometimes liable to do; in this case the roots receive injury. They require but little water, and that only in the growing season, when the soil is found to be very dry. The method of increasing them is by suckers from the roots.

Many of the yuccas may be planted out in the flower-garden, or on the lawn, such as the *Y. gloriosa*, *filamentosa*, &c.; in either place they will be objects of great ornament. But, for this purpose, a dry situation should be chosen, and in places where this cannot naturally be found, the preferable way is to elevate them on a hillock of suitable compost a little above the surrounding surface, covering the whole with good turf, and if neatly done it will be found to answer, and have a pretty effect. The generic name is taken from its being called by the inhabitants of San Domingo, Yuca. The specific name is taken from the resemblance of the leaves to those of the aloe, hence *aloifolia*.

Adam's needle is the English name of the yuccas, taken from the leaves terminating with a sharp point; those of the yucca *filamentosa* have the fibres detached in separate filaments: from this it has been called Eve's thread.

KENNEDIA SPLENDENS.

(SPLENDID CRIMSON KENNEDIA.)

CLASS.
DIADELPHIA.ORDER.
DECANDRIA.NATURAL ORDER.
LEGUMINOSÆ.

GENERIC CHARACTER.—*Calyx* two-lipped, upper one two-toothed, lower three-toothed. *Corolla* butterfly shaped (papilionaceous). *Vexillum* bent backwards, (reflexed), wings pressed close to the keel. *Keel* remote. *Legumi* oblong, compressed.

SPECIFIC CHARACTER.—*Plant* an evergreen twiner, with a smooth stem. *Leaves* in threes (ternate), leaflets oblong lanceolate, obtuse, smooth, of a dull green colour. *Racemes* axillary, terminal; flowers in threes, footstalks short and rough. *Calyx* a light brown colour, villous. *Corolla* a rich bright crimson.

THIS beautiful plant has been considered to be a new *Glycine*, and some doubt exists whether it might not safely be referred to that genera; but only having the drawing to inspect, we have been unable to effect that strict investigation so requisite to arrive at certainty in anomalous cases.

Whether it be a new glycine, or, as we have considered it, a species of *Kennedia*, it is evidently distinct from any of the preceding ones; and from its neat character the size and brilliancy of its flowers, combined with the length of the raceme on which they are produced, sufficiently recommend it to a place in all good collections.

Our drawing was taken at Messrs. Youngs' nursery, of Epsom, about October last, and we believe it was the first time of its flowering in this country. We are not certain of its native country, but Messrs. Young think it came from the Brazils, among other articles.

Its twining habit at once recommend it for the greenhouse or conservatory, or for training to a trellis in a warm situation on the south wall. The soil suited for young plants is two parts of good rich loam, to one of peat, the whole mixed with a little clean sand. Cuttings of the ripened wood will strike tolerably free if planted in pots filled with white sand, and placed in a tan pit or frame, where there is a little bottom heat.

Messrs. Young have been successful in propagating a few plants, and with the exception of two or three they have disposed of, it is at present very scarce, and can only be purchased at the above nursery at about five guineas a plant.



Kennedia splendens.



CALCEOLARIA CORYMBOSA, *var.* TALISMAN.

(TALISMAN CALCEOLARIA, OR SLIPPER-WORT.)

CLASS.

DIANDRIA.

ORDER.

MONOGYNIA.

NATURAL ORDER.

SCROPHULARINÆ.

GENERIC CHARACTER.—*Calyx* four cleft. *Corolla* monopetalous, two-lipped, inflated. *Capsule* two-celled and four valved.

SPECIFIC CHARACTER.—*Plant* perennial, herbaceous. *Stem* a foot or more high, erect, simple, covered with soft hairs, of a purple colour. *Lower leaves* ovate, obtuse, having a short footstalk and notched. *Stem leaves* heart-shaped, embracing the stem, opposite, flowers in a corymb. *Flower stems* long, and slender, covered also with pubescence like the stem. *Calyx* broadly ovate, spreading, partly acute. *Corolla* upper lip small, lower one large and inflated, bright yellow. *Germen* globose.

Var. TALISMAN.—*Stem* two feet high, pubescent. *Root leaves* oblong, lanceolate, obtuse, notched. *Stem leaves* ovate, obtuse, opposite. *Corymbs* forked, consisting of twenty or more flowers. *Calyx* ovate, acuminate. *Corolla* upper lip small, of a pale purple colour, incurved, lower lip large, of a deep blood red, and slightly notched.

THIS, of all the varieties that have emanated from the species *Corymbosa*, is the most rich in colour, and, when grouped with the other kinds, displays a picture of elegance and gracefulness of which no collection should be destitute.

Its habit is that of the *var. Jupiter*, requiring as it does, when grown in borders, to be sheltered from excessive wet in winter, if not taken up and potted, and removed to a cold pit or frame, in either of which they will stand quite safe till spring. For further particulars, see Vol. I., page 246.

THUNBERGIA ALATA, *var.* ALBA.

(WHITE-FLOWERED WINGED THUNBERGIA.)

CLASS.
DIDYNAMIA.

NATURAL ORDER.
ACANTHACEÆ.

ORDER.
ANGIOSPERMIA.

GENERIC CHARACTER.—*Calyx* double, outer one consisting of two heart-shaped leaflets, each having three nerves, inner one smaller and toothed. *Corolla* consisting of one petal, somewhat bell-shaped, with a limb divided into five equal lobes.

SPECIFIC CHARACTER.—A twining shrub. *Stem* slender, covered thickly with soft white hairs. Leaves heart-shaped, sagittate, opposite, pubescent, five-nerved. *Flowers* solitary, springing from the axils of the leaves. *Calyx* double, yellow green. *Corolla* orange yellow or buff; inside of the tube dark purple, giving a striking appearance to the eye.

Var ALBA.—Habit very like the *alata*, but with broader leaves, and larger flowers, its beautiful delicate white corolla, and the conspicuous dark spot in the centre.

THIS beautiful and interesting plant has so striking a resemblance to *Thunbergia alata*, in every important particular, except the colour of the corolla, that we are lead to consider it merely a variety of that species.

It is unquestionably a most desirable plant, being so well adapted for training up the rafters of the stove, or other convenient places, where its loveliness can be clearly seen.

It grows freely, and produces its blossoms in great abundance, and no doubt will be found to propagate with great ease. For further particulars see Vol. II. page 2, where *T. alata* is treated of.

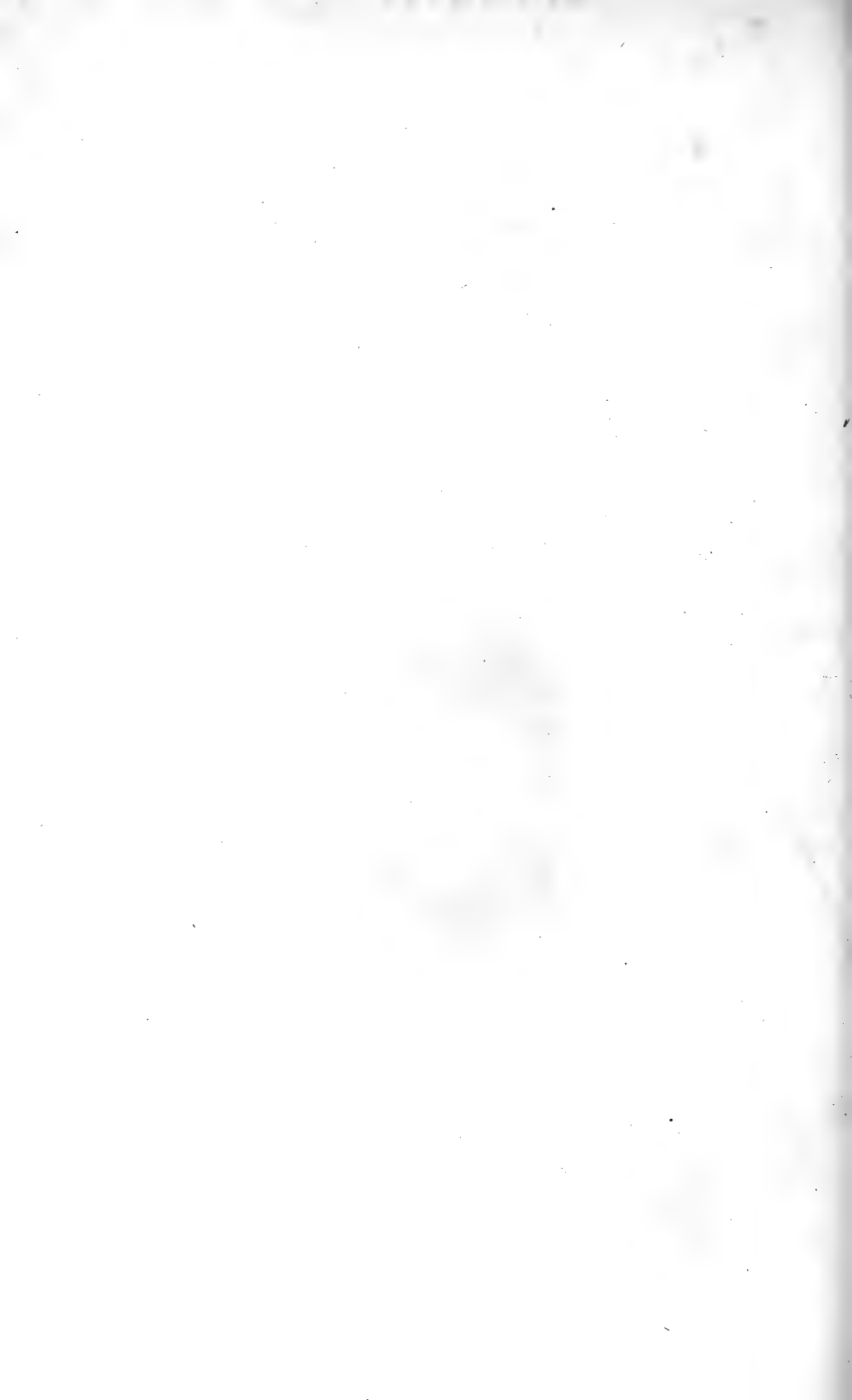
We are obliged to Mrs. Lawrence, of Ealing, for our drawing, in whose collection the plant flowered beautifully in the early part of last summer.

The generic name is given in honour of Charles Peter Thunberg, M. D., Professor of Botany in the University of Upsal.



E. W. Smith del et sc.

Thunbergia alata alba.



CULTURE OF THE HELIOTROPIUM PERUVIANUM.

To propagate this fragrant exotic with success, cuttings must be taken from the parent about the latter end of February, or beginning of March, and planted in pots of rich garden soil, and plunged in a strong hotbed or bark-pit, removing all decayed leaves, &c., as they appear, or they will affect the whole. In two or three weeks, when the cuttings have grown, they must be removed to an airy part of the hot-house for a few days, to harden previous to potting. If a succession of flowering plants through the autumn and winter months are wanted, more cuttings should be put in during May and June.

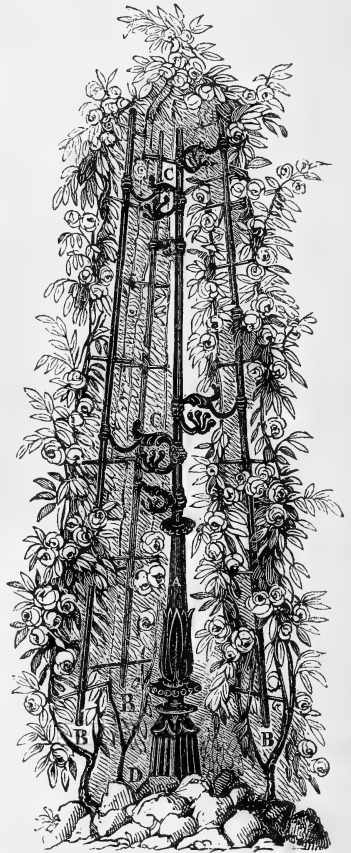
If they are intended to be kept in pots, provide some good soil, composed of one part good maiden loam, one of good rotten dung, half the quantity of sandy peat, and a little prepared leaf or vegetable mould; the whole must be well chopped, and incorporated together, but not sifted; pot off the cuttings in forty-eight sized pots, allowing as much soil to adhere to their roots as possible; cover these balls of roots about a quarter of an inch deep, pinch off the extreme ends of the plants to cause them to grow bushy, and after giving them a watering, place them in a shady part of the stove till they have taken root, then remove them into a more exposed situation, and give them plenty of air and water. Due attention must always be paid to potting them as often as the roots appear to mat, or the plants will soon assume a sickly hue. When in bloom, remove them to the greenhouse or conservatory, where they will continue to flower the greatest part of the year. When they have done flowering, set them in a cool part of the greenhouse, until the following February, when they should be cut down, their balls reduced, and repotted in the compost. When potted, they should be placed in a hotbed to produce healthy shoots for propagation, after which the old stools may either be turned into the flower-borders or thrown away, as young plants raised every year are to be much preferred for flowering in pots.

But if the *Heliotropes* are grown purposely for the flower-garden, cuttings put in during the month of September, potted off into small pots, kept in a close frame and well protected from cold nights, by means of mats or long litter, until the following spring, is considered the best method. Harden them by gradual exposure to the open air, so that by the middle of May they will bear to be planted out in beds, composed of a good mellow rich earth. Should cold nights happen after the plants are turned out (which is sometimes the case), they must be defended by means of hoops and mats, or canvass; if thus protected, they will grow and flower freely in favourable seasons, until the chilly nights of autumn give a check to their vigour: they should then be taken up with their balls entire, and potted in good sized pots. If placed in the stove, and shaded for a few days, they will continue to flower down to Christmas, when a few cuttings may be taken from them for early propagation, and the old plants thrown away.

A NEW FLOWER STAND,

DESIGNED TO FORM A PILLAR OF ROSES.

TRAINING roses upon stands of varied descriptions, so as to form pillars from eight to sixteen feet high, is one of the prettiest floral fancies of the present day; and what in reality can be more lovely to look upon than a column after this description of blooming roses? For this purpose, we have not met with any better calculated than the one represented in the accompanying figure, being in every respect well adapted for the flower-garden, the ornamental shape of the centre support rendering it at all times an agreeable object. It was designed and sent us, some time ago, by Mr. Saul of Lancaster, who communicated the flower-stand figured in Vol. II. page 89; and from the great demand for the latter, Mr. S. has been induced to have it remodelled, improving it in some respects, so as to render it interesting and desirable for the drawing room, &c. The central pillar of the annexed figure, with the brackets, are made of cast iron. The letter A, shows the centre pillar sunk a sufficient depth into a large stone or block of wood, so as to hold it fast; of the two stone is preferable, as being more durable, and better calculated to secure it against rough winds, &c., C C C C C C, refer to the brackets which fasten the uprights B B B; through these uprights pass rods of iron for the purpose of tying the branches to. The whole should be painted three times over with paint of a blackish blue colour, which will secure it against rain, and prevent corrosion at the joints for many years. One advantage resulting from a stand of this description, consists in being enabled to make use of plants whose flowers vary in colour, such as red, white, and blush; the change in colour thus produced makes the whole extremely pleasing and full of interest. If a proper selection of kinds be made, a continual display of bloom may be kept up during many of the summer months. At the bottom of the pillar D, may be placed a few large rough stones, which will have the appearance of rock work, and much add to the picturesque beauty of the whole; also prevent the soil becoming dry about the roots, thus assisting them to grow with more freedom.



There are other stands of a more simple structure, made of well-seasoned oak or larchwood, as represented in the accompanying figures, that answer for training plants to very well. (Fig. 2.) consists of three stout upright stakes roughly planed, standing at right angles, with cross bars made of the same material, either nailed on the outside, or let into a mortice to hold them fast; to these bars the branches of the plants so trained are to be tied.



Fig. 2.

(Fig. 3.) represents one similar in structure but less uniform in appearance, the only difference consists in the bars crossing each other in the middle; by this means

there is an advantage in training the young shoots, for by the crossing of the bars this may be done more neatly, and with greater regularity. Stands of this description cost very little, and if made of dried wood, well painted, will last for four or five years. The height of them should be regulated by the habit of the plants intended to be trained, if for *Clematises* or *Passifloras* about eight or ten feet will be sufficient, as the first object in training them will be to have every internal part quite hidden, so as to render the whole one complete mass of flowers and foliage; if carried higher they will be apt to become naked at the bottom which will give them an unsightly appearance. But if *Ecchremocarpuses* or *Lathyrises*, be desired for training, a stand of six or seven feet high will be found sufficient. As many of the plants that look well, trained after this manner, are rather tender, it will be advisable to choose as warm a situation as the flower-garden will afford. A select list of ornamental creepers is given in

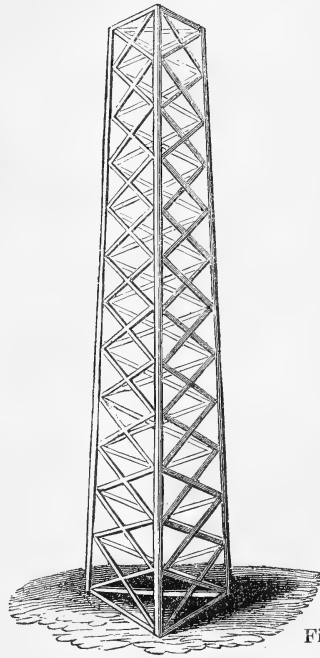


Fig. 3.

Vol. II. pages 33 and 34, arranged so as to show the time of flowering, colour of the flowers, height they usually grow, and their general habits.

CULTURE OF THE GENUS VERBENA;

PRINCIPALLY THE VERBENA MELINDRES.

THE *V. melindres* is one of the most splendid and lively ornaments we possess, contributing more to beautify our flower-garden than any other plant introduced into this country. "It may truly be called the gem of the flower-garden." The graceful habit of its growth, the surpassing brilliancy of its flowers, combined with the ease with which it is preserved and cultivated, sufficiently tend to prove its worth; so bright and dazzling are the flowers when the sun shines, that it is often with pain that we approach near to look upon them. In short, its merits cannot be too highly appreciated by those who love to admire the richness of nature, when given to augment our pleasures and enrich our dwellings; nor can we, as practical men, too assiduously apply ourselves to its cultivation, in order that it may be improved and disseminated, and the plant brought to as high a state of perfection as human skill can find means to reach. A short time ago, when only a few solitary plants existed in this country, the situation they then enjoyed was one the most select and favourable, generally occupying a place where its grandeur could be readily and advantageously seen. So rare and valuable was it considered, that every attention was given to encourage its growth, and to increase the number of plants. Experiments were tried, and soon it was found, that to propagate it was attended with little difficulty. At length the plants became numerous, consequently the worth and beauty of our flower-garden increased. And to render this the more perfect, we find whole beds filled with it, and in summer, when in full bloom, nothing can surpass the richness it imparts, and the animating effect it gives to all around. For the particulars of this mode of culture, see Vol. I. page 173. There is another method not generally practised, which we shall now detail, not that it will enhance its genuine beauty, but exhibit it with more advantage, particularly as it affords the opportunity of moving it from one place to another, as the taste or will of the possessor may dictate, and this without injury to the plant or impairing the beauty of its blossoms. About the month of August or September, when the plants in the beds have grown strong, and the branches have commenced to emit young roots at the joints, a selection of the strongest and best rooted ones is made, taking care to secure a ball of earth to each; they are then potted, using good rich compost made of rich loam and well rotted dung, into thirty-two sized pots, after this a little water is given to each, in order to settle the soil about the roots, they are then moved to a favourable part of the greenhouse, and in a short time they will have recovered any tardiness that might have been occasioned by shifting; after this they may be moved to any part of the house, or to a cold dry frame or pit, but here they must be watered very sparingly, and air admitted freely when the weather is fine, leaving them exposed at no time when the atmosphere is unusually damp. In this state they will stand the whole of the winter without sustaining any loss. In the spring as

early as is consistent they should be excited to grow, and will shortly require fresh potting, which should be done as soon as the roots have penetrated through the soil to the sides of the pot; at this shifting, twenty-four sized pots should be used, and the plants placed where they can enjoy an abundance of light and air; this cannot be better effected than by placing them near the front of the greenhouse. At this stage water should be given, so as just to keep the soil moist. In about a month or six weeks after this they will need an additional supply of pot room, which should be given without delay. The shoots now will be found to have increased in strength and number, and if frequently shifted, increasing the size of the pot at each shift, until they finally reach to number one, in which they may be allowed to flower, the progress made will be surprising. During their growth, which will continue without intermission, some of the flower-buds which have made their appearance should be pinched off, for, if allowed to remain on, will rob them of a portion of their strength and consequently their growth will be retarded. After they have received their last shift, no more buds should be plucked, for, if any more be destroyed, the ultimate beauty of the plant will be impaired. But whether the branches, which at this stage will have grown three or four feet long, are to be trained to a trellis, or allowed to hang over the sides of the pots, must be determined by the taste of the possessor. We have them upon both systems at Chatsworth, and find both to answer admirably, the branches of many growing the length of four or five feet, entirely covering the pot over which they hang, or hiding the trellis to which they are trained; and when elevated in a conspicuous part of the greenhouse, or placed in a warm part of the flower-garden, the effect they give is truly grand, a continual display of loveliness being maintained until the frost sets in. And to try to what pitch of excellence this plant can be brought, we propose plunging a plant or plants into a good rich border, and training them to a trellis on the hot wall, with other beautiful and valuable plants. The result we shall treat of in its place.

Verbena aubletia, or rose Vervain, is also a beautiful plant, well adapted to flower-garden purposes. Its pretty laciniate leaves, and solitary corymbs of purple flowers, entitle it to extensive cultivation. It is a perennial plant, requiring the protection of the greenhouse during winter, yet, if well covered with leaves or straw mats, it endures the intensity of the winter. Cuttings of the young shoots will take freely if put in sand and placed under a bell glass; this should be done about the month of August. It may also be increased by layers, which should be pinned down as the growth of the shoot advances; good loam and sandy peat suit this best.

Verbena paniculata is not so handsome as the other species. It is a hardy perennial, and does well with the treatment required for *V. aubletia*. Its flowers are blue, and produced on an erect stem.

Verbena venosa, or strong-nerved Vervain, is another beautiful plant of this genus, and planted in the flower-garden it flowers prolifically; either single, or a number grouped together, they have a very pleasing effect. Its flowers are of a rich purple colour, produced on a kind of forked spike. It is propagated freely by cuttings planted in common rich soil, but the most ready way is by dividing the roots, which is easily done, as it throws up many suckers. It requires the protection during the winter,

either of the greenhouse or a cold dry frame or pit, in which place it should be cautiously watered.

The *V. pulchella*, or sweet-scented Vervain, is a plant of much beauty, and is well adapted for planting in beds in the flower-garden; its flowers are pretty, and emit an agreeable fragrance when growing in the open air or in the greenhouse; in either place it will thrive well, but of the two it is more calculated for the flower-garden, as, when grouped together, the effect they give is much better than when standing singly in pots. This also is easily propagated either by layers or by cuttings of the ripened wood, which should be planted in sand, and placed under a bell glass; any rich soil will do for this purpose.

Verbena rugosa, or wrinkled-leaved Vervain, is a hardy plant, and particularly showy, making a grand display of beauty when planted in beds in the flower-garden, for which it will be found well adapted. It thrives well in light rich soil, and may readily be increased by cuttings.

The species spoken of above are all valuable plants, and should be in every well-arranged flower-garden.

REVIEWS.

1. THE COMPANION TO THE BOTANICAL MAGAZINE.

“THE proprietor of the Botanical Magazine has long been desirous to combine with that work a supplementary portion, destined to include various information relating to botany and botanical travellers; to be edited by the talented Dr. Hooker, author of the above, to be continued in monthly numbers, each number to contain two sheets of closely printed letter-press, and two partially coloured plates; separate 1s. 6d., or stitched with the magazine 1s., thus making in the whole, including a coloured number of the magazine, 4s. 6d. From the editor’s extensive correspondence, and frequent intercourse with scientific botanists and travellers of almost every part of the world, a constant supply of novel and entertaining information will be insured, which will be found extremely useful to the botanist, and interesting to the general reader.” This work we can safely recommend as one of interest and extensive utility; but to enable our readers to judge of its merits we make the following extract, from the sixth number, upon the uses and properties of the coca. “The coca, (*Erythroxylon coca* of Lamarck,) is a shrub of six or eight feet high, and to the eyes of an individual unpractised in botany, presents the general appearance of a straight-growing black-thorn bush; its numerous small white flowers, and the pleasing green of its leaves, occasioning this similarity. A large plantation of coca, while in this state, is an agreeable object, though less beautiful than a well kept coffee ground. The frequent stripping of the foliage of

coca soon reduces it to naked brushwood, and it is but slowly that it regains its verdant garb. These leaves, which are gathered and dried with great care, form the object of a brisk trade, and the use of them is as ancient as our first knowledge of Peruvian history; for the rude primitive people received the coca from the Cadmus of the lofty mountains of Titicaca, and wherever the incas afterwards penetrated, they distributed it as a boon among the conquered nations. To the present day, we see the Indian, stretched out unsocially in the shade, alternately putting some coca-leaves and some finely powdered chalk into his mouth. Silently, as unwilling to be disturbed by conversation, he whiles away a good half hour in the enjoyment of this occupation, slowly swallowing the saliva, and renewing the masticated leaves by fresh ones; and, while thus engaged, not all the haste and impatience of the traveller, nor even the approach of a heavy storm, can rouse the Indian from this state of intolerable apathy. The servant would instantly quit any white master who attempted to restrain him in this respect, and would sooner bear to be deprived of necessary food, than to employ in any other manner the period allotted to the enjoyment of his coca. Only in quiet retirement, too, is the pleasure unalloyed, it is lost by riding or walking: so that if the traveller would keep his companion in good humour, whether proceeding by boat or by mules, he must four times a day, consent to these tantalising pauses, a sacrifice which even the farmers of this country are compelled to make to the infatuation of their workmen. It has never answered to debar a coquero (thus is the most intimate companion termed in Peru) from the enjoyment of this vice, for every one declares he would sooner forego the most necessary things, and the appetite for it increases with age, bringing with it many evil consequences. Strangers are amazed at beholding such an infatuated passion for a leaf, which, whether fresh or dry, is only distinguished by a slight scent; possesses no balsamic properties, and when taken in small quantities has merely a grassy, or at most, a bitterish taste; the difficulty, however, vanishes when the observation of its effect upon others, or one's own personal experience, convinces us that, the coca, by its property of stimulating the nervous system, possesses a power much akin to that of opium. Rude nations have ever sought for artificial excitements, and the lower a people stand in the scale of intellectual ability, so much the more attractive to them is that means of exhilaration which removes for a time the consciousness of a dreary waste within. The American Indians, and especially those of the Peruvian Andes, though surrounded by civilisation, are enthralled by a melancholy suspicion of their own deficiencies and inability to improve themselves, whence arises their passion for artificial stimula, whether supplied by the coca or by the immoderate use of ardent spirits. Under the effect of the former, the habitual dejection of the Peruvian leaves him, and his indolent imagination brings images to his mind, which would never occur to him in his usual condition. If less violent in its first effects than opium, the coca is, perhaps, more dangerous from their longer continuance. A series of observations can alone convince the novice of this fact, as without it, the long train of ills which attack the Peruvian would never be traced to their real source. The sight of an inveterate

coquero suggests the desired explanation; useless for every active pursuit in life, and the slave of his passions, even more than the drunkard, he exposes himself to the greatest dangers, for the sake of gratifying this degrading propensity. As the stimulus of coca is most fully developed when the body is exhausted with toil, or the mind with conversation, the poor victim then hastens to some retreat in the gloomy native wood, and flinging himself under a tree, remains stretched out there, heedless of night or of storms, unprotected by covering or by fire, unconscious of the floods of rain and of tremendous winds which sweep the forest; and often yielding himself for two or three entire days to the occupation of chewing coca, returns home to his abode, with trembling limbs and pallid countenance, the miserable spectacle of unnatural enjoyment. Whoever accidentally meets the coquero under such circumstances, and by speaking interrupts the effect of this intoxication, is sure to draw upon himself the hatred of the half-maddened creature. The man who is once seized with the passion for this practice, if placed in circumstances which favour its indulgence, is a ruined being. Many instances were related to us in Peru, where young people of the best families have begun to use coca for the sake of passing the time away; and, acquiring a relish for it, have, from that period, been lost to civilisation, and, as if seized by some malevolent instinct, refuse to return to their homes, and resisting the entreaties of their friends, who occasionally discover the haunts of these unhappy fugitives, either retire to some more distant solitude, or take the first opportunity of escaping when they have been brought back to the town; indeed the lives of such wretched beings are embittered by the presence of civilised society, where the white coquero is shunned as the most dissolute drunkard, and, soon sinking into a semi-barbarous state, and degrading their white hue, which is the natural stamp of a higher class of society, they die a premature death from their excessive use of this intoxicating leaf. An example of this kind fell under my own notice, in an individual who lived with me in the solitary Pampayaco, and unworthily bore the honoured appellation of Calderone. He was of the fairest colour, and of very good descent, but for twenty years had resided in the montana, where from compassion, he was permitted to inhabit a hut, more fit for a savage than for a white man. Although scarce forty years of age, he was more decrepid than many a person of sixty, and utterly useless for any common purpose of life, as no one could depend on his word. Priding himself excessively, like all Creoles, on his white colour, yet utterly averse to any exertion, the mere idea of a city life with its accompanying restraints, was hateful to him. As he was a decided coquero, he could only be of service when it was practicable to keep this intoxicating herb from him; but when once the passion had irresistibly seized him, which was at least every month, he would break through all restraints, and disappearing in the forest, was lost for many days, after which he would emerge, sick, powerless, and altered. He was of some use to me, as a good and eager sportsman, and, by liberally supplying him with such fine gunpowder as he could not obtain by purchase, I soon gained his perfect confidence and goodwill. His disposition was generally kind, but any remonstrance against his vices, would

throw him into an ungovernable rage; he has frequently assured me, in confidential moments, that he would rather, as he has done for months together, live alone in the midst of some coca shrubs, in the most solitary spot in the wilderness, depending for support on his fishing-line and gun, than return home to his family at Huanuco. His descriptions of the lovely visions that appeared to him in the forest at night, and of his delicious sensations at such moments, had something in them truly awful.

“When it rained, he used to cover his half-naked body with soddened leaves that had fallen from the trees: and he assured me, that when this wretched substitute for raiment was brought to steam by the warmth of his person, that he could lie thus enveloped, for hours, without experiencing inconvenience or cold. The exciting principle of the coca appears to be of very volatile nature, and whether the elaborate chemistry of our country will ever be able to ascertain its mode of operation seems very dubious, as even in its native place, the leaves, where this quality principally resides, after being kept twelve months, become perfectly inert, and good for nothing. Apart from the effect undeniably produced on the nervous system by masticating the foliage, its exciting properties must be derived from subordinate causes. Large heaps of the freshly dried leaves, particularly while the warm rays of the sun are upon them, diffuse a very strong smell, resembling that of hay in which there is a quantity of melilot. The natives never permit strangers to sleep near them, as they would suffer violent headaches in consequence. When kept in small portions, and after a few months, the coca loses its scent, and becomes weak in proportion. The novice thinks that the grassy smell and fresh hue are as perceptible in the old state as when new, and this is to be expected with the Peruvian, who never uses it without the addition of burnt lime. Without this, which always excoriates the mouth of a stranger, the natives declare that coca has not its true taste, a flavour by the bye which can only be detected after a long use of it; it then tinges green the carefully swallowed spittle, and yields an infusion of the same colour. Of the latter alone I made trial, and found that it had a flat grass-like taste, but I experienced the full power of its stimulating principle.

“When taken in the evening, it is followed by great restlessness, loss of sleep, and generally uncomfortable sensations, while from its exhibition in the morning, a similar effect, though to a slighter degree, arose, accompanied with loss of appetite. The English physician, Dr. Archibald Smith, who has a sugar plantation near Huanuco, once, when unprovided with Chinese tea, made a trial of the coca as a substitute for it, but experienced such distressing sensations of nervous excitement, that he never ventured to use it again. The Peruvian increases its effects by large doses, utter retirement, and the addition of other stimulating substances. The inordinate use of the coca speedily occasions bodily disease, and detriment to the moral powers, but still the custom may be persevered in for many years, especially if frequently intermitted; and the coquero sometimes attains the age of fifty, with comparatively few complaints. But the oftener these orgies are celebrated, especially in a warm and moist climate, the sooner are their destructive effects made

evident ; for this reason, the natives of the cold and dry districts of the Andes are more addicted to the consumption of coca than those of the close forests, where undoubtedly other stimulants do but take its place. Weakness in the digestive organs, which like most incurable complaints, increases continually in a greater or less degree, first attacks the unfortunate coquero. This complaint, called opilacion, may be trifling at the beginning, but soon attains an alarming height ; then come bilious obstructions, attended with all those thousand painful symptoms, which are so much aggravated by a tropical climate. Jaundice and derangement of the nervous system follow, along with pains in the head, and such a prostration of strength that the patient speedily loses all appetite ; the hue of the whites assumes a leaden colour, and a total inability to sleep ensues, which aggravates the mental depression of the unhappy individual, who spite of all his ills, cannot relinquish the use of the herb to which he owes his sufferings, but craves brandy in addition ; the appetite becomes quite irregular, sometimes failing altogether, and sometimes assuming quite a wolfish voracity, especially for animal food ; thus do years of misery drag on, succeeded, at length, by a painful death.

“ In a moral point of view, the custom of chewing coca is no less deleterious. The propensity for solitude and inaction which it engenders, is productive of many bad consequences ; and if the intellectual powers do not seem to sink so quickly as under the influence of ardent spirits, still the effects tend finally to equal degradation. It is fortunate that a thinly peopled region is the only theatre for the coqueros, the bustle of a town would ill suit this propensity ; besides, public opinion is even more strong against it than gambling or drinking. The stigma of vulgarity attaches so much to the coquero, that every white person shuns any intercourse with him, though he always pleads the weakness of his stomach as an excuse for chewing the herb. The Indian alone is considered as privileged to continue this custom, for even the negro, though fond of strong excitement, does not love the coca ; still, females of every class are said to be partial to it, and to enjoy it both in the montana and the towns, though in the greatest secrecy. It is a rare thing for strangers to addict themselves to it, though it is said that the Chilians do so, when coming to reside in the coca districts, and become even more inveterate coca chewers than the natives themselves. You may frequently hear the ignorant people in Peru speak of this herb as a blessing sent from heaven, and a miraculous plant, to which the greatest virtues are ascribed. Undoubtedly many individuals may use it without suffering materially, but as its effects of increasing the powers arise solely from exciting the nerves, the results must finally be injurious ; and, even those instances of endurance which arise from its use, have been greatly exaggerated. The miner will perform, for twelve long hours, the formidable heavy work of the mine, and sometimes even doubles that period, without sustaining any farther sustenance than a handful of parched maize, but every three hours he takes a pause for the purpose of chewing coca (*coqueai*). He would work ill and reluctantly if the proprietor let him want his favourite herb ; and he exerts himself four-fold if he is allowed to take brandy along with it, thus heightening, as

he says, its pleasing taste. But after quitting such labour as no European could have performed, he requires (provided the coca has not engendered any disease) as much food as others, and such a quantity of it as might surprise any one, when its miserable nature is considered. The same holds good with the Indian, who, as a porter, messenger, or vender of his own productions, traverses the Andes on foot. Merely chewing coca from time to time, he travels with a load, weighing one cwt., on his back, over indescribable rough roads, and accomplishes frequently ten leagues in eight hours. During the revolutionary war, the undisciplined patriot troops, chiefly consisting of Indians from the Sierra, by dint of ample supplies of coca and brandy, traversed long distances in a very short time, and thus became very dangerous to the Spaniards. Where Europeans would have halted and bivouacked, the ill-clad barefooted Indians merely paused, for a short interval, to chew their coca. But, with all this, coca only possesses a stimulating property which is highly dangerous, and so fascinating, that, for one who becomes passionately attached to it, there is no escape. Short, too, is the alleviation of misery which it yields to the thousands whose destruction it procures, so that we may well adopt the opinion of the old Spanish chronicler, who affirms that 'the use of the coca is solely a depraved taste, and worthy only of such beings as the unhappy Indians now are.'

2. FLORIGRAPHIA BRITANNICA.

Coloured 1s. Plain 6d. "By Richard Deakin, and Robert Marnock, curator of the Sheffield Botanical and Horticultural Gardens."

THE first number of this publication appeared in August last. Each number contains twelve plates, illustrative of the flowering plants and ferns of Britain. The engravings, though small, are well executed, and the colouring good, giving a tolerably correct idea of the plants they are intended to represent; and to obviate any difficulty that may arise from the smallness of the plates, the authors have given dissections of, and considerably magnified the reproductive organs, &c., so that the class and order to which they belong may readily be fixed upon. The arrangement followed is that of the Linnæan system, at the same time, the natural order of each genus is specified. We recommend this work to the notice of all who desire to become acquainted with the native plants of this country, and from its reasonable price it cannot fail to get into the hands of all classes. To the young gardener, who may feel disposed to possess it, we would advise to make choice of the plain copies, as the expense is not only smaller, but, if he be diligent, he may lay on the colours himself from the natural plants, and this would certainly make a more lasting impression on the mind, than merely looking over and reading the descriptions.

Perhaps no one has contributed more, or laboured with more diligence, to im-

prove the art of gardening, even at that day when so many obstacles tended to impede the progress and cool the desires of those whose ardent wish was to see that pursuit brought to such a standing as might lead their fellow men to taste of those pleasures they well knew it was so competent to afford, than John Evelyn, he was the son of the author of the *Sylva*; and to show how defined his taste for that art was, we extract the following from S. Felton's second edition of the Portraits of English authors on Gardening; when he says, "Let us but take a turn or two in a well contrived and planted garden, and see what a surprising scene presents itself in the vernal bloom, diffusing its fragrant and odoriferous wafts, with their ravishing sweets; the tender blossoms curiously enamelled; the variously figured shapes of the verdant foliage, dancing about, and immantling the laden branches of the choicest fruits; some hiding their blushing cheeks, others displaying their beauties, and even courting the eye to admire; others the hand to gather; and all of them to taste their delicious pulps.

"Can anything be more delightful than to behold an ample square in a benign aspect, tapestried and adorned with such a glorious embroidery of festoons and fruitages, depending from the yielding boughs pregnant with their offspring, and pouring forth their plenty and store as out of so many Amalthean horns? Some tintured with the loveliest white and red; others are azure purple; others striped with an incarnadine as over a tissue of vegetable gold. Colours of an oriency that mock the pencil of the most exquisite artist; and with which their native beauty, perfume, fragrance, and taste, gratify and entertain more senses at once than does any sublunary object in all unvitiated nature besides."

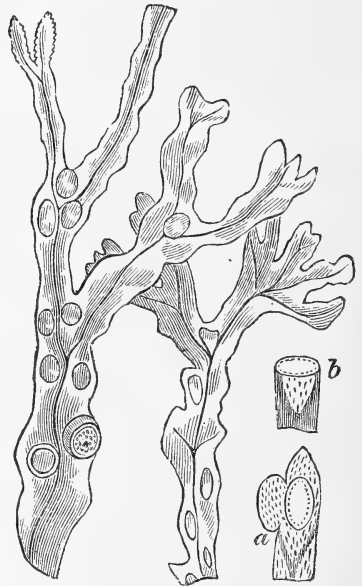
HINTS ON THE MANAGEMENT OF FERNS.

IN Vol. I, page 171, of our Magazine, we detailed the method of raising stove ferns from seeds; we now proceed to lay down a few rules for their future management. It is well known to all who have the least acquaintance with this interesting but often neglected tribe of plants, that the situation the generality of them prefer, is (if tender kinds) that part of the hot-house which is little suited for any other sorts of plants, and if hardy or indigenous ones, we generally find them thriving in the greatest vigour in those situations which would be immediate death to almost any other native plant. We recollect some time ago seeing a good collection of tender ferns, placed at the back of the house, on a flue, or a shelf or kind of stage, and from the healthy state of the other plants which stood immediately in front of them, this part of the house where the ferns were growing, was constantly shaded; and in cloudy or dull weather it was surprising to see how gloomy their situation, was rendered, and still more surprising to witness their very healthy state, putting forth, as many of them did, beautiful large leaves, obtruding themselves into the path

which run at the back of the house. It cannot be denied that the ferns are a handsome and extremely interesting tribe of plants, adapting themselves, as the generality of them do, to those situations where plants of more delicate habits will scarcely keep in existence; we think, for this simple reason, they are entitled to more general cultivation, for any one who has but a small hot or green-house may have choice selections of these interesting plants suited to either place, and if the following directions be attended to, they may be grown with tolerable ease, and will not fail, we are sure, to compensate for the labour that may be bestowed upon them. After the plants that have been raised from seed or otherwise procured, have attained sufficient size and strength to be allowed to stand singly in pots, they should, with the greatest possible care, be potted, for if the roots are broken, or otherwise injured, they will be sometime in recovering. The soil best for the purpose, we would say, is sandy peat with a very little mixture of rich loam. Before potting, nothing perhaps is of more importance than to attend properly to the drainage, for ferns although we find them sometimes in this country growing in very moist places, do not like, neither will they thrive if the soil in which they are potted be suffered to become saturated. Next in the scale of importance to proper drainage, is to understand the most advisable plan for putting in the plants, and of placing the soil about their roots: it cannot be urged that it is generally natural for ferns to have the soil close packed about the roots, but experience has taught us that in potting them it is best to press the soil pretty close to their roots, which may be done without damaging them, if care be taken, and if the soil have a pretty good admixture of sand, the water will pass off with freedom. After the plants are safely settled in the pots, a little water may be applied with a very fine rose, so as not to wash any of the soil into the hearts of the plants, or into the axils of their leaves, for if this be not attended to, the soil which is most sure to accumulate, will tend greatly to injure the plants and retard their future progress; next they should be secured from the influence of the sun, either by placing them at the back part of a wall, or, what is equally good, is to place canvass or mats so as to evade this luminary; in a short time after this the plants will have made new roots, and become established and set in a promising state for growing, they may then be removed to the situation in which they are hoped to flourish, which should be the back part of the house, or so disposed at the front as to prevent the rays of the sun from acting directly upon them, or, as we have sometimes seen them placed in a pit with other stove plants, so as to be partially shaded by their branches and foliage; in either of these places they will grow better, and maintain a more healthy and pleasing appearance than they would if left exposed to the heat of the sun; this is one reason why ferns do better in a partially shaded situation, since they enjoy an atmosphere more humid and subject to less variation than when under the direct rays of the sun. The administration of water is often too little attended to, and considered of minor importance in many instances, and to this is not unfrequently attributable the bad success of many cultivators, and it is certainly a very difficult point to hit upon. In close damp weather the watering should be particularly attended to, for if the plants at this time get over-watered they are more liable to

suffer, than when the atmosphere is clear and less humid, but at all times water should be given with the greatest caution, as once over-watering may be attended with the worst consequences. In dry weather it may be seen when a plant needs water by the appearance of the soil, which will be dry on the surface, but although this cannot be taken as a sure criterion, it is certainly better than always watering indiscriminately, without reference to any rule, which is too often the case. As ferns, like most other plants, are subject to the attacks of insects, particularly the red-spider, it is necessary to syringe them now and then over the leaves in order to arrest the progress of this little intruder, the best time to perform this is in the evening, after a fine summer's day. After this operation it is not uncommon to see many of the pots left standing full of water, which in many instances is succeeded by an indication of sickness in the plant, to remedy this the plants should be looked over, and where water is found standing in the pots, they should be turned on one side until this superabundance has run off, then they may be placed in their upright position without sustaining any injury. His Grace the Duke of Devonshire's collection of ferns at Chatsworth are planted in the fissures of the rock-work in the stove, giving the whole at all times a very pretty and interesting appearance. In fine, from the varied shapes of the leaves, the peculiar manner of their development, a continued diversity is maintained, which is quite engaging and beautiful; in this situation they grow surprisingly and are remarkably healthy.

The accompanying figure is the Bladder-wrack, (*Fucus vesiculosus*, Linn.) it belongs to the Jussieuan order *Algæ*; the leaf is smooth, glossy, and dark olive, having a mid-rib tapering from its base: *a*, represents the vesicles, containing the spores; *b*, a section of the same. The plant is said to be employed in the manufacture of kelp. It is readily known by the round hollow bladder-like excrescence, which is said to be filled with air, in the male plant, while in the female it contains a jelly. In the dry state the plant assumes a dull black colour very brittle, and is not unfrequently found covered with a kind of saline efflorescence.



The subject of Ferns we shall resume at a future opportunity.

HINTS ON THE GENUS DIGITALIS.

THE genus *Digitalis* belongs to the class *Didynamia* and order *Angiospermia* of the Linnæan system, and is one of that group in the Jussieuan arrangement denominated *Scrophularinææ*, or Fig-wort. They are, for the most part, showy plants; and *D. purpurea* (see fig.) and the variety *Albo* are natives of this country, found growing in abundance about rocky places, old hedge-rows, and not unfrequently by road sides, where they are objects of much beauty. The flowers of the former are of a purplish-red colour, growing on one side of a fine showy spike; the flowers of the latter are white, but it is not so commonly met with as the other.

The *D. laciniata* is a hardy perennial, and although common, is, when well grown, a very pretty plant, producing its flowers about June and July. It may readily be increased by dividing the roots. It is a native of the mountains about Malaga. The flowers are yellow, which it produces in great abundance.

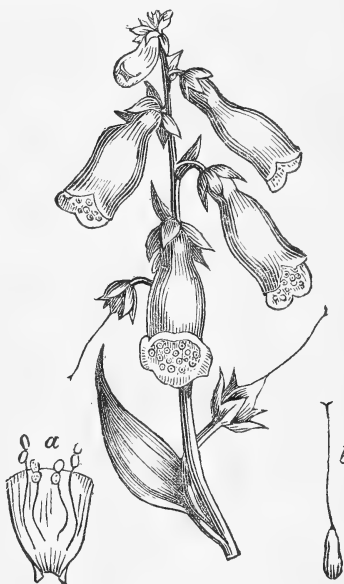
The *D. ambigua* is certainly a very desirable plant, as it will grow in almost any soil and situation, It has large yellow blossoms which it produces about August, and, being a hardy plant, is well calculated for the flower-garden. It is a native of the South of Europe, particularly Germany, and is easily increased by seeds, or by divisions of the roots.

The *D. canariensis* is said to have been cultivated in this country so long ago as 1698, by the Duchess of Beaufort. It is sometimes found growing to the height of six feet, in which state, when in full bloom, it is a very lively object. The flowers are of a tawny yellow colour, produced about the month of June. It is a native of the Canary Islands, and not so hardy as the preceding species, requiring the protection of a green-house or frame, during frost. It grows well in sandy loam, and is increased by seeds, which it produces in abundance.]

The *D. lutea* is a native of the South of France, Transylvania, and Italy, where it is found on mountainous places in the shade.

It is a hardy perennial of very easy culture, growing in almost any soil and situation. The flowers are yellow, and when in bloom it has a very pretty appearance about June and July. It may be propagated from seeds, or by dividing the roots.

D. parviflora, or small-flowered Foxglove, is a plant of little beauty, and will grow in any sheltered situation, being nearly hardy. The flowers, which are produced in great abundance, are very small, and of a dull colour. It may also be propagated by seeds, or by divisions at the root.



Foxglove (*Digitalis purpurea*) a, part of a flower, showing the four stamens; b, the pistil.

NEW AND BEAUTIFUL PLANTS

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Of the above twenty-four monthly plates we have only noticed such plants as are new and very rare, and only such new ones as are handsome, and deserve to be extensively cultivated. For descriptions and figures reference must be made to the works themselves.

CLASS I.—PLANTS WITH TWO COTYLEDONS (DICOTYLEDONEÆ).

INDIAN FIG TRIBE (CACTEÆ).

CEREUS NAPOLEONIS. Napoleon's Cereus. This plant was sent by Mr. Kay, of Clapton, about ten years ago, to the Edinburgh Botanic Garden, where it flowered for the first time in September last. The flowers open in the morning and close in the afternoon. It is very like the *C. grandiflorus*, and is slightly, not very agreeably, perfumed. *Bot. Mag.* 3458.

COMPOSITÆ.

COREOPSIS CORONATA. Crowned Coreopsis. Seeds of this beautiful plant were gathered in Texas, and received from Mr. Drummond during the spring of 1835. The plants raised from them flowered copiously in the summer and autumn; those in the open air continuing to display their handsome flowers, remarkable for the circle of brown spots placed at a distance from the disk, till October, when they were cut off by the frost; those in a frame continued much longer in perfection. *Bot. Mag.* 3460.

EPACRIDEÆ.

COSMELIA RUBRA. Red Cosmelia. A marshy plant found upon the coast of New Holland. In this country it is a very pretty green-house plant, with the habit of an Epacris. It flowers in May. *Bot. Reg.* 1822.

THE BIRTH-WORT TRIBE (ARISTOLOCHLÆ).

ARISTOLOCHIA FÆTENS. Stinking Birth-wort. A native of the West Indies, whence it was obtained by Mrs. Marryat, in whose stove at Wimbleton it flowered

in June last. It is remarkable for its large size, and the singular colour of its flowers, which are beautifully variegated with purple and dirty yellow. They have a most disagreeable and disgusting smell, which will prevent the plant from becoming a favourite. It will strike freely from cuttings. *Bot. Reg.* 1824.

THE CHICKWEED TRIBE (CARYOPHYLLÆ).

ACROSTEMMA BUNGEANA. Dr. Bunge's Scarlet Campion. A plant of this beautiful species was received from Messrs. Booth of the Foltbeck Nurseries near Hamburgh, by Dr. Neill, in whose collection it flowered in July last. It is a native of Asiatic Russia. A hardy perennial, requiring a loamy soil, and it may be increased by cuttings, or by seeds which appear to perfect freely. *Brit. Fl. Garden*, 317.

THE VERVAIN TRIBE (VERBENACEÆ).

VERBENA RUGOSA. Wrinkled-leaved Vervain. A very showy species, raised from seeds received from Buenos Ayres. It is a hardy perennial, growing in a light rich soil, and increased by cuttings, or by parting the roots. *Brit. Fl. Garden*.

THE MEZEREUM TRIBE (THYMELEÆ).

DAPHNE ODORATA, *var.* RUBRA. Red-flowered fragrant Daphne. An erect evergreen bushy shrub, about two feet high; very desirable for the green-house or conservatory, for, if growing vigorously, it continues to blossom during the greater part of the year. The flowers are of a dark red in the bud state, becoming paler and more glossy after expansion, and they are then highly fragrant. *Brit. Fl. Gar.*

CLASS II.—PLANTS WITH ONLY ONE COTYLEDON (MONOCOTYLEDONEÆ).

THE ORCHIS TRIBE (ORCHIDÆ).

DENDROBIUM DENSIFLORUM. Dense-flowered Dendrobium. This lovely Orchidea comes so near to Roxburgh's *D. clavatum* (*Hort. Beng.*, p. 63), that Dr. Lindley would have considered them as identical, had not bulbs been ascribed to the latter, of which the former was entirely destitute. It is a most splendid plant, producing large clusters of yellow flowers. It thrives well in a moist atmosphere, with other Orchideous plants. *Bot. Reg.* 1823.

THE LILY TRIBE (LILIACEÆ).

TULIPS. Elizabeth and Homer. Rose Elizabeth was raised from seeds by the late Wm. Clark, Esq., of Croydon, and bloomed for the first time in Mr. Jeffries' superb collection at Rotherhithe. It is a flower of considerable merit, of a beautiful form, and has the white ground exceedingly pure to the base of the cup. Homer is one of Mr. Groom's flowers. It is one of great beauty. The cup is of a beautiful form, approaching to a globe; the white is very bright and pure; the feathering is glossy, and of a peculiar richness. *Fl. Mag. No.* 7.

REMARKS ON THE NATURAL ORDER ASCLEPIADEÆ;

WITH SOME

DIRECTIONS FOR GROWING THE PERGULARIA ODORATISSIMA.

THIS is a tribe of plants which differ materially from most others of the vegetable kingdom, particularly in the structure of its fertilising organs. The subjects of this tribe belong to the fifth class and second order of the Linnean system, viz. *Pentandria Digynia*, but they occupy a section of it by themselves, inasmuch as they have characters in which they all agree, but which stamp them with peculiar interest. They also form an order in the natural system, and this is represented by the genus from whence it derives its title, *Asclepiadeæ*, from *asclepias*, or swallow-wort.

This order comprises about twenty-five genera, a family among which the most noted are *Periploca*, that beautiful hardy climber wherewith the trellised fronts and balconies of some rural villas are decorated; *Asclepias*, the type, which contains several interesting herbaceous perennials, natives of America; and some pretty annuals of ready culture. *Stapelia*, a most extensive family of succulents, possess the very disagreeable property of emitting a powerful stercoraceous or putrescent odour, which even deceives while it attracts the common blow-fly. *Hoya*, that elegant climber, whose blossoms appear as if they were modelled out of wax, or from some vegetable substance of a very beautiful texture; and finally our *Pergularia*, also a climber, which yields to none other for the singularity of its habits and the astonishing diffusibility of its great fragrance.

The *Asclepiadeæ* agree in having the stamens more or less concealed, and surmounted by a member which forms a sort of crown, and of this peculiarity of structure *Hoya* furnishes one of the best examples.

The pollen or farina is not a powder, as that of flowers in general, but is produced in waxy or glutinous masses, and in this one point it approximates to the *Orchideæ*, or plants of the *Orchis* tribe. The flowers of all the genera have but one petal, which is below or inferior to the fruit, and that is a follicle, or seed-vessel, somewhat resembling a folded leaf, opening when ripe by one suture only, of which the fruit of the larkspur may be adduced in illustration.

Pergularia is distinguished from its congeners by its yellowish green flowers, produced in large tufts from the axils of its heart-shaped leaves; these flowers have a wheel-shaped contort corolla, the segments somewhat reflexed, and their edges folded back; the tube swollen at the top. *Calyx* in five segments, shorter than the tube; masses of *pollen* erect, small, and requiring a glass to be accurately investigated; stigma obtuse, closely invested by the small anthers or pollen. The verdant tufts of flowers are formed rather widely apart, in the twining stems; the individual

blossoms are very numerous on the tufts, and durable; the odour they emit can scarcely be described, it perhaps may best be compared to the compound blended fragrance of a perfumery shop, and though not absent during the day time, is only diffused after sun-set; as soon as the shades of the evening approach, the house becomes replete with the gaseous aroma. The base of the tube is melliferous, and the honey yielded is attractive of wasps and flies; the former absolutely revel in its sweets, and are to be seen plunged and immersed, as it were, in the swollen cavity of the tube.

This climber cannot be called a pretty plant, but its leaves are handsome, its stem graceful, and its flowers exceedingly curious; no good collection ought to be without it.

The culture of the *Pergularia* is simple: it strikes freely during summer, in a pot with a large layer of sand, over rich soil, or in a phial of glass, if kept gently warm. The rooted plants grow well in the decayed turf of sandy loam, broken up and mixed with black reduced leaf mould.

But the plant should have plenty of room, because its roots ramify widely, and require much water; hence it always succeeds best when a large pot (a twelve), with four or six holes opened around its sides, is plunged in the leaf-bed of the stove; its shoots then twine freely and widely, and the blossoms are produced early in summer, and remain a source of fragrance for months. It may be cut back very freely after the flowering season, or rather just before the season of spring growth, and be thus kept within bounds and in full verdure.

OPERATIONS FOR MARCH.

ACHANIA MOLLIS (OR **MALVACISCUS MOLLIS**,)—This is a pretty species, producing its scarlet flowers at almost all seasons. Cuttings of it may now be put in sand, which will readily strike root if plunged in a little heat. In taking off the cuttings it is best to go as near the old ripened wood as possible, the new shoots being liable to rot in the middle. Do not take care of any of the leaves above the part immersed in the sand.

ALOES may now have a little water, say once in eight or ten days, but not oftener. See Vol. I., page 41.

ALSTRÆMERIAS.—The green-house kinds may now safely be potted. They thrive best in a mixture of full one third sand, rather more than a third of good loam from the pasture, and a little peat. See Vol. I., page 199.

ANDROMEDA, KALMIAS, &c.—Propagate those that strike readiest from cuttings; others that increase best by layers should also be attended to during this month.

ANNUALS.—Some of the tender kinds may now be sown in pots filled with light rich soil, and placed where there is a little bottom heat. The half-hardy kinds may be sown on a slight hot-bed. See Vol. I., page 18.

ANNUALS (Tender) sown on a hot bed last month will now be up; give plenty of air on fine days in order to make them hardy.

BOUVARDIA TRIPHYLLA should now be propagated. The readiest way to perform this, is, by dividing the roots, and planting each division in a mixture of loam and peat. After this, place them in a warm situation, they will soon begin to grow, and speedily make pretty plants. See Vol. I., page 225.

ERICAS.—The greenhouse kinds may now be propagated in pots filled with sand, and placed under a bell glass in a gentle heat.

ISOTOMA AXILLARIS.—Cuttings of this pretty plant, that were put in last autumn, should now be potted off into small pots, and carefully watered, placing them in a part of the green-house where they will have a free circulation of air. Also young plants that were potted off in the autumn should now have an increase of pot-room. The best soil for them is good rich loam and peat.

IXIAS.—The bulbs of this favourite genus should now be carefully examined; any that require to be fresh potted should now be done. The soil they delight in is rich sandy loam, mixed with a little peat, or decayed leaves; after potting, water should be very sparingly given. See Vol. I., page 8.

PELARGONIUMS.—If it be desirable to have them in flower in the autumn, cuttings of the favourite kinds should be put in this month.

PETUNIA VIOLACEA. Cuttings of this, if not put in last autumn, should now be, without delay. They readily strike in light rich soil, placed in a little heat under a handglass. The other kinds may be similarly treated, observing to pot them in good rich soil at all times. Vol. I., page 7.

SCHIZANTHUS RETUSUS.—Those potted off last autumn will now require an increase of pot-room, as they are, at this season, liable to damp; water should be given with great caution, and an airy situation in the green-house should be chosen to place them, where they can have the benefit of the sun. Vol. I., page 5.



ESCHSCHOLTZIA CROCEA.

(SAFFRON-COLOURED ESCHSCHOLTZIA.)

CLASS.
POLYANDRIA.

ORDER.
MONOGYNIA.

NATURAL ORDER.
PAPAVERACEÆ.

GENERIC CHARACTER.—*Calyx*, of one leaf. *Corolla*, consisting of four petals. *Capsules* round, and ten-ribbed.

SPECIFIC CHARACTER.—Perennial. *Leaves* glaucous, bipinnatifid. *Calyx* long, more slender than that of *Californica*. *Corolla*, dark orange, very showy.

THE flowers of this beautiful perennial are of a much richer colour than those of the well-known *E. californica*, which make so splendid a show on our flower borders from the beginning of July to the end of October, or beginning of November.

Our plants appear to bear the weather as well as that species, and, from what we have already experienced of their habit, will, no doubt, require the same treatment, which may be briefly stated as follows :—

1. Propagation may be effected either by seeds or by division, but the best plants are always produced by seeds.
2. Always sow the seeds as soon as they are ripe ; this is preferable to keeping them until the following spring, for, in doing so, many lose their vegetating power ; and a crop of plants is seldom raised.
3. Always select a light dry soil for the purpose and a somewhat sheltered situation, and the young plants will stand the winter without any protection.
4. It is better to sow the seeds at once in the open ground, where the plants are intended to flower ; this is preferable to sowing them in pots, and afterwards transplanting them, in consequence of the peculiar construction of their roots. When transplanted, they are long before they commence growing again.
5. When the seedlings are of a proper size, thin them out where too thick, and they will require no more attention except keeping free from weeds.

IPOMÆA HORSFALLIÆ.

(MRS. HORSFALL'S IPOMÆA.)

CLASS.

PENTANDRIA.

ORDER.

MONOGYNIA.

NATURAL ORDER.

CONVOLVULACEÆ.

GENERIC CHARACTER.—*Calyx* five-parted, naked. *Corolla* bell-shaped, five-plaited. *Stigma* capitate, composed of three lobes. *Ovarium*, two or three-celled, each cell containing two seeds.

SPECIFIC CHARACTER.—*Plant*, a smooth tender evergreen, with a long twining stem. *Leaves*, generally in fives (Quinate), with rather long foot-stalks; leaflets lanceolate, entire, slightly curved at the edges. *Flower-stalks* axillary, as long, or longer than the *footstalks* of the leaves. Flowers many, forming a *cyme*, each flower growing upon a small stalk, which increases in size upwards, to the seat of the flower-bud. *Calyx* of five, imbricated, equal, oval-shaped lobes, very blunt, and of a purplish black colour. *Corolla* campanulate, with a short limb, consisting of five broad rounded lobes, each with a notch at the end, and of a brilliant rich rose colour. *Stamens* five, erect. *Filaments* smooth. *Ovary* globular. *Stigma* consisting of two hairy lobes.

THIS beautiful and very splendid species of the extensive genus *Ipomœa*, was raised a few years ago by Mr. Evans, at Everton, gardener to Charles Horsfall, Esq. by whom seeds were received either from Africa or from the East Indies, some time previous.

Mrs. Horsfall, in whose stove it flowered profusely, kindly furnished us with a drawing of this exquisite plant last autumn.

As a twining plant for the stove, this is unquestionably the most deserving of cultivation, for, if well grown, it is highly ornamental, producing an abundance of rich blossoms, which continue beautiful for many months. Its whole habit is pleasing, the leaves are pretty, and full of interest, which, if plenty of room be allowed for the branches to ramble, grow to a great size, so as almost to hide the part of the house over which they are permitted to flourish.

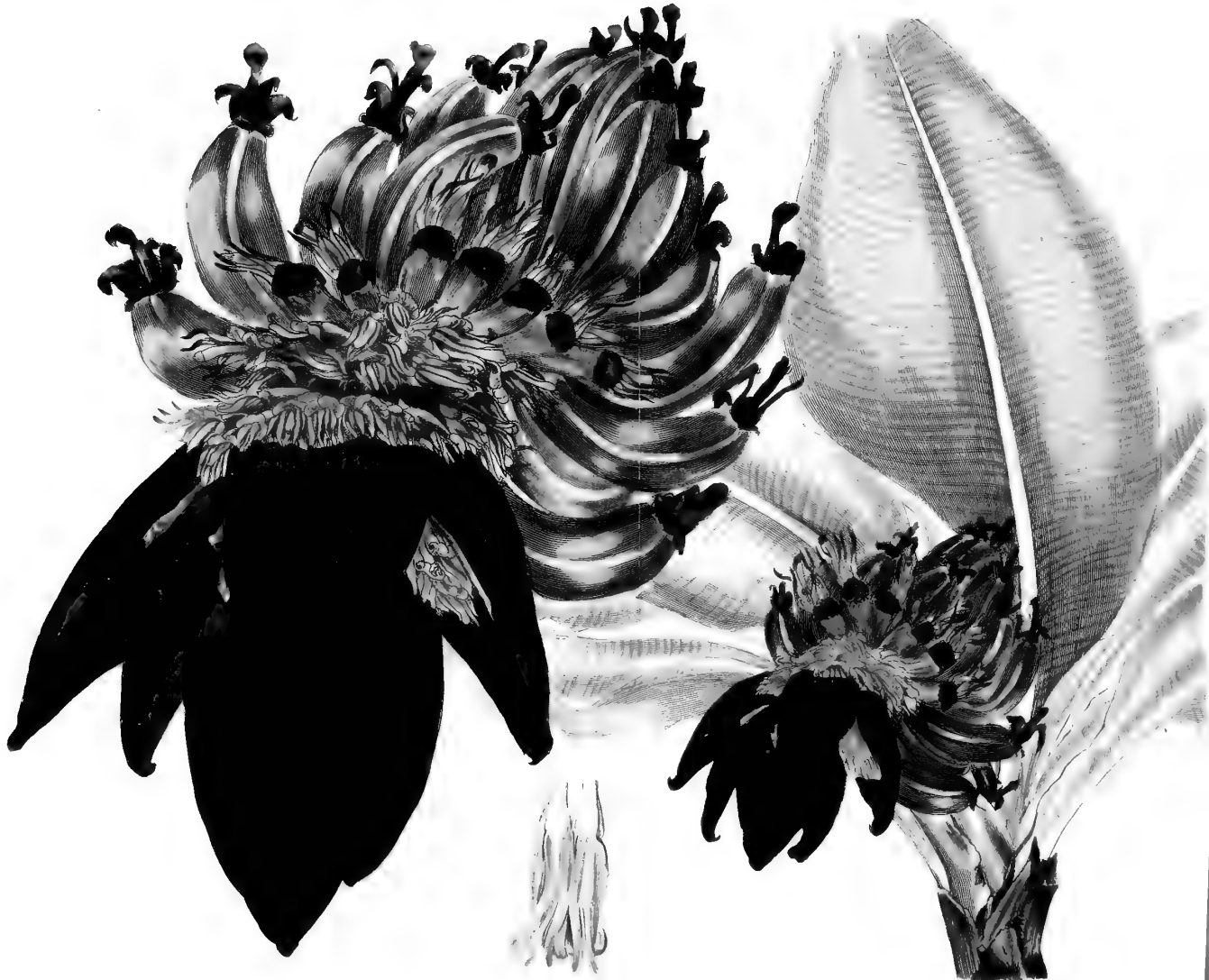
The most successful method of cultivating this plant, so as to ensure a good display of bloom, is to encourage plants in a young state, by first potting them in nice open soil, composed of sandy loam and peat, placing them in rather a humid atmosphere, and occasionally syringing over the leaves, which will give them a green and healthy appearance. After they have become strong, a little well-rotted dung may be added to the compost, and the plants potted into the new soil, allowing them a good shift, and plenty of drainage; at this shift the plants should be removed to that part of the house where they are intended to flower, and carefully trained to the trellis or rafter to which they are to grow, bearing in mind at all times, particularly when the plant is growing vigorously, to supply it with plenty of water.

The flowers usually begin to open about the month of August, and continue to expand in succession until the latter end of October, and sometimes later. It may with tolerable ease be propagated by cuttings, potted in pure sand, and placed under a bell glass in a moderate heat.



Ipomoea Hirsutissima





Musa sapientum



MUSA CAVENDISHII.

(THE CAVENDISH PLANTAIN.)

CLASS.

HEXANDRIA.

ORDER.

MONOGYNIA.

NATURAL ORDER.

MUSACEÆ.

GENERIC CHARACTER.—*Corolla* in two divisions; upper erect, terminated with five teeth, lower half the length of the upper, and conical shaped. *Fruit* oblong three-cornered, many-seeded.

SPECIFIC CHARACTER.—*Plant* four to five feet high. *Stem* composed of small cells, retaining moisture. *Leaves* oblong, lanceolate, obtuse, with parallel veins, midrib protuberant on the under side, upper grooved. *Spathæ* spathaceous, nodding, springing from the centre of the leaves, spathes brown red, freckled with white spots. *Corolla* pale yellow, consisting of two petals, upper fringed and reflexed, under short and entire. *Stamens* erect, fertile. *Pistil* erect, nearly as long as the stamens. *Stigma* globose.

THIS highly interesting and most valuable plant is a native of China; it was sent from the Mauritius in 1829 by the late Charles Telfair, Esq., to his friend the late Mr. Barclay of Burryhill. Mr. Cameron, Curator of the Birmingham Botanic Gardens, has kindly furnished us with the following particulars respecting its history:—

“The only plants of the Chinese *Musa*, that I ever heard of, were two imported ones received under that name at Burryhill in 1829. They were sent from the Mauritius by the late Charles Telfair, Esq., who stated in his letter, that he had obtained the species two or three years previously from China, that he had been at much pains in collecting together all the species and varieties of *Musa* he could obtain, and that he considered the one sent to be the most valuable, as it fruited profusely, and, only growing three feet high, would render it a great acquisition to the stoves of this country. As I had left Burryhill, I do not know what became of either plants.”

Messrs. Young, of Epsom, purchased both plants at Mr. Barclay's sale, one for the Duke of Devonshire, and the other to go to the continent.

A confirmation of its being a Chinese species, is an old Chinese drawing of the present kind, in the possession of Aylmer Bourke Lambert, Esq., one of the vice-presidents of the Linnæan Society. In a communication which we had with Mr. Lambert in July last, before our plant flowered, he informed us that he possessed a drawing on old Chinese paper which he believed identical with our plant. Mr. Lambert had a full sized copy made, and exhibited it at the Linnæan Society in

November last, at the same time giving it its present name, *M. Cavendishii*. For an idea of the whole plant, see (fig. 1.)

Our plant showed indications of flowering in September last by putting up a small imperfect leaf; this was shortly followed by the spike (spatha) of flowers. Owing to the lateness of the season, the flowers developed themselves but slowly: the first week in November it commenced flowering, and has continued without intermission ever since; on the flower-stalk there are 100 fine fruit swelling off; unfortunately it had been kept in rather a small pot, or there is no doubt but it would have perfected a greater number.

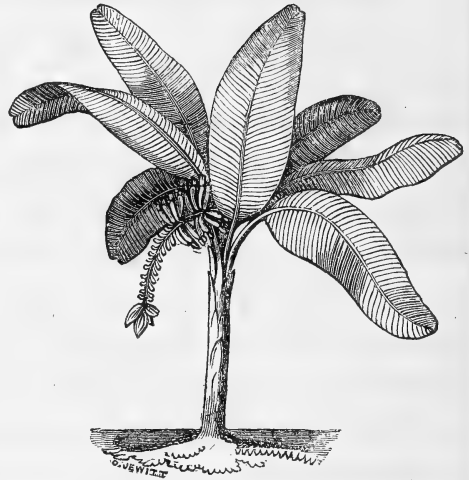


Fig. 1.

The plant before us differs widely from any of the known species of this genus, and particularly from the common dwarf kinds, the leaves being very short and thick, with short petioles or leaf-stalks. With respect to the fruit, which is its most valuable quality, an extract from a letter addressed to our friend, Mr. Cooper of Wentworth, dated March 1st, 1835, from Mr Newman, superintendent of the Royal Gardens at *Mauritius*, will at once explain. "Returning again to my experimental garden, I have a dwarf sort of *Banana* which has fruit of an exquisite flavour, and I think would do well in England with very little care in the hothouse. I have gathered 240 fruit from a single raceme, and in less than a year after planting: if you like to have a few plants, I will with pleasure send them; I feel confident that ere long this and several other varieties of *Musa* will be cultivated for the tables of the great in England."

The plant is not more than four feet six inches high; had it flowered at a more favourable season, we have every reason to believe it would have swelled off more than double the quantity of fruit it is now doing.

We have a very healthy plant, which we intend to grow with every possible care, and there is no doubt but a great crop of fruit will be gathered. If our anticipations should prove correct, what a valuable addition this will be to our exotic fruits! A pit forty feet long, fifteen broad, and five high, will produce several hundred-weight of fruit in a year, with no other care or attention than that of giving plenty of manure to grow in, and a good supply of heat and water. It will fruit at all seasons, and no doubt with easier culture than any kind of fruit grown under glass.

PREFATORY REMARKS ON THE GENUS MUSA.

THE derivation of the type of this genus has been variously admitted. Linnæus says "it was given in honour of *Antonius Musa*, the brother of Euphorbus;" others allow the Arabic name for the plant, *Mauz*, as being more probable; but the former, judging from the two words, appears most likely to be the original. The plants of this splendid genus are amongst the most prominent features in the vegetable world, and form a striking part of that group or class in the *Linnæan* arrangement called *Hexandria*; characterised by each flower being furnished with six male organs, termed *stamens*; it is divided into three orders, in the first of which, *Monogynia*, they occupy a conspicuous place; the plants belonging to this order are known by each flower possessing only one female organ or style, which is surmounted by the stigma. In the *natural* or *Jussieuan* system they are ranked in that order denominated *Musaceæ*, well known to have sprung from the name of the genus *Musa*. Arranged in this noble family are some species of the highest value to mankind in point of usefulness, others as ornaments are only surpassed by a few of the higher orders of vegetation admired for their gigantic stature and graceful foliage. They are either biennial or perennial, with roundish, solid, watery stems, usually straight, perpendicular, averaging from five to twenty-five feet high, simple, thick, round, smooth, fungous, and lamellated. The leaves are oblong, from three to ten feet in length, and under two in breadth. The flowers are produced in large terminating racemes, destitute of a calyx or perianthium, generally of a yellowish white, but in some of a bright scarlet, some possessing fertile, and others sterile blossoms, the fertile occupying the lower, and the sterile the upper part of the raceme. The fruit that succeeds the former is of an oblong, angular, recurved shape, sweet, eatable, and containing many seeds of a black colour. They are found in great abundance in the old world, where, for the greatest part, they are cultivated. Two species only are cultivated for the nutritive aliment afforded by their fruit, viz., *Plantain* and *Banana*, although by some the former has been considered merely a variety of the latter; still there are some points of dissimilarity existing in the colour of the leaves, shape, and taste of the fruit, sufficient to constitute them distinct species. And what is so very remarkable connected with the history of these plants is, their being no where found in a wild state, claiming nativity to no particular part or country in the torrid zone, but from equinoctial Asia and America to the islands of the Atlantic and Pacific Oceans, they offer their produce indifferently to the inhabitants; in a word, wherever the mean heat of the year averages 75 degrees Fahrenheit, these plants are amongst the most important and interesting objects for the cultivation of man; and, we may ask, is it not here that the first rudiments of civilisation begin to develop themselves? for even amongst the wildest tribes of South America, which depend upon their fruit for subsistence, much care is exercised in the propagation of them. All hot countries appear equally to favour their fruit, and they have been even cultivated

in *Cuba*, where the thermometer is known to descend as low as 45 degrees Fahrenheit. The produce of these plants is enormous, and the short period and little labour required to bring this to perfection is wonderful to the European, who has never witnessed them growing in a natural state. Eight or nine months after the suckers are planted, the flower-spike or raceme may be seen arising from the centre of the leaves, which, in three months after, will be feathered with clusters of ripened fruit, when it is collected and preserved by the natives. The whole labour required in the cultivation of a plantation of these plants is, to cut the stalks laden with ripe fruit, and to give them a slight nourishment once or twice in the year by digging about their roots. These plants, therefore, for a great portion of mankind, are what wheat, barley, and rye, are for the inhabitants of Western Asia, and Europe, and what the numerous varieties of rice are for those of the countries beyond the Indus. The produce of a single plant not unfrequently weighs upwards of seventy pounds; thus we may estimate the produce of a plantation containing a thousand square feet, planted with thirty or forty plants, to exceed four thousand pounds of nutritive substance. M. Humboldt calculates, "that as thirty-three pounds of wheat and ninety-nine pounds of potatoes require the same space as that in which four thousand pounds of bananas are grown, the produce of bananas is, consequently, to that of wheat as 133 : 1, and to that of potatoes as 44 : 1."

The banana, ripened in the hothouses of Europe, has an insipid taste; but yet the natives of both Indies, to millions of whom it supplies their principal food, eat it with avidity, and are satisfied with the nourishment it affords. The fruit is a very sugary substance, and in warm countries the natives find such food not only satisfying for the moment, but permanently nutritive; yet, weight for weight, the nutritive matter of these plants cannot be compared to that of wheat, or even potatoes. At the same time a much greater number of individuals may be supported upon the produce of a piece of ground planted with these plants, compared with a piece of the same size in Europe growing wheat. Humboldt estimates the proportion as twenty-five to one, and he illustrates the fact by remarking that a European, newly arrived in the torrid zone, is struck with nothing so much as the extreme smallness of the spot under cultivation, round a cabin which contains a numerous family of Indians.

The ripe fruit is preserved like the fig, by being dried in the sun; in this state it is an agreeable and healthy aliment. Meal is extracted from the fruit by cutting it in slices, drying it in the sun and then powdering it.

In addition to the uses made of these plants already noticed, slices of the fruit fried as fritters are considered a luxury; the tops of the young suckers are eaten as a vegetable of great delicacy; the fermented juice produces a good wine much indulged in by the natives, and praised as agreeable by Europeans. In a paper on Tropical Fruits, by Dr. Lindley, in the fifth vol. of the Horticultural Society's Transactions, he states, upon the authority of Mr. Crawford, that some of the varieties (which are numerous) are equal in flavour, when served up raw, to fine Reinette apples, and when stewed equal to our best stewing pears. They vary, according to the varieties, in shape, from eight or nine inches long and two broad,

to nearly spherical, and in colour from dark red to pale green. The plants which have fruited in the stoves of this country (and this has happened frequently for the last century, and is attended with no great difficulty), have been uniformly of a pale yellow colour, insipid or nearly tasteless, which indeed is almost the general character given them by Europeans, even by many of those who have eaten them in the tropics.

Having now given the most general uses to which this fruit is applied in an edible point of view, we may mention some of the many domestic purposes to which other parts of the plant are applied; the leaves are used as a thatch for buildings, they are woven into mats for many purposes, serving as dishes, &c.; and are worked into baskets, and other fancy articles; they yield flax in abundance, from which some of the most expensive muslins of India are manufactured; we believe *M. Telaxis* produces that most valued. Decandolle states, that their spiral vessels exist in such abundance in the stem (which is formed by the united petioles of the leaves), as to be capable of being pulled out by handfuls, and actually collected in the West Indies and sold as a kind of tinder.

In addition to those kinds noticed for their value to mankind, there are many others known, several of which are cultivated in our stoves for their stateliness and magnificent foliage, which, when combined with their beautiful spathaceous flowers, are objects of peculiar interest. *Musa rosacea*, and *M. coccinea*, have been long known in this country for the ornamental effect they render when introduced among other plants; and being of a dwarf habit, they are well adapted as decorations at balls or assemblies given by the great, their noble foliage giving an air of grandeur to such scenes. The species best known in this country are four, viz., *M. paradisiaca*, *M. sapientum*, *M. rosacea*, and *M. coccinea*; a separate wood-cut of each will be found in the succeeding pages, accompanied with the habit, culture, and other distinctive particulars connected with them, so as to point out the most essential points of resemblance and dissimilarity known to exist in the genus.

MUSA PARADISIACA; OR, COMMON PLANTAIN.

THIS species, trivially called the Common Plantain, was introduced to this country prior to the termination of the sixteenth century. It differs from the *M. sapientum*, or *Banana Tree*; *first*, in the absence of dark purple stripes and spots on the stem; *secondly*, in its fruit being more of an oblong shape, and somewhat longer, with a more firm pulp, and less pleasant to the taste. The *Botanical* distinctions are as follow: *Stem* herbaceous, of a light, clear, green colour, rising from twenty to twenty-four feet high. *Leaves* something paler in colour than the stem, measuring, in a full grown specimen, from six to seven feet in length, by two or more in breadth. *Spadix* or flower spike, springing from the centre of the leaves, inclining to one side, frequently measuring four feet and a half

in length, spathaceous. *Corolla* divided into two parts, an upper, and a lower, the upper erect, and five-toothed, the lower concave. *Stamens* generally six, persistent. *Fruit* slightly recurved, with three angles, measuring, when ripe, eight or nine inches in length, by one and a half in diameter, of a pale yellow colour, many seeded. In its general external character, this species bears a striking proximity to the species *rosacea*, but a little guarded attention and observation will soon detect their distinctive differences; the points in which they nearest resemble each other are the form, colour of the leaves, and stem yet in these there exists a considerable difference, although not easily discovered by a superficial glance; this consists in the length, breadth of the leaves, and the height the former usually grows, all of which are superior to the latter. The most essential distinction will be found in the manner the two species produce their flowers, and the disposition of the flower stem; in the former, or *M. paradisiaca* (see fig. 2), this consists externally



Fig. 2.

of a great number of spathes of a dark blood colour, which continue to develop until it finally reaches the length of four feet, suspended from the centre of the leaves. In the latter, or *M. rosacea*, instead of producing a spike, the flowers, also spathaceous, are disposed singly round the stem, and the corolla is of a clear rose colour. The cultivation of this species is not difficult, and it may be grown with little trouble, provided a lofty spacious hothouse be at hand, without which the result will be a stunted and

imperfect specimen, with four or five torn and unsightly leaves, instead of one healthy and vigorous, crowned with beautiful and perfect foliage. It is also quite essential to allow the roots plenty of room and soil, so that the extreme exhaustion carried on continually by the leaves may be counteracted. The soil should comprise two parts of turfy loam, about half decomposed, and one of well-rotted dung from a disused hotbed, and a little sandy peat; the whole well reduced, and incorporated, but not sifted, this would much lessen its value by taking from it the fibrous part. As these fast growing plants are generally amongst the first to start in the spring, the sooner at this season they are shifted the better, which should never be deferred longer than the latter end of February. In shifting, the suckers, if any, should be carefully taken off, and planted in a proportionable sized pot, filled with the same compost; but, at all times, except in the dead of winter, suckers, after they have made two perfect leaves, should be removed, as they take a deal of nutriment from the soil, thus diminishing the food of the parent plant. The treatment frequently given this plant during winter, operates as a detriment to its future welfare in a number of instances. Commonly the practice at this season is, to water it liberally, from a mistaken notion of its being essential in consequence of the healthy appearance always maintained by the leaves. The result of this method is, in the spring, when desired to shift and re-excite their growth, the roots assume an unnatural colour, and a great number totally perish. The baneful effects of this we have experienced, and find that a season of rest is indispensable for them. We therefore for three months in the winter apply little or no water, say from the middle of November to the middle or latter end of February, when they receive a full shift.

After the soil has been changed, and the plant fully set fair for growing, in a temperature of 70° or 75° Fahrenheit, water may be copiously administered, and the whole syringed forcibly with water of the same temperature.

The suckers are produced in abundance from the base of the parent stem, they require a little additional attention after being taken off, until pretty well established, when they will thrive with the treatment given to old plants.

A few plants have produced fruit in this country, which, in every instance, has been something inferior to that grown in the tropics, the taste generally being much like a sweet potato when boiled, and insipid; the skin is tough and of a pale yellow colour.

MUSA SAPIENTUM; OR, BANANA TREE.

THIS noble species was added to the collections of this country about a century ago, being previous to that time imported from the tropics, when, shortly after, its present specific name was given by Linnæus. The earliest accounts we possess of this plant inform us of its being a distinct species, distinguished from the preceding one by its *maculate* or spotted stem, and of its fruit being less esteemed for food by the natives of the East and West Indies, where they are carefully cultivated by

the planters, who plant them in low rich ground, by the sides of gullies (*water courses,*) where they produce fruit most part of the year. Since the period of its introduction, it has been cultivated with various success in the hothouses of this country. By some it is admired for the extreme magnificence and superiority of its leaves, and certainly, as a plant, calculated to impart ease and give an air of oriental grandeur to an arrangement of exotics, this stands without a rival, except we allow an exception among its congeners the *palms*. Others, no less admirers of its portly and stately habit, have been somewhat more deeply interested in its cultivation, from a desire to witness its enormous and nutritive produce, which so largely administers to the wants of so many of our fellow creatures in the parching regions of the tropics; neither have the commendable exertions of those been altogether frustrated: but, on the contrary, it has been brought to produce its fruit, although somewhat inferior. One instance is given in Vol. IV. of the Horticultural Transactions, 183. In 1811, a plant of the Banana was planted in the pit of a stove. "It was then about six feet high, with a single stem, in each succeeding year it has produced a bunch of fruit, and, in 1819, two bunches; the first ripe in May, the other in August, having about four dozen of fruit on each stem. The plant is



Fig. 3.

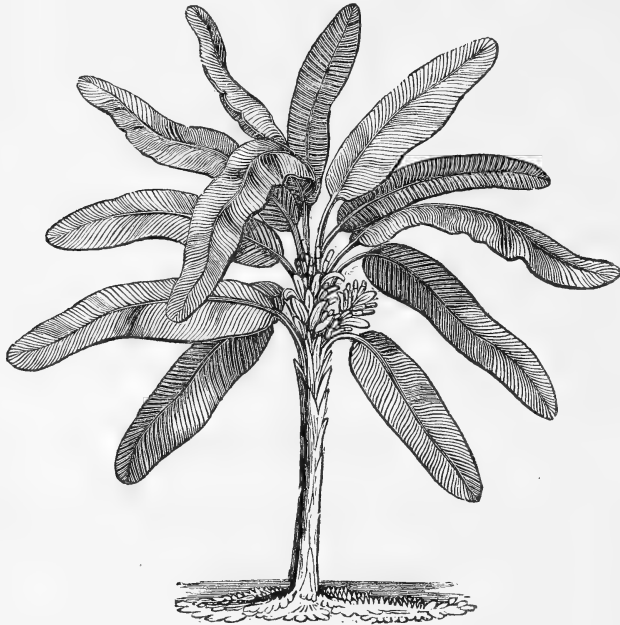
now sixteen feet high, and measures three feet round at the bottom." The botanical descriptions may be briefly noticed as follows: *Stem* perennial, of a pale purple colour, occasionally interrupted with a cluster of dark spots; full-grown, from twenty to twenty-five feet high. *Leaves* shaped like the *M. paradisiaca*, (see fig. 3,) but more flaccid and of a faint purple colour, which gradually grows deeper

as it approaches the margin, when a still deeper purple stripe is formed round the whole, extending itself over the leaf stalk, until it is finally lost in the stem. *Flowers*, mostly like the preceding, except the durability of the stamens, which are in this deciduous. *Fruit* something shorter, and rounder than that of the preceding, and with a softer pulp of a more delicious flavour. This species is of extremely easy culture, and will grow equal in size to those produced in the soil of India, if the treatment recommended for *M. paradisiaca* is faithfully applied to it. The rapidity of its growth when the roots have plenty of room for extension, and the plant a lofty house for the spread of its leaves, is very surprising. In the beginning of May, 1835, we had occasion to remove a plant then about four feet high, with two or three imperfect and sickly looking leaves, from a small stove in which it had been kept during the winter and spring months, into one more spacious and lofty. At this removal, the roots were placed in a good sized box of about three feet in depth, by two and a half in width, and filled with light rich compost, well watered. It had not been in this situation long before it began to vegetate freely, throwing up more healthy and perfect leaves, and in the course of a short time its growth became so rapid, that, before six months had elapsed, the extremities of the leaves had reached the glass at the roof, and were considerably injured by forcing themselves against the rafters and bars of the lights. The house from the plane on which the box was placed, to the centre of the roof, which is double, measured nearly twenty feet, thus allowing the plant and box when first introduced to be about five feet, which was the outside; the plant in six months grew to the astonishing height of twenty feet, which averages its growth at two feet and a half per month, or more than seven inches per week. At the present time, the whole plant from the surface of the soil to the centre of the leaves is sixteen feet, the stalk at the base in diameter exceeds six inches, and the leaves from the two opposite extremities equal the whole length of the plant; and what makes this appear the more extraordinary is, that, during this incessant growth, it threw out at different times three or four strong suckers, one of which was allowed to remain on, and is at this time attached to its parent, to which it is not a great deal inferior. In the whole course of its growth it received precisely the same treatment as that recommended for the species *paradisiaca*, which has proved satisfactory. If we are fortunate, we anticipate seeing it laden with its wonderful fruit towards the termination of the ensuing summer.

MUSA ROSACEA; OR, ROSE-COLOURED PLANTAIN TREE.

THIS species has been long known in the stoves of this country for its magnificent foliage and lively flowers. It was found in the Mauritius, whence it was introduced to this country about 1805. In speaking of the *M. paradisiaca* it was observed, in reference to that species, that it bore much resemblance to this; so much as not unfrequently to confound the two; but was distinguished by the

inequality of their leaves and the disposition of their flowers. In addition to these differences, which are of themselves sufficiently evident to conduce to a ready distinction, we may notice another equally clear: still, as it relates to the fruit, it cannot be of any assistance except when the plant is in a fruiting state. But as mistakes are always liable to arise in cases like the present, we shall briefly detail it, hoping it will not prove unserviceable. In the tropics, the former, *M. paradisiaca*, is cultivated for its abundant nutritive produce; and the facility with which this is brought to perfection has caused it to be looked upon by the amateur of this country as an object worthy of cultivation, more for the usefulness of its fruit than the mere novelty of its appearance. Of the latter, *M. rosacea*, we possess no



information to show that it is any where grown for the usefulness of its fruit; in short, respecting its existence in its native country we know comparatively little; and the acquaintance our experience has enabled us to form of it since it was introduced, has been such as satisfactorily to convince us that in this country, under the most judicious management, its fruit cannot be brought, in any quantity, to such a state of perfection as to be mistaken for the former. There are a few instances of its having fruited in this country, but, wherever this has happened, the fruit has been of inferior quality, compared with that produced by the *Common Plantain* in this country or in the tropics. In the botanical descriptions we are informed that the flowers are produced on a spike, and nodding; or erect and in clusters round the stem, the latter being most frequently the case. *Male* flowers deciduous. *Spathes* elliptical (oval-shaped), obtuse. *Fruit* oblong. The most attractive feature in the whole plant is in the flowers, which are of a clear rose-colour, and certainly a well grown plant in full bloom is handsome, when arranged among other exotics. The

best way to grow fine healthy plants, with plenty of good foliage, is to shift them early in the spring, and to place them in a vinery or peach-house, where a temperature of 60 or 65 degrees is kept, giving them, after they commence growing, a good supply of water, not only at the roots, but with the syringe over the stalk and leaves. None of the species of this genus are very subject to the attacks of insects, although, if neglected, these enemies may be expected and will appear; but if a good supply of water is forcibly applied with the syringe or engine they cannot do much harm. After the plants, introduced to the vinery or peach-house, have made five or six good leaves, the month of May will be drawing near, when they may be brought into the green-house or conservatory (if lofty enough to admit them), placed amongst the other plants, and will give a pretty and interesting appearance to the whole. As it is requisite in the summer months almost to expose the plants in these places, it will be found necessary to take some precautionary step to prevent the wind from tearing their leaves, which it is very liable to do if not protected. Plants so treated are then in a fit state to employ as decorations for ball-rooms, &c.; for this purpose many are grown in the neighbourhood of London. At the approach of winter the plants should be placed in the stove, or other place where a little heat is kept, until spring, when they will require fresh shifting. The only thing necessary to be attended to particularly, in the successful cultivation of this plant, is to keep the roots sound during their torpid existence in winter, which can be only guarded against by a judicious administration of water during that season. In other particulars the treatment recommended for *M. paradisiaca* will also suit this.

MUSA COCCINEA; OR, SCARLET-FLOWERED PLANTAIN TREE.

THIS is the most dwarf species known in the genus, except that represented in the coloured figure, viz., *M. Cavendishii*, from which it will be readily known by the broad obtusely-shaped pale green leaves of that species. It has been an inhabitant of the stoves of this country for more than a century, and was, previous to that time, imported from China. The dwarf habit of its growth renders it interesting and valuable as a stove-plant; and it is much esteemed by some who favour the growth of this genus on account of the peculiar colour of its stalk and leaves, which are of a yellowish-green. This peculiar feature being only natural to this species, will at all times be a sure mark of distinction.

The botanical distinctions are as follows: *Spadix*, or flower-spike, erect. *Flowers* produced in heads (capitate) round the flower-spike, which rises immediately from the centre of the leaves. *Spathes*, in great numbers, of a clear scarlet colour at the base, very large, with a portion of yellow at the end of each. *Stalk*, from six to eight feet high in a full grown specimen. *Leaves* obtusely-lanceolate,

few, seldom exceeding four or five perfect ones on a good sized plant, being parallel, very conspicuous on the under side.

The cultivation of this species is attended with somewhat more trouble than any of the preceding, on account of its being of rather a more tender habit. It requires at all times to be grown in a brisk heat, with an atmosphere inclined to humidity ;



and in very open rich soil well watered. Suckers, by which it is increased, are produced from the roots of the old plants in abundance, at all times, but more particularly after the stalk is cut off, which always dies after flowering. When they are large enough, and have made plenty of good roots, they should be carefully taken from the old soil and potted in new, being careful at first in giving them water until well established, which will be soon manifest by the indications of growth in the plant; afterwards they may be treated as recommended for older plants. This plant, when in bloom, is peculiarly handsome; the rose colour of the flowers and yellow-green tint of the leaves make a pretty contrast, and produce a lively effect in the stove, when arranged among other exotics. When in bloom, if it is desired to set the fruit, the pollen from the anther, when matured, should be removed to the stigma by means of a soft camel's hair brush, when the atmosphere of the house is dry, for if damp it cannot be performed so successfully. This is essential to the setting of the fruit in the whole species. Care should at all times be taken not to damage the leaves, as this tends much to injure the beauty of the plants.

HINTS ON THE ILLICIUM FLORIDANUM.

THIS species is esteemed as a green-house plant, on account of the fragrance contained in its leaves and flowers; the leaves when rubbed between the fingers emit a scent, much like anise, hence arises the trivial name *Anise seed tree*. Nor does this property only exist in the leaves and flowers, but the bark when bruised is found equally to possess it. It is a native of West Florida, found in considerable abundance on the banks of the river *Mississippi*, and in marshy places near the town of *Pensacola*. It flowers freely in the green-house about April or May, and continues in this state for a considerable time; the blossoms are of a dark purple colour, possessing no remarkable show; the only attractive feature in them, is the agreeable perfume they emit, which in a small house, in the evening when closed, is so powerful as to impregnate the whole with its delightful odour. It cannot be said that this plant is generally cultivated well, on the contrary, it is frequently indifferently managed in this respect; some who possess it, fall into an error by keeping the soil at the roots too dry, others without any reference to discriminative treatment, apply to it exactly what they consider indiscriminately suited to all green-house plants. We have plants at Chatsworth which produce an abundance of bloom every spring, and the treatment that appears to suit them best may be briefly stated as follows.

The soil made use of at all times is sandy peat, with a very trifling mixture of friable loam, well incorporated. In shifting we take care to drain well with pots-herds, in fact, during the whole process of potting, we add now and then a few pieces of grit stones, which at all times act as a reservoir to the young roots, this is performed in the same manner as in potting *Ericas*, the sole use of the practice being to prevent the roots from getting too dry or too wet. When the potting is completed, they receive the same treatment as other green-house plants, except that we always observe to give them more water than the generality of these plants require. If shifted in March, which is the most proper time, the flowers will not only be more abundant but much stronger and finer in every other respect. It is rather difficult to propagate; still cuttings of the well-ripened wood, planted in a pot of sand put under a hand-glass, and placed in a moderately heated close situation in the propagating house, will root freely, observing to give a little water carefully now and then with the syringe, or water pot that has a fine rose. So treated, the success will be satisfactory. But the easiest way to increase them is, by laying the branches in any common soil, after the manner usually followed in this operation.

The other two species, *Ill. anisatum* and *Ill. parviflorum*, are interesting, and will thrive well in the green-house amongst other plants, where they may be treated as recommended for *Ill. Floridanum*. They may be also increased readily by layers.

HINTS ON THE CULTURE OF THE IXIA TRIBE.

IN the early part of September, the bulbs which have been preserved since flowering in the early part of the summer, should be examined, and the largest and best looking ones selected for fresh potting.

The best soil for them should consist of a mixture of sand and peat, with a very trifling addition of rich open loam well incorporated.

A few of the bulbs (say four or five) should be planted in thirty-two sized pots filled with the above compost, observing to put the bulbs about half an inch deep in the soil; when this is completed, they may be placed in the open air, until the winter frosts render it advisable to remove them to the green-house, where they may remain until the early part of February, when they should be introduced to about sixty degrees of heat, giving them from the commencement of their growth a regular supply of water.

In the month of May, if the season is fine, they may be expected to flower, during the time they continue in this state, a copious supply of water is requisite for them, in fact all bulbous plants, when in bloom, hold their true character better if a liberal supply of water is given at the time of flowering.

After flowering, place them in the open air, where they should be attended to with water so long as there exists in any part of them a disposition to generate sap.

When the roots appear perfectly matured, they should be taken out of the pots, cleaned, and carefully put in paper bags, or kept in a drawer where they will be secure from moisture, until the return of the planting season in September.

Few plants repay us with a profusion of more brilliant flowers than the above tribe of bulbous plants. The chief object in the successful culture of bulbs seems to be, that of keeping them in a perfectly torpid state, until the time it is wished to excite them, at which time, and during the whole period of their growth, they should be kept in as free a growing state as possible. There is little doubt but the generality of the Cape bulbs will produce good flowers under this treatment.

HINTS ON THE TREATMENT OF THE RHODODENDRON ARBOREUM.

BY A. Z., HORT. REG., VOL. I., 687.

THIS very magnificent species, according to Sir J. E. Smith, in *Exotic Botany*, Chap. VI., was first noticed by Captain Hardwicke, on a tour to Sirinagur, in 1796, growing in the mountainous tract called the Sewalic Chain, which separates the plains of Hindostan, between 75 and 85 degrees east longitude, from the Himalaya mountains. It is generally found in elevated situations, in forests of oak; the soil a rich black vegetable earth, on stony beds. The natives use the wood for making the stock of matchlocks, or common muskets of Hindostan; the stem is columnar, twenty feet or more in height, sixteen to twenty-four inches in diameter. From its natural situation, it is irrigated by the melting of the snow above, which

continues to take place most part of the season of flowering and making its shoots ; it will, therefore, be readily seen that there exists a necessity for it to have an abundant supply of water during its growing and flowering season. It is not sufficiently hardy to endure our winters generally, although some plants have stood out, planted in an American shrubbery, throughout the whole year, when the weather was not very severe, and did not seem to be affected by it ; they certainly are, when in flower, very splendid ornaments to our conservatories or green-houses. They grow freely in sandy peat, and strike root readily by layers of the young wood. They are sometimes grafted upon the *R. Ponticum*, but never make such handsome tree-like plants as when propagated by layers or seeds. They seldom flower until they are several years of age, and are then rather capricious, not flowering every year in succession, although receiving precisely the same treatment.

Individuals who have not the convenience of a conservatory or green-house, may keep them very well in a cold pit or frame, through our most severe winters. They will come beautifully into flower in the beginning of April, and the flowers secrete such a quantity of honey, that when they are shaken it falls from them like large drops of rain.

Mr. Knight thinks a spike may yield upwards of a dessert spoonful at a time, and, after being exhausted, a fresh supply is secreted. It is, however, considered unwholesome, as is all collected from the other species of *Rhododendron* and *Azalea*, although most part of the *Ericæ* produce honey free from all deleterious qualities.

HINTS ON THUNBERGIA.

THE only species of this interesting family which is generally and extensively cultivated, is the *Th. alata* (from *Ala*, a wing), so named on account of the curiously winged appendage along and on each side of the footstalk of the leaves. This species has been figured at No. II., page 2, vol ii., and pretty faithfully ; but the winged process is not sufficiently brought out. The figure given is very pleasing, but, as a constant grower of this lovely gem, the writer of this article is justified in noticing it somewhat critically. The botanical description is faithful, so is the natural history of the plant which follows it ; but the soil recommended is not that which will produce the richest verdure of the herb, and the greatest breadth of the flower. Pure black peat, kept for years exposed to the air (not heath or moor soil, but the substance dug out of a moss or turbary, without any traceable sand), caused the leaves to be of a full green, three inches long, two broad, and the flowers (at and after midsummer) to attain the diameter of a crown piece, or very nearly so. But peat varies much in character, and in its chemical components ; therefore, to recommend it as a *sine quâ non* would be to mislead, or, perhaps, seriously disappoint the reader, who may be solicitous to afford every advantage, as respects aliment and situation, to a plant which is so lavish of its beauties.

Perhaps thoroughly decayed wood-moss, *Hypnum*, or bog-moss, *Sphagnum*, would approach very nearly to that peat which I succeeded with ; but, at all events,

leaf mould, quite blackened, with old and rotten-wood earth, either, or both united, to the extent of half the compost; black-heath soil, and the semi-decayed turfy-surface of a common, the earth of which is a sandy loam, of each one quarter, the whole perfectly blended, and I should say sifted coarsely, the portions retained by the sieve to be employed as drainage to the pots; in this compost *Thunbergia* will revel, either in a pot or in parterre. The latter situation suits the plant well after midsummer, and in a bed it is perfectly beautiful. Plants raised in pots and transferred with entire balls to a bed of soil similar to that described, and kept moderately moist, each under a hand-glass, till the growth becomes established, will, in a few weeks, run and intertwine into a mass, the effect of which surpasses that of most of the beautiful subjects employed in the "bedding-out" system of gardening. The seeds also ripen freely in September and October, at least in the southern counties, provided the weather be serene and genial. The autumn of 1835 was singularly favourable to the formation of perfect capsules; but the deluges of rain in October, and the extremely keen frosts of the third week, prevented their complete maturation. *Thunbergia* will prosper in the greenhouse, conservatory, or stove, provided it be not, in the winter, exposed to a temperature below 45 degrees; it loves pot-room, and also to send its roots into a feeder-pan below it, half filled with the soil, and pierced at the bottom with three small drainage-holes. Water should be pretty liberally bestowed, and with these precautions and cares the cultivator will perceive that the plate at No. II. has not done justice either to the colour or to the expansion of the flower.

The seeds may be sown in deep pans, either as soon as ripe or in January; there are three or four in a capsule, exceedingly curious in structure. Perhaps six weeks may elapse, even in a heat of 60 degrees, before they vegetate, but the young plants progress rapidly. One of the greatest beauties of the flower is traceable in the structure of the four stamina and the style; these claim the utmost admiration of the botanist.

There are about eight species of *Thunbergia* known, but it is rare to meet with seven of them; the following list exhibits the dates of introduction and native country of each:—

Thunbergia fragrans; East Indies, 1796; white sweet flowers.

————— *grandiflora*; idem, 1820; blue.

————— *cordata*; Trinidad, 1820; white.

————— *angulata*; Madagascar, 1823; yellowish.

————— *coccinea*; Nepal, 1823; reddish—misnamed, for it ought to be of a brilliant crimson, the specific name being derived from *coccus*, doubtless, which implies cochineal, whence the finest scarlet and crimson dyes are extracted.

————— *Capensis*; Cape of Good Hope, 1824; yellowish.

————— *Hawtayneana*; Nepal, 1826; scarlet.

All these, and many other genera, are grouped by the botanists, who affect the natural system, under *Acanthaceæ*, from *Acanthus*, bear's-breech; it may agree with that type in having rather swollen joints near the exsertion of the leaves, but *Acanthus* differs materially in structure, and, in fact, seems wholly unfit to be a type of plants so essentially dissimilar. The natural system may be an excellent coadjutor, but till it be less thorny, less perplexed with difficulties, and more certain and fixed in its own

principles, it will remain the science of the learned *few*, but a sealed book to the inquiring many. Linnæus may have promulgated an artificial system, but his classification is, with all its imperfections, so simple, so certain, so entirely, and, upon the whole, so pre-eminently luminous, that its pupils will remain its faithful and grateful supporters. We will not speak evil of the natural system, whose "*eclaircissement*" is a consummation devoutly to be wished: but, till that be accomplished, we will not abandon the great master.

REMARKS ON THE ASTRAPÆA.

THIS noble genus contains only three species, all of rather easy culture, merely requiring that heat and atmosphere generally kept in our wet stoves; yet, like all plants cultivated under glass, each genus, and frequently almost every individual species, require different treatment, or the proportions constituting that treatment administered in different degrees. These observations justly apply to the genus *Astrapæa*, for while we find in one house plants of it growing in all the vigour of their native soil, we find others in another collection, stunted and indicating symptoms of weakness; still, in both instances, the common application of stove culture is judiciously observed, of which the surrounding plants bear ample testimony by their strong shoots and stiff foliage. From this fact, it is evident that some particulars in the administration of the required aliment is indispensable, and apart from the general routine of stove management, yet not interfering with the main principles (heat and moist atmosphere). We have watched the cultivation of the principle features in this genus, viz., *A. Wallichii*, for several years, during which time our success with it has been sufficiently satisfactory to convince us that the result of our experience cannot but be acceptable to our readers, which will be found in the following details.

The first and most beautiful species is the *A. Wallichii*, named after Dr. Wallich, superintendent of the Botanic Garden of Calcutta, a native of Madagascar, introduced to this country about fifteen years ago, described in our catalogues as growing upwards of thirty feet high. It is unquestionably one of the finest plants that can occupy a place in our stoves, for even when unassisted by its elegant blossoms, the large cordate leaves and long hairy footstalks, with the great dilated stipules at their base, render it at all seasons a complete bush of considerable magnitude, of pale green verdure. But when in flower, which generally takes place about August or September, and sometimes much later, its bright scarlet pendulous blossoms, with yellow anthers, are beauties which it is almost impossible to conceive unless actually seen on a fine clear day when fully expanded. To cultivate it with success, so as to maintain a perfect healthy specimen throughout the whole season, the following directions must be attended to:—

1. The habit of it is to grow rapid and strong, therefore requires much room at the roots, which are addicted to ramify to a great extent; if cramped for pot-room, the foliage in that case will always assume a stunted and sickly appearance, much inferior to that produced where the roots have plenty of room. No place can

suit it better than to be planted in a border of well-prepared compost, yet, as it is not always desirable or convenient to have them growing in the borders, pots of a sufficient size should be procured, proportioning them, in this respect, to the size and health of the plant intended to grow in them.

2. The most favourable season for potting them is early in the spring, before the sap, which is abundant in these plants, begins to be much excited, for, in this case, the first effort of their roots is not unfrequently frustrated, and the growth thereby diminished.

3. Previous to potting, nothing is more essential to their growth than good drainage, so that the water may pass off without interruption; for, as they naturally delight in a liberal supply of that element, a bad effect will result if it be allowed to become stagnant, which, if possible, should be prevented.

4. Rich soil is indispensable for them: this should be composed of two parts good loam, to one of well-rotted dung, with a little sandy peat; the whole well mixed together with a spade, but not sifted.

5. Always water liberally when the plant is growing, but, before applying the water, it is necessary to examine the soil with the hand, and if it be found very full of moisture it should for a time be suspended. In the autumn, as the exertions of the plants decline, the quantity of water should be proportionably diminished, and in the dead of winter it should be almost wholly withheld.

6. A damp situation in the stove, where it can have plenty of light and sunshine, with from 65 to 75 degrees of heat, will suit them admirably.

7. Their free growth and dense foliage render it necessary to syringe frequently and forcibly all over the branches and leaves, at least every alternate morning or evening; this, if properly performed, will have a twofold effect, that of stimulating their vegetative powers, and at the same time prevent the attacks of the red spider, &c., to which they are very subject. In order to arrest the progress of these enemies, it is requisite to examine narrowly for them while in the act of syringing; for as the whole plant is covered with small hairs, these little intruders are liable to take advantage of them, and thus elude the action of the water, and after a time they become so numerous as to carry their depredations to an injurious extent, which a little timely attention will prevent.

8. If it can be avoided, never, in cleaning off dirt or insects, make use of a sponge or any thing else that is likely to damage the leaves, for nothing tends more to make the plant unsightly than freckled leaves, which is almost sure to result from this; but if due attention be paid in the application of water with the engine or syringe, these services will not be called for.

9. Propagation is effected by cuttings of the ripened wood, observing, in preparing them, to make a clear cut at the joint to be inserted, and, if possible, the leaves should not be wounded; pot them in any common sandy soil, bearing in mind to press the soil close to the lower part of the cutting; afterwards place them under a hand-glass, where a moderate heat is kept, and they will soon strike roots.

10. After the cuttings have made roots of three or four inches in length, they may be potted off into 48 sized pots, using for this purpose a little rich friable soil; let them stand till pretty well established in the cutting frame or pit; during this

time only a little water should be given, and that with caution ; afterwards they may be treated as recommended for older plants.

A. viscosa, a species described as growing upwards of thirty feet high, much inferior to the former, but, like it, very easy to cultivate. It is distinguished by its large cordate angularly lobed leaves, which abound, as well as the branches, in a clammy sticky substance. Madagascar is also its native country, whence it was introduced in 1823. The treatment recommended for the above will also apply to this. Cuttings will succeed in the same manner.

A. tiliaefolia. Introduced in 1824 from the island of Bourbon, where it is described as growing from ten to twenty feet high. Its leaves resemble those of the common lime-tree. The whole habit of the plant is much like the other species, therefore the treatment required for them will also suit it.

NEW AND RARE PLANTS

FIGURED IN THE LEADING BOTANICAL PERIODICALS, AND FLORISTS'
MAGAZINE FOR FEBRUARY.

BOTANICAL REGISTER. Edited by Dr. Lindley, each number containing eight figures ; coloured 4*s.*, plain 3*s.* ; and corresponding letter-press.

BOTANICAL MAGAZINE. Edited by Dr. Hooker, each number containing eight plates ; coloured 3*s.* 6*d.*, plain 3*s.* ; and corresponding letter-press.

BRITISH FLOWER-GARDEN. Edited by Mr. David Don. Containing four plates ; coloured 3*s.*, plain 2*s.* 3*d.* ; and corresponding letter-press.

FLORISTS' MAGAZINE. By F. W. Smith. Containing four monthly plates, highly coloured ; several plates with two figures ; large size 4*s.*, small 2*s.* 6*d.* ; and corresponding letter-press.

Of the above figures, we have only selected such as are new or very rare ; and amongst these only such as deserve to be extensively cultivated. For descriptions and figures, reference must be made to the works themselves.

CLASS I.—PLANTS WITH TWO COTYLEDONS (DICOTYLEDONEÆ).

THE EVENING PRIMROSE TRIBE (ONAGRARIÆ).

ENOTHERA HUMIFUSA. Pencilled Evening Primrose. A pretty hardy little annual, raised by Mrs. Marryatt, who originally received the seeds from Mr. Lambert. Its habit is to creep close to the ground, forming a tuft a foot in diameter, and sheds its seeds very freely. Dr. Lindley says, "this plant, when exposed to much light, has flowers of a very pale delicate flesh colour, but if they are made to expand in a cool shady place, such, for instance, as a sitting-room with a northern aspect, they acquire a beautiful pink." *Bot. Reg.* 1829.

LOASEÆ.

BARTONIA AUREA. Golden-flowered Bartonia. A very beautiful half-hardy annual, discovered by Mr. Douglas, in California, and raised in the Garden of the

Horticultural Society. It is only beneath bright sunshine that its splendid flowers unfold; in the early morning, the plant is a shabby bush, with pale greenish grey branches and weedy leaves; but, as the sun exercises his influence, the petals gradually unroll, as if in acknowledgment of his power, till every branch is radiant with gold; and so metallic is the lustre of the inside of the petals, that one would really think they must be composed of something more solid and enduring than the delicate and tender tissue of a flower. Dr. Lindley recommends for this plant, first, a sheltered situation; secondly, a sunshiny spot; thirdly, a very rich soil, and fourthly, a good deal of moisture. *Bot. Reg.* 1831.

THE FIG-WORT TRIBE (SCHROPHULARINÆ).

PENTSTEMON COBÆA. Cobæa-flowered Pentstemon. A very handsome species, of which seeds were sent to Europe by Mr. Drummond, in the spring of the past year (1835), from the interior of Texas, about St. Austin. The specific name (*Cobæa*) was given by Mr. Nuttall, on account of the magnitude and sort of general resemblance in its flowers to the *COBÆA SCANDENS*. *Bot. Mag.* 3465.

THE GREEK VALERIAN TRIBE (POLEMONIACEÆ).

COLLOMIA CAVANILLESII. Cavanille's Collomia. A beautiful annual, introduced from Chili by Mr. Cunning, producing its flowers towards the latter end of summer. Respecting it, Professor Lindley observes, that, if the seeds are sown in March in the open borders, the blossoms will appear in June; if again sown, shortly after that time, a second crop of flowers may be had in September and October. *Bot. Mag.* 3468.

THE ROSE TRIBE (ROSACEÆ).

POTENTILLA ATRO-SANGUINEA; hybrid RUSSELLIANA. Mr. Russel's hybrid variety of the Deep Blood-coloured Cinquefoil. Perhaps no plant, bearing the open air in our climate, produces flowers of a richer hue than this, which is a hybrid, said to have been first raised by Mr. Russel, of Battersea, between *P. atro-sanguinea*, and *P. Nepalensis*, but far exceeding, in the size and beauty of its blossoms, either of its parents. It is perfectly hardy, bearing the severest winters of our island with impunity, and flowering during the summer and autumn. *Bot. Mag.* 3470.

PEA TRIBE (LEGUMINOSÆ).

ADESMIA PENDULA. Pendulous-fruited Adesmia. A curious and interesting perennial species, with long white runners, a native of dry sandy pastures, in the province of Buenos Ayres; raised by Dr. Neill, in his garden at Canonmills, near Edinburgh, in 1834, from seeds transmitted to him by Mr. Tweedie. It is quite hardy, and grows well in a sandy soil, where it will flower, and ripen its fruit freely. *Brit. Fl. Gard.* 322.

THE NIGHT-SHADE TRIBE (SOLANÆÆ).

SARACHA VISCOSA. Clammy Saracha, a singular species, which flowered and ripened its fruit in the open border of the Chelsea Botanic Garden, seeds of which had, the preceding year, been received by Mr. Anderson, from the Royal Botanic Garden at Berlin. The plant is shrubby, and requires to be protected in the greenhouse during winter. It is easily multiplied both by seeds and cuttings. *Brit. Fl. Gard.* 323.

THE SOLANUM TRIBE (SOLANÆ).

LYCIUM AFRUM. African Box Thorn. A rather desirable species with purple flowers, long known in our collections, said to be indigenous to Africa; and, as Mr. Don says, "although too tender to grow in the open border unprotected, it will be found to succeed admirably, if planted against a wall in a favourable aspect." It may be increased by seeds, and cuttings of it, planted in sand and placed in the shade, will root readily. *Brit. Fl. Gard.* 224.

TERNSTREMIACEÆ.

CAMELLIA JAPONICA CANDIDISSIMA. White Japan Camellia. One of the most beautiful of the white Chinese varieties. The flowers are large, of a milk white colour, have their petals arranged with great symmetry, and finely contrasted with the dark green and ample foliage. Accompanied with the description of the above variety of Camellia, the author has given some excellent practical directions for budding, &c., which will be found of great service to those who require assistance in this respect. *Flor. Mag. No. 8.*

THE CHICKWEED TRIBE (CARYOPHYLLÆ).

PINKS. Anne Boleyn and Superb. Both extremely good flowers, the former often equalling the size of the carnation, thus forming a bold figure in the pink bed, in which it well deserves a place. Wells' Superb is a flower of much merit; it has a perfect rose leaf, and fills out well in the centre; the lacing, if well grown, is very perfect and bright; the colours increase in intensity as they approach the centre. *Flor. Mag. No. 8.*

CLASS II.—PLANTS WITH ONE COTYLEDON (MONOCOTYLEDONEÆ).

THE CORN FLAG TRIBE (IRIDÆ).

GLADIOLUS NATALENSIS. Natal Corn Flag. A most splendid species, a native of the coast of Natal, in the eastern part of Southern Africa. It is increased freely at the roots; and, if allowed to remain for two or three years undisturbed in a favourable situation, it throws up six or seven spikes of flowers, and has a very showy appearance. In this number many useful hints are given, which will be found of much value to the lover of Cape bulbs. *Flor. Mag. No. 8.*

THE ASPHODEL TRIBE (ASPHODELÆ).

HYACINTHS. Madame Mermone and Helicon. The former is a very choice variety, and one of delicacy and beauty; the latter (Helicon) is a noble flower, with the tint of a beautiful mellow purple, and a lighter tinted base to the petals. *Fl. Mag. No. 8.*

THE ORCHIS TRIBE (ORCHIDÆ).

ONCIDIUM RUSSELLIANUM. The Duke of Bedford's Oncidium. An interesting plant with peculiarly pretty flowers, obtained from the Gardens of Mrs. Moke, at Tejuca, near Rio Janeiro, by the Hon. Captain J. Ross, R.N., who sent it to Woburn, with other valuable plants, in 1835. It is named in compliment to His Grace the Duke of Bedford. *Bot. Reg.* 1831.

THE ORCHIS TRIBE (ORCHIDÆ).

SARCOCHILUS FALCATUS. Falcate-leaved Sarcochilus. An extremely pretty neat little plant, native of New Holland, and near Hunter's River. Its flowers, which it produces freely, are of a dingy white, and, contrasted with its leaves, fill the plant with interest. *Bot. Reg.* 832

OPERATIONS FOR APRIL.

ANNUALS (hardy) of all kinds should, in the early part of this month, be sown without delay, choosing a dry day for the purpose. Those intended to flower where sown, as *Mignonette*, *Catchfly*, and *Lupins*, should be sown in small round patches on the borders. The sorts intended for transplanting, as ten week stock, *French* and *African Marigolds*, may be sown on a border, under a south wall, or on a slight hotbed.

ARDISIA.—All the species may now be potted; for this purpose use a mixture of loam and peat, water carefully, and they will grow well. Cuttings will take readily, if put in sand under a hand-glass, where a moderate heat is kept.

ARISTOLOCHIA.—The choice species of this genus will flower well towards July or August, if potted in soil composed of rich loam and sandy peat; cuttings will strike freely in sand, under a bell glass, in a little heat.

BRUGMANSIA SUAVEOLENS, &c., early this month should be potted, using good rich soil composed of open loam, a little rotten dung, and sandy peat.

BARRINGTONIA SPECIOSA.—This beautiful plant should be allowed plenty of pot-room, a good supply of water, and, placed in about seventy degrees of heat, will grow well: cuttings of the ripened wood put in pure sand will root freely.

COLUMNEA SCANDENS.—Allow plenty of pot-room, use good rich open loam and peat, water sparingly, and it will produce an abundance of good bloom in the autumn; cuttings should now be put in, they root readily in sand.

COCCOLOBAS, so much admired for their fine large leaves, should now be potted in light loamy soil; if inclined to sandy, so much the better.

CLIVEA NOBILIS will now require attending to; in potting observe to drain well, as much water tends to injure and retard its growth: open loam and sandy peat suit it best.

EUGENIA, PSIDIUM, &c., will now require potting; they thrive well in rich loam mixed with a little well pulverised rotten dung: syringe occasionally in order to keep them clean.

GARDOQUIA GILLIESII must at this season be particularly attended to: water at all times with caution.

GLYCINA should now be propagated, either by cuttings or layers.

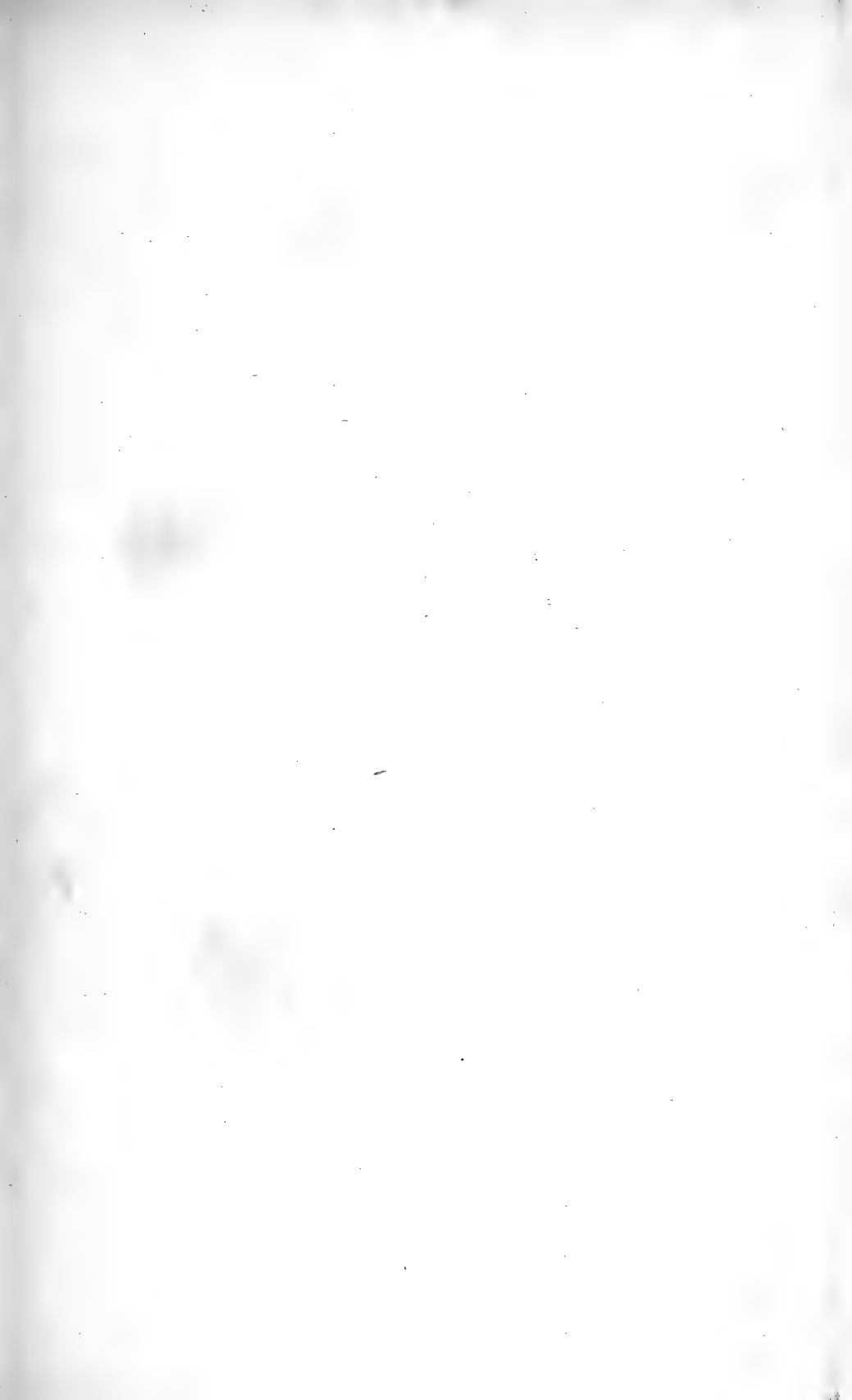
MAGNOLIA ODORATISSIMA.—Cuttings of the ripened wood will strike readily in sand under a bell or hand glass: a little bottom heat will be advantageous.

OXALIS FLORIBUNDO, DEPPEI and RUBELLA should be speedily potted, a rich soil will agree with them.

RHODOCHITON VOLUBILE.—Young plants should be encouraged by giving plenty of pot-room. They delight in any rich soil.

SCHIZANTHUS RETUSUS, potted early in last month, will now require an increase of pot-room: water at all times should be given with great caution.

VERBENA.—Those intended to flower in pots must not be cramped of pot-room, if this is the case, the plants will not be so large or their bloom so fine; it is therefore advisable to attend to this particularly now.







NERIUM THYRSIFLORUM.

(DENSE-FLOWERED OLEANDER.)

CLASS.

PENTANDRIA.

ORDER.

MONOGYNIA.

NATURAL ORDER.

APOCYNÆÆ.

GENERIC CHARACTER.—*Calyx* five parted, persistent. *Corolla* salver-shaped, (hypocrateriform). Surmounted at the orifice with little cut appendages; segments twisted. *Stamens* five, inserted into the middle of the tube. *Anthers* arrow-shaped (sagittate), fixed by the middle to the stigma.

SPECIFIC CHARACTER.—*Plant* an evergreen shrub, from four to five feet high. *Stem* smooth, of a branching habit. *Leaves* linear, lanceolate, smooth, perfectly opposite, with very conspicuous veins; upper side of a deep green colour, under somewhat paler. *Calyx* of a light brown, four parted. *Corolla* a bright rich pink. *Flowers* produced in loose terminal cymes.

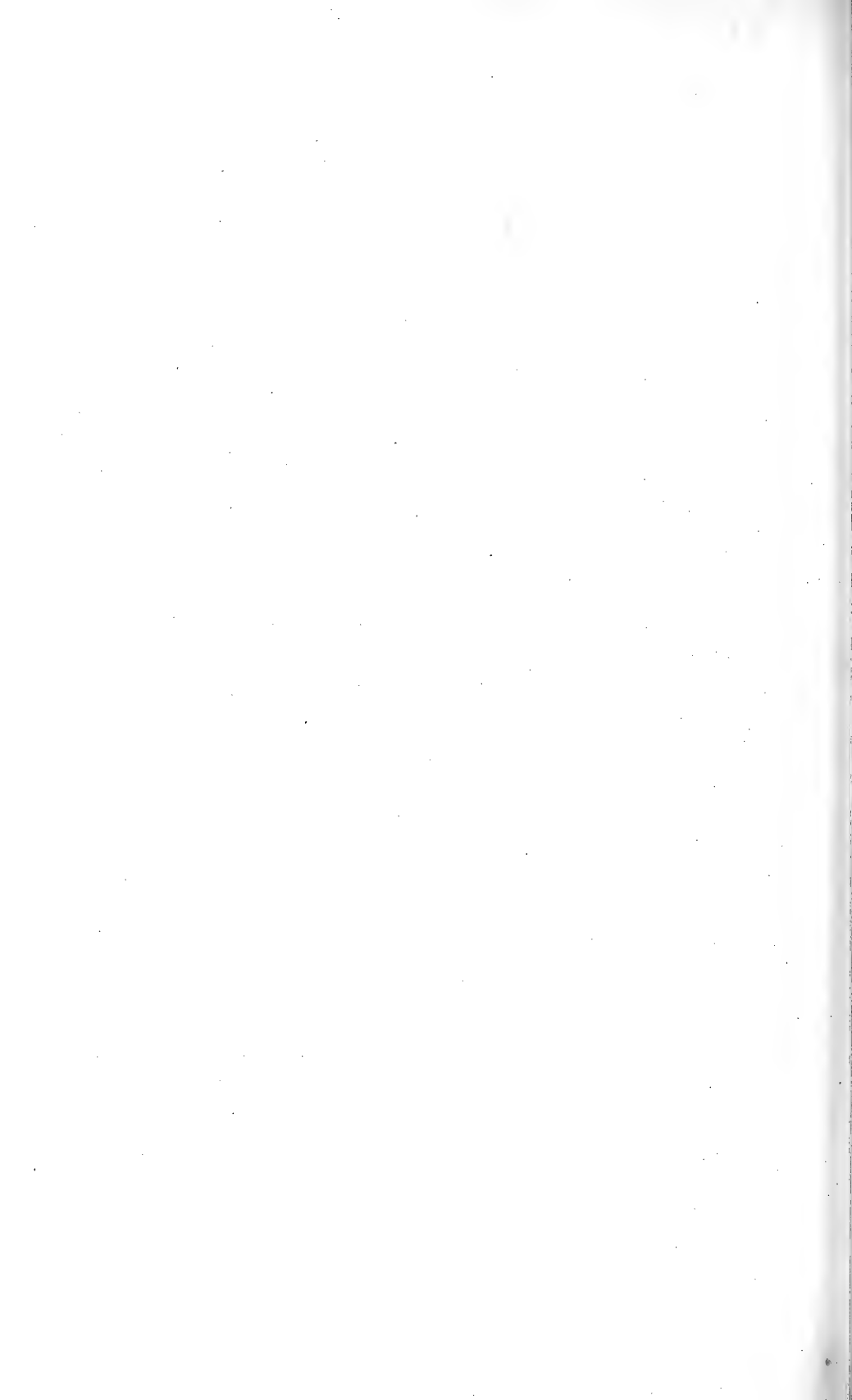
THE plant, from which the accompanying figure was taken, produced flowers about July last in Mr. Tate's nursery at Chelsea; by whom it was raised from seeds, about six years ago, sent either from Sylhet or Nepal by Lady Amherst.

We are not aware of its having been previously described in any of the Botanical publications of this country, nor of its existing in any collection, except that of Mr. Tate, who says upon the authority of several practical Botanists, among whom is Mr. Smith at Kew, that it is a distinct species, distinguished from the rest of the family, particularly from the *Nerium splendens*, to which it approximates, by its long lanceolate leaves, which exceed those of that species two or three inches, also by the veins being differently dispersed, and much more conspicuous.

It is certainly a splendid production, and no doubt will prove a valuable accession to the green-house, &c.; and, from its habit being in general accordance with the whole genus of which it forms a part, we infer that the treatment required for them will also suit it.

The generic name *Nerium* is from the Greek, in reference to the plant being found growing in the Southern parts of Europe upon the verges of rivulets.

We have retained the specific name under which the seeds were received in this country, as being more expressive of the dense collection of flowers produced on a single cyme.







Isora grandiflora.

IXORA GRANDIFLORA.

(GREAT-FLOWERED SCARLET IXORA.)

CLASS.

TETRANDRIA.

ORDER.

MONOGYNIA.

NATURAL ORDER.

RUBIACEÆ.

GENERIC CHARACTER.—*Calyx* ovate, four-parted. *Corolla* monopetalous, funnel-shaped; with a four-parted spreading limb. *Stamens* four, somewhat elevated above the throat, exserted. *Style* equal in length to the tube of the corolla, or sometimes a little longer, two-parted at the point, the lobes of the stigma spreading, or rolled back (revolute).

SPECIFIC CHARACTER.—*Plant* a shrubby spreading evergreen, from three to four feet high. *Leaves* sessile, cordate, oblong, acute, shining. *Calyx* four lobed, acute. *Limb* of the corolla divided into four ovate, lanceolate, acute lobes, of lively scarlet colour. *Flowers* produced in compact, umbellate terminal corymbs. *Berry* crowned with the lobes of the calyx.

SYNONYMS.—*I. coccinea*, Lin. Spec. 159, *Pareta coccinea* ex Bum. bifidi 950.

THE generic name (*Ixora*) is said to be the name of a Malabar idol, to which were offered the flowers of some of the species.

The specific name is given in reference to the flowers of this species, being larger and handsomer than any of the previously named ones.

We were favoured with the drawing of this species by John Clowes, Esq. of Broughton Hall near Manchester, last autumn, in whose possession, among other well-grown plants, it flowered beautifully at that time. It is a native of the East Indies at Tanjore, and of China and Ceylon. In various parts of India it is said to flower the whole year round, whence Sir Abraham Hume is said to have first introduced it to this country.

The genus *Ixora* is extensive, comprehending upwards of forty species, most of which when in bloom are truly beautiful, and worthy of extensive cultivation in every collection; the flowers, which are produced generally in umbellate corymbs, vary in colour from a bright scarlet to a pure white.

The present species, when well grown, forms a neat shrub, producing its scarlet blossoms about the latter end of July or August.

The whole of the species in this genus thrive well in a stove where rather a moist heat is kept, but it is advisable never to plunge the pots in tan, since this practice has a bad effect upon the roots; the best soil for them is turfy loam, peat that contains a good share of fibre, and clean sand in equal quantities.

Cuttings strike freely in either mould or sand, but sand is preferable placed in a gentle heat under a glass.





Penstemon mansuetiformis

DENDROBIUM MONILIFORME.

CLASS.

GYNANDRIA.

ORDER.

MONANDRIA.

NATURAL ORDER.

ORCHIDEÆ.

GENERIC CHARACTER.—*Lip* spurless, jointed with the column. *Pollen masses* four, parallel.

SPECIFIC CHARACTER.—EPIPHYTE. *Leaves* ovate, lanceolate, obtuse. *Stem* one foot and a half high, shining, pale green, with swelled tumid joints, divided in two lobes at the end (apex); clasping the stem at the base. *Veins* conspicuous both in the stem and the leaves, particularly the lower part of the leaf that embraces the stem. *Flowers* produced in pairs on a common footstalk (peduncle), springing mostly from the top of the stem; of a clear rose colour marked with crimson on various parts of the flower.

SYNONYM.—*Epidendrum moniliforme*. Linn. Sp. pl. 1352.

THIS splendid Epiphyte is a native of China and Japan, from the former of which countries it was introduced a few years ago, through the London Horticultural Society.

For the opportunity of figuring this fine plant we are obliged to Mr. Wm. Bow of Broughton, near Manchester, in whose collection it flowered profusely about November last. The success of this gentleman in cultivating this singularly beautiful tribe of Plants (*Orchideæ*) is great, as will be seen in the accompanying plate. This plant amongst its congeners is very remarkable and easy to be distinguished from them, by the tumid joints of the stem, and thread-like veins, so conspicuously seen through the exterior transparent membrane of the stem. It must be treated as other orchideous plants, for it delights (as most of them do) in a moderately humid atmosphere varying in temperature from 65 to 75 or 80 degrees Fahrenheit; but it must be observed that it is especially necessary to be very cautious in giving water at the roots at all times, particularly when the plant is not growing, as a superabundance of this element is extremely injurious.

The generic name is derived from the Greek, in reference to the habit of the species being to grow upon trees. In the dense woods of the East Indies they entwine themselves about the branches of living trees, where they flower in great perfection.

The specific name is given in reference to the stem, from the alternate swellings and contractions resembling a necklace.

A SELECTION OF THE MOST BEAUTIFUL STOVE-SHRUBS,

WITH REMARKS ON THEIR CULTURE, AND THE SEASON OF FLOWERING.

OUR observations on the general culture of stove plants, to which we refer our readers, will be found in Volume II., page 53 ; in addition to what we there stated, we have here entered into particulars respecting each separate species. We conceive this necessary, because each individual plant has a habit peculiar to itself ; and under a general mode of treatment one plant will flourish greatly whilst another will pine, languish, and scarcely continue to exist.

SELECT LIST OF STOVE-SHRUBS.

<i>Aphelandra cristata.</i>	<i>Cerbera fruticosa.</i>
<i>Acacia Houstonia.</i>	<i>Croton pictum.</i>
— <i>Lambertiana.</i>	<i>Dracæna terminalis.</i>
<i>Astrapæa Wallichii.</i>	— <i>ferrea.</i>
<i>Allamanda cathartica.</i>	— <i>striata.</i>
<i>Ardisia paniculata.</i>	<i>Epiphyllum splendidum.</i>
— <i>pyramidalis.</i>	— <i>speciosum.</i>
— <i>colorata.</i>	— <i>truncatum.</i>
<i>Alstonia venenata.</i>	<i>Erythrina enneandria.</i>
<i>Brownea grandiceps.</i>	— <i>Abyssinica.</i>
— <i>coccinea.</i>	— <i>arborescens.</i>
<i>Beloperone oblongata.</i>	— <i>crista galli.</i>
<i>Bauhinia recurva.</i>	— <i>incana.</i>
<i>Bejaria glauca.</i>	— <i>horrida.</i>
<i>Barringtonia speciosa.</i>	— <i>mitis.</i>
<i>Butea frondosa.</i>	— <i>piscidioides.</i>
— <i>superba.</i>	— <i>poianthes.</i>
<i>Beaumontia grandiflora.</i>	— <i>secundiflora.</i>
<i>Brunfelsia undulata.</i>	— <i>rubrinervia.</i>
<i>Carolinea alba.</i>	— <i>caffra.</i>
— <i>princeps.</i>	— <i>speciosa.</i>
— <i>minor.</i>	<i>Euphorbia splendens.</i>
— <i>insignis.</i>	<i>Eugenia Malaccensis.</i>
<i>Cereus speciosissimus.</i>	— <i>Jambos.</i>
— <i>grandiflorus.</i>	<i>Gomphia obtusifolia.</i>
— <i>Jenkinsonii.</i>	— <i>nitida.</i>
<i>Crossandra undulæfolia.</i>	<i>Geissomeria longiflora.</i>
<i>Careya sphærica.</i>	<i>Gustavia Augusta.</i>
— <i>arborea.</i>	<i>Grislea tomentosa.</i>
<i>Cleome dendroides.</i>	<i>Gardenia radicans.</i>
<i>Cryptophragmium venustum.</i>	— <i>speciosa.</i>
<i>Cassia ligustrina.</i>	— <i>latifolia.</i>
— <i>glandulosa.</i>	<i>Guettarda speciosa.</i>
— <i>pulchella.</i>	<i>Goldfussia anisophylla.</i>
<i>Cotyledon decussata.</i>	<i>Hibiscus tiliaceus.</i>
<i>Clitoria arborescens.</i>	— <i>Lindlei.</i>
<i>Columnnea scandens.</i>	— <i>rosa sinensis pleno.</i>
— <i>hirsuta.</i>	— — <i>flava.</i>
<i>Clerodendron hastatum.</i>	— <i>splendens.</i>
— <i>paniculatum.</i>	— <i>crinitus.</i>
— <i>viscosum.</i>	— <i>liliflorus hybridus.</i>
— <i>squamatum,</i>	— <i>Genevii.</i>

Hibiscus manihot.
Hamellia ventricosa.
Hosta cœrulea.
Ixora crocata.
 — *bandhuca.*
 — *grandiflora.*
 — *rosea.*
 — *incarnata.*
Jonesia Asoca.
Justicia nodosa.
 — *carnea.*
 — *speciosa.*
 — *venusta.*
 — *picta.*
 — *coccinea.*
Jatropha panduræfolia.
Jacaranda mimosifolia.
Lantana mixta.
 — *Seloi.*
Luculia gratissima.
Magnolia odoratissima.
Mimosa asperata.
 — *latispinosa.*
 — *pudica.*
 — *polydactyla.*
 — *pigra.*
 — *rubicaulis.*
 — *sensitiva.*

Melodinus monogynus.
Melastoma heteromalla.
 — *granulosa.*
Malpighia glabra.
Nepenthes distillatoria.
Plumieria acuminata.
 — *rubra.*
Osbeckia stellata.
Poinciana regia.
 — *pulcherrima.*
Plumieria bicolor.
 — *tricolor.*
Petræa erecta.
Quassia amara.
Rhexia holosericea.
 — *viminea.*
Randia Bowieana.
Rondeletia speciosa.
Ruellia persicifolia.
 — *Sabini.*
Solandra guttata.
 — *grandiflora.*
Tecoma stans.
Tabernæmontana gratissima.
Wrightia coccinea.
 In the above list also, most kinds of palms
 are desirable.

APHELANDRA.

A. CRISTATA.—This is a most splendid species, bearing a spike of brilliant scarlet flowers; it thrives well in equal parts of heath mould and sandy loam, with a small portion of very rotten dung. The mode of propagation is by cuttings planted in spring, and plunged in a brisk moist heat. This plant ought to be in every collection.

ACACIA.

A. HOUSTONIA and LAMBERTIANA.—The culture of Acacias is so well known, that little need be said on the subject; but we may just name that both the species, named above, flourish the best when placed in a cool and airy part of the stove. Half ripened cuttings planted in clear sand, covered with a bell-glass, and plunged in a brisk heat, soon strike roots, and are ready to pot off, which operation should be done as soon as possible after they are rooted.

ASTRAPÆA.

A. WALLICHII.—This is a most splendid plant, bearing fine pendent rose-coloured flowers; it, however, requires a deal of room. It is a native of Madagascar, and will grow freely in any rich light soil, if sufficient pot room and heat be given. It strikes freely from cuttings, planted in pots filled with equal parts of heath mould and sandy loam, and plunged in heat, with a hand-glass over them.

ALLAMANDA.

A. CATHARTICA.—This plant is a native of Guiana, found on the sea coasts, and is excellent for the rafters of a hothouse, being an evergreen, and bearing a

profusion of rich yellow trumpet-shaped flowers. It is of remarkably easy culture growing in a mixture of heath mould, sandy loam and very rotten dung. And half ripened cuttings grow as easily as those of the pelargonium, if planted in small pots, and plunged in a cucumber frame, any time in the spring of the year.

ARDISIA.

A. PANICULATA.—This species is a very free flowerer, and, in our judgment, the finest of the whole; but both the *pyramidalis* and *colorata* are very beautiful, and well deserve a place in every collection of stove plants. They all three grow in a mixture of two parts loam, one part heath mould, and one part very rotten dung. They often produce seeds, particularly the *A. paniculata*, which should be sown in February, and placed in a brisk moist heat; they will increase with difficulty by cuttings of half ripened wood, planted in May, and covered with a bell-glass; also pieces of the root taken off at the time of potting, if planted in pots, and placed in a dry heat, will soon grow, but great care is requisite not to destroy them by moisture.

ALSTONIA.

A. VENENATA.—This plant is remarkable for the beauty of its leaves, rather than for the splendour of its flowers; the latter, however, are far from despicable, being a very delicate white. It grows in a mixture of equal parts of loam and heath mould, and may be propagated freely by cuttings planted in spring in pots, and plunged in a brisk moist heat.

BROWNEA.

B. GRANDICEPS.—All the species of *Brownea* are splendid plants, but this and the *coccinea* particularly so; they require a strong heat to grow them to perfection, and should therefore be placed in the hottest part of the stove. They are also very impatient of water during winter, caution is therefore necessary not to over-water them. They strike from ripened cuttings, which should be planted in autumn in pots of sand, and, after standing in a temperate dry heat till February or March, should be plunged in a brisk moist heat, and, if covered with a bell-glass, they will strike with great freedom.

BELOPERONE.

B. OBLONGATA.—Very easy of culture, requires a good heat, growing freely from half ripened cuttings planted in sand and plunged in a moist heat, and covered with a bell-glass.

BAUHINIA.

B. RECURVA and RACEMOSA are both very splendid specimens of a very interesting genus, they are well calculated for rafters, and will grow in a mixture of heath mould, loam, and very rotten dung; cuttings of half ripened wood should be taken off in May and planted in pots of sand, and afterwards covered with a bell-glass, and plunged in a moist heat.

BEJARIA.

B. GLAUCA.—This splendid plant requires to be set in the coolest part of the house, and potted in heath mould. Cuttings of the tender wood will strike if planted in pots of sand, plunged in a gentle heat, and covered with a bell-glass.

BARRINGTONIA.

B. SPECIOSA.—This noble plant, to flourish properly, requires a strong heat and plenty of moisture during the season of growth ; and, at the time of watering, it should never be exposed to a temperature much below 60° Fahrenheit. Our plants, at Chatsworth, grow freely in equal parts of heath mould and good rich loam. We have found cuttings strike well, if taken off when the wood is ripe and planted in pure sand, and plunged in a brisk moist heat, with a hand-glass over them.

BUTEA.

B. FRONDOSA and **SUPERBA** are two fine stove plants ; they grow freely in equal parts of heath mould, rich loam, and very rotten dung. They are propagated by cuttings of half ripened wood, which should be planted in pots of sand, plunged in heat, and covered with a hand-glass, in consequence of the size of the leaves, which must, by no means, be mutilated.

BEAUMONTIA.

B. GRANDIFLORA.—This is another plant suited for rafters or trellis. It is easily cultivated, growing in equal parts of loam and heath mould, and is propagated by cuttings of half ripened wood, planted in sand, under a bell-glass, and plunged in heat. It is a native of Nepal.

BRUNSFELSIA.

B. UNDULATA.—The flowers of this plant emit a rather pleasant fragrance. A mixture of loam and heath mould suits the plant well ; and cuttings planted in sand under a glass, and plunged in heat, grow freely.

CAROLINEA.

C. ALBA.—This magnificent tree is a native of Brazil. The flowers are white, and emit rather an unpleasant smell. The *C. princeps* and *minor* are, if any thing, more beautiful than the *alba* ; the *insignis* will grow between thirty and forty feet high, the flowers are very large, of extraordinary beauty, and have a delicious fragrance, but too powerful if closely confined. The fruit will grow nearly as large as a child's head, and has a sweetish taste not unlike Spanish chestnuts. All the species are easy of culture, but require plenty of room and heat. The soil that suits them best is two parts good loam and one part very rotten dung. They are propagated by layers, which should be tongued on the upper side, also by cuttings of half ripened wood, planted in sand, under a hand-glass, in heat.

CEREUS.

FOR the general culture of all stove *Cactææ*, see our remarks, Vol. I., p. 49.

CROSSANDRA.

C. UNDULÆFOLIA.—This is a splendid species, and remarkably easy of culture. Any light rich soil will suit it, and it propagates readily in spring, by cuttings planted in sand under a glass, in heat.

CAREYA.

C. SPHÆRICA and **ARBOREA** are natives of the East Indies ; they grow well in

a mixture of two parts loam, one part heath mould, and one part very rotten dung. They are propagated readily by cuttings planted in sand, under a glass, in heat.

CLEOME.

C. DENDROIDES.—This is a Brazilian plant of great beauty, growing in any light soil, and readily propagated by seeds and cuttings; the latter may be planted in light soil and plunged in a moist heat.

CRYPTOPHRAGMIUM.

C. VENUSTUM is well deserving a place in any collection, requires the common treatment of most other stove shrubs, and is propagated by half ripened cuttings planted in sand under a glass, and plunged in heat.

CASSIA.

C. LIGUSTRINA, *GLANDULOSA*, and *PULCHELLA*, are all very beautiful. They require a soil composed of equal parts of heath mould and loam; the foliage of the *glandulosa* is particularly elegant when the plants are large. They are all propagated by cuttings and seeds, which must be received from India, as they seldom produce any in our stoves.

COTYLEDON.

C. DECUSSATA.—This is a succulent of rare beauty; it requires to be potted in sandy loam, and placed in a cool part of the stove. The same attention is requisite in watering this plant, as other succulents, viz., administering only about twice a week in the driest weather, and less in damp weather, and scarcely giving any during winter. It is propagated by cuttings, which should be laid on a shelf to dry a few days, and afterwards planted in pots of mould, and placed in a dry heat.

CLITORIA.

C. ARBORESCENS.—This is a very rare plant in our collections. It is a native of Trinidad, and consequently requires a strong heat. The soil should be two parts loam, one part peat, and one part very rotten dung. It is propagated by seeds, which are produced in pots, and also by cuttings, planted in pots of soil, and plunged in a moist heat.

CLERODENDRON.

All the *Clerodendrons* require plenty of pot room, and all the summer season often syringing over the leaves, or they become much infested with the red spider. They are very handsome, and continue flowering a long time. They propagate readily by cuttings of the young wood planted in pots of soil, and plunged in a brisk moist heat.

CERBERA.

C. FRUTICOSA is a fine species of very easy culture, and readily propagated by cuttings planted in sand, and plunged in a brisk moist heat.

CROTON.

C. PICTUM.—The beautiful blotching of the leaves of this shrub renders it a notable ornament to the stove. It strikes readily by ripened cuttings, planted in sand in the autumn under a hand-glass; and in spring, by plunging the pots in a brisk heat.

DRACÆNA.

D. TERMINALIS is a most graceful plant, not unlike a species of palm in its growth. It grows readily in a mixture of heath mould and loam, and is readily increased by pieces of the stem and by seeds. The *D. ferræa* and *striata* are both very ornamental.

ERYTHRINA.

All the *Erythrinæ* are splendid, and are easy of culture. They require to be kept rather dry and cold during the time they are without leaves, and, when they begin to grow, place them in a strong heat, where they will receive plenty of moisture. They are propagated freely by cuttings, which may either be planted in sand or light soil, and plunged in a brisk moist heat.

EUPHORBIA.

E. SPLENDENS.—The flowers of this species are not large, but they are of an extremely rich colour. Any common poor soil suits it, and care is requisite not to over-water it. Cuttings strike freely, if left a day or two to dry after separation from the plant, and then planted in small pots of poor soil, and plunged in a strong heat.

EUGENIA.

E. MALACCENSIS and *JAMBOS* are very ornamental tropical fruit trees; the flowers themselves have nothing remarkable in them, but the fruit is both ornamental and valuable. They both thrive well in a mixture of two parts sandy loam, and one part very rotten dung, and are very easily propagated by cuttings of the ripe wood, planted in the autumn, in pots of sand, and placed in a moderately cool and dry place; in February, plunge them in a bark or hotbed, where they will receive a brisk heat, and give them a moderate supply of water.

GOMPHIA.

G. OBTUSIFOLIA and *NITIDA* require only the common care and treatment of hardy stove plants; and are very easily propagated by cuttings, planted in pots of sand, and covered with a glass.

GEISSOMERIA.

G. LONGIFLORA.—This plant well deserves more attention than has hitherto been given it. The soil for it should be rich, say two parts light loam, and one part very rotten dung. Cuttings of the young and tender wood, planted in light soil, under a glass, and plunged in a brisk heat, will speedily grow.

GUSTAVIA.

G. AUGUSTA.—This splendid plant, to be grown to perfection, should be placed in a strong heat. It has been long discovered, but is yet scarcely known in collections. A soil composed of one part heath mould, one part light loam from a pasture, and one part leaf mould, suits it well. Cuttings of the ripe wood taken off in the autumn, planted in sand, and placed in a moderate dry heat, and in February plunged in a strong moist heat, under a glass, will strike pretty freely.

GRISLEA.

G. TOMENTOSA.—A lovely plant, and remarkably free flowerer; a mixture of one part heath mould, and two parts sandy loam, forms a good soil for it; and cuttings of the tender wood, taken off in April, strike freely if planted in sand, under a glass, in brisk heat.

GARDENIA.

For the culture of *G. radicans* and *florida*, see Vol. I., page 226; the *G. speciosa* and *latifolia*, are both very scarce in our collections. They require the same treatment as *G. florida*.

GUETTARDA.

G. SPECIOSA.—This rare plant ought to be in every collection; it requires precisely the same treatment as *Gardenia florida*.

GOLDFUSSIA.

G. ANISOPHYLLA.—With this plant I am unacquainted, except from figures, and include it in my list merely from report.

HIBISCUS.

For the culture of this splendid genus refer to Vol. I., page 77; and Vol. II., page 3.

HAMELLIA.

H. VENTRICOSA.—This plant is very easy of management, thriving in a mixture of equal parts of heath mould and sandy loam from a pasture; and is easily propagated by cuttings of the half-ripened wood planted in April, in sand, and plunged in a moist heat.

HOSTA.

H. CÆRULEA.—This species may be treated like *Hamellia*, only the cuttings will do better if planted young, in pots of soil instead of sand.

IXORA.

All the species of *Ixora* require the same kind of treatment; for which see our observations on *Ixora bandhuca*, Vol. 2, page 265.

JONESIA.

J. ASOCA.—The flowers of this species are rich, and bear a good deal of resemblance to those of *Ixora*. The plant grows to a large size, and should be treated like *Ixora*. Large branches will strike root if planted in sandy soil, and plunged in a strong moist heat.

JUSTICIA.

All the species named above are most beautiful, and require similar treatment to each other, for which refer to Vol. I., page 102.

JATROPHA.

J. PANDURÆFOLIA.—This is one of the most beautiful plants ever introduced to our country. It is a remarkable free flowerer, and continues blooming most part

of the year. It is, however, scarce, because rather difficult to propagate. Cuttings will generally grow if planted singly in thimble pots and plunged in a brisk bottom heat. Layers also strike pretty well if an incision is made at a joint on the upper side of the branch, and a slight twist be given to bring the end of the tongue nicely in contact with the soil. But the best way of propagation is to fertilise the stigmas during the time of flowering, and seeds will be produced, which should be sown in February and plunged in a strong heat, when they will soon vegetate, and the young plants be ready to pot off in thimble pots, in a mixture of two parts loam, one part heath mould, and one part very rotten dung. Both whilst young, and when grown to a large size, this plant is very impatient of water, care must be taken, therefore, not to water it indiscriminately with other stove plants.

JACARANDA.

J. MIMOSIFOLIA.—This is a charming plant; the delicate appearance of the leaves, and the boldness of its trumpet flowers, form a very fine contrast. It thrives in a mixture of one part sandy loam, one part heath mould, and one part very rotten dung. In winter it is customary to give all the plants of this genus very little water, as the check generally has the tendency of throwing them into flower. Cuttings of half ripe wood will grow, planted in sand, and plunged in heat.

LANTANA.

L. MIXTA and **SELOI** are both very pretty, and remarkably easy of culture, growing freely in a mixture of two parts sandy loam, one part heath mould, and one part very rotten dung. Cuttings of half ripened wood root very frequently in pots of soil plunged in heat.

LUCULIA.

L. GRATISSIMA.—This pretty plant should be placed in a cool part of the stove. It grows freely from cuttings planted in pots of mould, and plunged in a hotbed.

MAGNOLIA.

M. ODORATISSIMA.—This plant is well known and very deservedly prized in our stoves. The delightful fragrance emitted by the flowers when expanded fills the surrounding atmosphere to a great distance. It is a native of Java, and was introduced a few years ago. The culture is simple; the plant merely requiring to be potted in a mixture of loam and sandy heath mould. It may be increased by ripe cuttings planted in sand and plunged in a brisk heat under a glass, and by budding.

MIMOSA.

Of the several species mentioned in the list, the *M. asperata*, *latispinosa*, *pigra*, and *rubicaulis*, grow to good sized shrubs; and, from the delicacy of their foliage, form a pleasing contrast to the foliage of most other stove plants. The *M. polydactyla* and *pudica* seldom form large plants. The *pudica* is the well known inhabitant of our stoves called the sensitive plant. It is usually sown as an annual, but if properly preserved from over moisture in winter, when it loses its leaves, it grows vigorously for three or four years, often producing seed in the second or third year. The true sensitive plant (*M. sensitiva*) is a biennial climbing plant, calculated for a small trellis two or three feet high. They all thrive well in equal

parts of sandy loam, heath mould, and rotten dung. They all produce seeds, by which they are easily propagated, and cuttings of the tender wood, planted in a pot of sand under a glass, and plunged in a very brisk moist heat, strike root freely.

MELODINUS.

M. MONOGYNUS.—This plant is easy to cultivate, growing in equal parts of loam and heath mould, to which may be added a little dung; and cuttings grow in sand, under a glass, in a gentle heat.

MELASTOMA.

M. HETEROMALLA, now called *Pleroma heteromalla*, is a very handsome species with silvery leaves; both this and *granulosa* grow freely in heath mould alone, and require a strong heat to grow them to perfection. In winter they are very impatient of water. Cuttings of the tender wood, planted in either heath mould or pure sand under a glass, and plunged in a gentle heat, will strike root freely.

MALPIGHIA.

M. GLABRA is but a dwarf growing plant, but a very free flowerer; it also bears occasionally a fruit about the size of a bird-cherry. It flourishes in a mixture of loam, heath mould, and rotten dung. It is so impatient of being potted, that sometimes it will not recover for nearly a whole season after being shifted; the best way, therefore, is to pot seldom and with care, so as not to disturb the roots much.

NEPENTHES.

N. DISTILLATORIA.—For the successful culture of this plant see our remarks in Vol. I., page 58.

PLUMIERIA.

All the species of Plumieria are very beautiful, and are somewhat of a succulent nature, they, therefore, never require much water, and, during the season of their hibernation, should have much the same treatment as Cacti, Vol. I., page 49. Cuttings are made by taking off a good-sized branch, and either sticking it in the bark bed, or planting it in a pot of mould, and plunging it in heat under a glass. The most suitable soil is loam, heath mould, and rotten dung.

OSBECKIA.

OSBECKIA requires precisely the same treatment as *Melastoma*.

POINCIANA.

P. REGIA and PULCHERRIMA are both splendid, and ought to be in every collection; for their culture see page ? of the present volume.

PETRÆA.

P. ERECTA.—This beautiful plant grows freely in a mixture of loam and heath mould, with a little rotten dung added, the cuttings should be planted in sand in May, and be plunged in heat under a hand-glass.

QUASSIA.

QUASSIA AMARA.—The wood of this shrub is the *bitter wood* of the shops. The plant grows very handsome, and is an exceeding free flowerer. It grows freely

in a mixture of equal parts of heath mould and loam, with a small portion of rotten dung. Cuttings grow slowly; they must be made of the ripe wood taken off in the autumn, and planted in pots of sand, under a glass, in a gentle dry heat; and in February plunged in brisk hotbeds.

RHEXIA.

R. HOLOSERICEA and VIMINEA require precisely the same treatment as *Melastoma*.

RANDIA.

R. BOWIEANA.—This plant requires a strong moist heat when in a growing state; should be potted in heath mould, with a little loam mixed, and may be increased by half ripened cuttings planted in sand in May, and plunged in a very brisk moist heat, and covered with a glass.

RONDELETIA.

For the successful culture of this genus refer to Vol. I., page 158; and Vol. II., page 242.

RUELLIA.

R. PERSICIFOLIA and SABINI are both handsome species, remarkably easy of culture; they do not flower freely unless their roots be cramped in the pots; when in a growing state they also require a large supply of water, but in winter scarcely any. Cuttings strike root freely in a mixture of sandy loam and leaf mould. This soil also suits the plants well.

SOLANDRA.

S. GUTTATA and GRANDIFLORA partake much of the habit and appearance of *Brugmansia suaveoleus* (*Datura arborea*). Any light rich soil suits them well; they require much room for the roots, and flower freely when they have plenty of roots. They are easily propagated by cuttings, planted in rich soil. See Vol. II., page 108.

TECOMA.

T. STANS should be treated like *Bignonia*, for which refer to Vol. II., page 108.

TABERNÆMONTANA.

T. GRATISSIMA.—This is a very pretty sweet-scented species, growing freely in a mixture of equal parts of sandy loam and heath mould; and cuttings grow in sand treated as other stove plants.

WRIGHTIA.

W. COCCINEA is another very easy growing plant, requiring precisely the same treatment as the last.

Flowering in January.

FLOWERS ORANGE.

Crossandra undulæfolia.

FLOWERS SCARLET.

Erythrina poianthes.

FLOWERS WHITE.

Carolinea alba.

FLOWERS PURPLE.

Justicia speciosa.

— *picta*.

FLOWERS ROSE-COLOURED.

Malpighia glabra.

Flowering in February.

FLOWERS RED OR SCARLET.

Clerodendron squamatum.
Alphelandra cristata.
Erythrina enneandria.
 — *macrophylla.*

FLOWERS PURPLE

Petræa erecta.
Melastoma granulosa.

FLOWERS ROSE-COLOURED.

Hibiscus splendens.

Flowering in March.

FLOWERS RED OR SCARLET.

Erythrina mitis.
 — *piscidioides.*
 — *Abyssinica.*
 — *incana.*
 — *secundiflora.*
 — *crista galli.*

Jonesia Asoca.
Cotyledon decussata.

FLOWERS WHITE.

Plumieria bicolor.

FLOWERS YELLOW.

Cassia glandulosa.
Solandra guttata.
Rondeletia speciosa.
Hamellia ventricosa.
Hibiscus rosa sinensis aurea.

FLOWERS ROSE-COLOURED.

Acacia Lambertiana.
Plumieria tricolor.
Cerbera fruticosa.
Osbeckia stellata.

Flowering in April.

FLOWERS SCARLET.

Quassia amara.
Jatropha panduræfolia.

FLOWERS WHITE.

Clerodendron hastatum.
 — *viscosum.*
Gardenia radicans.

FLOWERS YELLOW.

Sesbania picta.

FLOWERS PURPLE.

Mimosa pudica.
Goldfussia anisophylla.
Ruellia persicifolia.
 — *Sabini.*

Flowering in May.

FLOWERS SCARLET.

Wrightia coccinea.
Epiphyllum speciosum.
 — *truncatum.*
Aphelandra cristata.
Carolinea insignis.
Erythrina horrida.
 — *caffra.*
 — *speciosa.*

FLOWERS YELLOW.

Mimosa rubicaulis.
Gomphia obtusifolia.
 — *nitida.*
Brunfelsia undulata.

FLOWERS PURPLE.

Mimosa polydactyla.
Dracæna terminalis.
Clitoria arborecens.
Melastoma heteromalla.
Rhexia viminea.
Bejaria glauca.

FLOWERS WHITE.

Gustavia Augusta.
Beaumontia grandiflora.
Mimosa pigra.
 — *asperata.*
Randia Bowieana.

FLOWERS BLUE.

Hosta cærulea.

Flowering in June.

FLOWERS SCARLET OR CRIMSON.

Eugenia Malaccensis.
Cereus speciosissimus.
 — *Jenkinsonii.*
Barringtonia.
Butea frondosa.
 — *superba.*

Acacia Houstonia.
Grislea tomentosa.

FLOWERS BLUE.

Jacaranda mimosifolia.

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FLOWERS PURPLE AND ROSE.

Cleome dendroides.
Ardisia paniculata.
 — *colorata.*
 — *pyramidalis.*

FLOWERS YELLOW.

Cereus grandiflorus.
Magnolia odoratissima.

FLOWERS WHITE.

Bauhinia recurva.

Flowering in July.

FLOWERS SCARLET OR CRIMSON.

Epiphyllum splendidum.
 Geissomeria longiflora.
 Caroleia princeps.
 — minor.
 Careya sphaerica.
 — arborea.
 Guettarda speciosa.
 Lantana mixta.
 Poinciana regia.
 — pulcherrima.
 Euphorbia splendens.
 Brownea grandiceps.

Russelia grincea.
 Hibiscus liliiflorus hybridus.
 Ixora coccinea.
 — crocata.
 Clerodendron paniculatum.

FLOWERS BLUE

Rhexia holosericea.

FLOWERS WHITE.

Caroleia alba.
 Plumieria acuminata.

Flowering in August.

FLOWERS SCARLET AND RED.

Erythrina rubrinervia.
 — arborescens.
 Ixora bandhuca.
 — rosea.
 Justicia carnea.

FLOWERS YELLOW.

Cassia ligustrina.
 Hibiscus tiliaceus.
 Tecoma stans.

FLOWERS WHITE.

Melodinus monogynus.

Flowering in September.

FLOWERS SCARLET AND RED.

Beloperone oblongata.
 Justicia nodosa.

FLOWERS YELLOW.

Hibiscus cernitus.
 Allamanda cathartica.

FLOWERS WHITE.

FLOWERS PURPLE AND ROSE.
 Justicia venusta.
 Luculia gratissima.

Alstonia venenata.
 Tabernamontana gratissima.
 Mimosa latispinosa.

 CULTURE OF THE GENUS EDWARDSIA.

THIS genus is much esteemed, and eagerly sought for by most cultivators of ornamental plants, on account of the peculiarly shaped and invariably yellow coloured flowers. They are shrubby plants of easy culture, varying in height from six to ten feet, branchy, forming, when full and well grown, an agreeable bush. In the Linnæan system they form a portion of that class and order called *Decandria Monogynia*, and belong to that section of the monogynous plants, recognised by the flowers being butterfly-shaped (*papilionaceous*), characters by which the plants forming the natural order *Leguminosæ* are at once distinguished. The flowers of these plants are pretty and curious, but not so handsome as might be expected from this tribe, among which exist some of the most beautiful genera of hardwooded plants in the vegetable world. The whole genus comprises six species, four of which will survive our winters in the open air, if not very severe. The remaining two being natives of a warm climate require the heat of the stove. Before treating of each species, which we propose to do separately, it will be better to notice the essential characters of the genus; afterwards, in their proper place, the distinctive marks of the species, mingling with the whole every other important particular that may appear necessary to render the subject serviceable as a general

reference. The generic characters are an obliquely five-toothed calyx, with the upper side cleft. *Corolla* papilionaceous, composed of five distinct petals. *Keel* long. *Stamens* ten, inserted into a cup-shaped, many angled, thalamus. *Filaments* falling off, (deciduous). *Legume* (pod) necklace-shaped, (*moniliforme*), one-celled, two-valved, four winged, many seeded. *Leaves* pair, pinnate, without foot stalks, (*extipulate*), deciduous. *Flowers* produced in short axillary racemose spikes.

E. grandiflora may be regarded as its name imports, the most handsome species in the genus, and certainly when in flower it is a splendid ornament, exhibiting by its large, and in a healthy plant numerous clusters of pendulous yellow blossoms, which are produced before the leaves, a garland of golden hue. It is a native of New Zealand, whence it was brought into this country about the year 1772. The leaves, which are compound, consist of from seventeen to twenty-one oblong, somewhat linear, lanceolate leaflets, hairy beneath, petals of keel bent like a sickle (*fulcate*). The season of its flowering generally happens about April or May, in which state it continues for a considerable time. It is rather hardy, and will do well planted in a good border of open loam and peat, against a south wall, when it will flower and perfect its seed, by which it may be increased, or cuttings of the young wood put in sand will strike readily under a hand-glass.

E. microphylla, or small-leaved *Edwardsia*. This is a valuable species, with leaves composed of from twelve to fifteen pairs of roundish emarginate leaflets, smooth, sometimes pubescent on the under side. Flowers papilionaceous, petals of the keel elliptical, hooked on the back. This species is a native of New Zealand, introduced to this country a little more than a century ago. It produces its large pendulous branches of golden coloured flowers about May and June, thus forming an elegant shrub well suited to a warm place in the arboretum, or flower garden, whence it can be conveniently moved to a frame or greenhouse, or otherwise protected in extreme frost. It delights in a good open loamy soil, blended with a little sand, or destitute of the latter, if the loam be open, it will grow well. It may be propagated by seeds, which generally ripen, or by cuttings put in sand under a hand-glass.

E. chrysophylla, or golden coloured *Edwardsia*, so called from the young leaflets being clothed with small yellow hairs (*pubescent*). The compound leaves of this species consist of seventeen obovate leaflets; with the petals of the keel like the preceding elliptical, and the dorsal (growing on the back) margin straight. It is a native of the Sandwich Islands, and not quite so hardy as the former species, it therefore must at present be considered to prefer the greenhouse, where it will grow and flower well; the flowers are rather small, still their uniform yellow colour renders the plant handsome about May and June, which is the general season of its flowering. It should be potted in rich loamy open soil, mixed with a little peat, carefully watered at all times. Propagation may be easily effected by cuttings of the young wood being potted in sand and placed in a little heat under a hand-glass.

E. myriophylla, or many leafletted *Edwardsia*. This is an interesting and desirable species, with its individual leaves formed of twenty pairs of obovate, entire emarginate leaflets, either smooth or pubescent on the under side. This is also a

native of New Zealand, producing about May or June brilliant yellow flowers, which make a conspicuous show. Its habit is much like the other New Zealand species, and therefore requires the same attention.

E. nitida, or shining leaved *Edwardsia*. This is a pretty shrub of about eight feet high, native of the Island of Bourbon, introduced to this country about fourteen years ago. It requires the heat of the stove, and, if potted in soil composed of a mixture of loam sand and peat, will grow well. The flowers are yellow. The number of leaflets to each leaf varies from twenty to twenty-five, of an elliptic, somewhat ovate obtuse shape, with a small notch at the end and silvery on both surfaces, wings of the flower oblong, with the dorsal margin straight. *Legume* hairy. Cuttings of the young wood put in sand, under a bell-glass in heat, will propagate freely.

E. denudata, or naked *Edwardsia*, a shrubby plant, also a native of the Island of Bourbon, requires the same treatment as the other stove species. *Leaves* composed of from seventeen to twenty-one elliptic obtusely-shaped leaflets, under surface of a pale colour, clothed with silky hairs; upper surface smooth, clothed with rusty shining wool. *Legume* very thickly covered with small hairs (*tomentose*). The two stove species will do well treated as other stove plants of a similar habit, none of them are very liable to be assailed by insects, still it is necessary to keep a vigilant eye upon them in case these intruders should make their appearance. The hardier sorts growing in the open air, must be objects of attention during the winter, that is, if the weather be very severe they will require protection, which will be readily rendered, if the plants are growing against a trellis, by nailing a mat or two over them. But if planted on the lawn or border, shelter in this case will not be so easily afforded. The most available method is to form a covering by wreathing hoops together of sufficient dimensions, and covering the whole with garden or straw mats, observing to give air and light at every opportunity, through the day, and cover them at the approach of night; if they are carefully attended to in these respects they will stand very well.

NEW AND RARE PLANTS

FIGURED IN THE LEADING BOTANICAL PERIODICALS, AND FLORISTS' MAGAZINE FOR MARCH.

BOTANICAL REGISTER. Edited by Dr. Lindley, each number containing eight figures; coloured 4s., plain 3s.; and corresponding letter-press.

BRITISH FLOWER-GARDEN. Edited by Mr. David Don. Containing four plates; coloured 3s., plain 2s. 3d.; with corresponding letter-press.

BOTANICAL MAGAZINE. Edited by Dr. Hooker, each number containing eight plates; coloured 3s. 6d., plain 3s.; and corresponding letter-press.

FLORISTS' MAGAZINE. By F. W. Smith. Containing four monthly plates, highly coloured; several plates with two figures; large size 4s., small 2s. 6d.; and corresponding letter-press.

Of the above figures, we have only selected such as are new and very rare; and

amongst these only such as deserve to be extensively cultivated. For descriptions and figures, reference must be made to the works themselves.

CLASS I.—PLANTS WITH TWO COTYLEDONS (DICOTYLEDONEÆ).

VIOLET TRIBE (VIOLACEÆ).

PANSIES, LAVINIA, AND JOHN BULL. An elegantly finished drawing of each is given, with pleasing directions for the cultivation of this lively family. *Flor. Mag., part IX.* J. Bull is a bold, well-proportioned flower, with brilliant colours, and has excited much interest among amateurs. LAVINIA, grown by Mr. Hogg, is a very interesting flower, though its colours are not so intense as those of John Bull.

THE PRIMROSE TRIBE (PRIMULACEÆ).

PRIMROSES, DOUBLE CRIMSON AND DOUBLE WHITE. These are by far the most pleasing of all the varieties of *Primula acaulis*, or primrose. If we are to say any thing of the figures accompanying the descriptions, we must allow them to be superb productions, and reflect much credit on the work. *Flor. Mag., part IX.*

(PRIMULACEÆ.)

AURICULA, PAGE'S WATERLOO. This choice variety was raised by Mr. Page, and is at present very highly prized. The flowers are not very large, but very perfect; the eye is of a pale yellow; the paste is very fine and bold; the ground colour of a rich violet, margined with a lively yellow. The peduncles being rather short, it is advisable not to allow above nine pips to remain for the tress; the stem is firm and erect; the leaves are of a dark green, nearly plain at their margin, and very strongly nerved. It may be produced of the chief growers. *Flor. Mag., part IX.*

(COMPOSITÆ.)

DAHLIAS, BROWN'S PURPLE STRIPE. This beautiful new variety of Messrs. Brown of Slough, has the advantage of not being subject to those departures from character which affect almost all the striped varieties. It maintained its character without any deviation, during the whole season, which is a rare character amongst dahlias. It rises about three feet in height, of a good habit, and a profuse flowerer. *Flor. Mag., part IX.*

THE NIGHT-SHADE TRIBE (SOLANEÆ).

MANDRAGORA AUTUMNALIS. Autumn-flowering Mandrake. This highly interesting plant was communicated by the Hon. William J. H. Fox Strangways, in the early part of December last, who found it in some parts of the south of Italy, also in some of the islands of the Archipelago. It is a hardy perennial, requiring a deep loamy soil, and it may be increased by seeds, which ripen the following spring after flowering. *Brit. Flor. Gar., 325.*

THE PEA TRIBE (LEGUMINOSÆ).

KENNEDIA GLABERATA, or smooth-leaved Kennedia. This very pretty greenhouse climber is a native of New Holland, and flowered at Mr. Knight's nursery at Chelsea, in May, 1835. An elegant species, producing bright scarlet flowers, and no doubt will require the sametreatment as the rest of the species. *Bot. Reg., 1838.*

(LOBELIACEÆ.)

LOBELIA DECURRENS, or Wing-stemmed Lobelia. This is a handsome

perennial, introduced some years since from Chili, but not frequently found in collections. It grows vigorously in a moist, partially shaded peat border, and increases without much difficulty by cuttings. Like the rest of the genus, it has an exceedingly acrid milky juice, which renders it dangerous to those who handle it incautiously. *Bot. Reg.*, 1842.

THE WATER-LEAF TRIBE (HYDROPHYLLÆ).

PHACELIA CONGESTA, or tufted-flowered Phacelia. A very pretty and interesting hardy annual, with light-blue flowers, native of Texas, where it was gathered by the late Mr. Thomas Drummond, and, from seeds transmitted by him, plants were raised in the Glasgow Botanic Garden, and likewise in the garden of Dr. Neille at Canon Mills, near Edinburgh. It is of a very branching habit, and no doubt will make a good border plant. *Brit. Flor. Gar.*, 327.

THE FIG-WORT TRIBE (SCROPHULARINÆ).

PENTSTEMON MURRAYANUS. Mr. Murray's Scarlet Pentstemon. An extremely beautiful scarlet-flowered species, a native of Texas, where it was discovered by Mr. Drummond, by whom seeds were transmitted to the Glasgow Botanic Garden in the spring of 1835. It is remarkable for its stately growth, its singularly glowing and large foliage, and for the number, and size, and rich colouring of the flowers. On one specimen were counted eleven pairs of floral leaves, from the axis of which sprang from two to four flower-buds; and in one of the dried native specimens a single raceme had fifty-six blossoms. It will doubtless prove quite a hardy herbaceous perennial. Named after Mr. Murray, Curator of the Glasgow Botanic Garden. *Bot. Mag.*, 3472.

(COMPOSITÆ.)

COREOPSIS DIVERSIFOLIA. Various-leaved Coreopsis. Another of the many valuable species sent to this country by the lamented Mr. Drummond. He gathered it not only upon the coast at Braganza, but in the interior of the country round San Felipe. It produces large bright orange-coloured flowers with a dark eye, in the open air, in the month of July. Probably a hardy annual. *Bot. Mag.*, 3474.

THE ROSE-TRIBE (ROSACEÆ).

ROSA CENTIFOLIA, MUSCOSA, CRISTATA. Crested *var.* of the moss-rose. This variety of the moss-rose, like many of the more novel sorts, was obtained from France. Independently of the curious mode in which the moss springs in tufts from the edges of its calyx, giving to the early buds a most remarkable appearance, this rose, when fully expanded, is large and of the loveliest hue, vying in beauty with any Provence rose. *Bot. Mag.*, 3475.

THE BORAGE TRIBE (BORAGINÆ).

ANCHUSA VERSICOLOR. Changeable flowered Alkanet. An exceedingly pretty little annual worthy of extensive cultivation. Remarkable for the striking change of colour the flowers undergo; being almost red in the state of the bud, then, when expanded, reddish purple; at length bright blue with a yellow eye, from which diverge several delicate rays of a pale yellowish white colour; it flowers in July, and is a native of the Caucasian Alps, about Chinaburg and Kasbek. *Bot. Mag.*, 3477.

CLASS II.—PLANTS WITH ONLY ONE COTYLEDON (MONOCOTYLEDONEÆ).

THE NARCISSUS TRIBE (AMARYLLIDÆ).

ZEPHYRANTHES DRUMMONDI. *Drummond's Zephyranthes.* An elegant little bulbous plant, gathered in Texas by Mr. Drummond, after whom it is specifically named. The flowers are of a pale pink, produced upon a long tube, and must, seen naturally, have a gay appearance. *Brit. Fl. Garden*, 328.

THE ORCHIS TRIBE (ORCHIDÆ).

STANHOPEA INSIGNIS. *Noble Stanhopea.* This wonderful plant was originally found by Messrs. Humboldt and Bonpland on the trunks of old trees in shady woods near Cuenca in Quito, but has since been met with in various districts in South America. Dr. Lindley says, "In order to see its curious blossoms in perfection, the young spikes should be watched, and, as soon as they appear, they should be artificially led over the edge of the pot or basket, otherwise their tendency to turn downwards is so great that they are apt to force themselves into the earth and to become smothered. Naturally it fixes its pseudo-bulbs upon branches, clinging to them with its numerous creeping roots, and suspending in the air its stout zig-zag spikes of fleshy wax-like flowers." *Bot. Reg.*, 1837.

ORCHIDÆ.

CORYANTHES MACRANTHA. *Large flowered Coryanthes.* "Accustomed as we are now become," says Dr. Lindley, "to strange forms amongst orchideous plants, I doubt whether any species has yet been seen more remarkable for its unusual characters than *Coryanthes macrantha.*" The plant has the habit of a *Stanhopea* or *Gongora*; and pushes forth from the base of its pseudo-bulbs a pendulous scape, on which two or three flowers are developed. Each flower is placed at the end of a long, stiff, cylindrical furrowed ovary, and when expanded measures something more than six inches from the tip of one sepal to that of the opposite one. In colour, the sepals are an ochrey yellow, spotted irregularly with dull purple; they have a most delicate texture; the upper sepal falls back from the tip of the ovary; is narrow, and not above one half the length of the two lateral ones, which, instead of applying themselves to the tip, as is usually the case, turn directly away from it, placing themselves at an acute angle with the upper sepal, and after a while collapsing at their sides till they look something like bats' wings half at rest.

 OPERATIONS FOR MAY.

ALL kinds of half hardy plants, that are intended to fill up vacant spaces in the flower garden by being disposed singly, or two or three together, in appropriate parts of the beds, borders &c., or those that are intended to occupy a whole or a part of a bed by several sorts being grouped together with a view ultimately to produce a dense mass of varied blossoms, may now safely be placed in those situations where they are intended to flower. The above hints embrace the many varieties of *Salvias*, *Verbenas*, *Lobelias*, *Petunias*, *Alonsoa*, *Calceolaria*, *Mimulus*, &c. Also the common scarlet and other *Geraniums*, and any common green-house plants that are desired for flower-garden purposes may now be plunged where they are to

remain, until frosty nights render it necessary to afford them protection. Tender annuals that have been raised in small pots, in the nursing pit or frame, should now be gradually exposed to harden them, or they will suffer when planted out, which should speedily take place.

Attention will now be required amongst alpine plants, &c. ; where these occupy places in rock-work, many points should be attended to, such as examining the soil about the roots, making them firm, thinning where too thick, introducing new kinds, clearing off seedling weeds which will now be showing in abundance, and setting all fair and in a manner that will do credit to the whole.

ANNUALS of various sorts to succeed those sown last month should now be put in.

CAMELIAS should now be potted, the soil for this purpose should consist of equal parts of loam and peat, to which may be added a little well pulverised dung ; after potting they should be placed in a peach-house or vinery in order to excite the growth of their shoots, bearing in mind to syringe them now and then over the leaves and branches. Vol. 1, page 33.

CLIMBING PLANTS, whether in the green-house, stove, or flower-garden, will now require attending to, the superfluous shoots cut out, and the others tied in.

DAHLIAS (seedlings) should be planted out in some unfrequented place where they can be proved when in bloom ; old plants may now be turned out into the borders, &c.

GREENHOUSE PLANTS, where it is customary to expose them by forming clumps of them in the flower-garden, &c., may in the early part of this month be taken out without fear from frosts, &c. ; a sheltered situation is preferable for them.

HERBACEOUS PLANTS (early flowering kinds). If cut down as soon as the flowers have faded will very often produce a second time a display of blossoms in the autumn. Much advantage would be gained if the attention of practical men were turned to this point.

Nelumbiums, Plumieria, Euryale, Pontederia, and other aquatic plants, should now have great attention. Keep them free from insects, and allow plenty of room for both roots and leaves ; a frequent change of water will be beneficial for them. Vol. 2, page 110.

Propagate *Salvias, Verbenas,* and any desirable species or variety of plants, remembering to shade the cuttings from the influence of the sun, and carefully water them.

Primulas (seedlings), if not potted off, let it now be done without delay, using 60 sized pots ; if older plants, encourage them to flower ; they flower well in 32 sized pots, any rich light soil will suit them. Vol. 1, page 181.

Rhodochiton volubile, Lophospermum erubescens, will do very well, trained against a south wall ; provided they are planted in a good border, and the situation be sheltered, they may now be put out.

SUCCULENTS.—Offsets of this curious family may now be taken and propagated if not previously done. Give plenty of air to old plants, in short to all dry stove plants ; be very guarded in watering them, for they are very tenacious of this element. Vol. 2, page 27.



Xyris polyantha (V. Pursh.)

ZYGOPETALON MACKAIL.

(MR. MACKAY'S ZYGOPETALON.)

CLASS.

GYNANDRIA.

ORDER.

MONANDRIA.

NATURAL ORDER.

ORCHIDÆ.

GENERIC CHARACTER.—*Petals* equal, united at the base. *Lip* notched at the apex. *Column* half round.

SPECIFIC CHARACTER.—*Epiphyte*. *Root* fleshy, twisted (tortuose), not branching. *Bulb*, ovate, wrinkled, marked with the scars of the decayed leaves. *Leaves* smooth, linear, lanceolate, sheathing, marked with small white streaks from the place of insertion to the apex. *Scape* nearly two feet long, compressed, scaly. *Flowers* five or six, large. *Petals* lanceolate, of a dingy yellow green colour, blotched with purple. *Lip* large, standing horizontally, waved, notched at the extremity, and marked with lines and spots of purple and blue. *Column* half the length of the petals, yellow green, marked with spots of purple. *Stigma* convex. *Anther* ovate, terminal, compressed. *Pollen masses* two, large, yellow, each with a small lobe, or pollen mass behind. *Germen* linear, green.

THIS beautiful epiphyte was imported by Mr. Mackay, of the Dublin College Botanic Garden, from Brazil, sometime about 1827, when it was for the first time figured in the Bot. Mag., new series, Vol. 1, page 2748.

We are obliged to Mr. Bowe, of Manchester, for the opportunity of figuring this species, and who kindly permitted our artist to make a drawing from his plant, which flowered about October last.

This plant, which is certainly one of great beauty, may be classed amongst the most showy of this highly interesting family (Orchidæ).

It may be grown with success, with the treatment given to other portions of this tribe. The plants at Chatsworth, which grow satisfactorily, are kept in an atmosphere imperceptibly humid, averaging in temperature from 60° to 80° Fahrenheit, giving them at their growing seasons, spring and autumn, a liberal supply of water at the roots, but very rarely any over the leaves, except when the weather continues unusually fine for any length of time, and then only a slight sprinkling with the syringe early in the morning, or when the house is closed about 3 o'clock in the afternoon.

The soil in which they are potted is turfy peat, broken up into pieces about an inch square, mixed with potsherds to ensure a good drainage.





Ipomoea rubro variegata.

IPOMŒA RUBRA-CÆRULEA.

(REDDISH-BLUE IPOMŒA.)

CLASS.

PENTANDRIA.

ORDER.

MONOGYNIA.

NATURAL ORDER.

CONVOLVULACEÆ.

GENERIC CHARACTER.—See Vol. 3, page 50.

SPECIFIC CHARACTER.—*Plant* herbaceous, with smooth, twining, roundish branches. *Leaves* alternate, palish green, acuminate, entire, undulated, veined. *Footstalks* the length of the leaves. *Flower-stalks* somewhat racemose, axillary, producing three or four flowers. *Calyx* five-parted, small, erect, of a brownish purple colour, with a pale, nearly white margin. *Corolla*, before expanded, white, with the limb of a rich red, which when fully developed assumes a fine purplish blue, with five angles. *Filaments* unequal, arising from the base of the tube. *Anthers* oblong, yellow.

GERMEN oblong. *Style* filiform. *Stigma* two-lobed.

THE seeds of this splendid plant were collected by Mr. Samuel Richardson, (an officer in the Anglo-Mexican Mining Association,) in the province of Guanaxuato in Mexico, by whom they were presented to I. D. Powles, Esq., of Stamford Hill.

In the stove, about the months of July and August, this plant makes a very pretty show when trained up the rafters, or other parts of the house where it can be clearly seen. It flowers freely, and will grow well in soil composed of equal portions of loam and peat, with a little well-rotted dung.

About the middle of October last, we were favoured with the sample from which our drawing was made, by Mr. Cameron, Curator of the Birmingham Botanic Garden, where it flowered profusely in the stove.

Although it has been considered to flower only in the stove, there is no doubt but it would produce abundance of blossoms in a sheltered situation, against a south wall, in the open air, especially if the wall is flued.







CAMELLIA RETICULATA.

(CAPTAIN ROWES' CAMELLIA.)

CLASS.

MONADELPHIA.

ORDER.

POLYANDRIA.

NATURAL ORDER.

TERNSTRÆMIACEÆ.

GENERIC CHARACTER.—*Calyx* imbricated, surrounded by accessory bractees or sepals. *Stamens* cohering into a tube (monadelphous). *Anthers* elliptical, two celled, opening lengthwise. *Capsule* furrowed, with a dissepiment (partition) in the middle of each valve, separating from the three angled axes when ripe. *Cells* one or two seeded.

SPECIFIC CHARACTER.—*Plant* shrubby, from eight to ten feet high. *Leaves* stiff, oblong, acuminate, serrated, flat, of rather a dull colour, veins deeply sunken (reticulate). *Flowers* large, axillary, solitary, of a clear rose colour. *Calyx* five-leaved, slightly tinged with purple. *Petals* from seventeen to eighteen, somewhat undulated (repand, or wavy), mostly entire, carelessly arranged. *Stamens* a great deal shorter than the petals, often divided into several bundles placed opposite the inner petals. *Ovary* silky, of a roundish form, four celled. *Stigma* simple. *Style* sometimes two or three parted.

AMONG the many splendid species of this genus that annually beautify our collections by their rich blossoms, there is no one that has a more just claim to our admiration than the present; so imposing are its blossoms when fully expanded, that if it were not for the superior colour of its petals, and simple form of the leaves, we might say it somewhat approximated in appearance to the well-known tree *Pæonia*, (*Pæonia Moutan*). And certainly the loosely arranged and wavy disposition of the petals give the blossoms of this plant a not very distant likeness to those of that genus.

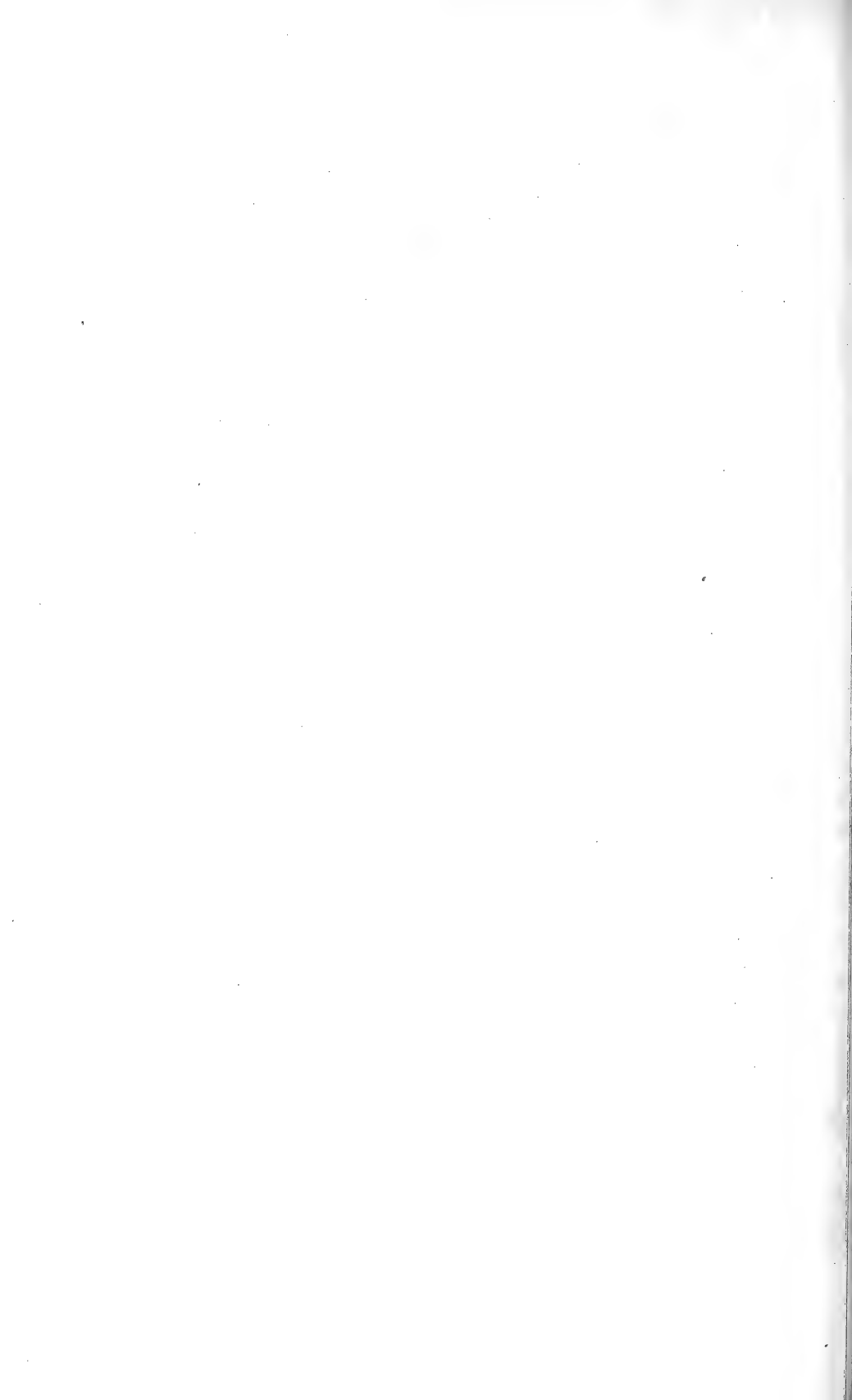
The common culture observed in growing that family of plants will be found to suit this very well; but if any difference is necessary to be made, we should say a little stronger soil should be given, as it is inclined to grow somewhat stronger than many of the other species. For further particulars of culture, see Vol. I, page 33.

The generic name is given in honour of George Camellus, or Kamel, a Moravian Jesuit and traveller in Asia. The specific name (*reticulata*) is given in reference to the resemblance the nerves of the leaf bear to net work.

This gaudy species of *Camellia* produced its blossoms, for the first time in this country, in the conservatory of Thomas Carey Palmer, Esq., at Bromley.

It was brought from China by Captain Rowes, in compliment to whom its English name is given.

Messrs. Lewcomb, Prince, and Co., of Exeter, kindly favoured us with the accompanying figure.

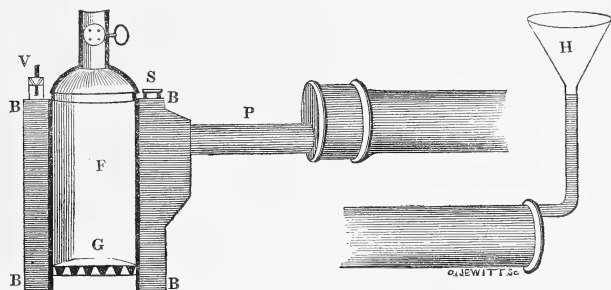


PLAN OF A NEW HOT-WATER BOILER,

BY J. ROGERS, JUN., STREATHAM COMMON.

HAVING lately had occasion to apply stove-heat to a small pit, and not finding any of the ordinary hot-water apparatuses exactly suited to my purpose, I was induced to try the following experiment, and the success with which I have met leads me to think a knowledge of it may be useful to others, as I believe my apparatus to be the most effective, as well as the most economical, both in original construction and consumption of fuel, of any hitherto in use.

The annexed section will afford the best explanation of my plan.



B B B B is a cylindrical boiler, $11\frac{1}{2}$ inches in diameter, enclosing a similar and concentric cylindrical furnace $7\frac{1}{2}$ inches in diameter; each sixteen inches high. F is the furnace; G the grate, two inches from the bottom of the boiler; P the pipe, $2\frac{1}{2}$ inches in diameter, communicating with a cast-iron pipe, 4 inches in diameter, 9 feet long.

The boiler is closed at top, having a steam valve v, and s a filling screw, similar to that by which oil is put into a lamp. Both ends of the cast-iron pipe are closed by wooden plugs, through one of which is passed the communication pipe, P, as close to the lower side of the pipe as possible; while through the other a small air pipe is passed, as close as possible to the upper side of the pipe; and to the air-pipe is attached a funnel, H. The cast-iron pipe is laid at a small inclination, about one inch in the nine feet, so that the end farthest from the boiler is highest: both the smaller pipes are passed through the backwork of the pit, and the cast-iron pipe alone is within. The boiler and iron-pipe being filled with water, either through the filling screw or the funnel of the air-pipe, a small fire is lighted in the furnace; the water, heating, rapidly flows off into the cast-iron pipe, and is replaced by cold, till the whole boils, when steam escapes at the valve.

A little coke is required at first lighting, afterwards cinders are the only fuel; and so slow is the combustion, that this *small furnace* has remained burning *eleven hours* without any attention whatever, excepting once, about two hours after it was lighted, to clear the furnace-bars and regulate the draught for the night. The

water continued almost boiling the whole time, and of course the temperature of the pit was uniform.

My boiler is made of tin; and the small chamber *c* is a little projection, added to prevent the ascending and descending currents from interfering with each other, which might be the case in so narrow a boiler. I prefer, for an apparatus on so small a scale, one pipe to two for the communication between the boiler and heating-pipe, as the hottest water will then always remain in the iron pipe, even if the fire go out and the boiler is cool.

There is one other point in the action of this boiler too important to be omitted: by loading the valve at *v*, until the water rises through the air pipe into the funnel *h*, an oscillating motion is produced between the column of water in the air pipe and the weight on the valve; the result of which is, that the hottest water in the boiler, and occasionally some portion of steam, is forced into the iron pipe, where the latter is invariably condensed before it can reach the air-pipe, unless the water be too low and the fire too strong; in which case it escapes through the funnel, making such a noise as cannot fail to attract the attention of the gardener if any where at hand. I need hardly observe the economy of heat is thus as complete as possible; and indeed so completely is all the heat of the fire absorbed, that although my chimney is not more than three feet long, I can stop the top with my naked hand without inconvenience, at a time when the fire is sufficiently strong to keep the water boiling. This, to those who have not tried the experiment, may seem almost incredible. I could point out several advantages which this method possesses, but they will occur to an intelligent reader. Its superiority, in my view, over all other forms of small boilers, is the time which it will continue to burn without attention, and the economy of fuel, where cinders are the most suitable which can be used; if applied to a great extent of pipe, of course stronger fuel must be employed.

I might mention its power of heating, but those who are accustomed to such apparatuses can calculate more readily than I am able the effect of a four-inch pipe at 212°. It raises my little pit 30° or 32° degrees, and of course I am obliged to give air all day long.

P.S. The whole expense of my apparatus was not 4*l.* 5*s.*; if made with copper, which it should be to be durable, about 6*l.*

ON THE CULTIVATION OF BRUGMANSIA SUAVEOLENS,

WITH A FEW HINTS ON RAISING HYBRIDS, BY CROSSING *B. SUAVEOLENS* WITH
B. SANGUINEA.

AMONG the many beautiful plants that now decorate our conservatories and flower gardens, perhaps there is not one that has a more splendid appearance (when properly grown) than *Brugmansia suaveolens*, or *Datura arborea* of old gardeners; for whether we examine a single flower, or consider the effect of the combined

dozens jutting from beneath its sombre but majestic foliage, and impregnating the nocturnal air with their delicious fragrance, there is a delicacy, an uniformity, nay, a grandeur ! that calls forth simultaneous plaudits of admiration from every observer. And while we are thus expatiating on the charms of *B. suaveolens*, we cannot allow the opportunity to pass of calling the attention of our readers to another very splendid species of this genus, which flowered in the autumn of 1834, in the garden of Miss Trail, at Hase Place, Kent ; and from which a figure was published in January, 1835, in that excellent botanical periodical "The British Flower Garden," conducted by the late enthusiastic and much to be lamented botanist, Mr. Robert Sweet. This species is called *Brugmansia sanguinea*, but from what we can judge of the flower from the drawing, we feel inclined to think it would be more appropriately placed among *Datura*. We possess a plant of this species, and also another which we purchased under the name of *B. tricolor*; and from the appearance of the plants we hope to be able to present our subscribers with a figure of each before the end of the season. The *B. sanguinea* was raised from seed collected by Mr. Crawley, at Guayaquil in the state of Equador ; and as it was found growing at a greater elevation than *B. suaveolens*, it is reasonable to suppose that it will be much hardier.

Although it would appear that some of our scientific botanists, who formerly advocated hybridising, or cross-breeding, in the vegetable kingdom, are now veering round, and contradicting their former statements, on the supposition that hybridising has been the means of introducing many "mongrel and debased varieties," yet as we cannot see the injury, we feel rather inclined to see what can be done in the way of hybridising between *B. suaveolens* and *sanguinea* ; and if we should succeed in procuring plants with flowers partaking of the habit of both parents, we shall consider that we have not done any injury, but rather that we have effected some good, by introducing another plant to this small but most beautiful genus. We also intend to graft or inarch *B. sanguinea* on *suaveolens*, and should we succeed in forming a union, we shall not fail to make our subscribers acquainted with our practice when we publish the figures.

We shall now proceed to the culture, and we do not know that we can do our readers a greater service, or more easily put the tyro *au fait* of successful practice, than by simply detailing a method by which we have grown *B. suaveolens* from five to eight feet high in one season, and with heads, the diameter of which corresponded with the height of the stems.

Early in February we take cuttings of the young wood, at about three or four inches long, pot them in sandy soil in small 60-sized pots, plunge them in a hotbed frame where there is a brisk bottom heat, and water and shade them as appears requisite. After they are rooted, which is generally in about three weeks, we re-pot them into 48 sized pots, using a compost composed of the following ingredients :— Two parts turfy loam ; two parts fresh horse droppings ; one part leaf mould ; and one part rotten dung ; well mixed and incorporated together for two or three weeks previously to using. When they are potted, we replace them in the frame, and supply them plentifully with liquid manure at the roots, and with fresh water over the

foliage at least once a day; this is particularly necessary, not only to refresh and invigorate the plant, but likewise to keep down that troublesome little pest the acarus, or red spider. We keep the plants in the frame as long as there is height sufficient; but when there is not we remove them to a forcing-house, or pine stove, where there is a moist heat of not less than 60 degrees. If they grow properly, they are removed into pots one size larger every third week; but perhaps the best criterion is to re-pot them as often as the roots protrude through the hole at the bottom of the pot: we never give them a pot more than one size larger at a time, until they get into No. 4, from which they are removed into their permanent pots No. 1. In raising standard plants, it is requisite to divest the plants of all lateral or side shoots as soon as they can be perceived, and to encourage only the main leading shoot; but if we want dwarf bushy plants, we cut off the main leader when the plants are about one foot high, and train out three or four of the strongest side shoots divergently from the centre. After the plants are established in their permanent pots, they are placed in the greenhouse or conservatory, where they will send forth their trumpet-like flowers in the greatest abundance for several weeks in succession. The above remarks apply more particularly to *B. suaveolens*; but we are perfectly satisfied that they will apply with equal force to *B. sanguinea* and *tricolor*.

REMARKS,

SHOWING THE COMPARATIVE DIFFERENCE AND DISPOSITIONS OF TREES PLANTED IN EXPOSED AND SHELTERED SITUATIONS.

FROM that excellent little scientific work, entitled "The Alphabet of Gardening, by Mr. James Rennie, Professor of Zoology, King's College, London," we select the following hints, hoping they will not altogether prove unacceptable to our readers in general; and we feel assured that, to those whose study and delight is to inquire into and investigate the laws of nature, they will be perused with pleasure and profit.

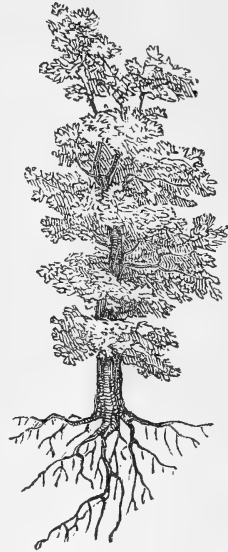
"The degree of light and of exposure has a great mechanical effect on plants. In the interior of forests and crowded orchards, the wind produces much less effect than on solitary trees in a garden or park. When crowded, the tops push up into the light above, and, not being agitated by the wind, their trunks do not thicken or become stunted, to prevent the blast making a greater pull against the roots.

"On the other hand, when standing in an open situation, trees, being freely exposed to every storm, give every advantage to its violence, by the wide spreading of their branches.

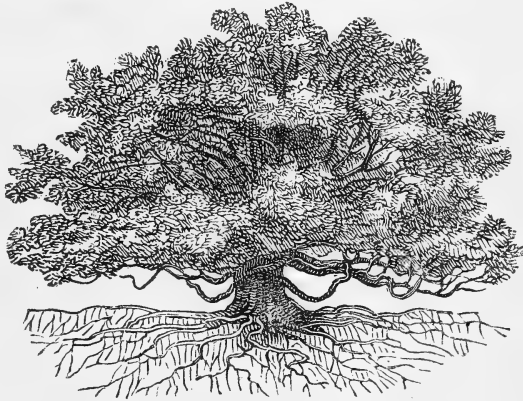
"In accordance with this, solitary trees become greatly larger than those which are crowded, while their system of root is always proportional to the branches, in order to afford a heavier ballast and a stronger anchorage for counteracting the greater spread of sail displayed in the wide expansion of the branches. The same is true of all or most garden plants, which extend in proportion to their room. Hence the necessity of wide planting when it is required to have plants with large

spreading heads, as in the instance of New Zealand spinach ; and on the other hand of planting closely when plants are required to be tall, and at the same time slender, a case which more rarely occurs than the other.

“ Recent writers on botany have endeavoured to show that the tapering tube of the carrot, the beet, and other simpler plants, are not properly roots, or, at least, that they have more the characteristics of stems than of roots ; in other words, as every plant grows in two directions, one downwards, the other upwards, the spindle-formed tube of the carrot is alleged to belong to the upper or ascending portion of the plant, rather than to the downward or descending portion. Independent of structure, however, this would appear to be equally rational as to allege that a man’s feet belong to the upper portion of his body ; but it appears to be correct enough to say the partly horizontal portion of the iris, though underground, are not roots but stems ; and it must be very obvious that the creeping runners of strawberries are not stems.



“ Weak stems, which cannot rise high in a perpendicular direction by their own rigidity, are furnished with several means for effecting this. Some straggle up irregularly amongst other thick-growing plants, as the bramble and little-sweet ; others, like the hop, the kidney-bean, and convolvulus, twine closely around others stronger than themselves, and ; when they cannot meet with such, several shoots will twine around each other to give mutual support.



“ It is important to remark, that different species, in twining for support, follow different laws, one going from right to left, of which there are twenty genera ; and another from left to right, of which there are ten genera. A hop-plant, for instance, directs its course round a pole with the sun ; but if untwisted and forced to take an opposite direction, it will injure or perhaps kill it. If a honeysuckle do not meet with support, it twists into a spiral form from right to left. It is of importance to attend to these circumstances in training.”

ON PLANTS SUITABLE FOR GROUPING IN FLOWER GARDENS.

Grouping, or arranging showy plants *en masse*, has of late years become so general in all good gardens, that we are somewhat surprised some efficient person has not attempted to give practical instructions, so as to insure a succession of beautiful flowering plants for this purpose. Although the system has become almost universal, it is, we conceive, but imperfectly understood. The following hints are the result of our experience in the management of this style of flower gardening, and should they be the means of facilitating or elucidating any thing connected with the subject to any of our readers, we shall feel most happy; they apply to flower gardens with small detached symmetrical beds, whether formed upon grass (which is the newest style) or gravel; and as one or two shabby or declining beds spoil the whole effect, the earliest opportunity should be embraced to refill them; to do this throughout the season, with the least possible expense and trouble, is the object to be attained; for this purpose, a reserve garden, some frames or pits, practical skill, and considerable attention, are requisite; these for the most part depend upon the experience and perseverance of the gardener, for although many good practical works upon gardening have been published, the rotation of crops for the flower garden has generally been but indifferently treated upon, whilst the kitchen garden minutiae are elaborately explained; in fact, until the last few years, flower gardens were for the most part a mere secondary object, as far as regarded management; whilst, if the old works on gardening are examined, it will be found the kitchen garden was cropped much the same as at present, and produced vegetables as good and in as great variety (with the exception of a few introductions of minor importance). The principal things in the flower garden were such as annual lupins, thrift, double-feverfew, bachelors' buttons, honesty, &c., with some bulbs, and those planted almost indiscriminately, without reference to height, colour, or duration; there were none of the petunias, dahlias, verbenas, calceolarias, eschscholtzias, and dozens of other equally elegant plants that adorn so beautifully our borders and beds at the present time; not that we would wish to exclude their less gaudy brethren, but the flower garden beds should at all times be as dazzling as possible, whilst the borders might be occupied with the miscellanies. There are some who advocate beds with mixed plants, which, when arranged according to their heights, colours, and seasons of flowering, look very well when properly attended to; and to those having little room, and desirous of possessing a large collection, they have their recommendations; still they never have that striking effect the same beds would have if filled with suitable plants, arranged in groups, and in large flower gardens we think them decidedly bad; and as there are continually some shabby or decaying plants, the same, or even a greater objection, may be made than that of declining beds in the grouping system, as the opening made by cutting down a permanent plant cannot be conveniently filled until again occupied by its dormant possessor.

Take for example any of the botanic or physic gardens, where herbaceous and other plants are arranged according to their genera or orders, and contrast them with a flower garden managed upon the best acknowledged principles of grouping, and we do not hesitate to say this will be sufficient to cause many to become converts to what we recommend. What we have just stated respecting public gardens was merely given as an example of the general effect produced by plants mixed indiscriminately, and not to insinuate, as might be supposed, that these arrangements are wrong or incompatible with such institutions; we know to the contrary; neither do we suppose that botanists would consider a flower garden, managed as we propose, so fraught with interest, notwithstanding which they would certainly acknowledge the superiority in general effect and beauty; but these are not the objects sought after by scientific men, who, with microscopes, examine and admire, with as much satisfaction, a new form of lichen or moss, as others would a bed of roses; indeed so changeable are the tastes and fancies of human nature in general, that any thing called new and beautiful to-day, will probably, in a short time, be termed only pretty. The most beautiful plants and colours cease to be interesting or charming to the eye when they have become familiar, or, at least, cease to cause the usual emotions felt at seeing any new or beautiful form; in course of time, we view them with the same indifference as we do the most common things or colours; we propose to obviate this by grouping the most approved colours in beds, changing their position at every re-arrangement, which would in some instances occur thrice in the season; and thus the monotony of seeing the same plant spring, flower, and die, would, we conceive, be in a great measure remedied.

We may now mention such plants as we have found most suitable in the earliest months of the season. The varieties of crocus, *Helleborus niger*, or Christmas rose, and the blue and white Russian violets, are among the first harbingers of returning spring. Edgings of crocus, particularly where the garden is in the geometrical style, are in our opinion preferable to filling any of the beds entirely with them; they should be planted in September when taken up, which need not be oftener than once in three years.

Groups of the following may be had from January until April:—

Helleborus niger should be planted from the reserve garden, either in the autumn, when some of the beds have become vacant, or just before flowering; they should be taken up immediately after flowering, which is the time for their propagation by division of the roots, and planted in good soil until again wanted.

Russian violets, single white and blue, may be treated in the same manner.

Hepaticas, blue and peach blossomed; *Primula acaulis*, the red, white, and puce coloured varieties, may be treated as recommended for *Helleborus*; a shaded part of the reserve garden should be chosen for the last two, or close under a north wall in the kitchen garden, which is generally unoccupied.

Viola tricolor, (as recommended in a former number).

Draba nivalis makes a beautiful white mass, and may be planted just before flowering without injury; it is propagated in May by cuttings, under a north aspect.

Aubrietia deltoidea matches the above for height, is lilac, and may be propagated the same way, or by division.

Ajax pumilus should be planted in September, or even when in flower they will move exceedingly well without injury.

Erythronium dens-canis, red and white, makes a beautiful bed, and when the flowers are past the leaves are exceedingly handsome; may be managed as *Ajax pumilus*.

These, with *Coronilla glauca* and Neapolitan violets, brought forward under cover, and planted out in March, giving them slight protection during frost; early tulips, hyacinths of colours, narcissus of sorts, anemonies, and beds of some autumn-sown hardy annuals, as *Nemophila*, *Clarkia*, *Collinsias*, will be found sufficient crops to make flower gardens look better and gayer than they generally do at an early season of the year.

Anemonies, if marked the season before, might be made to fill several beds with different colours, red, white, blue, &c.

(To be continued.)

REMARKS ON, AND CULTURE OF, THE GENUS TAMARINDUS.

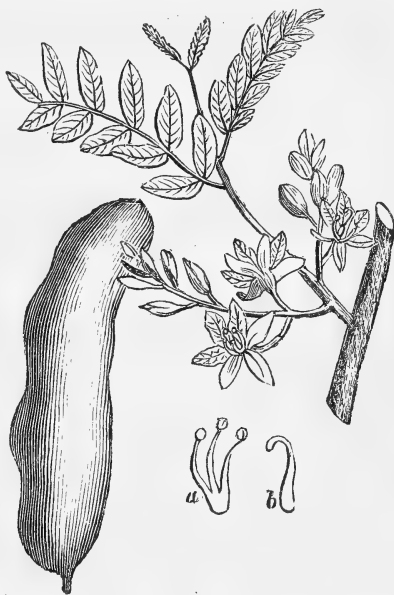
THIS genus contains two species, one from the East, and the other from the West Indies, which have both been long held in high estimation by many people, on account of the acid, yet sweetish taste of the fruit, which, after some preparatory processes, is rendered agreeable to the palate, and of much service in medicine.

T. indica, or East Indian Tamarind, is a tree of great magnitude, when full grown often exceeding fifty feet in height, with corresponding branches. The season of its flowering is generally about June and July, in which state it presents rather an interesting appearance, the calyx being of a straw colour, the petals of a clear yellow beautifully striped with red, the filaments purple, and the anthers brown. In the stoves of this country they seldom or never produce flowers, owing, perhaps, to there being too little room allowed them for the extension of their roots and branches. P. Miller says, he had several plants twenty years old, and upwards of fifteen feet high, which never had shown blossoms. The timber of the Tamarind tree is heavy, firm, and hard; sawn into boards, it is converted into many useful purposes in building. The pulp contained in the pods is used both in food and medicine. The Tamarinds which are brought from the East Indies are darker and drier, but contain more pulp: being preserved without sugar, they are fitter to be put into medicines than those from the West Indies, which are much redder, but being preserved with sugar are more pleasant to the palate. The use of Tamarinds was first learned from the Arabians; they contain a larger proportion of acid, with the saccharine matter, than is usually found in acid fruits. The

epicarp of the pod is thin, and the acid pulp for which they are esteemed is the sarcocarp. Tamarinds are preserved in two ways; commonly by throwing hot water from the boilers on the ripe pulp; but a better method is to put alternate layers of *Tamarinds* and powdered sugar in a stone jar. By this means the Tamarinds preserve their colour, and taste more agreeably. Preserved Tamarinds should be fresh and juicy, and should have an agreeable acid taste; they should not have a musty smell, the seeds should not be soft and swollen, and the blade of a knife should not get a coating of copper by being immersed among them. Tamarinds contain sugar, mucilage, citric acid, supertartrate of potass, tartaric acid, and malic acid. In medicine, the pulp of *Tamarinds* taken in the quantity of from two to three drachms to an ounce or more, proves gently laxative and purgative, and at the same time, by its acidity, quenches thirst and allays immoderate heat. *Don's General System of Gardening and Botany, Vol. 2.*

T. occidentalis, or West Indian Tamarind, is a tree of much magnitude, attaining in a full grown specimen the height of from thirty to fifty feet, with branches in proportion. Its blossoms, which are produced in February, so much resemble the *T. indica*, that it will be unnecessary to mention them here. The difference in the two species is in the pods; in the West Indian species they are shorter and redder than those of the East Indian, but are inferior in quality.

To grow these plants well, they must have the constant heat of the stove; and, in their growing season, should have a good supply of water, both at the roots and over the branches. The soil for them should be rich and strong, composed of peat and loam, and a slight mixture of well rotted dung, being careful to incorporate them thoroughly before using. They propagate with great facility by cuttings planted in a pot of sand, with a hand-glass placed over them in heat. But as seeds are annually received from abroad, the trouble of propagating them may be dispensed with, as better plants may be procured with less trouble from seeds. In sowing the seeds it must be observed, that in order to excite vegetation they must be raised in a hotbed, and as soon as the young plants have grown the length of two or three inches they should be put into separate pots, using the same soil as recommended for older plants.



REMARKS ON THE BARRINGTONIA SPECIOSA.

THE growth of this plant is attended with much difficulty, and has, ever since it first became an inmate of our stoves, had much of the attention of practical men directed to discover the mode of treatment best adapted for it. After all that has been said, and the exertions made, to demonstrate what is essential for its successful cultivation, it is still but little understood among many cultivators. This is evident, from the many apparently healthy, but in reality, sickly stunted specimens often found in the collections of this country. All who have turned their attention to the progress made by this plant when growing, must be convinced that the nature of it is to grow rapid and luxuriant, and that it requires a steady humid atmosphere, varying in temperature from 65° to 70° Fahrenheit, to enable it to accomplish these points. To irregularity of treatment is to be attributed the bad success of many who possess this plant; and which is seen first, by the temperature of the house getting too low; and secondly, by the atmosphere being allowed to become very dry; the ill effects of either are soon visible when persisted in for any length of time, by the upper surface of the leaves assuming a pale yellow colour, and becoming blotched, as if suffering from drip in various places over their surface, and prematurely falling off. Nor does the bad effect of too low a temperature, which of the two is by far the most dangerous, cease here; but it extends itself to the bark of the young wood, which it causes to rot in more than one place, and, if not checked, would end in the total destruction of the whole plant. At the usual time of shifting stove plants (spring), the *B. speciosa* requires to be examined also, and if thought advisable to be shifted: this should be done by applying to the roots a mixture of soil, comprising two parts of loam, and one of peat and sand; these proportions should be well incorporated but not sifted. In potting, good drainage is indispensable; as the soil, if this be not observed, is liable to get sour, and thus canker the roots. After potting, the temperature of the house should never descend lower than 65°, if it does, and is allowed to continue in this state for any length of time, it may be of the worst consequences; and on the other hand, it is not advisable to suffer the thermometer to rise higher than 80°, although in very hot weather a little variation from this will not signify, still the nearer it is kept to this the better. In a temperature varying between the above two points with a moist atmosphere, the plants will grow rapidly and strong, requiring no other attention than that of supplying them with water at the roots, and occasionally syringing them over to prevent the attacks of insects. Towards the autumn, when their growth begins to decline, less water than usual should be given; and in the winter very little will be required, and this only when the soil becomes very dry.

In the autumn and winter months, when it will be requisite to allow the atmosphere of the house to become more dry, as much humidity at this season is injurious to most stove plants, the temperature must, by no means, sink below 65 or 60 degrees. In this state the wood will ripen, and the newly formed buds will

become perfectly matured, which will be much in their favour in starting the following spring. The *Barringtonia* is a native of the South of China, Java, Sumatra, the Moluccas, and of the Islands in the Pacific Ocean, at the mouths of rivers by the sea side. Its flowers are disposed in an erect thyrses of a purple and white colour, said to expand at night and fall at sunrise; these are succeeded by a reddish brown drupe, the seeds of which, mixed with bait, are said to inebriate fish in the same manner as *Cocculus indicus*.

AGE OF PLANTS.

SOME plants, such as the minute funguses, termed mould, only live a few hours, or at most a few days. Mosses, for the most part, live only one season, as do the garden plants called annuals, which die of old age as soon as they ripen their seeds. Some again, as the foxglove and the hollyhock, live for two years, occasionally prolonged to three, if their flowering be prevented.

Trees again, planted in a suitable soil and situation, live for centuries. Thus the olive-tree may live three hundred years; the oak double that number; the chestnut is said to have lasted for nine hundred and fifty years; the dragon's blood tree of Teneriffe may be two thousand years old; and Adanson mentions banians six thousand years old.

When the wood of the interior ceases to afford room, by the closeness of its texture, for the passage of sap or pulp, or the formation of new vessels, it dies, and by all its moisture passing off into the younger wood, the fibres shrink, and are ultimately reduced to dust. The centre of the tree thus becomes dead, while the outer portion continues to live, and in this way trees may exist for many years before they perish.

ON THE ORIGIN OF WEEPING TREES*.

BY WILLIAM ANDERSON, CURATOR OF THE BOTANIC GARDEN AT CHELSEA.

I HAVE never seen a printed report on the manner in which these different varieties of trees have been discovered; for example, the weeping oak. The cause of this neglect may be, that persons finding such varieties, either do not examine their origin, or keep it secret from personal interest. The following observations, therefore, may not prove uninteresting. Fascicles, or bundles of shoots, are often observed on trees, which resemble a bird's nest at a distance, but when examined they prove to be a cluster of small twigs. Such bundles are observed on different trees, but more frequently on the white or common birch tree, (*Betula alba*, L.) In the year 1808, I observed such a bundle on a *Cratægus*, *Mespilus*, and *Oxyacantha*, and grafted young thorns with them, which, in two or three years, produced beautiful branches. About the same time I observed such a bundle on *Ulmus cam-*

* From "The Gardener's Magazine."

pestris, the eyes of which were budded on healthy young trees, and every one produced a long hanging shoot. According to this observation, it would be very easy to procure a large collection of drooping, or weeping, trees. Our gardeners, however, multiply no species so numerous as the *Fraxinus excelsior*, var. *pendula*; which variety often retains its hanging character when raised from seeds. We possess several such trees, of about ten feet in height, which were raised from seed of the original tree, obtained in 1780 from a nurseryman, who found it a few years previously to that in the neighbourhood of Newmarket, in Cambridgeshire.

HINTS ON THE TREATMENT NECESSARY FOR A FEW VALUABLE GREENHOUSE PLANTS.

LUCULIA GRATISSIMA is a very handsome plant when in flower, and therefore much attention should be paid to the cultivation of it. It is a greenhouse plant, and will flower about August or September if properly managed. Give it a great deal of light and air, water it with caution at the roots, and occasionally a little may be applied over the stems and leaves. In potting, use good light rich soil, and drain well previously. Cuttings are difficult to strike; these should be carefully prepared from the half-ripened wood, put in a pot of good sand under a handglass without heat, but in a close corner of the greenhouse, and sparingly watered.

Chorizema ilicifolia, *C. nana*, *C. rhombea*, *C. Baxteri*, *C. Henchmanni*. A particularly interesting genus of little greenhouse plants, that require to be steadily treated, or they will not grow or flower to perfection. They delight in an abundance of air and light, and should be potted in a mixture of sand and peat, sparingly yet attentively watered at all times. Be careful not to over pot any of them, as they seem not to like any unnecessary soil about their roots. Seeds sown early in the spring, potted off when strong enough and judiciously managed, will make handsome plants.

Tropæolum pentaphyllum and *T. tricolorum*. These elegant plants are so well suited for training up long stakes, columns, or any favourable part of the greenhouse, that their neat foliage, and ear-drop-like blossoms, cannot, under any other mode, be properly seen. They should, particularly the former, have plenty of soil allowed them, which should consist of open loam, a greater quantity of peat, and a little sand; if planted in a little prepared border they will do well. Copiously water them when growing. Place a good sized pot in an inverted position over them in the winter, to keep off water, &c.; gather the seed if ripened in the autumn, and sow it early in the spring in very light open soil. Cuttings strike with little trouble in sand, and, if encouraged, will flower beautifully the same season.

Kennedia bracteata, *K. sericea*, *K. coccinea*, *K. Comptoniana*, *K. monophylla*, *K. ovata*. These, like the preceding, are in no place so advantageously seen as when trained up a column six or seven feet high; they are greenhouse plants of the first character, for beauty of foliage and flowers; all of them grow well in strongish soil, composed of two parts peat to one of loam, except *K. coccinea*, which, being more delicate, requires a rather lighter soil, composed of sand and peat.

Water them freely, and take care not to let the water at any time stand at the roots. *K. monophylla* does exceedingly well planted in a border in the greenhouse or conservatory; in this situation it will grow strong, and will therefore require more water than when growing in a pot. Cuttings of the whole, planted in a pot of sand, in a little heat, under a bell-glass, will root freely.

Burtonia conferta, is a pretty little plant with heath-like foliage, but to manage it well is a matter of much difficulty. The most frequent error committed in the management of it is over watering, this cannot be too cautiously guarded against, as it is extremely tenacious of moisture. In potting, use a little peat and sand, with a trifling portion of loam incorporated through the whole, but be careful to drain well with reduced potsherds. Let it, at all times, enjoy an unencumbered situation in the greenhouse, where light and air can reach it without interruption. Cuttings taken when the wood is tolerably fine, and put in sand under a bell-glass, will, with care, produce roots.

Boronia Pinnata. An elegant little greenhouse plant, producing its pink flowers early in the spring, which diffuse a scent like that of the hawthorn. This species has many admirers, but there are few that can grow it well. It should in summer be much attended to, as regards the application of water, which must always be given in moderate quantities, otherwise the plant will sustain injury. Pot it in sandy peat, observing to drain well, and be mindful not to let the pot room be over much. It delights in plenty of light and air, and will therefore do better if not much crowded with other plants. Cuttings require particular attention, for they are very liable to damp while in the striking pot; they should be potted in sand, with a glass put over them, and afterwards set in a cool frame; the lights of which should be occasionally taken off to allow the cuttings to dry, otherwise they are very likely to go off from excessive moisture.

Helichrysum. This genus is amongst the best of our greenhouse plants, and is tolerably easy of culture. The species are much esteemed for the brilliancy of their flowers, not only when growing, but also when preserved in a dried state. The annual species should be raised on a hotbed, and afterwards, if they be transplanted or potted, let them be removed to a warm situation. They are all natives of the Cape of Good Hope, and will do well potted in sandy peat. Care in watering is particularly required in all, but perhaps more so in *H. proliferum* and *fulgidum*; these we have more than once observed to suffer from a super-abundance of this element. They are not easily propagated; still, cuttings put in sand and placed in a moderate heat, not covered with a glass, carefully watered, may, with attention, be brought to produce roots.

Epacris, *Eucalyptus*, *Pimelea*. Most of the species contained in these three genera are very valuable plants; and we may add, that the greater part of them are natives of New Holland, and therefore form a part of our greenhouse collections. They thrive best in a peaty soil, although some of the stronger growing species of the *Eucalyptus*, for instance the *E. pauciflora* and *perfoliata*, require a loamy soil. Water may be given freely to all of them while growing. Cuttings will strike readily potted in sand, placed under a bell-glass.

NEW AND RARE PLANTS

FIGURED IN THE LEADING BOTANICAL PERIODICALS AND FLORISTS' MAGAZINE FOR APRIL.

BOTANICAL REGISTER. Edited by Dr. Lindley, each number containing eight figures; coloured 4s., plain 3s.; and corresponding letter-press.

BOTANICAL MAGAZINE. Edited by Dr. Hooker, each number containing eight plates; coloured 3s. 6d., plain 3s.; and corresponding letter-press.

BRITISH FLOWER-GARDEN. Edited by Mr. David Don. Containing four plates; coloured 3s., plain 2s. 3d.; and corresponding letter-press.

FLORISTS' MAGAZINE. By F. W. Smith. Containing four monthly plates, highly coloured; several plates with two figures; large size 4s., small 2s. 6d.; and corresponding letter-press.

Of the above figures, we have only selected such as are new or very rare; and amongst these, only such as deserve to be extensively cultivated. For descriptions and figures, reference must be made to the works themselves.

CLASS I.—PLANTS WITH TWO COTYLEDONS (DICOTYLEDONEÆ).

THE FLAX TRIBE (LINEÆ).

LINUM BERENDIERI. Berendier's yellow-flowered Flax. An exceedingly beautiful and new species of *Linum*, found by Mr. Drummond at Rio Brazos, and San Felipe in the same country, and introduced to the gardens of this country in 1835. Its flowers, which are a beautiful rich orange yellow, are produced in August. It will grow very well in a cold frame, but it is probable it will prove a hardy annual, and a most valuable acquisition to our gardens. *Bot. Mag.*, 3480.

(MELASTOMACEÆ.)

CHÆTOGASTRA GRACILIS. Slender *Chætogastra*. An extremely beautiful melastomaceous perennial plant, first found by several travellers in Brazil, but afterwards collected by Mr. Tweedie, at Rio Grande de Sul in South Brazil, who sent seed to the Glasgow Botanic Garden, from which the present plant in question was raised. Its blossoms, which are of a faded rose colour, are produced about June; it requires the heat of the stove, and from the large handsome character of its flowers will, no doubt, prove a desirable but variable object. *Bot. Mag.* 3481.

(COMPOSITEÆ).

RHODANTE MANGLESII. Captain Mangles' *Rhodante*. A beautiful hardy annual, producing brilliant rose coloured and yellow blossoms early in the summer months. In July, Professor Lindley observes, it becomes shabby, and by the beginning of August its seeds are ripe, and its life departed. It was introduced by Captain Mangles, R.N., who brought seeds from the Swan River Colony, New Holland, to the gardens of Robert Mangles, Esq., of Sunning Hill. It is hardy, but plants raised from seeds, and grown in an airy part of the greenhouse in pots, for select purposes, will flower beautifully; but there is no doubt of its doing well and flowering freely in the open air in the flower garden. *Bot. Mag.*, 3483.

THE WATER-LEAF TRIBE (HYDROPHYLLEÆ).

NEMOPHILA INSIGNIS. Showy Nemophila. This is one of the many highly ornamental plants of California, for the discovery and introduction of which to our gardens, we are indebted to the exertions of the lamented Douglas. The flowers are large, and of so bright a blue that no artificial colouring can do justice to them. It blossoms in July and August. *Bot. Mag.*, 3485.

THE HEATH TRIBE (ERICAÆ).

ZENOBIA SPECIOSA. Showy Zenobia. An evergreen shrub of very great beauty, a native of swamp and boggy grounds in both Carolinas. It was introduced to our collections by Messrs. Fraser, about 1800; since which it has become a favourite ornament in our flower-gardens. Two varieties are met with, differing a little in the outline of their leaves, and in the absence or presence of the white bloom with which they are frequently covered. Both varieties are readily propagated by layers. They should be grown in a soil composed of sandy peat, with the addition of about a fifth part of loam, and the plants should be plentifully supplied with water during the summer, especially if the season and situation happen to be dry. *Brit. Fl. Garden*, 330.

(ERICAÆ).

RHODODENDRON FLAVUM; var. *coronarium*. Garland flowered Rose Bay. A bushy deciduous shrub, producing flowers of a rich yellow in large compact clusters. This plant was imported from Holland; the gardens of which have been long famed for the extent and beauty of their collections of varieties of this genus. It may be regarded as the handsomest of the yellow flowered kinds, and will grow best in a mixture of sandy peat and loam; the best mode of increasing them is by layers. *Brit. Fl. Garden*, 331.

THE CAMPANULA TRIBE (CAMPANULACEÆ).

CAMPANULA LOREYI. Lorey's Bell Flower. An extremely beautiful hardy annual, producing blossoms of a deep blue colour. It is of very easy culture, thriving in almost any kind of soil, and ripening its seeds freely in the open border, where the plant may be occasionally left to sow itself. Grown in patches, or as an edging to flower borders; it is highly ornamental from its dwarf and slender habit; a succession of bloom is maintained throughout the summer and autumn months. *Brit. Fl. Garden*, 332.

THE PEA TRIBE (LEGUMINOSÆ).

KENNEDIA STIRLINGI. Sir James Stirling's Kennedia. A graceful greenhouse trailing plant, native of the Swan River. It was raised by Robert Mangles, Esq., of Whitmore Lodge, from seeds given to him by Sir James Stirling, Governor of the colony, in compliment to whom it has been named. Its flowers, which are seen in April, are of a bright scarlet; it will, doubtless, be easily propagated by cuttings. *Bot. Reg.*, 1845.

THE ROSE-TRIBE (ROSACEÆ).

CRATÆGUS MICRO CARPA. Small-fruited Thorn. This interesting species of *Cratægus* is, according to Elliott, a native of the upper districts of Georgia and Carolina. It was also collected by Mr. Drummond in the province of Texas.

The flowers, which are white, appear in May or the beginning of June; the fruit is red, but does not make much show upon the branches. *Bot. Reg.*, 1846.

CRATEGUS HETEROPHYLLA. Various-leaved Hawthorn. This is amongst the handsomest species of this genus. When well grown, it forms a dense pyramidal head, produces leaves the first of the genus, and is soon covered with a mantle of snow-white blossoms. After the latter have fallen away, the leaves become fully developed, and from their shining surface, neat figure and firmness of texture, render the tree a beautiful object. Finally, the rich crimson of the numerous leaves, which adorn the branches in the last days of Autumn, harmonizes beautifully with the fading verdure of the leaves. *Bot. Reg.*, 1847.

(ONAGRARIÆ).

GODETIA LEPIDA. Smart Godetia. A pretty new annual, found in California by Mr. Douglas. It was raised in the gardens of the Horticultural Society in July, 1835. It is a handsome species, producing blossoms of a rose colour, and the centre of each petal is marked with a spot of crimson; which gives it, when in full bloom, a very striking appearance. *Bot. Reg.*, 1849.

(COMPOSITÆ).

OXYURA CHRYSANTHEMOIDES. Ox-eye-like Oxyura. A hardy annual, with yellow flowers of considerable beauty, resembling in aspect the *Chrysanthemum coronarium*. It was found in California, by Mr. Douglas and produces its flowers about the months of August and September, ripening seeds in abundance. *Bot. Reg.*, 1850.

(TERNSTREMIACÆ).

CAMELLIA ANEMONIFLORA and **ROSA MUNDI.** The anemoniflora is a hybrid, produced between the *Red Waratah* and *Pomponia*, or *Kew blush*; it partakes of the free growth and ample foliage of the *Waratah*, and the form of the flower; but the centre is much improved, by partaking of the delicacy of the *Pomponia*. It is lighter than the surrounding petals, and partially mottled with a more delicate salmon-colour. It was raised by Mr. James Dickson, of Acre Lane, Clapham, of whom it may be procured. *Rosa mundi* is one of those beautiful striped varieties which does honour to the perseverance of Camellia amateurs. Its centre is not of the most perfect character. *Flor. Mag.*, No. X.

THE HEATH TRIBE (ERICÆ).

RHODODENDRON CAMPANULATUM. Bell-flowered Rose bay. This magnificent plant is a native of the lofty mountains of the north of Nepal, called Gosaingsthan, and was introduced by Dr. Wallich. The flowers are of a very large size, of a pure white, delicately tinged with a subdued rose colour towards their extremities; of a bell-shape, divided into five nearly equal lobes, the top one is decorated with crimson spots nearly to the base, which is generally of a very warm white. The flowers are individually about two inches and a quarter across, growing in a corymbose cluster, of about twelve or fifteen in number. It is expected, that this species will endure more severe weather than many of its congeners from North America, as it was found at a much higher elevation, therefore, a much colder; but it has not yet

been exposed to our winters, and perhaps it may not bear them without the protection of a greenhouse or conservatory. *Flor. Mag., No. X.*

THE CHICKWEED TRIBE (CARYOPHYLLÆ).

PICOTEEES. Miss Miller and Emperor of China. Miss Miller was raised from seed by Mr. Pinder, of Croydon. It is a flower of great merit; the colours are very brilliant and rich, the crimson markings being so distinct, and the greatest quantity being contrasted with the pure white in the centre of each petal, make it a flower of great interest. Its form is also good.

Emperor of China is one of those novel flowers which Mr. Hogg has imported from Germany. It is a pleasing flower, full of well disposed petals, which are brilliantly marked with stripes of bright scarlet. Highly worthy the attention of amateurs. *Flor. Mag., No. X.*

(LILIACEÆ).

TULIPS. Solon and Esther. Solon is a fine flower, raised from seed, and broke by the late W. Clarke, Esq., of Croydon. It is a first or second row flower, of a novel and bold appearance; the petals are remarkably broad, and the shape of the flowering fine.

Esther is a very striking flower, the colour is brilliant and rich, and when the flower expands, the peculiar manner of its markings forms a complete star. *Flor. Mag., No. X.*

CLASS II.—PLANTS WITH ONE COTYLEDON (MONOCOTYLEDONEÆ).

ORCHIS TRIBE (ORCHIDÆ).

PERISTERIA PENDULA. Pendulous Dove flower. This fine plant was imported, with many other varieties, from Demarara, by John Allcard, Esq., in whose stove, at Stratford Green, it flowered in January of the present year. The flowers are of a pale greenish white without; within, tinged with blush and sprinkled with purple dots. "This, and the species *P. elata*, are the only species that we are at present acquainted with in this country." *Bot. Mag., 3479.*

THE NARCISSUS TRIBE (AMARYLLIDÆ).

COOPERIA CHLOROSOLEN. Green tubed Cooperia. This interesting little plant flowered in the greenhouse a Spofforth, about the beginning of January; it differs from *C. Drummondii*, in having a much larger limb, the tube green, and the sepals lined with green on the outside; the leaves longer and wider, the filaments free from the tube one eighth instead of one sixteenth, and the style shorter than the tube. *Bot. Mag., 3482.*

THE ORCHIS TRIBE (ORCHIDÆ).

ANGRÆCUM CAUDATUM. Long-tailed Angraecum. A most remarkable new species of Angraecum, imported from Sierra Leone by Messrs. Loddiges, in whose collection it flowered in August last. Professor Lindley says, it is one of the most difficult of the tribe to manage successfully. In the nursery at Hackney, it is attached to a piece of wood, suspended from the roof of the stove for epiphytes. *Bot. Reg., 1844.*

OPERATIONS FOR JUNE.

AGAVE AMERICANA, or American Aloe, now brought out of the greenhouse and placed on the lawn or in the flower-garden, will have a good and pretty effect.

ALONSOA ACUTIFOLIA, and its varieties, will make a pretty show if planted in a small bed or group by themselves; some time this month they may be safely put out.

BULBS of all kinds that have done flowering should now be gradually dried off. Be cautious to secure the labels proper to the respective pots, or confusion will ensue when the plants are grown next season, and cause some trouble to rectify.

BALSAMS, COXCOMBS, and other tender annuals, now require great attention; to make noble specimens, give water in abundance, use good rich compost, and pot as often as required, and they will grow and flower well.

BOUVARDIA TRIPHYLLA, if treated as recommended for March, may now be planted out in the flower-garden or other suitable place; if a little sheltered the better.

CHINA ASTERS, and other showy annuals, should now be planted out in their respective places.

DIANTHUS. The favourite plants of this genus, such as Carnations, Pinks, &c., should in this month be propagated. Pipings carefully prepared and potted, and plunged in a moderate heat, will make young roots tolerably free; a temporary hotbed, made of any coarse fermenting materials, will answer. See Vol. I., page 68 to 73.

DAHLIAS continue to plant, but bear in mind, that the nights at this season are sometimes cold, and consequently liable to injure very young or tender plants. A slight protection will be necessary and effectual.

GREENHOUSE PLANTS, particularly those that are growing freely, should now have a good supply of water.

INSECTS.—*Greenfly* and *thrip*, so destructive to stove plants, &c., should now be carefully watched.

IMPREGNATION or CROSSING should be carried on, whenever an opportunity offers to effect it.

LOBELIAS should now be planted out in beds, and they will make a fine show in the autumn.

LAYERING, INARCHING, &c., performed in the two preceding months, should now be attended to, and other operations effected in such species as will admit of working at this season.

ORANGE and LEMON TREES may be removed from the greenhouse to a favourable situation in the flower-garden.



Phacelia unifolia.

PHACELIA VINIFOLIA.

(VINE-LEAVED PHACELIA.)

CLASS.

PENTANDRIA.

ORDER.

MONOGYNIA.

NATURAL ORDER.

BORAGINEÆ.

GENERIC CHARACTER.—*Calyx* persistent. *Corolla* bell-shaped (campanulate), five cleft. *Stamens* exserted. *Style* short. *Stigma* divided at the apex, long.

SPECIFIC CHARACTER.—*Annual*, clothed over every part with very minute hairs (pilose) or down (pubescent). *Stem* about eighteen inches high, slender, somewhat branching. *Calyx* linear five-cleft, each about a third shorter than the corolla. *Corolla* spreading, divided into five ovate, obtuse lobes, of a very bright blue colour, the lustre of which gradually diminishes towards the centre, where a yellow eye is formed, which gives a remarkably striking effect to the expanded flower. *Stamens* five. *Filaments* weak, inserted into a kind of sheath near the base of the corolla. *Anthers* yellow. *Style* the length of the filaments when these are erect, a character they by no means seem true to. *Flowers* produced in loose, lateral, leafless panicles.

An extremely pretty little plant, producing flowers which rival in colour that elegant annual recently figured in Bot. Mag. 3485, being only surpassed by the surperior size of the corolla; it flowers freely, and, unlike its rival, is of a very neat-growing habit. The free disposition to flower, and ample, not crowded, foliage, combined with its neat growth, render it desirable in a high degree as an autumnal ornament for the flower garden.

This is another of the many contributions so conspicuous in our Magazine, communicated by our numerous friends in and about Manchester, whose zeal and success in the cultivation of exotic plants is of the highest tone; the present sample was furnished, some time back, by Mr. Campbell, curator of the Botanic Garden at that place.

The seed from which the plant was obtained was imported by the late much respected Mr. Drummond, from Texas.

An open rich loamy garden soil will suit it, and the readiest way, we expect, by which it can be increased, is from seeds, and it is very probable that it will ripen these in abundance.

The generic name alludes to the flowers, which are disposed in fascicled spikes.

The leaves of this pretty little new annual being so much like those of the vine, we have been led to adopt for it a specific name "*vinifolia*;" although, from the little knowledge we have of the plant, we suspect it will not be found to continue true to that character. If it should prove that the leaves are liable to vary much in form, we suggest "*heterophylla*" as a specific name, as in that case being more descriptive of the plant.





Azalea Rawsonii.

AZALEA RAWSONII.

(C. RAWSON'S AZALEA.)

CLASS.

PENTANDRIA.

ORDER.

MONOGYNIA.

NATURAL ORDER.

RHODORACEÆ.

GENERIC CHARACTER.—See Vol. 1, pages 126, 129.

SPECIFIC CHARACTER.—*Plant* a dwarf bushy shrub, two feet high. *Leaves* ovate, of a dark green colour, somewhat paler on the under-side. *Flowers* produced at the extremity of almost every branch, invariably three in number, of the most intense tints, surpassing in lustre the coloured figure. *Anthems* varying in number from five to ten.

WE are indebted to Mr. John Menzies, gardener to Christopher Rawson, Esq., F.G.S., of Hope House, near Halifax, for this superb new hybrid *Azalea*, who raised it from seeds collected by himself, and sown in 1832.

In a letter from Mr. Menzies, he states as his belief that it is produced between *A. phœnicea* and *Rhododendron dauricum atrovirens*, and this we think very probable from the existing similarity of appearance in these two plants. If, from this circumstance, we may judge of the habit of the one figured, it is very probable that it will prove nearly hardy; but whether it does or does not, it is decidedly an improved feature in this charming family, from which we are encouraged still to look forward with a glowing anticipation for something, if possible, still more beautiful.

To the example here set by Mr. Menzies, and others who have preceded him in the delightful work of *hybridisation*, we solicitously call the attention of our practical brethren, &c. in whose exertions we will gladly and actively co-operate.

It is named in compliment to C. Rawson, Esq., F.G.S., with whom Mr. Menzies has lived as gardener for many years. The generic name is from the Greek ἀνάλειος, *dry, arid*, in allusion either to the place where the plant is found, or to the dry brittle nature of the wood.

The soil used by Mr. Menzies for his *Azaleas* is, equal parts of leaf soil and heath mould, with a small portion of hazel loam.



Thymus phlomisifolius

BEGONIA PLATANIFOLIA.

(PLATANUS-LEAVED BEGONIA.)

CLASS.
MONŒCIA.ORDER.
POLYANDRIA.NATURAL ORDER.
BEGONIACEÆ.

GENERIC CHARACTER.—*Male* destitute of calyx. *Petals* four, the opposite two the largest. *Stamens* many. *Female* also without any calyx. *Petals* four to six. *Capsules* inferior, three angled, winged, three-celled, many-seeded.

SPECIFIC CHARACTER.—*Plant* shrubby, from eight to ten feet high, erect, seldom branched ; producing, when well grown, leaves upwards of a foot in diameter.

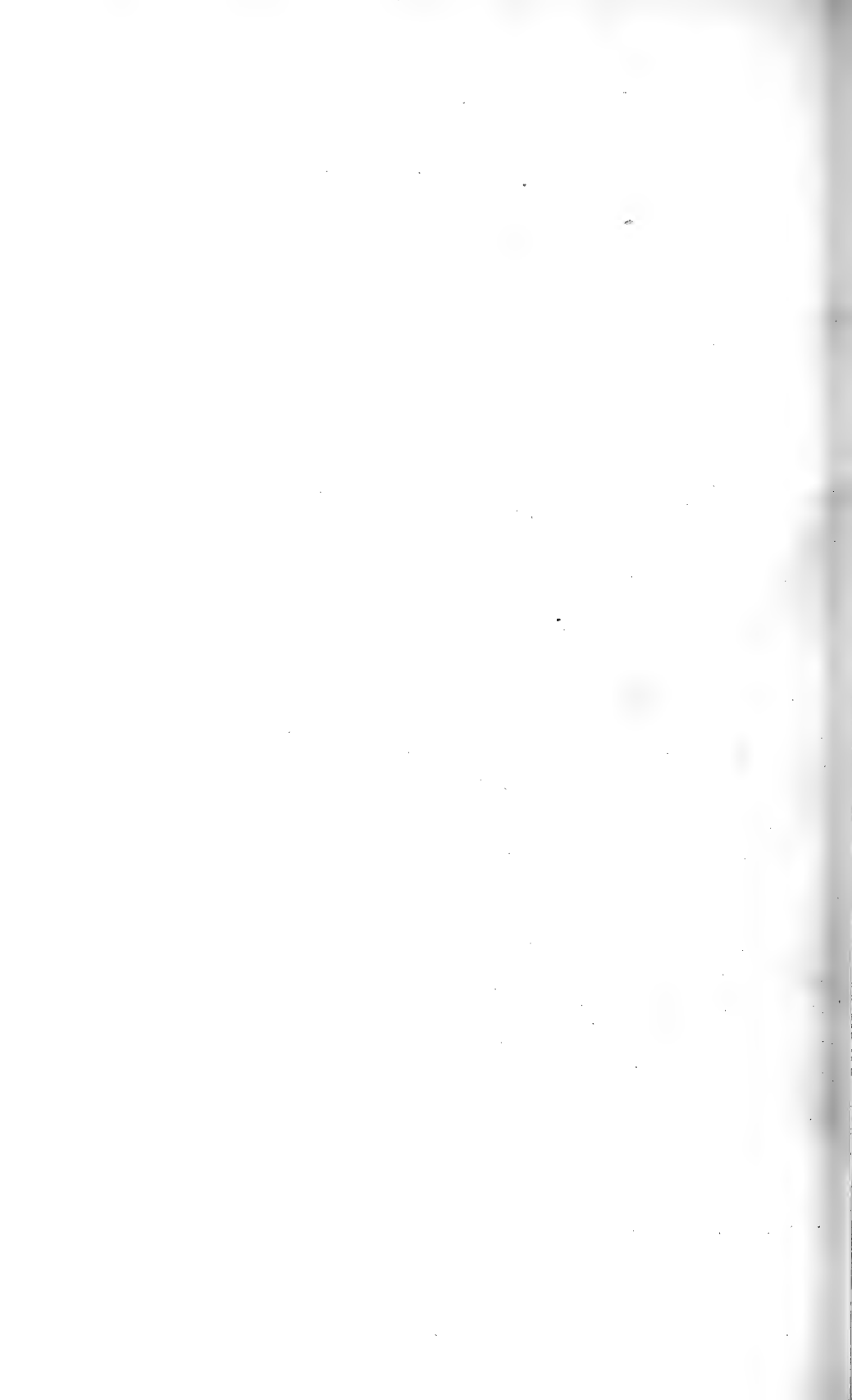
THIS plant is rarely met with in a flowering state in the stoves of this country ; a circumstance probably accounting for its limited circulation, and the more frequent occurrence of other species of this genus, most of which are in many particulars inferior, and very distinct from the one we have figured.

Our drawing was made, about the latter end of last autumn, from a sample kindly furnished by our friend Mr. Cameron, of the Birmingham Botanical Garden, with whom it flowered beautifully in the stove. It is a plant frequently seen in the collections about Paris, and is stated to flower freely in that country.

The plants of this genus partake somewhat of a succulent habit, and are generally more admired from the circumstance of the neatness of their leaves, which are oblique at the base, than from any trace of beauty in their flowers ; they grow with little difficulty among other plants in a bark stove, potted in a light loamy rich soil. Propagation is readily effected by cuttings, planted in sand in heat ; or by seeds (if such can be obtained), is a ready mode of increasing them.

The generic name is given in honour of Michael Begon, whose exertions in the promotion of Botany were conspicuous in the seventeenth century.

It is a native of Brazil, introduced from the Berlin Gardens by the late R. Barclay, Esq., in the autumn of 1829.





Pithecolobium thrypsiflorum

DICHORIZANDRA THYRSIFLORA.

(THYRSE-FLOWERED DICHORIZANDRA.)

CLASS.

HEXANDRIA.

ORDER.

MONOGYNIA.

NATURAL ORDER.

COMMELINEÆ.

GENERIC CHARACTER.—*Calyx* of three leaves, concave. *Petals* three. *Stamens* six, two of which are separated from the rest. *Capsules* three-sided and three-valved.

SPECIFIC CHARACTER.—A shrubby perennial herbaceous plant, from three to four feet high. *Leaves* smooth, of an oval-lanceolate shape, waved at the edges, and clasping the stem at the base, shining. *Flowers* produced in a dense erect thyrses, of a bright rich blue colour, making, when expanded, a lively show.

THIS plant is handsome, and highly worthy of cultivation,—first, on account of its being easy to cultivate; secondly, for its free disposition to flower; and lastly, on account of the immense number of blossoms produced on a single raceme, which not unfrequently exceeds six inches in length, and these of so rich a blue as to render it in a flowering state very desirable as an autumnal ornament for the stove.

Our drawing was made from a plant in the collection of Mr. Clowes, of Manchester, which flowered beautifully in his stove about the middle of last autumn.

To grow it well, a compost of rich but light soil should be prepared, composed of sandy loam, peat, and a little decayed vegetable mould, the two former in equal portions; in this the plant should be potted, allowing a good shift; afterwards place them in a warm part of the stove, observing to frequently syringe, and when growing giving them a liberal supply of water; of this element they delight in a good quantity, providing attention has been paid to drainage, which is of the first importance.

It was raised from seed some years ago received from the Brazils, where, Mr. Milkan informs us, the species is found wild at about thirty miles' distance from Rio Janeiro.

The generic name is taken from the Greek, and implies the separation of two of the anthers from the rest.

The specific name alludes to the panicle or spike bearing the flowers, they being closely set thereon.



ON THE MYRTLE TRIBE OF PLANTS.

IF we except the rose, that universal favourite, the theme of the poet, and the pride of every garden, we are not aware of any plant which is accompanied with more pleasurable associations than the myrtle. It is one of the loveliest of evergreens; elegant in its growth, graceful in its figure; its leaves are not only beautiful, but they abound with a fragrant essential oil of peculiar quality; and its *flowers*, of dazzling white, pencilled with light airy stamens, each supporting a beautiful anther, are absolutely "redolent of sweets."

This charming evergreen is so retentive of its brilliant foliage, that, to borrow the expression of Dr. Lindley, it seems as if it "were intended to make us forget that winter has power over vegetation." It is not our intention, however, to make the beauties of this species the chief subject of the present article; we select it as the *type* of an order from which we hope to point out a few of the characteristics of what is now, *par excellence*, designated—THE NATURAL SYSTEM OF BOTANY. We do this with the greater pleasure, because the members of the tribe are generally plants of great elegance, and moreover possess a peculiarity of structure which may very happily be adduced to explain the construction of the new system, and to point out in what way it differs from the artificial classification of the great Linnæus.

The study of botany is enchanting as it is useful; it is a pity, therefore, that its pursuit should be hampered by difficulties; but so it is with all that is human, and we must submit. To those, therefore, who have been educated in the Linnæan system, we say "Go on, abandon it not, you have proved by experience the facilities it affords, the light it communicates; but be not prejudiced against *that classification* which embraces and teaches the knowledge of the physiological structure of vegetable organisation."

To young students, whose opinions remain unformed, we recommend the impartial investigation of the elements of both systems. In the four numbers on botany, already published by the Society for the Diffusion of Useful Knowledge, and in Dr. Lindley's "Ladies" Botany (Ridgway), the reader may obtain a sufficient insight of the leading principles of the natural system, which, in point of fact, may be considered the *Science of Physiological Botany*. If the student be inclined to investigate deeply, we recommend him to make himself acquainted with the principles of this science; but caution him, at the same time, that difficulties and perplexities will attend his progress; if, on the other hand, he wish merely to discriminate genera, to acquire the art of classing plants, and of assigning them a "local habitation and a name," we refer him to the classification of Linnæus. Therein is light, precision, and arrangement approaching to perfection. Heretofore the *natural system* has been a mass of confusion; and even now, improved as it has been by the zeal of a Lindley, it is unsettled, unfinished, and subject to perpetual revisals, additions, and alterations.

But not to dwell on the merits and deficiencies of *that*, to which we cordially

wish success, we come at once to the object we had in view when we commenced this article.

The myrtle tribe is one of the *orders* of the system. Its title is *Myrtaceæ*, and it is found in the first *Grand Division*, in which all the plants are of a vascular structure (*vasculares*), in contradistinction from the subjects of the second grand division, whose stems at least are entirely cellular (*cellulares*), and unfurnished with tubular vessels and woody fibre. The first division contains two great classes, and our *Myrtaceæ* is a member of the first of these, inasmuch as its seeds have two lobes, whence the term *Dicotyledones*. This great class is again subdivided; and its first division comprises all those plants which have calyx and corolla (*Dichlamyda*). Again, this first subdivision has three *subclasses*, viz., 1st. *Thalamifloræ*, wherein (as in *Ranunculus*) the petals and stamens are attached to the receptacle. 2nd. *Calycifloræ*, wherein the petals, and frequently the stamens, are seated on the sepals, or calyx-leaves, as in the greater number of fruit trees; for instance in *Pyrus*, *Prunus*, *Persica*, *Amygdalus*, cum multis aliis. 3rd. *Corolliflora*. Here we find the corolla monopetalous, inferior, or below the germen, and the stamens attached to it, and not as in the two preceding subclasses.

Now, let any one acquainted with botanical structure take a flower of the myrtle, and he will, after a short investigation, be convinced that it must be referred to the second sub-class of the first sub-division; because it has a great number of stamens not attached either to the petals or receptacles; that the petals are seated on the calyx, and therefore that it has both calyx and corolla; in a word, that it belongs to the 12th Linnean class—*Icosandria*.

But the order *Myrtaceæ* is not founded solely upon the number or position of the stamens, and therefore it contains many genera which are not found in the 12th class; this circumstance will be noticed more particularly, but we must previously endeavour to find out the number as well as the position of the order; and in so doing shall detect one of the imperfections of the system.

When the *Encyclopædia of Plants* appeared in 1829, *Myrtaceæ* formed the order lxiii of the sub-class, and the order itself was again subdivided into *three tribes*: the 1st. termed *Baccata*, contained eleven genera, the fruit or seed-vessel of which is a berry. The 2nd, *Capsulares*, comprised nine families having *capsular* seed-vessels. The 3rd, called *Lecythideæ*; in this, the three genera differed from those of the two foregoing tribes, the fruit being either a drupe or vessel enclosed within a leathery rind.

The plants (genera) of distinguished beauty and excellence were seen in the first tribe: viz., *Myrtus*, the tree myrtle, and *type* of the order, with ten varieties of the common myrtle, hardy tenants of the greenhouse; the lovely but captious woolly-leaved pink-flowered myrtle, native of China; and that most fragrant stove-evergreen, the pimenta-leaved myrtle, *M. pimentoides*, formerly termed broad-leaved pimenta.

2. *Pimenta vulgaris*, or true allspice, pimenta, or Jamaica pepper.

These two plants are rarely met with in our stoves, and we regret their absence; the former is more fragrant, and as an evergreen is more desirable, inasmuch as it

is more hardy, or at least more accommodating to the treatment usually bestowed on it by our cultivators.

3. *Psidium*, the *Guava*. This is a most interesting family; and the purple-fruited, or Cattley's guava is, perhaps, the most perfect and graceful evergreen that an amateur of plants ought to desire, or even can possess; it may be raised from seeds, by cuttings, or by layers; grows freely, fruits early, and yields eatable berries as large as a prize gooseberry, resembling, with the exception of the colour, a small orange. Any climate in greenhouse, vinery, or stove, not reduced below 45 degrees of Fahrenheit, suits it well; and, in addition to its many excellencies, the fruit is calculated to furnish a delicious guava jelly; in its flowers, it is obviously a true member of *Myrtaceæ*.

Punica, the pomegranate, formed one of the eleven genera; but it has recently been removed, and now constitutes an order by itself, *Granateæ*.

In the second tribe, *Capsulares*, we perceived those ornaments of the conservatory *Metrosideros*, *Melaleuca*, and *Calothamnus*, with their beautiful tufty pencils of gorgeously-tinted stamens; the first of these belongs to *Icosandria Monogynia*; the two others to *Polyadelphia Polyandria*; the pretty small-leaved *Leptospermums*, hardy conservatory or greenhouse evergreens, are more nearly allied to the true *Myrti*.

Thus far we have followed the guidance of the *Encyclopædia*; but if we turn to the catalogue of the *Hortus Britannicus* of 1832, we perceive that *Myrtaceæ* has become the lxxxivth natural order, and, therefore, that no fewer than twenty three intermediate orders have been added to the list. A great change also has been effected in the arrangement of the order; which no longer consists of three tribes, distinguished by the structure of the seed-vessels, but six tribes founded upon other bases, thus: 1. *Chamælanchiææ* denotes the dwarfish angular figure of the plants; 2. *Leptospermiaæ*, the similitude of the genera to their type *Leptospermum*; 3. *Myrteææ*, the same, &c. &c. &c.

Not to be more prolix, we merely add that the list of the orders in the first grand division was, in 1832, increased to two hundred and ten; and these are divided and sub-divided into tribes, sub-tribes, and the like, to an extent that makes the memory to quail. As new plants flow in, new orders must be, and are, originated to meet the occasion; till we are almost tempted to exclaim with Macbeth,

“What! will the line stretch out the crack of doom?”

These eternal alterations, changes of positions, and new creations, form the great blot of the system: a stumbling block is thereby thrown in the way of the inquiring many, who cannot but perceive that the twenty-four simple classes of Linnæus, with all their imperfections, furnish a locality for every new introduction, almost if not entirely, without exception, to which it can appropriately be referred, without violence to the characters of its inflorescence.

We arrive, then, at the following inevitable conclusion; that the Linnæan system is a simple, well regulated whole, perfect in its structure, and easily available;

it therefore is, and must remain, the *vade mecum* of the many. The natural classification is, on the contrary, the system of the learned few; it is unfinished, unformed, and to this day is composed of disjointed materials, grand in its object, comprehensive in its design, but so hampered with difficulties that it is but too likely to remain "a sealed book, a hidden mystery." We now arrive at the point from which we started; and shall quote the characters which distinguish and illustrate the order *Myrtaceæ*, as we find them in the *Encyclopædia of Plants*, and *Hortus Britannicus*.

"*Dotted leaves*, with marginal ribs, and an *inferior* ovary and single style, are the great features of *Myrtaceæ*. They are all fine evergreen shrubs or trees, generally bearing white flowers, and in the first section (tribe) "producing fleshy fruit," &c. &c. "The volatile oil contained in the little reservoirs of the bark, the leaves, and the floral envelopes, gives these plants a fragrance, which has caused them to be celebrated by the poets of old." "There is also a considerable proportion of the *astringent* principle in these plants; in the bark of the pomegranate it is very obvious." "The leaves of the Chilian myrtles, *Leptospermum scoparium*, and some other species, have been used as substitutes for tea." (See farther, *En. Pl.* p. 1068, order lxiii.)

Punica has been subsequently removed, and now is referred to *Granateæ*. "This order consists of one genus, the well known pomegranate; it differs from *Myrtaceæ*, in the leaves being *destitute of pellucid dots*, as well as the seeds being enveloped in pulp." (*Hort. Brit.*, p. 513, order lxx.)

The reader has now before him, a fair, and one of the most pleasing specimens of the plan; he thence can draw a sort of inference on the general arrangement of the new classification. We hope soon to resume the subject, to cite other examples; and in doing so, to present to the lover of nature some more of those exquisite productions which charm the senses, while they instruct the understanding.

ORNAMENTAL BASKETS FOR PLANTING GREENHOUSE PLANTS IN.

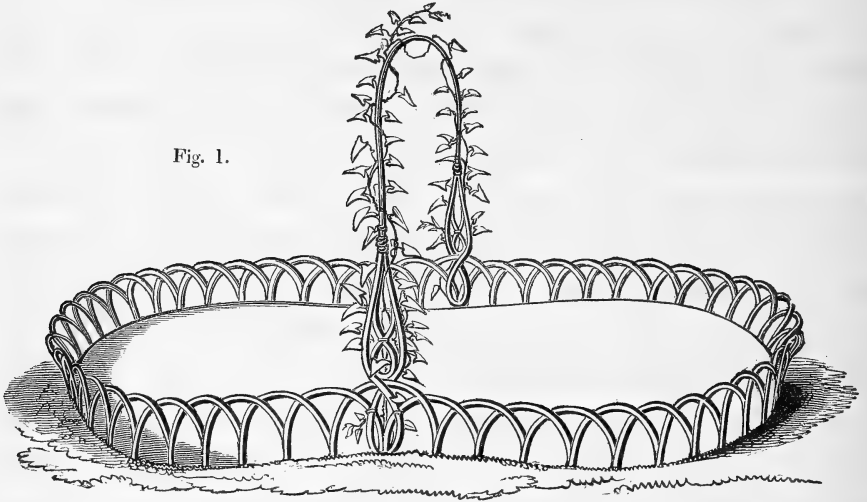
It is only under certain circumstances, that it is thought advisable to expose greenhouse plants during the summer season; or, in other words, to turn them out of doors during the three months of summer, or perhaps till the middle or latter end of September. In cases where the greenhouses are wholly devoted to the cultivation of this kind of plants, and the house well and properly constructed, it is certainly to be allowed that they will do much better if kept in the whole season; receiving, every fine day, a free circulation of air from all the moveable sashes and ventilators; but in places where the number of species of greenhouse plants is small, and accomodation scanty—perhaps only one greenhouse, and this a small one—it is

commendable to remove, in the summer months, all duplicates, and the hardier or coarser kinds, to the out-door situation; for if they are injured by being exposed to the open air, they will, shortly after being re-introduced, recover what they may have lost in leaves or branches; and the stage in the greenhouse, previously occupied by greenhouse plants, may be filled with tender annuals, which will make a very gay appearance when in bloom, besides adding an additional feature of interest, an acquisition so very desirable, particularly in small places. Nor would we only recommend that duplicates or the coarser kinds be taken out, but that every species (making very particular ones exceptions) be removed to a proper situation. The principal objections urged in favour of turning greenhouse plants out are, that in the greenhouse they are exposed to the direct rays of the sun, and consequently the roots being often found at the inside surface of the pots, suffer injury from being dried up from the too great, in this instance, degree of heat; and what gives much force to this argument is, that it is our best and most choice species that suffer most in this case. The result of this is, that a brown and sickly aspect is given to the plants, and not unfrequently renders them naked, by the premature decay of many of their leaves. These disadvantages, if such they can be called, are easily remedied by shading the house slightly with canvass, which is easily, and with a trifling cost, effected. In places where a greenhouse solely devoted to greenhouse plants is kept, it is most frequently found to be upon a large scale, and consequently it would be found no very easy matter to furnish the stage with annual or other plants, after the proper greenhouse plants were taken away; and if this were indifferently done, the house, always intended to be a place of interest and amusement, would become neglected and unfrequented for the want of something to realise the objects it was erected purposely to create. We would say, inferring from the little advantage or loss accruing from the practice of either systems, that, in places where a large greenhouse is, to turn out of doors all duplicates in the summer season is commendable, thus making more room for the remainder to grow; and in the autumn the duplicates may be re-introduced without injury, as they will bear to stand much closer in the winter than in the summer: on the other hand, where only a small greenhouse is kept, it is commendable to expose all during three or four months in the summer, and the greenhouse made up as before noticed. The situation best suited for plants of this description, is one rather sheltered on all sides, particularly from the wind in the west, and intense sun southward; if the situation is bleak, they are liable in windy weather to be blown over, which a judiciously selected spot will prevent; too great an exposure to the sun is injurious, inasmuch as it is liable to scorch the foliage and give the plants a sickly appearance. An east or a north east aspect is to be preferred.

We have seen a very pleasing effect created by planting the commonest kinds of greenhouse plants in beds in the flower-garden, and placing in a novel manner, round the margin, a kind of planed lath, of a foot or more in length, so as to allow three or more inches to fasten each in the ground; and across the centre of the bed a half circular hoop is bent, which, when neatly executed, will represent a wicker basket filled with living plants in full bloom. The accompanying diagrams 1 and 2

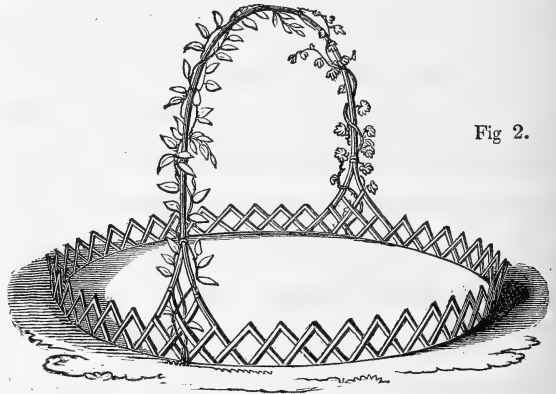
will afford the best idea of the plan. First, form the bed of whatever shape is most

Fig. 1.



desirable ; then, after adjusting the soil, select as great a variety of the refuse of the greenhouse plants as is practicable, and plunge them in the soil, previously having divested them of the pots. In plunging, observe to let those occupying the centre of the bed stand higher than the rest, so as, when completed, a gradual slope may be effected from the centre to the border of the clump. In working in the laths, a small nail will be required at each crossing, in order that they may stand fast. When this is completed all round, the bow should be carried across, which will represent the handle of the basket ; and to give an additional interest to the whole, a free growing creeper, of any common kind, may be trained over it, which will create the most pleasing effect imaginable. The whole may be painted of any colour that is thought most neat or desirable,—we should say blue or green is preferable.

Fig 2.



AN EXPOSITION OF THE GENUS PÆONIA.

EXTENSIVE, varied, beautiful, and curious are the countless objects comprised in the collections of plants at present known in this country, blending the colours of their flowers into an indefinite variety of hues, and assuming shapes and odours to an equally numberless extent. Some from the dazzling colour of their petals are almost too gaudy to admit of the mind properly to form an estimate of, or conceive precisely the extent of their beauty; others, by their neatness and minute growth combine with their more noble brethren, and exhibit in their conformation the traces of a divine hand, which call forth the noblest powers of the mind to investigate and admire. What form, what character, or what tint, says an eminent but ancient writer, can we not discover in one or other of nature's flowers; and again, what, except the cheering beams of the sun, that renders the atmosphere congenial to our comfort, and stimulates vegetable nature into activity and newness of life, is there to render the earth attractive or admirable to the pleasure-seeking traveller, or give an impulse to the musing bard, so powerful as that which nature displays in the growth of plants, or the development of their leaves and flowers? In the endless variety and sub-variety of plants, and degrees, and sub-degrees of colour in their flowers, varying from the most brilliant and intense, to the more simple and unassuming, there is no one perhaps that rises higher in the scale of magnificence than the genus *Pæonia*. For beauty and size of the flower, the *pæony* can scarcely be said to have a rival, and we find this exquisite property in the most extensive degree in the Chinese tree *pæony*, or *Pæony Moutan*, and its varieties.

This plant, and its splendid varieties, are all hardy, and will endure the open air of Britain; although they are in the flowering season occasionally housed, it is not done because they cannot stand the cold or frost, but on account of their blossoms being liable to be bruised and affected by rough winds. To flower them perfect and well, no place can equal a greenhouse, or, in cases where a greenhouse is not at hand, they may be brought to produce their magnificent blossoms in a high degree of perfection in glass frames, so constructed as to answer the size of the plants intended to flower in them. To grow good strong healthy plants that will flower well annually, it is necessary to apply the treatment recommended below.

P. Moutan has given birth to many worthily esteemed and beautiful varieties, all of which in a great degree partake of the habit of the originals, and consequently require very similar treatment, as the following brief outline will show:—

1st. Plants, of whatever size or age, require a loamy soil; still old established plants require this in a greater degree of strength than young ones. For young plants raised from seed, cuttings, &c., a loamy soil, blended with a little mellow sandy peat, we should say, will in general be found to suit them better than if loam alone is used; and we feel persuaded that a little well rotted dung, mixed with the soil applied to old plants, will be found of some advantage.

2d. A situation not too much exposed to the sun, nor too a great degree shaded, is to be sought for them. Too much sun is apt to act so powerfully upon the branches as to prevent them from freely swelling, or properly forming their

buds. On the contrary, a densely shaded aspect is objectionable; inasmuch as the wood in such situations does not properly ripen. No spot then can answer so well for them as one facing the east or inclined to south-east.

3rd. When in flower, and during the growing season, they require a good supply of water, but by no means should they be allowed to become saturated. When grown in pots, it is therefore indispensable to attend properly to drainage.

4th. Previous to the season of flowering them, which is from March to the latter end of May, or even sometimes as late as June, they should be removed to the greenhouse, or frame set apart for this purpose; when as much air as possible should be given them until the flowers begin to expand, at which time they require a good deal; but in windy, cold weather it is necessary to be careful on this point lest injury ensue.

5th. *Propagation.* Cuttings of the young wood, with a portion of the preceding year's attached, prepared in August or September, and planted in a sheltered situation in light soil, will root freely. Also they may be increased by layering, but the readiest way is to strike them from cuttings.

P. Moutan, with its varieties, are very ornamental, and produce beautiful blossoms, on which account they are cultivated to a considerable extent in the gardens throughout China and Japan. In its growth it forms a shrub from three to ten feet high; in China it is stated to exceed in height sometimes ten feet, but in this country it seldom exceeds half that height. The flowers, which show in the spring months, are single, and of a purple colour, generally fragrant. It is a native of the North of China, on mount Ho-nan. The leaves consist of a number of oval-oblong segments of a greenish-yellow colour underneath; the number of carpels is five, each covered with dense hairs.

Var. papaveracea is a nearly white flower, except a purple spot, which occupies the base of each petal; the number of petals are variable, sometimes they run from eight to thirteen, and often more, in number. The flower, when well opened, is handsome, and with some people much esteemed. The capsules of this variety are totally enclosed in the disk.

Var. humei. The flowers of this variety are double, and have a bunch of long petals arising from the middle of the flower of a reddish colour. It is worthy of cultivation.

Var. rosea is a semi-double rose-coloured flower, with leaves having blunted segments.

Var. rosea-plena is a fine double flower of a deep pink colour and nearly scentless.

Var. Banksii. A large and full-blown flower of this and the three following varieties we have lately received from Lord Mountnorris's superb collection of moutans at Arley Hall; they were forwarded to us, through his lordship's permission, by Mr. Hammond, his Lordship's present gardener. No where are these plants cultivated more successfully than at the place we have mentioned; neither has any one devoted more time, or exercised more zeal in the improvement of them, than his lordship, of which the flowers now before us bear ample proof. The present variety is a remarkable fine one; the flowers are bold and very full of petal; and

what renders them so superior is the rich colouring of reddish pink at the base of each petal reflecting indescribable lustre on the upper part of them, which is also slightly tinged with pink.

Var. albida plena. A very beautiful and nearly double flower, with large petals jagged at the end, mostly of a white colour, except at the base, which is marked by a striking spot of purple mixed with pink.

Var. carnea plena. Double flowers, of a delicate purplish pink, with a rich purple rayed spot at the top of each.

Var. Anneslei. Flowers small, almost single, of a rich purplish pink; petals obcordate, usually nine in number, slightly torn at the margins, and of a dark colour at the base.

The merits of the three following varieties were not known until they produced their flowers this spring, being seedlings raised by Mr. Hammond, from seed obtained by crossing.

Superb-blush. A double flower, with well disposed petals slightly jagged at the top, of a blush colour that deepens towards the base, which is occupied by a lively pink; segments of leaves long and acute. This is a very fine and desirable variety.

Carnea simplex. Flowers single; petals large, and jagged at the edges, the upper part of a flesh colour, and the base of a dark purplish red. Flowers, when well expanded, measure in diameter something more than nine inches; segments of leaves acute. This is a variety of much merit.

Variegata is a striking semi-double flower with good qualities.

We insert the following brief list of the herbaceous species and varieties, in order that any of our readers who may desire to possess a small collection, may know which kinds are necessary and advisable for them to purchase. But as it does not often happen that so great a quantity as are here noticed is wanted, we have given the season of flowering of most of them, and colour of their flowers, so that one or two, or more, as may be desired, may with little trouble be selected.

P. albiflora produces its white flowers about May and June, and its native place is from Siberia to China.

Var. candida has pale flesh-coloured flowers, of frequently eight petals. Flowering in June.

Var. fragrans. Double rose-coloured flowers, produced upon an erect stem three feet high.

Var. Humei has very double red flowers.

Var. Siberica. Pure white flowers, with flesh-coloured stigmas. May and June.

Var. Tatarica has flesh-coloured flowers of from nine to fourteen petals, with flesh-coloured stigmas.

Var. vestalis has white flowers of eight petals and pale yellow stigmas. May.

Var. uniflora has white flowers, much like the *Vestalis*.

Var. Whitegi. Pale blush flower produced upon a stem three feet high, bearing usually five flowers.

Andersonii produces flowers of a deep rose-colour, with the petals a little curled.

Anomala is characterised by its crimson drooping flowers, which it produces about May and June.

Arietina is a good flower, native of the Levant ; flowers about May and June.

Cretica is a native of Crete, its flowers are white and blush.

Decora produces deep crimson flowers about May or June.

Var. Pallasii is a native of the Crimea, a tolerably good flower.

Officinalis produces red or crimson flowers.

Festiva is a flower of considerable merit.

Var. carnescens is a variety of *Festiva*, its flowers are very double, and of a deep rose colour.

Var. rosea produces flowers of a deep rose colour.

Var. rubra has very double dark purple flowers. This is the variety most common in gardens.

Var. Sabini produces very dark purple flowers in May or June.

Paradoxa, var. fimbriata has very double flowers, and has been called the double-fringed pæony.

Var. simpliciflora is a flower of eight petals, of little interest.

Peregrina, var. compacta is a tolerably good flower, but possesses nothing very attractive.

Pubens. Flowers large, of a dark purple colour, with yellow anthers.

Villosa produces white flowers from May to July.

Mollis is a small flower of a dull purplish red.

Humilis has flowers of a purplish blood colour, the petals a little jagged ; it flowers about May or June.

Tenuifolia produces fine dark red flowers, nestled as it were among the finely divided leaves.

Baxteri is a good flower, rather scarce in collections ; as is also the *splendens*, but may be obtained of the Messrs. Loddiges at the Hackney Nursery.

REMARKS ON THE FORMATION OF A ROSARY FOR SCOTCH ROSES.

IN Volume I. from pages 138 to 146, and Volume II. at pages 35, 41, 209, and 214, will be found a series of remarks, embracing the culture, propagation, and general treatment of the genus *Rose*. The remarks above alluded to are, in all respects, calculated to assist in the management of this interesting family, whether on an extensive or a limited scale. The true species of this genus have, by the assiduously applied skill of cultivators, given birth to a numberless variety of hybrids, many of which surprisingly surpass the original stock, for richness of colour and disposition of the flower ; and from this quality, hold a prominent rank in the estimation of every admirer of this delightful family. These varieties are again improved, by a distinct operation to that of multiplying varieties from seed gathered from flowers, which had been previously impregnated, by introducing to the stigma the pollen from the stamens of other flowers ; this is effected by uniting a branch or scion deemed fit for the operation, to the trunk or stem of another, for the purpose of causing the introduced branch to grow more freely, and thus produce a greater number of

blossoms, and these improved ones; or by this unity the object sought is, to form a plant of the kind introduced of a peculiar and novel shape, or in the case of them being grafted upon standards five or six feet high, to allow other plants to grow underneath them. Experience has taught, that certain kinds, brought to unite with other specified kinds, will grow and flower better than they would if worked indiscriminately upon any stock; directions for this, and the best way of performing it, are given at the pages before quoted. Many systems have been devised, and plans laid down, by men of much practice, for the formation of a plot of ground intended to be devoted entirely to the cultivation of roses. Two appropriate designs are given in that excellent work, the *Encyclopædia of Gardening*, third edition, page 892; still, as these, although excellent designs, are more calculated for the

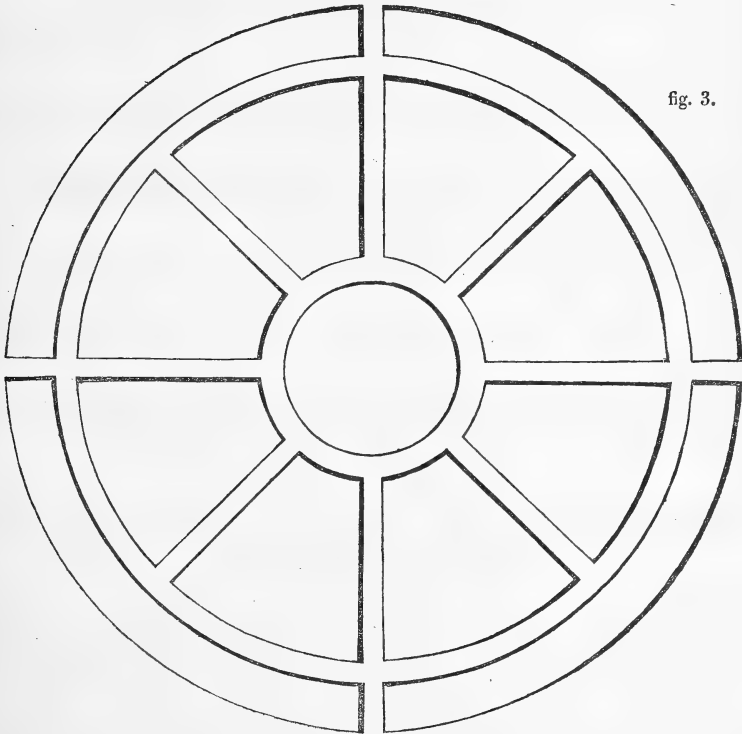


fig. 3.

Chinese and their innumerable varieties, &c., than for the Scotch rose, we have, therefore, given the outlines of a plan (fig. 3) which, we think, will do well for the latter, so far as the filling each bed with this variety of rose goes. We do not wish it to be understood that we are of opinion that a rosary entirely formed of Scotch roses would create an improved effect, when executed upon any given system or design, but it is our opinion that a rosary consistent with the fig. given, planted with the garden varieties of Scotch roses, and amongst these introduced some standards of other valuable kinds, would have a very novel effect. And this novelty would be produced in the first place, by the difference in the size of the leaves and contrast in

the colour and make of the flower, which, in the standards, would be large and bold, and in the dwarf or Scotch small and pretty ; a circumstance which will, undoubtedly, fill the whole with interest, and in the flowering season with gaiety. We insert the following list as given by Mr. G. Don, in his General System of Gardening and Botany, trusting it will be found serviceable to those of our readers who have an interest in the cultivation of this species of rose.

DOUBLE SCOTCH ROSES.

Anderson's double lady's blush.
 Double lady's blush.
 — pink blush.
 — Provins blush.
 — rose blush.
 Dutch double blush.
 Princess double blush.
 Double crimson.
 — crimson marbled.
 — dark —
 — light —
 — purple.
 Small double light purple.

Double dark red.
 — light red.
 — true light red.
 Large double two coloured.
 Small double two coloured.
 Large double white.
 — semi-double white.
 Whitley's double white.
 Globe double yellow.
 Large double yellow.
 Pale double yellow.
 Small double yellow.

SINGLE FLOWERED SCOTCH ROSES.

Aberdeen.	Dalrymple.	Grampian.	Moncrieff.
Aberfoil.	Darnoch.	Greenock.	Monteith.
Alba.	Douglas.	Haddington.	Montgomery.
Alva.	Dumbarton.	Halkirk.	Montrose.
Ancram.	Dumblane.	Hamilton.	Mount Stuart.
Arbroath.	Dumfermline.	Hawick.	Mull.
Argyll.	Dunfries.	Hawthorndean.	Moray.
Arrachar.	Dunbar.	Hector.	mutabilis.
Aurora borealis.	Duncrief.	humilis.	Nevis.
Balloch.	Dundee.	Huntly.	Northumberland.
Banff.	Dunglass.	incarnata.	Paisley.
Bannockburn.	Dunkeld.	Inverary.	penicillata.
Bass.	Dunlop.	Invermay.	Pentland.
Bengloe.	Dunmore.	Janus.	perpetual.
Ben Lomond.	Dysart.	Jedburgh.	picta.
Ben More.	dwarf bicolor.	Jura.	Proteus.
Berwick.	Eden.	Keith.	Roberton.
bicolor.	Elgin.	Kelso.	Rosslyn.
Biggar.	Etterick.	Kilmarnock.	Rothsay.
Birnam.	fairy.	Kincardine.	rubicunda.
Blair Athol.	Falkirk.	Kinnaird.	Selkirk.
Boharm.	Falkland.	Kinross.	Shetland.
Borrisdale.	Falla.	Kircaldy.	Sky.
Borthwick.	Fife.	Kirkwall.	Staffa.
Buchan.	flavescens.	Lanark.	Sterling.
Bute.	Forfar.	Laxford.	Strathmore.
Caithness.	Forth.	Leith.	striata.
Calder.	Fort William.	Leslie.	Stronsa.
Callender.	fulgens.	Lismore.	Sutherland.
Campsie.	Furness.	Locheber.	Teviotdale.
carnescens.	Galloway.	Lochaird.	Tabert.
Carron.	Glasgow.	Lochfyne.	Thornhill.
Cheviot.	Glenco.	Lochleven.	Thurso.
ciphieri.	Glenfallach.	Lochlomond.	Tranent.
Clydesdale.	Glangarry.	Lothian.	variegata.
Cromarty.	Gourock.	Maidenkirk.	venulosa glabra.
Dalkeith.	Grahamston.	Melrose.	venulosa hispida.

NEW AND RARE PLANTS

FIGURED IN THE LEADING BOTANICAL PERIODICALS AND FLORISTS' MAGAZINE FOR MAY.

BOTANICAL REGISTER. Edited by Dr. Lindley, each number containing eight figures; coloured 4*s.*, plain 3*s.*; and corresponding letter-press.

BOTANICAL MAGAZINE. Edited by Dr. Hooker, each number containing eight plates; coloured 3*s.* 6*d.*, plain 3*s.*; and corresponding letter-press.

BRITISH FLOWER-GARDEN. Edited by Mr. David Don. Containing four plates; coloured 3*s.*, plain 2*s.* 3*d.*; and corresponding letter-press.

FLORISTS' MAGAZINE. By F. W. Smith. Containing four monthly plates, highly coloured; several plates with two figures; large size 4*s.*, small 2*s.* 6*d.*; and corresponding letter-press.

Of the above figures, we have only selected such as are new or very rare; and amongst these, only such as deserve to be extensively cultivated. For descriptions and figures, reference must be made to the works themselves.

CLASS I.—PLANTS WITH TWO COTYLEDONS (DICOTYLEDONEÆ).

THE FIGWORT TRIBE (SCROPHULARINÆ).

COLLINSIA BICOLOR. Two-coloured Collinsia. A very handsome, hardy, erect-growing annual, with flowers arranged in several whorls towards the extremities of the branches, large and striking from the contrast of colour between the upper and lower lip, which in the upper is white, while the lower is of a pale purple. It was introduced, in 1833, to the London Horticultural Society, from California, by the late lamented Mr. Douglas. In the Glasgow Botanic Garden it flowered in August. *Bot. Mag.*, 3488.

THE NIGHT-SHADE TRIBE (SOLANÆ).

JABOROSA INTEGRIFOLIA. Entire-leaved Jaborosa. A very singular plant, with a subterraneous root, sent to this country, with another species, by Mr. Tweedie, from the Pampas of Buenos Ayres; supposed to prove perfectly hardy, if planted in the open border in a favourable situation. The flower consists of a long campanulated tube, with a limb of five lanceolate spreading segments, externally pale yellow and green, internally white. *Bot. Mag.*, 3489.

THE ROSE TRIBE (ROSACEÆ).

ROSA MICROPHYLLA. Small-leaved Chinese Rose. This Rose, so much admired by cultivators, cannot be exceeded in delicacy of form, shadow, and colouring, by any species of this highly-prized genus. It is a native of China, and is stated to have blossomed, for the first time, in Mr. Colville's nursery some years ago. *Bot. Mag.*, 3490.

CRATEGUS ORIENTALIS. Oriental Hawthorn. A very handsome tree, with large snow-white vernal flowers, and rich purple autumnal leaves. When growing, it has a gay appearance, because its leaves are downy; at a more advanced age it becomes green, in consequence of the leaves losing their hairiness. It is a native of the Crimea, and the parts bordering on the Black Sea. In its growth it forms a close-headed tree; the fruit, which is its autumnal beauty, is of a scarlet colour,

about the size and form of a common marble. It is propagated by grafting or budding upon the common hawthorn. *Bot. Reg.*, 1852.

THE GREEK VALERIAN TRIBE (POLEMONIACEÆ).

LEPTOSIPHON ANDROSACEUS. Androsace-like Leptosiphon. A genus of five species, established by Mr. Bentham, all of which are remarkable for their graceful habit, slender foliage, and exceedingly pretty flowers; and which make a very handsome appearance when planted thickly in an open border. Experience has shown that these plants will not flourish well in a situation much exposed to the sun in summer. It should, therefore, either be sown in the autumn, so as to flower early, or in June, so that it may be ready for blossoming in September. *Bot. Mag.*, 3491.

THE PEA TRIBE (LEGUMINOSÆ).

LUPINUS TEXENSIS. Texas Lupin. A very beautiful deep blue-flowered Lupin, an inhabitant of Texas, closely resembling the *Lupinus subcarnosus*; but distinguished from that species chiefly by the differently shaped leaves. *Bot. Mag.*, 3492.

LATHYRUS ROTUNDFOLIUS, var. ELLIPTICUS. Round-leaved Everlasting Pea. A climbing perennial herb, extending to the height of three or four feet, of easy culture, and is readily increased, both by parting the roots and by seeds. It is a very handsome and desirable flower: the corolla is of a rich crimson, rendering it very showy, and highly deserving a place in the flower garden. *Brit. Fl. Garden*, 333.

THE WATER-LEAF TRIBE (HYDROPHYLLEÆ).

EUTOCA MENZIESII. Mr. Menzies' Eutoca. A very beautiful hardy annual, with purple flowers, introduced by the Horticultural Society in 1826, from seeds transmitted by the late Mr. Douglas, by whom they were collected during his botanical researches on the banks of the Columbia, in North-west America; growing abundantly in sandy exposed situations. The plant should, therefore, be cultivated in a light soil, and in a sunny situation; for under such circumstances it will be most likely to perfect its seeds freely. *Brit. Fl. Garden*, 334.

THE CROW-FOOT TRIBE (RANUNCULACEÆ).

CLEMATIS CALYCINÆ. Minorca Virgin's Bower. An evergreen scandent shrub, with dark brown angular branches, a native of Minorca and Corsica, and was introduced from the Paris Garden, in 1783. The plant has finely divided leaves, resembling those of some umbelliferous plants; and the flowers are large and elegantly spotted with purple. It is a very interesting plant from its peculiar habit, and from its producing its blossoms at a season of the year (February), when few hardy plants are in flower. It should be trained to a wall, in a sheltered situation, and with a southern aspect. It is readily multiplied by layers. *Brit. Fl. Garden*, 335.

(TERNSTREMIACEÆ).

CAMELLIA JAPONICA DONCKELAERI. Donckelaer's Japan Camellia. A remarkably beautiful variety, said to be a genuine Japanese kind, and to have been brought to Holland by Dr. Siebold. The petals of the flower are blotched with white, and the general aspect is good; but somewhat loose. *Bot. Reg.*, 1854.

THE EVENING PRIMROSE TRIBE (ONAGRARIÆ).

GODETIA RUBICUNDA. Ruddy Godetia. A handsome species, found in California by the lamented Mr. Douglas. It flowers in July and August, when it forms an agreeable contrast with *G. Lindleyana*, in consequence of the want of spots in the flower, and the peculiar ruddy appearance of its petals. A hardy annual. *Bot. Reg.*, 1856.

(COMPOSITÆ).

DAHLIA. Levick's Incomparable. This in form and character is an elegant flower, and very beautiful in colour. It attains the height of four feet, and produces a very considerable quantity of flowers of a rich scarlet, tipped with white; and though it is apt to become plain or all scarlet, in this state it is by no means an inferior flower. Its tipped flowers, however, constitute its principal claim. *Flor. Mag.*, No. XI.

TERNSTRØEMIACEÆ.

CAMELLIA JAPONICA, var. IMBRICATA. A plant of good habit and a profuse bloomer; the flowers are admirable for brilliancy of colour and symmetry of form. It grows two feet high, and often may be seen with upwards of fifty flowers upon one plant. *Flor. Mag.*, No. XI.

THE CAMPANULA TRIBE (CAMPANULACEÆ).

CAMPANULAS. *Pumila* and *Garganica*. The *C. pumila*, or dwarf bell-flower, is a native of Switzerland, and flowers in June, July, and August; in height it does not exceed three inches, but it produces such a profusion of flowers, that the foliage is nearly hid by them. The *C. garganica*, or *Garganian*, bell-flower, is a plant of great beauty, the blue of its corolla being of a very brilliant azure, and it produces a profusion of flowers upon its procumbent panicles. It thrives well in a little loam and peat, with a trifling addition of leaf mould, but it must by no means be allowed to become wet. *Flor. Mag.*, No. XI.

THE PRIMULA TRIBE (PRIMULACEÆ).

POLYANTHUS. Fletcher's Defiance. An extremely interesting variety, the petals of the flower are very beautifully edged with a bright yellow, while the ground colour is dark brown and the eye of a brilliant yellow, which renders it, upon the whole, very pleasing. The number contains some excellent directions for the cultivation of these plants. *Flor. Mag.*, No. XI.

CLASS II.—PLANTS WITH ONE COTYLEDON (MONOCOTYLEDONEÆ).

THE LILY TRIBE (LILIACEÆ).

ORITHYIA UNIFLORA. Single-flowered *Orythya*. This plant is about the size, and has entirely the habit, of single-flowered specimens of *Tulipa biflora*, but the bulb is rather larger, of an ovate form, and covered with a dark chestnut coat. It is very pretty, and is found frequent on the rocky banks of the river Irtysh, and other streams which descend from the Altai mountains. The flowers are of a bright yellow, solitary. *Brit. Fl. Gard.*, 336.

THE ORCHIS TRIBE (ORCHIDÆÆ).

ONCIDIUM CORNIGERUM. Horned *Oncidium*. A very showy species, producing very neat interesting flowers upon a scape of from 11 to 16 inches long. It

was imported by the Hon. and Rev. W. Herbert, of Spofforth, from Brazil. *Bot. Mag.* 3486.

ONCIDIUM ALTISSIMUM. Tallest *Oncidium*. An exceedingly beautiful species, with nearly round pseudo-bulb, very much compressed, and two edged. Leaves acute; racemes decumbent, nearly simple; colours of the flower very bright; wings of the column rounded, and a little channelled. *Bot. Reg.* 1851.

THE LILY TRIBE, (LILIACEÆ).

ORNITHOGALUM CHLOROLEUCUM. Green and White *Ornithogalum*. A species found in the vicinity of Valparaiso, whence it has been brought by several collectors. It is a frame bulb, flowering in July. *Bot. Reg.* 1853.

ZYGOPETALUM COCHLEARE. Spoon-lipped *Zygopetalum*. Beautiful as all the species of *Zygopetalum* are, without exception this is perhaps the most attractive, not only on account of the delicate wavy surface of the petals and sepals, and the peculiarly rich veining of the lapis lazuli blue of its lip, but of its delicious fragrance. If lilies of the valley were growing intermingled with the plant, the air could not be more perfumed with their pure and delightful odour than it is after the curious flowers have unfolded. Like all the other species, this is easily cultivated in earth in a damp stove. It is a native of Trinidad. *Bot. Reg.* 1857.

OPERATIONS FOR JULY.

ANNUALS for standing in pots during the winter may now be sown.

BRUGMANSIA SUAVEOLENS will flower better, and continue in this state longer, if plenty of water is given at this season.

BUDDING towards the latter end of this month may be commenced.

CALCEOLARIAS. Towards the latter end of this month a few cuttings of particular or favourite sorts may be put in. Young shoots strike readiest.

CHINA OR GERMAN ASTERS. A plantation of these, made about the beginning of this month, will flower well in the autumn; give them plenty of water at night in order to counteract the great drought often experienced at this season.

CAMELIAS do not require so much water at this season, in consequence of their growth being nearly completed.

GARDOQUIA HOOKERI must be carefully watered at this time.

GREENHOUSE PLANTS, should be allowed plenty of water.

HYDRANGEA HORTENSIS will now require a great quantity of water; if in pots, place them in feeders kept regularly filled with this element; if planted out, water them well every night.

PETUNIAS should now be propagated, so as to secure a good stock for next season, and to meet any loss in winter from frost, damp, or otherwise.

PELARGONIUMS continue to propagate, also other soft woody plants.

SALVIAS. All desirable kinds should now be propagated; any common earth will suit them.

SOLLYA HETEROPHYLLA propagate in a pot of sand, and the plants thus raised will flower well next season.



Acacia vestita.

ACACIA VESTITA.

(CUNNINGHAM'S ACACIA.)

CLASS.

POLYGAMIA.

ORDER.

MONECIA.

NATURAL ORDER.

LEGUMINOSÆ.

GENERIC CHARACTER.—*Flowers* polygamous. *Calyx* four or five toothed. *Corolla* of five petals, *Stamens* very numerous, frequently from 10 to 200 in each flower. *Legumes* dry, two-valved.

SPECIFIC CHARACTER.—An evergreen greenhouse shrub, from four to six feet high. *Stem* hispid, as are also the leaves, branching. *Phyllodia* * half elliptic, lanceolate, one-nerved, terminating in a point (mucronate). *Flowers* produced in immense numbers upon loosely racemose spikes, of a bright yellow colour.

THIS species was discovered in the interior of New Holland, by Mr. Cunningham, who transmitted seeds to this country some years ago, and plants were brought to flower, for the first time, in the conservatory of the Comtesse de Vandes, at Bayswater.

Every one knows how highly ornamental the New Holland species of *Acacia* are in our greenhouses and conservatories, the greater part of them displaying their gold, orange, purple and white coloured blossoms, from the middle of winter to the latter end of April or May: and, perhaps, in no species is the yellow colour more resplendent than in the one we have figured. The flowers, which are set in such dense numbers on the peduncles as often totally to conceal the leaves and branches, first begin to develop their globular stamen-like heads about the middle of April, and continue till June. When fully blown they resemble a mass of collected yellow stamens and anthers, from the midst of which, here and there peeps forth the whole or a portion of a green leaf, and a short length of the stem or stalk, which relieves the dense cluster, and adds a tint that improves the whole in general appearance.

All who admire beautiful and easy flowering plants, should possess this species; it may be obtained for a trifling cost at any of the London, and most of the country

* *Phyllodia*, dilated petiole, with the consistence of a leaf.

nurseries. In the greenhouse it may be managed with little trouble being careful to supply it with plenty of water at the roots, but before watering it should be ascertained whether the soil be in a proper state to receive it or not. The best soil is an equal quantity of very sandy loam and peat. Cuttings do not root freely; but these, preferring the young wood taken off at a joint, and planted in a pot of sand, under a bell-glass, may, if judiciously managed, be brought to put forth roots freely. Another method of increasing *acacias* is, by taking off pieces of the root, planting them in light soil, leaving the top part a little exposed, and plunging them in a little heat; by this method, good plants are frequently obtained.

The generic name is supposed to be the Greek name of some plant of the genus, and taken by Willdenow in his revisal of the genus *Mimosa*, as the designation of one of his new divisions*.

* Loudon's Encyclopædia of Plants.



HIBISCUS SPLENDENS.

(SPLENDID HIBISCUS.)

CLASS.

MONADELPHIA.

ORDER.

POLYANDRIA.

NATURAL ORDER.

MALVACEÆ.

GENERIC CHARACTER.—*Calyx* surrounded by many leaves, rarely by a few-leaved involucre, occasionally connected at the base. *Stigmas* five. *Carpels* joined into a five-celled, five-valved capsule, with a dissepiment in the middle of each valve on the inside. *Cells* many-seeded, rarely one-seeded.

SPECIFIC CHARACTER.—*Plant* shrubby, five to twenty feet high. *Stem* beset with straight prickles and tubercles at the base. *Corolla* expanded, tomentose on the ribs beneath, segments of the calyx three-nerved, keeled, leaflets of the involucre numerous, linear, awl-shaped, a little shorter than the calyx. *Peduncles* axillary, one-flowered, much larger than the petioles. *Leaves* palmately three, five-lobed, lobes lanceolate.—*Hook. Bot. Mag.* 1. 3025.

THIS splendid feature of the natural order *Malvaceæ* was introduced into this country about eight years ago, by Mr. Frazer, from New Holland, and in 1830 a figure appeared by Dr. Hooker, in that excellent periodical, the *Bot. Mag.* 1, 3025. The plant from which the drawing in the *Bot. Mag.* was taken, produced its flowers in the stove, and by most of those who possessed it at that time it was thought to be dangerous to place it in the greenhouse, or, in other words, that it would not produce its blossoms so perfect if brought into the greenhouse and treated, as far as regards temperature, like other New Holland plants; since that time it has become pretty generally diffused through our collections, and cultivators, ever on the alert, have ascertained that it will grow better and blossom more freely in the greenhouse than in the stove; for instance, Messrs. Fisher and Holmes, of Handsworth, near Sheffield, who have plants of it for sale in a vigorous state, always keep them in the greenhouse, and we have been assured frequently that it grows and flowers to the greatest perfection with this treatment. About eight months ago, we obtained a plant of Messrs. Fisher and Co., which has since that time been standing with other plants in the greenhouse, and although then only a small plant, it now promises to make a fine specimen.

The species represented in the figure is a plant that no collection should be destitute of; its corolla is of a beautiful rose-colour, the lower part of the fila-

ments is pale, the upper rose-coloured like the corolla ; the anthers are dark crimson, and arranged in a pyramidal form. Style projecting, from around which arise five deep red, hairy, round stigmas, all of which parts in the expanded flower produce a pleasing effect. Mr. Frazer, its worthy introducer, says, in writing of it : “ This, I consider the king of all the known Australian plants. I have seen it twenty-two feet and a half high. The flowers, this season, measured nine inches across ; they were of the most delicate pink and crimson colour, and literally covered the entire plant.” It thrives well in a mixture of loam and peat, and cuttings will strike readily in sand or mould under a hand glass in heat. We would advise our friends to make a trial of it in the green house, for we believe it will thrive well. “ The only objection to this plant as an object of cultivation,” says Dr. Hooker, “ is its great size.” Our drawing was made from a plant which flowered in one of the stoves in Manchester Botanical Garden, and was sent us by our esteemed friend, Mr. Campbell, the director of that praiseworthy establishment, some time ago.

The genus *Hibiscus*, in that highly useful publication the *Hortus Britannicus*, by Loudon, is divided into eleven sections, these embrace eighty-one species and fifteen varieties. The species *rosa Sinensis* has given rise to five varieties, all of which are very handsome : the species *Syriacus*, so well known as a hardy shrub, is the parent of six varieties, all of which are hardy and much esteemed ; the species *mutabilis*, noted for the change that takes place in the colour of its flowers, has given rise to one beautiful variety, as has also the species *digitatus*. For further particulars see vol. 1, page 77.

The generic name is taken from *hibiscos*, a name given by the Greeks to mallow.

The specific name alludes to the splendour of the plant when in bloom.



CHIRONIA TRINERVIS.

(THREE-NERVED CHIRONIA.)

CLASS.

PENTANDRIA.

ORDER.

MONOGYNIA.

NATURAL ORDER.

GENTIANÆ.

GENERIC CHARACTER.—*Calyx* divided into five parts. *Corolla* equal, consisting of a five-parted limb with equal ovate segments. *Capsule* ovate. *Seeds*, numerous, small.

SPECIFIC CHARACTER.—*Plant* an evergreen undershrub, from three to four feet high, dark green, smooth, spreading. *Leaves* three and five-veined, of an ovate lanceolate shape. *Flowers* axillary. *Footstalks* long, one-flowered. *Calyx* five-parted, acuminate, tube something shorter than the corolla. *Corolla*, persistent, limb expanded, five-parted, each part of an equal length, and a purple colour.

IN the number of the Botanical Register for October, 1835, Dr. Lindley has given a figure of a species of this genus, called *Chironia peduncularis*, and which we think identical with ours in the accompanying plate; we have, however, adhered to the old specific name, on account of its being more generally known by that expression; and as the leaves are frequently found to be three-nerved, the name we have adopted will still be descriptive of the plant.

It is a very pretty shrub, and Dr. Lindley says "it is covered with a succession of purple flowers from July to October;" an assertion that our plants at Chatsworth last season sufficiently verified. In the greenhouse it makes a conspicuous figure, and on the whole is very handsome; but still, as it will endure the climate of the flower-garden, its spreading habits rather recommend it to that place, where it may be planted several together in a bed, or dispersed singly; either way it will, by its rich purple blossoms, have the effect of adding much to the beauty and liveliness of that delightful spot. We possess no authentic account as to what country it is a native of.

It is propagated with much ease from cuttings; those struck in autumn or spring will flower well the succeeding season. At Chatsworth we take off cuttings of the young or half-ripened wood, pot them in sand, and, as soon as roots are obtained, we pot them off into soil; by this practice we have good flowering plants the following season, that can be employed for any purpose. The plants will not endure the winter, therefore must be protected by keeping them in the greenhouse during that season. Any kind of soil will suit them, but that in which a little peat is incorporated seems to be their delight.

"Named in honour of Chiron the Centaur, one of the earliest practitioners whose names have been preserved. The intense bitterness of the genus indicates its powerful tonic properties."—*Botanical Register*, 1803.







Mimulus lewisii.

W. H. Smith sc.

NEMOPHILA INSIGNIS.

(SHOWY NEMOPHILA.)

CLASS.

PENTANDRIA.

ORDER.

MONOGYNIA.

NATURAL ORDER.

HYDROPHYLLEÆ.

GENERIC CHARACTER.—*Calyx* hairy, persistent, ten cleft, five of which are ovate, nearly erect, the remainder smaller, lanceolate, alternate, and reflexed. *Corolla* funnel-shaped, of five equal emarginate lobes. *Ovary* one-celled, many seeded.

SPECIFIC CHARACTER.—*Plant* an annual. *Stem* growing a foot or more in height, hairy, of a straggling branching habit. *Leaves* alternate, upper ones opposite, stalked, hairy, each divided into an unequal number of lobes, occasionally one, but frequently two-toothed. *Flower-stalk* long, hairy, one-flowered, arising from the axilla of the leaves. *Calyx* hairy, consisting of ten clefts, the smaller of which are reflexed, alternating with the rest, which are of an ovate form and partly erect. *Corolla* campanulate, divided into five obtuse lobes, of a deep blue within, the intensity of which diminishes towards the base, where it is nearly white, externally; it is much paler. *Stamens* shorter than the limb. *Anthems* of a brownish purple. *Germen* broadly ovate, hairy. *Style* as long as the stamens. *Stigmas* small, capitate.

A TRULY beautiful and desirable little annual, a native of California, which found its way into our collections through the unparalleled labours of the lamented Douglas over that part of the world.

Comparing it with *N. phacelioides*, we find it in all respects superior, the flowers being somewhat larger, and the colour of a more intense and brighter blue. In our collections of half-hardy annuals, it is a surpassingly beautiful feature; and if sown as early as the season will permit in the spring on a warm south border, observing to transplant when the weather is fine and the plants pretty strong, a brilliant display of its rich blue blossoms will be produced, which will continue beautiful a great part of the season. If it be desired, a second lot of flowering plants may be obtained by sowing six weeks or two months later; but when sown at this season, we find it necessary to allow the plants to flower where sown. Good flowering plants may be grown singly in pots in the greenhouse, where, when in bloom, they have a most elegant appearance; plants thus grown, are much more likely to mature seed than when sown in the open border, especially if the season be what is termed a wet one.

A small bed filled with this plant, another with *Verbena melindres*, and a

third with *Eschscholtzia crocea*, &c., according to the size of the garden, alternating and diversifying the colours of each species, will make a very showy appearance until October.

It seems to prefer a light rich soil, particularly when grown in pots, which should contain peat and loam.

Mr. Nuttall, observing the species *N. phacelioides* growing in shady woods near Fort Smith on the Arkansas, was in consequence led to adopt the generic name *Nemophila*, from *νεμος* a grove, and *φιλεω* to love.—D. DON.

The specific name alludes to the showy colour of the flowers; hence the English appellation.

ON THE TROPÆOLUM.

No genus of plants contributes more willingly to beautify our greenhouses and flower-gardens than the present; and when we take into consideration their free growth, pleasing habit, and beautiful flowers, which in some of the species, as *T. major atrosanguinea*, are large, well formed, and of a most brilliant dark scarlet colour, and contrast these with their delicate pale green foliage, we feel at once satisfied that it is not in the least overrated. In the flower-garden, when unsupported by stakes, they wander a distance of several feet, flowering in the greatest profusion from one end of the branches to the other, thus forming a very pleasing appearance. When trained to a trellis against a wall, or supported by stakes on a border, or even carried over the projecting portions of rockwork in the rock garden, they have a highly ornamental appearance; and are objects that no garden, from that of the nobleman to the humblest cottager, should be without. We have been led to mention this genus, principally from a desire to put into the hands of our readers a fair account of those two species, which adorn so gracefully the columns, rafters, &c., of our greenhouses in the summer season, viz., *T. pentaphyllum* and *T. tricolorum*; these two species, beautiful as they are when in bloom, still are, in many instances, but indifferently grown; this must be owing to the want of a thorough acquaintance with their general habit; the former species is by far the easiest to manage, it being of a more hardy and vigorous growth than the latter, consequently the method of treatment requires to be different for each species. The *T. pentaphyllum*, after it has done flowering, which will be late in the autumn, and the branches have become withered down to the crown of the root or tuber, these parts may be cut off, being cautious not to disturb the root. As soon as, or even before, indications of withering are perceptible in the plant, watering at the roots should be entirely suspended; for, as the tuber is liable to be injured by much water about it, after it has ceased to generate sap for the support of the branches, a continuation of the practice may terminate much to the injury of the tuber, and consequently tend to limit its exertions the ensuing season. If planted in a border, which is the most successful way of treating it, after all decayed portions are cleared from the root, place over the tuber a common flower-pot in an inverted position, and in this state let it remain till March, taking care to keep it free from water; at the expiration of that time, remove the pot and expose the top of the root to the sun and air, giving a little water until it commences growing; when, and during its whole progress, it must be watered with the greatest caution. In very dry weather, a gentle syringing now and then over the leaves and branches will be of much benefit to it, as it will wash off all accumulations of filth, and set the plant growing with more freedom. The success of this plant entirely depends on its safe preservation through the winter; and we have experienced that to leave the tuber in the ground, securing it as we have now detailed, is by far preferable to taking it up and moving it to a supposed more secure place in the greenhouse; the latter

method subjecting it to so many probable accidents from over-watering, &c. This plant, to show its pendent and ear-drop-like blossoms to the greatest perfection, should be trained up a column five or six feet high, or conducted round three or four strong stakes made fast at the bottom; or where a place so favourable as those mentioned is not at command, one must be chosen that will allow a free circulation of air on all sides, for without this it does not seem to do so well. It will propagate with tolerable ease, by cuttings made from the points of the young shoots, planted in a pot of sand, and placed in heat; bearing in mind, not to over-water them during the time they are in the striking pot, as they are liable to damp off. They may also be increased by seeds, which ripen very freely.

In Vol. II., page 123, will be found a figure of *T. tricolorum*, with a few hints for its management, &c.; but, as they are too brief to convey every particular necessary to be observed in the growing of it, we shall now endeavour to lay down the result of our own experience for some time past in the cultivation of this desirable plant. This species is not so well calculated for planting in a border as *pentaphyllum*, because its growth is more delicate, consequently requires to be more gently dealt with. The best of all methods for growing it, is in pots; at first, of a size just sufficient to retain the root; after it has advanced a little in growth, and the shoots and roots begin to assume a healthy appearance, repot, and continue this operation as often as required; judging from the strength of the plant, the height it is likely to grow, what size it will occupy when at its greatest strength; if tolerably strong and branching, a pot ten inches across will suit it, if something weaker, one proportionably small must be chosen. As soon as the shoots begin to show themselves from the crown of the root, being previously placed in a gentle moist heat, let a little water be applied with caution, and the shoots will progress surely but gradually; and in a short time it will require supporting, which should be done by tying it to a temporary stake, which will suffice until it is advanced three or four feet in length, when better stakes of a proper length and strength should be introduced to the soil, making them as fast as possible at the bottom; round these, the branches must be conducted in a manner that will best exhibit their pretty blossoms, and when its growth seems to have reached the highest pitch, place it in a situation where it is desired to have it bloom, bearing in mind to attend regularly to the tying up of the branches. Now, the best place to grow this plant to the state we have described, is a greenhouse kept rather close in this place while its energies are in action, syringe it now and then all over; but in this, as in all cases, syringing should not be done unless the weather be fine, in order that the plant may not remain long in a wet state after the operation has been performed; if so, the very worst of consequences may accrue from it. During its growth, it is subject to the attacks of the green fly; when these appear, fumigation with tobacco should be had recourse to. For soil and other particulars, we refer our readers to the page quoted at the commencement. What an addition does the interest of our greenhouses receive from these two plants! In the autumn, when we naturally look for many other of our greenhouse plants to cease to be beautiful, these, in all the vigour of health and interest, stand forth in their greatest gaiety,

every branch teeming with their modest blossoms, as it were in token of a desire to excel each other. Some have recommended to place these plants in a warm situation in the open air against a south wall, but no place can be so well adapted for them as an airy greenhouse, particularly when we consider their liability to be cut off by autumnal winds and early frosts.

ON THE GENUS LOBELIA.

THIS genus comprises many of our choicest ornamental plants; some requiring the stove, others the greenhouse, and a part do best with the protection of frames. Scarcely any will bear exposure during the frost in winter, although many of them decorate so beautifully our flower-gardens in the summer. The species are natives of the countries within or upon the borders of the tropics; principally ranging in the West Indies, Brazil, the Cape of Good Hope, the Sandwich Islands, and a few are found in Chili and New Holland. They are, for the most part, evergreen herbaceous perennial plants; a portion are deciduous, a few annual, and a very small portion are shrubby.

To give the reader a general idea of the plants brought under this genus, we shall, in treating of it, arrange the species under the heads evergreen herbaceous perennial, deciduous herbaceous perennial, and annual; blending the whole with such remarks as shall appear to us requisite to furnish a fair table of observations, embracing the culture, propagation, time of flowering, colour of the flower, with brief hints on the merits, &c. &c.

EVERGREEN HERBACEOUS PERENNIALS.

L. macrantha.	L. secunda.
— Simsii.	— minima.
— pedunculata.	— illicifolia.
— dentata.	— hirsuta.
— nicotianæfolia.	— erinoides.
— pinifolia.	— coronopifolia.
— umbellata.	— triquetra.
— alata.	— tomentosa.
— assurgens.	— minuta.
— Zeylanica.	— erinus.
— pyramidalis.	— simplex.
— linearis.	— pubescens.
— bellidifolia.	— Thunbergii.
— rhizophyta.	— cærulea.
— decumbens.	

All the above species, except eight, produce blue flowers; the *rhizophyta*, *secunda*, *minima*, and *minuta*, have white flowers; the *assurgens*, scarlet; *pyramidalis*, purple; and *bellidifolia*, pink; the others, as before stated, are blue. Their season of flowering generally commences about the middle of May, or between that and the early part of June; in which state they continue till late in the autumn, while the more free-flowering ones remain till the frost forbids their longer stay.

They all may be employed for ornamenting the flower-garden during the summer season, either by dispersing them singly over various parts of the beds, or by selecting the better and more free-flowering kinds, and forming whole beds with them; for this purpose, such as the *erinus*, *bellidifolia*, &c., are excellently adapted; the former in particular is a gay and willing contributor, its light blue flowers spring forth in quick succession till very late in the autumn; thus creating one continued feature of liveliness and interest the whole season. The latter does not willingly flower so well; still it may be made to do so, by placing the plants in very barren soil, or even very fine river sand will cause it to flower abundantly. Some of the species are increased by dividing the roots, which generally throw suckers in great abundance; the others are propagated by cuttings with the greatest ease in either mould or sand. Of those species which most freely propagate by cuttings, the best time to strike them is in the autumn, for they may easily be kept through the winter in the greenhouse, or in a cold frame protected from frost with garden mats; and when planted out in the spring, they will commence and continue flowering until the return of winter. Those species which most readily increase by dividing the roots, should be taken up after flowering, and secured by means of a frame or greenhouse; or if they have the previous season been planted out in beds, they must be protected by straw mats or other materials during very wet or frosty weather, and the earliest opportunity taken in the spring to divide the roots, thus to prepare the plants for flowering in the summer; but the safest method of preserving them is to take up the plants and put them into the greenhouse, or other place secure from the frost, to divide the roots in the spring, and plant each division in a separate pot; by this means excellent flowering plants will be obtained. They thrive in almost any kind of soil, but they most delight in very rich earth, mixed with a little sandy peat. The dwarf species make a very pretty show when employed as decoration for rock-work, &c.; and a few here and there in the greenhouse, carefully grown, are very good assistants, on account of their being generally in bloom.

DECIDUOUS HERBACEOUS PERENNIALS.

L. Kalmii.
— Nuttallii.
— tenella.

L. Claytoniana.
— amœna.

The five species above named produce blue flowers, except *tenella*, which bears flowers of a purplish violet. They are all highly ornamental, and may be treated after the manner recommended for the evergreen perennials.

ANNUALS.

L. Cliffortiana (Michaux).
— puberula.
— anceps.
— Chilensis.
— debilis.

L. inflata.
— bicolor.
— gracilis.
— serrulata.
— Laurentia.

The annual species above named have all blue flowers, except *L. Cliffortiana*, a species with red flowers: they require very little trouble; merely sowing the seeds

in small patches, &c., where they are wished to flower, and thinning, if too thick, after they come up, is sufficient for them. Most of them ripen their seeds in abundance, which should be collected carefully on a fine dry day.

The species *cardinalis*, *fulgens*, and *splendens*, require the protection of a frame in winter; they are deciduous, and when planted in beds in the flower-garden in summer, make a very splendid show with their bright scarlet blossoms, which surpass all the other species in the genus. If treated according to the directions before given, good flowering plants may be obtained with little trouble.

The stove species are, *L. Cavanillesiana*, *L. decurrens*, *L. persifolia*, &c., and are plants of no great beauty or interest; their flowers, which are purple or red, may be considered ornamental, and that is as much as can be in justice said of them; they will thrive well in any light rich soil, and cuttings make roots freely, potted in mould or stuck in tan, but not covered with a glass. A variety of *fulgens*, viz. *propinqua*, is figured in Vol. II., page 52, to which we refer our readers.

IMPROVEMENT IN THE CONSTRUCTION OF FORCING-HOUSES.

IN an age of invention, and when horticulture, in all its branches, is progressing with most rapid strides, it appears desirable that no one circumstance which can tend to practical improvement or economy should be withheld. The erection of structures for the successful culture of the exotics of warmer latitudes is attended with considerable expense; but the outlay may be diminished by due attention to foresight and calculation; and were persons residing in the country, and who are desirous of erecting a greenhouse and plant stove, well acquainted with the means of providing the materials for the work, they would be surprised to perceive at how low a rate they might be furnished with the means of indulging themselves in one of the most elegant and instructive sources of enjoyment that a well regulated mind can desire.

The writer of this little article has been taught by experience. He is aware of the high charges made by builders and masons; and that many a lover of nature is and must be deterred, by the serious cost to which he unavoidably subjects himself. Profits, and very high ones, are made upon every material—bricks, mortar, timber, glass, and paint—but all these are to be purchased without much difficulty; and *labour* may be commanded upon reasonable terms; with the exercise of a little judgment and activity, (especially if it happen that one or more members of the family or establishment possess a mechanical turn); and it will be found, (we speak experimentally) that twenty or twenty-five pounds will go very far towards effecting what regular workmen would carry up to more than double that amount.

In the brickwork of a glass erection, an improvement has been produced which ought to be generally known: it combines economy to the extent of about one

third of the materials, great strength of building, and increased security as respects equable temperature. The mode of structure was, years ago, described in the *Horticultural Transactions*, and in Loudon's *Encyclopædia of Gardening*; but either prejudice or misconception has operated against its adoption, for we never meet with it in any of the gardens. It is therefore to be hoped that the notice now taken of it, will excite the attention of many of the readers of the *Magazine of Botany*, and induce some persons to give it a fair trial; in that case its merits cannot fail to become apparent.

In the ordinary way of building walls it is calculated that one hundred bricks will form a square yard of nine-inch work; but in the structure which it is our object to recommend, a saving of about one brick in three may be effected. The passages to which we refer in the *Encyclopædia* by Loudon, are to be found at par. 1561, page 305, edit. 4th, 1826. The following is a correct and sufficient extract:—"The *cellular wall* is a recent invention, (*Horticultural Transactions*, vol. IV.), the essential part of the construction of which is, that the wall is built hollow, or at least with communicating vacuities, equally distributed from the surface of the ground to the coping. If the height does not exceed ten or twelve feet, these walls may be formed of bricks set on edge, each course or layer consisting of alternate series of cells, nine inches in the length of the wall, by three inches broad. The second course being laid in the same way, but the bricks alternating or breaking joints with the first.

Figs. 1 and 2 exhibit bird's-eye views of two single courses of the cellular work, looking down upon them from above; all the bricks are set on edge, the two stretchers being met by an ender, thus forming the cells *c*, a succession of which is made by every three bricks. Fig. 2 shows the *enders*, *e*, *e*, *e*, which cross the two stretchers of every inferior course, thus binding the work in a way far more secure than that commonly practised in solid walls.

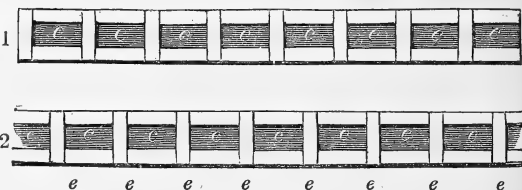
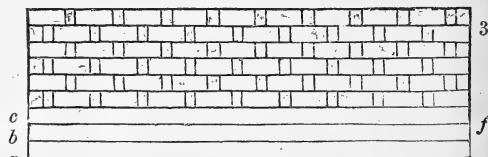


Fig. 3 shows the face of the wall, the *stretchers* and *enders* lying in alternate order, *c*, *b*, *a*—*f* are the foundation *solid* courses, *a* and *b* being of fourteen and *c* of nine-inch work. In *forcing houses* their construction possesses the peculiar advantage of interposing a plate of air throughout its whole surface; and as air is a bad conductor of heat, equability of temperature is provided for. In common garden walls—one of which the writer has just caused to be erected—every convenience of a solid wall is secured; and it is understood that the structure will act perfectly as a flued wall. The bricks and mortar ought, however, to be of the best quality, and the workman should lay his bricks with great precision. Mortar, to be good



and durable, ought to contain a larger proportion of sand than the cupidity of the lime-burners usually allows; but this proportion depends greatly upon the *quality* of the sand; if it be that of reduced gravel, or such as is dug from a pit, and commonly known by the name of *sharp sand*, it may safely be considered *siliceous*, or flinty; and therefore calculated to fix and consolidate a large portion of water in the form of *hydrate of lime*. But if it consist principally of reduced limestone, its activity as a chemical agent will be inconsiderable. We however assume, as a standard, that the sand employed shall be the screened scrapings or drift of a high road, which is repaired with gravel; and in that case, from three to four proportions of such sand should be admixed with *one* proportion of the best slaked lime. Mortar so prepared will *fix* an abundance of water (that universal cement) and consolidate it in the form of a hydrate of *silex* and *lime*, a substance that the wear and tear of ages will produce little or no impression upon; witness the solidity of those vestiges of Roman structures, which have withstood the pelting of the storm for two thousand years. Houses, pits, or walls for every process of horticulture, can be erected by the method proposed, which will be superior to those in common use, and at a greatly reduced expenditure; they are lighter and less liable to settle, and yet stronger than if built solid; they afford equal, if not better, protection to plants and trees, and may be heated by linings (or flues) permitting the heat of fermenting materials to pass through them with considerable freedom; and the plate of air within, being once effectually warmed, retains its temperature for a considerable time.

But it is not only in the brickwork of an erection that economy may be practised; timber may be purchased at the wharfs and yards; be sawed and cut to order at a price far below that which is imposed by carpenters. Many persons can handle the saw, plane, chisel, and other requisite tools, with a good deal of dexterity; and we have our eye now upon a range of glass structure, where every part of the work has been executed by the juniors of the family, with much neatness and precision; but if labour be *hired*, the work will still be conducted with comparatively light expense, provided the materials be purchased with judgment. Glass is of great consequence, and till recently the panes of greenhouses, &c., were much too large; oblong squares, five and a half inches long, and three and a half wide, or six inches long by three broad, can be obtained at the rate of about seven-pence per square foot of the wholesale glass merchants; and if the laps be made not wider than from one-twelfth to one-eighth of an inch, the glazing will be efficient, and little expensive.

If persons be deterred by the dread of incurring a considerable expenditure, from an enjoyment of nature's choicest beauties, these few hints, offered by one who is fully acquainted with the truth of the facts he has stated, may prove not only interesting, but very acceptable; at all events, the motives of their writer can scarcely be misunderstood.

REVIEW.

THE twelfth number of this publication bearing the appropriate name "FLORISTS' MAGAZINE," came to hand on the first of June last, thus concluding the first volume. In looking over the numbers before us, and comparing their contents with the promises made in the prospectus at the announcement, we feel it our duty to say that, in every particular, they have been faithfully fulfilled; and the volume, for simplicity and practicability of matter, for style and faithful execution in all its parts, stands unrivalled by any other work extant, confined to this particular and fashionable branch of horticulture. With this conviction, we recommend it to all lovers of horticultural and floricultural products, with the assurance that the work will be found highly useful and extremely interesting.

Each number comprises four quarto plates, illustrating six or seven different plants; with each representation is given the description, explanatory of the origin, merits or demerits, accompanied with the most successful and practical directions for their culture, &c.

The ninth number concludes with an article on Window-Gardening, by Charles Mackintosh, gardener to the king of Belgium; and to all who are desirous of obtaining information on this novel mode of growing plants, it will be found both pleasing and instructive. The article occupies seven full pages. We extract the description accompanying the figure of *Tigridia pavonia*, from the fourth number, which will convey an idea of the general style of the whole work.

"This very splendid and interesting flower, has long been known in our gardens under the name *Terraria pavonia*, a genus with which it was formerly confounded. It belongs to the natural order *Irideæ*, remarkable for the gaiety of their flowers, which are generally brilliant in colours, and interesting in structure and form. The name *Tigridia* has been justly considered inappropriate, as the flower bears no resemblance to the *striped* tyrant of the jungle. *Leopard* would certainly tell better its spotted character.

"The genus is a native of Mexico, and was cultivated about 1795. It is of comparatively easy culture, and will display its beauty in almost any situation, provided it is carefully protected from the frost. Though its cultivation has been attended with various success, failure has been caused, in many instances, by too much attention. The *Irideæ* generally would do better, if their growth was not stimulated by confinement and heat; and this plant, in particular, should not be forced into flower, if brilliancy and richness of colour are desired; though a flower of its splendour is often desired as an ornament of the greenhouse, or window, at an earlier period than that appointed by nature. Its usual time of flowering is towards the end of June, and during July; though a vestige of its former glory may be found in the early part of September. If forced, it may be forwarded a few weeks in the following way; about the second week of February, plant some of the strongest roots in long thirty-two pots, filled with a light rich *fibrous* loam, with about one third leaf-mould and sand, to about two inches below the surface.

Keep them moderately damp, but by no means *wet*, and place the pots in a hotbed or forcing house, till the plants attain the height of six inches. They should then be carefully exposed to the weather, in a greenhouse or cold frame, till all fear of frost is past; after which, they may be turned out into a warm border to flower, or kept in the pots, as taste may dictate.

“But they thrive better, if planted about the end of March or the beginning of April, in a prepared bed or border, which should have a south or south-west aspect, that they may receive the benefit of the sun during the hour they blow, and that the roots may be properly ripened in the autumn, which should always be strictly attended to, as their preservation through the winter, and their strength the following year, greatly depend on it. The bed should be about eighteen inches deep, of rich turfy loam, with one third decayed leaves and old horse manure, and as much sand as the nature of the loam may require. The whole should be chopped up with the spade, not sifted. Let the surface be raked smooth, and the strong flowering bulbs be planted either singly, or three near together; in rows, (if planted singly, which is to be preferred when the room is not too valuable,) about six inches asunder, and three inches below the surface. In this situation, they will, without further care, display their flowers, and amply repay the little trouble they require. Should September prove wet, a covering would be of great benefit, as they do not require moisture, when the foliage turns yellow; unless seed is intended to be preserved, and then a little moisture would facilitate its perfecting.

“This flower may be increased by seed, which should be sown about the first week in April, in boxes filled with a rich light soil; place them in a gentle heat till the plants appear, after which, they may receive a moderate supply of air when the atmosphere is temperate. If the plants are too thick, they may be transplanted into a bed formed on the surface of a cooling hotbed. They should then be kept closely shut down for a few days; but if the boxes are not one foot deep, they will not require this removal, which certainly checks their growth. They should be allowed to enjoy the full benefit of air as soon as the weather will permit. When they begin to turn yellow keep them dry; and when the tops are dried, take up the roots and put them in paper bags secure from frost, and the following spring treat them as the strong plants. The third spring, the strongest plants should be selected for flowering.

“They are also freely propagated by offsets, which should not be separated from the parent root till the time of planting, but kept tied in bunches in a dry season.”

ON THE DIFFUSION OF SEED.

THE economy of Providence in distributing seeds may be remarked in those of the dandelion (*Leontodon taraxacum*), which are everywhere to be seen during summer, floating about on the air, supported by its feathery down. It is not to be supposed, that half of these seeds ever fall upon spots favourable to germination;

but when so great a number of them, and of their congeners of the class *Syngenesia*, are scattered about by the winds, it almost raises the chance to certainty that some of them will fall on spots where before there has been none, or only a scanty vegetation; on the tops of walls, for instance, where a thin stratum of soil has been formed by the decay of the winter crop of mosses. The process of the forming of such soil is extremely interesting, and may be observed, in a small scale, even in cities, on brick or stone walls. First, there is the green incrustation, called *Byssus* by Linnæus; but recently proved to be the primary germination of several mosses, such as *Polytricha* and *Tortula*. When this decays, a very thin layer of vegetable earth is formed, which affords a scanty support for the roots of the next year's crop of mosses; and in process of time soil is formed of sufficient depth for *Draba verna* and other wall plants. A singular contrivance is conspicuous in one of our wild cresses (*Cardamine impatiens*), as well as in the balsams and in Touch-me-not (*Impatiens noli-me-tangere*), a native plant of the same genus. In all of these, when the seed is ripe, the valves which inclose it are so constructed that by the influence of the sun's heat they open with a sudden jerk, and throw the seeds to a considerable distance. The same effect is produced sooner and with more force when the ripe seed-vessel is touched by the hand, or by any accidental waving of the leaf against it. Were we disposed to refine upon the final cause of this, (a subject very ready to mislead,) we might say that this jerking of the seeds was contrived, not only for their diffusion, but for their preservation from birds and insects; since the instant that these should begin to devour them, the springs of the valves would be thrown into action, and the seeds scattered about before a single one could be secured for a meal. In the wood sorrel (*Oxalis acetosella*), as well as the horned sorrel (*O. corniculata*), the structure of these valves is very beautiful, but no description could do justice to it, not even with the aid of figures. The first, however, abounds in most woods; and the latter, where it has been introduced as a flower, soon becomes, from the circumstance under consideration, a very troublesome weed.

One of the most beautiful contrivances for the diffusion of seeds occurs in various species of violets. The seeds of this order of plants are contained in a capsule of a single loculent, consisting, however, of three valves. To the inner part of each of these valves the seeds are attached, and remain so for some time after the valves, in the process of ripening, have separated and stood open. The influence of the sun's heat, however, causes the sides of each valve to shrink and collapse, and in this state the edges press firmly upon the seed, which from being before apparently irregular in its arrangement, comes into a straight line. The seeds, it may be said are not only extremely smooth, polished, and shining, but regularly egg-shaped; so that when pressed upon the collapsing edge of the valve, it slides gradually down the sloping parts of the seeds, and throws it with a jerk to a considerable distance. There is another part in the contrivance of Providence for the same purpose, in the Violaceæ, worthy of remark. Before the seed is ripe, the capsule hangs in a drooping position, with the persisting calyx spread over it like an umbrella, to guard it from the rain and dews, which would retard the process of ripening; but no sooner

is the ripening completed, than the capsule becomes upright, with the calyx for a support. This upright position appears to be intended by nature to give more effect to the valvular mechanisms for scattering the seeds, as it thus gains a higher elevation (in some cases more than an inch) from which to project them; and this will give it, according to the laws of projectiles, a very considerable increase of horizontal extent. Some ripe capsules of *Viola tricolor*, which I placed in a shallow pasteboard box in a drawer, were found to have projected their seeds to the distance of nearly two feet. From the elevation of a capsule, therefore, at the top of a tall plant, I should think these seeds might be projected twice or thrice that distance.—*From the Mag. of Gardening and Botany, by Professor Rennie, M.A.*

REMARKS ON THE POINSETTIA PULCHERRIMA.

WE embrace the first opportunity to offer a few remarks on that beautiful new exotic, figured by Dr. Hooker, in the number of the Botanical Magazine for June. In looking over the account accompanying the plate, and comparing what is there said with the coloured figure, we feel satisfied that the *P. pulcherrima* is fully deserving of the most earnest attention and careful management, in order that it may be so grown as to produce its flowers as perfect in our stoves as those grown at Philadelphia, where it is stated the beautiful scarlet whorls of bractæ which terminate the branches measure as much as twenty inches across, and are equal in colour to the finest tints of *Rosa Sinensis*.

It is decidedly a splendid feature among our ornamental plants, and, from its habit, and our limited acquaintance with it, we feel confident it may be cultivated with the application of the common treatment given to stove-plants. The treatment given at Chatsworth is as follows:—It is kept in rather a close atmosphere in the stove, along with other tender plants, all of which are now and then syringed over when the weather is fine, in order to prevent the attacks of insects or the accumulation of filth. In the day, if fine, a free circulation of air is kept up; and at night the temperature of the house averages from 65 to 70 degrees. The soil used, and which seems to suit well, is very sandy loam; in potting, care is taken to ensure a good drainage, and as soon as the roots reach the inside surface of the pot, an additional shift is immediately given, so that the growth is never checked and the plant in consequence is kept continually progressing. It requires a great supply of water at the roots. The young shoots no doubt may be propagated with the greatest facility in sand, under a bell-glass, plunged in heat.

NEW AND RARE PLANTS,

FIGURED IN THE THREE LEADING BOTANICAL PERIODICALS AND FLORISTS' MAGAZINE FOR JUNE.

BOTANICAL REGISTER. Edited by Dr. Lindley, each number containing eight figures; coloured 4*s.*, plain 3*s.*; and corresponding letter-press.

BRITISH FLOWER-GARDEN. Edited by Dr. Don. Containing four plates; coloured 3*s.*, plain 2*s.* 3*d.*; with corresponding letter-press.

BOTANICAL MAGAZINE. Edited by Dr. Hooker, each number containing eight plates; coloured 3*s.* 6*d.*, plain 3*s.*; and corresponding letter-press.

FLORISTS' MAGAZINE. By F. W. Smith. Containing four monthly plates, highly coloured; several plates with two figures; large size 4*s.*, small 2*s.* 6*d.*; and corresponding letter-press.

Of the above figures, we have only selected such as are new and rare; and amongst these, only such as deserve to be extensively cultivated. For descriptions and figures, reference must be made to the works themselves.

CLASS I.—PLANTS WITH TWO COTYLEDONS (DICOTYLEDONEÆ).

HYDROPHYLLEÆ (THE WATER-LEAF TRIBE).

NEMOPHILA AURITA. Ear-leaved Nemophila. This is a pretty annual with dark blue flowers, which, when expanded fully, are about the size of a sixpence. It is described as being quite hardy, and Dr. Don says, it requires no particular mode of treatment, as it is found to flower and perfect seeds freely in the open border, and in the ordinary garden soil. Discovered by Mr. Douglas in California, by whom seeds were transmitted to the Horticultural Society. In comparing the present species and *N. insignis*, figured page 329, together, we decide the latter to be by far the best flower; still we think, both of them grown together will have a pleasing appearance, and certainly should be in the possession of every lover of flowers. *Brit. Fl. Gard.*, 338.

ERICÆ (THE HEATH TRIBE).

RHODODENDRON ARBOREUM, var. ROSEUM. Pink-flowered tree rose bay. A plant remarkable for its dwarfness in this country; and Dr. Don says, the plant from which the figure accompanying the description was taken, was no more than two feet high, but, in its native state, Dr. Wallich states it as equalling in height the *arboreum* itself. The flowers are produced in a compact globular cluster, in colour a rich pink; the corolla is marked within, on the upper side, with numerous deeper coloured spots, which look beautiful in the figure, and no doubt are highly so when seen on the plant. It was raised at the late Earl of Liverpool's, Combe House, in 1819, by Mr. W. Smith; the seeds, from Nepal, were communicated by Robert Henry Jenkinson, Esq. *Brit. Fl. Gard.*, 339.

GROSSULARIÆ (THE CURRANT TRIBE).

RIBES MALVACEUM. Mallow-leaved Currant. An upright branching shrub,

rising to the height of three feet or more. The calyx, which constitutes the chief beauty of the flower, is of a pale purple, copiously hairy on both surfaces. It is a Californian species, discovered by our lamented friend Mr. Douglas, by whom it was sent to the Horticultural Society. It should be grown in a soil composed of peat and loam; and will, doubtless, readily increase by cuttings. *Brit. Fl. Gard.*, 340.

EUPHORBIACEÆ (THE EUPHORBIVM TRIBE).

POINSETTIA PULCHERRIMA. Showy Poinsettia. This truly splendid plant was discovered by Mr. Poinsette, in Mexico, and sent by him to Charleston in 1828, and afterwards to Mr. Buist of Philadelphia; from Mr. Buist, it was brought by Mr. James M^cNab to the Botanic Garden Edinburgh, where it flowered twice last year, and again in February of the present year. "Nothing can be more ornamental in the stove. The rose-like whorls of *bractææ* which terminate the branches, have been seen on the large plants cultivated at Philadelphia as much as twenty inches across, and equal in colour to the finest tints of *Hibiscus Rosa Sinensis*. The rich scarlet *bractææ*, represented in the plate accompanying the description, measure upwards of seven inches across. It is highly deserving a place in every collection." *Bot. Mag.*, 3493.

A brief account will be found in another part of the present number of our Magazine, of the treatment we apply to our plant at Chatsworth.

LABIATÆ (MINT TRIBE).

PHYSOSTEGIA TRUNCATA. Blunt-calyxed Physostegia. A hardy annual with an erect stem, from eight or ten inches to a foot in height, with flowers of a purple rose-colour. It was found by Mr. Drummond in 1833 and 1834, about San Felipe de Austin, who communicated specimens and seeds to Europe. *Bot. Mag.*, 3494.

GENTIANÆ (THE GENTIAN TRIBE).

GENTIANA QUINQUEFLORA. Five-flowered Gentian. A pretty little annual, growing from nine to twenty inches high, producing a numerous quantity of pale lilac-coloured flowers at the extremity of the stem and branches, generally from three to five together. It was raised at the Edinburgh Botanic Garden, from seeds sent by Mr. T. Churnside, nurseryman of New York, and flowered in the greenhouse in the end of October. *Bot. Mag.*, 3496.

ONAGRARIÆ (THE EVENING PRIMROSE TRIBE).

FUCHSIA DISCOLOR. Port-Famine Fuchsia. This plant produces flowers much like the species *gracilis*, but differs in the colour of the stem. It was found in Port Famine, in the Straits of Magellan. *Bot. Mag.*, 3498.

LEGUMINOSÆ (THE PEA TRIBE).

KENNEDYA MACROPHYLLA. Large-leaved Kennedyya. A beautiful greenhouse twining shrub, introduced by Sir James Stirling, from Swan River in New Holland, and raised by Robert Mangles, Esq., of Sunning Hill. In the greenhouse, it will make a good twiner for columns, &c.; but a preferable mode is, to twine its

stems round and round to stakes fixed into the sides of the pots, so that the plant is compelled to grow round itself. *Bot. Reg.*, 1862.

CARYOPHYLLÆ (THE CHICKWEED TRIBE).

LYCHNIS BUNGEANA. Bunge's Lychnis. A very beautiful species with scarlet flowers, sent to England last year by Dr. Fischer, of St. Petersburg. It is not quite hardy, suffering both from the dryness and coldness of the open air; but thriving well in a cool greenhouse or frame, if fully exposed to light. *Bot. Reg.* 1864.

PRIMULACEÆ (THE PRIMROSE TRIBE).

AURICULA. Taylor's Glory. Taylor's Glory is one of the finest white-edged Auriculas. The flowers handsomely formed, and well-proportioned in all its parts. The foliage is remarkably ample, and almost as white as snow. This gem of florist flowers we can safely recommend to all lovers of these productions. *Fl. Mag.*, No. XII.

VIOLACEÆ (THE VIOLET TRIBE).

PANSIES. Pomona Superba, Count de Sellis' Desdemona. *Pomona superba*, is one of the most perfectly formed flowers we have seen, and certainly one of the largest. Its colour is remarkably pure and brilliant, the pencilling is rich and distinct.

Count de Sellis is not so large a flower as the former, but its peculiar and novel character cannot fail to make it an universal favourite. The pencilling on the three lower petals is condensed into a very remarkable rich spot, while the lemon colour of the flower is margined with a pure azure, which gives a pleasing appearance to the flower.

Desdemona is very rich, and curiously marked with a bright velvet-like purple, a colour and character which defies imitation. The blossom is large, well-formed, and of bold expression. *Fl. Mag.*, No. XII.

CLASS II.—PLANTS WITH ONE COTYLEDON (MONOCOTYLEDONEÆ).

ORCHIDEÆ (THE ORCHIS TRIBE.)

RODRIGUEZIA BARKERI. Mr. Barker's Rodriguezia. One of the orchideous family, although possessing no very splendid colours; the flower is, nevertheless, very interesting. It was imported from Brazil, by G. Barker, Esq., of Birmingham, and flowered in January last. It very much resembles the *Rodriguezia recurva* and *planifolia*, but Dr. Don points out a difference in the smooth, not striated, and plaited leaves, and in the very deep division and long segments of the lower sepal. The whole flower too is of an uniform pale green colour, nearly destitute of fragrance. *Bot. Mag.*, 3497.

ONCIDIUM CRISPUM. Crisped-flowered Oncidium. A large flowered and very handsome species of Oncidium, a native of the Organ Mountains, in the neighbourhood of Rio Brazil, first made known in the Botanical Cabinet. The petals are

broadly obovate, obtuse, much waved and crisped, of a rich brown colour; the claw is yellow, spotted with red above, beneath, green. *Bot. Mag.*, 3499.

HABENARIA PROCERA. Tall Habenaria. A rare feature among the lovely and curious family *Orchideæ*. A native of Sierra Leone, where it was found by Afzelius, many years since. It was imported last year by Messrs. Loddiges. It is a singular plant, the flower has a remarkably long spur, and the colour of the whole flower is white and green mixed. A damp stove will suit it best when in a growing state; but, after the leaves begin to perish, the roots should be kept dry until the return of the growing season. *Bot. Reg.*, 1858.

CATTLEYA LABIATA. Crimson-lipped Cattleya. The splendour and high character of the colour of the flowers of this plant, surpass anything we ever witnessed in the whole family of orchideous plants. It is a native of Brazil, and was introduced about eighteen years ago, by Mr. W. Swainson. It does not require much heat or dampness; a temperature varying between 65 and 80 degrees, with what we term an imperceptibly moist atmosphere, will suit it well. *Bot. Reg.*, 1859.

MORMODES ATROPURPUREA. Dark purple Mormodes. A new feature of *Orchideæ*, which flowered, for the first time, in John Willmore, Esq.'s collection, at Oldford, near Birmingham. It was imported from the Spanish Main in 1834. It opens a new genus, differing from *Catasetum* and *Myanthus*, in the want of cirrhi upon the column, and from *Monachanthus*, in its lip being membranous and curved upwards, with the sides turned downwards like the sides of a saddle, instead of being fleshy and helmet-shaped. The leaves are pale green; the flowers are an uniform rich purple. It requires the same treatment as *Catasetums*, *Cychnoches*, &c. *Bot. Reg.*, 1861.

TRICHOPIILIA TORTILIS. Twisted-petalled Trichopilia. A beautiful and highly curious plant, introduced from Mexico in 1835. The flower is handsome, the white of the lip, which is very clean and pure, forms a brilliant contrast with the rich blotches of deep crimson that ornament the interior of the little funnel, formed by the rolling of the lip round the column. From its habit, Dr. Lindley thinks it will thrive in the stove, under the same treatment as *Maxillarias*. *Bot. Reg.*, 1863.

DENDROBIUM MACROSTACHYUM. Long-spiked Dendrobium. A very interesting species of Dendrobium, which was discovered in Ceylon by the late Mr. James Macrae, some years ago. Its flowers are of a pale yellow, and the whole habit of the plant seems to be that of *D. Pierardi*, *cucullatum*, and *pulchellum*, but it is rather inferior to any of them in beauty, still requiring precisely the same treatment as those species. *Bot. Reg.*, 1865.

EPIDENDRUM ARMENIACUM. Apricot-coloured Epidendrum. A pretty plant with small apricot-coloured flowers, a native of Brazil, found in company with *Grobya Amherstiae*, and imported by Messrs. Rollisons, of Tooting. It is a stove-plant, increasing readily by division of its tufted stem. *Bot. Reg.*, 1867.

EPIDENDRUM SKINNERI. Mr. Skinner's Epidendrum. This is not a pretty species, but it is distinct from any previously described, and is remarkable for its

stems being dilated at the upper end, like some of the species of *Dendrobium*. *Bot. Reg.*, 1870.

MAXILLARIA AROMATICA. Aromatic Maxillaria. A fragrant stove-plant, breathing cinnamon and sweet spices, found in Mexico, whence it was brought by Lord Napier to the Botanic Garden Edinburgh, previous to the year 1826. Its flowers are yellow, produced on a solitary stalk about the month of May. *Bot. Reg.*, 1871.

CRYBE ROSEA. Pink-flowered Crybe. An orchideous plant, a native of Mexico, producing pale purple flowers, remarkable for never fully expanding; the edges of the lip turning inwards, and forming a sort of disk at the end of the flower. It is a stove-plant, requiring the same treatment as the common *Bletia verecunda*, and the like. *Bot. Reg.*, 1872.

OPERATIONS FOR AUGUST.

ALLAMANDA CATHARTICA. Cuttings of this fine flowering plant may now be put in, they strike readily in sand or mould, under a bell-glass, in a moist heat.

ANNUALS of choice sorts, for keeping through the winter, may now be sown in small pots.

CLEMATIS. The stove and greenhouse species may be propagated this month, any rich soil will suit them well.

CLERODENDRON. Plants of this genus, propagated this month, will flower well next season. The desirable species are, *C. squamatum*, *C. paniculatum*, *C. macrophyllum*, all are propagated readily in soil or sand, under a hand-glass, in moderate heat.

CLIMBING-PLANTS of all sorts should now be tied up with care.

IXIAS. As the tops decay, gradually diminish the supply of water.

LANTANA SELLOI, &c., may this month be propagated with success.

MIGNONETTE, now sown, will flower from March till May. They should be preserved through the winter, as noticed, Vol. II. page 6.

NERINE SARNIENSIS, or **GUERNSEY LILY**, will flower about October, if the bulbs are in the early part of this month potted in loam and peat; give them a good supply of air while growing, and they will flower beautifully.

POLYANTHUS TUBEROSA, *var. FLORE PLENO*, will now be coming into flower, during which time they should have a good supply of water, see Vol. I. pages 166, 168.

RUSSELIA JUNCEA, may now be propagated from cuttings of the half-ripened wood.

SEEDS. The kinds desired to be saved should now have unremitting attention; clean, dry, and pack them up, observing to name each sort accurately.





Rhododendron Chamaecistus.

RHODODENDRON CHAMÆCISTUS.

(GROUND-CISTUS RHODODENDRON).

CLASS.
DECANDRIA.ORDER.
MONOGYNIA.NATURAL ORDER.
RHODORACEÆ.

GENERIC CHARACTER.—*Calyx* five-parted. *Corolla* funnel or bell-shaped, with a five-parted limb, the upper part of which is the broadest, and generally spotted. *Stamens* various, from five to ten, usually longer than the limb, and always curved inwards (declinate). *Anthers* opening by two terminal pores. *Capsule* in five cells and five valves, rarely more as in *R. arboreum*.

SPECIFIC CHARACTER.—*Plant* a dwarf shrub. *Leaves* small, of an oblong-lanceolate shape, somewhat attenuated at both ends, and glandularly ciliated; that is, they have eye-lash-like hairs round the edges. *Flowers* usually two together, sometimes three, issuing from the end of the branch. *Flower-stalks* clothed with glandular hairs. *Calyx* of an ovate shape, also beset with glandular hairs.

THIS humble but pretty little plant in its growth resembles more a species of "*Helianthemum*" or "*Thymus*," than any of its native family; and so striking is the similarity existing between the leaves of this species and those of the plants comprised in the genus "*Thymus*," that in the *Encyclopædia of Plants* we find it designated by the term Thyme-leaved, as conveying the most familiar idea of the shape of the leaves. Nor would it be very surprising if a person were to mistake it for a species of thyme; its short, partially prostrate, and tufted branches, approximate so nearly to that genus. But how great is the contrast when in bloom; instead of small insignificant flowers produced on a short spike, as in thymus, we have, at the extremity of the strongest branches, two or three showy flowers, consisting of five ovate lobes of a delicate pale pink colour, at the base of which, and surrounding the organs of fructification, is a circle of lively pure pink, and immediately from the centre emanate the stamens and pistil; thus by the anthers of the former, and the stigma of the latter, a picture of elegance and gracefulness is produced, which suggests the following sublime sentiments :

“ Infinite God, thou great, unrivalled One,
Whose glory makes a blot of yonder sun !
Compared with thine how dim his beauty seems !
How quenched the radiance of his golden beams !

Thou art my life, the light by which I move ;
 In thee alone dwells all that I can love ;
 All darkness flies when thou art pleased to appear,
 A sudden spring renews the fading year ;
 Where'er I turn I see thy power and grace,
 The watchful guardians of our heedless race ;
 Thy various creatures in one strain agree,
 All in all times and places speak of thee ;
 Ev'n I, with trembling heart and stammering tongue,
 Attempt the praise and join the general song." *

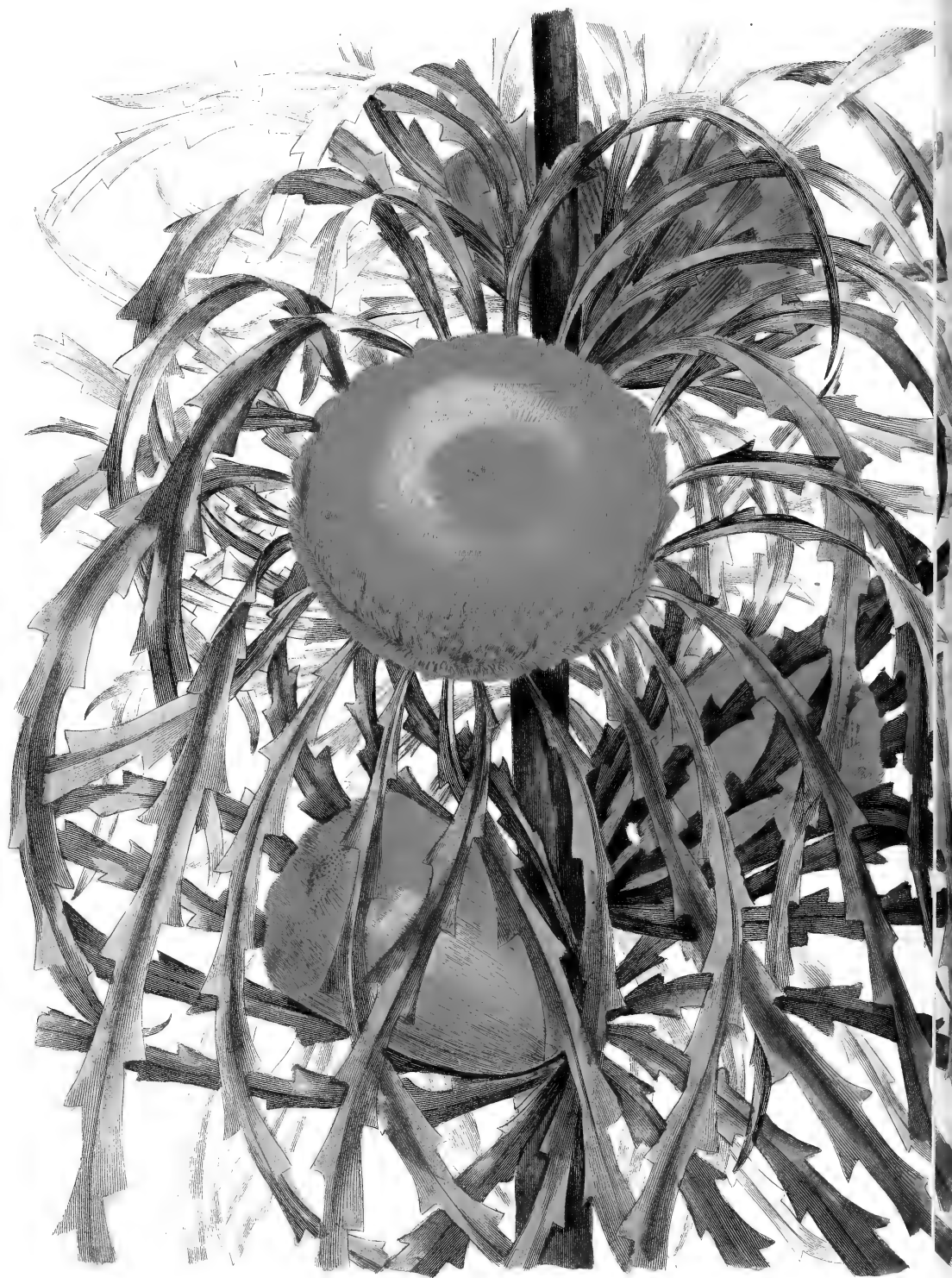
This pretty and interesting production seldom exceeds a few inches in growth ; the branches are short, nearly prostrate, and thickly set with leaves ; it was collected on the mountains of Carniola by Baron von Zois, who transmitted seeds in 1786, to the Messrs. Loddiges, and was figured in the *Bot. Cab.*, vol. 15, page 1491 ; also the *Bot. Mag.*, 488. At Chatsworth it takes up its station among the rest of the family in the Arboretum, and appears to bear with the out-door climate very well, but we are unable to say whether it will flower freely thus exposed ; a good method of flowering it we believe is to keep the plants in pots exposed to the frost in the winter, and introduced to the greenhouse in the spring, when, if the plants are middling strong and well-established, it will produce its charming blossoms about May or June. Messrs. Loddiges direct a shaded situation for it in summer, with a moderate supply of water, and to be kept under a cold frame or hand-glass during the winter. The soil in which it will thrive very well is peat that has a portion of sand intermixed with it, or very sandy loam is not objectionable for it. Cuttings of the young wood, planted in sand and placed under a bell-glass, will strike roots tolerably free.

The sample of our drawing was kindly furnished by our esteemed contributor, Mr. Bows, with whom the plant grows and flowers well.

The generic name is taken from *Rhodor*, a *rose*, and *dendron*, a *tree*, in reference to the large clusters of flowers, which are frequently red.

* *Bot. Cab.* 1491.





DRYANDRA LONGIFOLIA.

(LONG-LEAVED DRYANDRA.)

CLASS.

TETRANDRIA.

ORDER.

MONOGYNIA.

NATURAL ORDER.

PROTEACEÆ.

GENERIC CHARACTER.—*Calyx* of four parts or clefts. *Stamens* four, inserted in the ends of the segments, which are hollow (concave). *Scales* four, situated below the ovarium (hypogynous). *Ovary* of two cells, each of which is furnished with one seed. *Follicle* woody, consisting of two cells, with a loose two-parted dissepiment. *Receptacle* flat.

SPECIFIC CHARACTER.—*Plant* an evergreen greenhouse shrub, growing in some instances to the height of six feet, but more frequently from two to four. *Leaves* decurrent, very long, acute, pinnatifid, at the base attenuated and entire, upper side smooth, of a bright pea-green, beneath slightly hairy, and of an ash colour. *Lobes* of the leaves generally of an alternate triangular shape. *Flowers* of an orange brown or yellow.

THE natural order Proteaceæ, of which the genus *Dryandra* presents a distinguished feature, is easily recognised from all other orders in the Jussieuan system, first by the hard woody texture of their leaves; secondly, by their irregular tubular calyxes, which in the bud state are valvate in æstivation, by which is meant, they develope or open similar to the opening of valves; thirdly, by the stamens being placed upon the lobes, and the fruit dehiscing, or opening. These remarks are at once characteristic of this valuable order, so much prized by every lover of plants for the beauty of their foliage, and neatness of their flowers.

The present coloured representation is a plant of much beauty; its erect growth, lobed and gracefully pendent foliage, render it a valuable acquisition to the greenhouse. These characters, combined with its singular yellow flowers, studding at intervals, a stem six feet high, stamp it with an effect at once pleasing and attractive, and which recommends it to a place in every collection.

In Manchester Botanic Garden, from whence we obtained the sample of our drawing, the plant flowered profusely in the greenhouse; it stood full six feet high, and being well clothed with verdure, a remarkably pleasing effect was produced by the contrasted colour of the flowers and foliage.

New Holland is its native place, as it is likewise of all the other species in the

genus. It was introduced to this country about thirty years ago, since which it has been figured in the *Bot. Mag.*, t. 1582. It has no particular season of flowering still it has been stated that December and January are the months most probable for it to bloom.

The soil should be a mixture of equal parts of turfy loam, peat, and sand, the more sandy the better. In shifting always do it with moderation, for it is better to shift twice than to over-shift once with the view of saving trouble. As over-watering is directly injurious, it is indispensable, that the pots previous to putting in the plants, be well drained with potsherds. While the sap is in circulation, and the plants in consequence, making new wood and leaves, they will bear a good supply of water, but in autumn and winter it is requisite to give it with great caution. At all times they should enjoy an unencumbered and light situation, where plenty of air can reach them, for they do not thrive so well if crowded amongst other plants. An occasional syringing in the summer season will be of much benefit to them. Cuttings do not take readily, still they may be brought to produce roots if portions of the ripened wood, taken off at a joint, are prepared in August or September, observing not to shorten any of the leaves, and potted in sand, but not plunged; as soon as they have made young roots pot them into soil, for the sand if they remain long in it will injure them; after they are potted off, and until fresh roots have been made in the soil, they should have the uniform atmosphere of a close cold frame, from which they must be exposed by degrees.

The generic name is given after Jonas Dryander, reputed for his high botanical acquirements, and catalogue of the Banksian library.

The specific name alludes to the length of the leaves.



Rhodanthe Manglesi.

RHODANTHE MANGLESII.

(CAPTAIN MANGLES' RHODANTHE.)

CLASS.
SYNGENESIA.ORDER.
ÆQUALIS.NATURAL ORDER.
COMPOSITÆ.

GENERIC CHARACTER.—*Head* many-flowered, homogeneous. *Pappus* piliform, plumose, distinct. *Seed* gnawed, woolly. *Receptacle* naked.

SPECIFIC CHARACTER.—*Plant* an annual, growing from nine to sixteen inches high. *Stem* round, smooth, somewhat branching. *Branches* wavy, inclined to be slender. *Leaves* oblong-obtuse, clasping the stem at the base, upper surface of a dark green colour, something paler beneath. *Involucre* turbinate, much tapering at the base, formed below of many loosely imbricated, purplish grey, ovate, lanceolate scales, which, as they proceed upwards, grow longer and stronger, assuming a rose colour and toothed. *Disc* consisting of a great number of yellow tubular flowerets. *Pappus* feathery.

THIS very interesting and pleasing little annual, although hardy, has been with us, at Chatsworth, kept in the greenhouse, where its delicate foliage, fair rose-coloured flowers, and graceful habit, have been a conspicuous object of gaiety during the whole summer.

No plant can be more desirable or worthy of a place in the flower garden than the present; for beauty and liveliness of flowers it gives way to none; for freedom of disposition to produce them it stands unexcelled; and for general appearance, when several are put together, no group of plants can produce an aspect more easy and pleasing; and to use the words of Dr. Lindley, "it possesses the brilliancy of the Cape *Helichrysa*, without their stiffness and formality."

It may be brought to flower at almost any season, by attending to the time for sowing the seeds; say two months or ten weeks before the plants are wanted to bloom; we have had a succession the whole summer, and a few plants raised from seeds sown in June are just faded. Beautiful as its flowers are in the flower garden, a few plants will always be welcome in the greenhouse, and one that is kept airy and cool is the sort of place they much delight in. A loamy soil not over watered will do well for them. Seed ripens in abundance, which should be carefully collected in fine weather.

For the introduction of this plant we are indebted to the exertions of Captain

Mangles, R.N., who brought the seed from the Swan River colony, New Holland, to the gardens of Robert Mangles, Esq., Sunning Hill. "The genus," says Dr Hooker, "seems to be very nearly related to *Podolepis*, but differs in the involucre;" our drawing was made about June last, from a plant which flowered in the greenhouse at Chatsworth.

The generic name was given by Dr. Lindley, in allusion to the likeness of the flower in shape and colour to that of the rose.

The specific name by the same author is given in compliment to the gentleman who introduced it.



C. yunnanensis

ERYTHRINA CRISTA-GALLI.

(COCK'S-COMB CORAL TREE.)

CLASS.

DIADELPHIA.

ORDER.

DECANDRIA.

NATURAL ORDER.

LEGUMINOSÆ.

GENERIC CHARACTER.—*Calyx* tubular, two-lipped. *Vexillum* very long, lanceolate. *Legume* two-valved, many seeded.

SPECIFIC CHARACTER.—A shrub from twelve to fifteen feet high. *Leaves* slightly notched, in threes, midrib prickly on the underside. *Leaf-stalks* long, reddish brown, prickly and glandular. *Flowers* in threes, axillary, very showy. *Calyx* denticulate, orange brown. *Vexillum* bright scarlet, broad, reflexed, striated. *Keel* shorter than the vexillum, crimson.

THIS beautiful plant is a native of Brazil, from whence it was introduced in 1771; in its native country it is said to grow to a tree forty feet, or more, high, but in Britain it seldom exceeds eight feet, being little more than herbaceous. This and the *E. laurifolia* require the same kind of treatment, both flowering finely in the stove, and also on a warm border out of doors.

The compost is made of one part fresh maiden loam from the top spit of a pasture field, one part of heath mould (sandy peat), and one part of horse-dung well rotted and pulverized. The above should be well incorporated, and chopped very small, and also be well exposed during frost in winter.

As soon as the plants have done growing, which will be by the latter end of August, cut them down and set them in a cool greenhouse; keep them quite dry till about the end of November, then pot in fresh soil, suiting the size of the pot to the size of the plants; they never require one larger than a 16. When potted, water, and set them in a house where the heat is about 60 degrees.

In the spring, that is, about the beginning of March, they will flower in perfection. In May, when they are again out of flower, take the plants and cut them down as before, to five or six eyes, according to the strength of the stems; re-pot them, and place them in the stove until they have taken root, and made shoots from nine to twelve inches, when they must be removed to a house, of the temperature

of from 55 to 60 degrees, allowing them plenty of light, or the shoots will be apt to draw and become weakly.

When the shoots are three or four inches high, syringe them frequently with pure water, to prevent the attacks of the red spider (acarus); unless this is well attended to, that destructive insect will soon render the plants very unsightly, if not wholly prevent their flowering.

Continue to treat them thus till they show flower, then allow plenty of air and moisture, and they will flower freely again in July.

When in full bloom they may be removed to the greenhouse or conservatory, where, placed among other exotics, they will greatly add to the gaiety and splendour of the house.

If it is wished to have them flower again, after they have done flowering, again re-pot them, cut down the young wood as before, take them back to the stove, and treat as before, and they will flower again in the months of October and November; but the best plan is to give them a winter after they have flowered twice.

In warm situations out of doors, both this and the *E. laurifolia* will grow and flower freely, but only once in the year; and they require cutting down to about four inches of the stem on the approach of winter, and to be sheltered by an inverted flower-pot, or the roots to be dug up and potted, or kept in a dry cellar until the approach of spring.

Cuttings of the stems made at the time the plants are cut down strike very freely planted singly in small pots, and plunged in a strong moist heat under a handglass, and slightly shaded until they have taken root, which will be in three weeks or a month; then expose them gradually until they will bear the temperature of the stove.

The plant from which our drawing was made flowered finely in our stove at Chatsworth.

The generic name applies to the colour of the flowers, which are a brilliant scarlet or red, and sometimes orange; most of the species partake of these colours in a high degree.

A SELECT LIST OF GREENHOUSE SHRUBS.

WITH SHORT NOTES ON THEIR PECULIAR TREATMENT.

- AZALEA Indica phœnicea.
 — — Smithii.
 — — variegata.
 — — lateritia.
 — — alba.
 — Danielsiana.
 Acacia dealbata.
 — præsans.
 — lunata.
 Anthocercis viscosa.
 Bossiæa microphylla.
 — heterophylla.
 Bouvardia versicolor.
 Beaufortia decussata.
 — sparsa.
 — carinata.
 — splendens.
 Brugmansia bicolor.
 Burtonia conferta.
 Boronia denticulata.
 Crowea saligna.
 Chorizema rhombea.
 — Henchmanni.
 — nana.
 Camellias of all kinds.
 Callistachys lanceolata.
 Calothamnus quadrifida.
 Corræa speciosa.
 — pulchella.
 Crotalaria purpurea.
 Cassia pulchella.
 Crassula coccinea.
 — versicolor.
 Cratægus glabra.
 Callistemon scabra.
 Daviesia cordata.
 Dracæna stricta.
 Dillwynia glycinifolia.
 — pungens
 Ericas of all kinds.
 Epacris grandiflora.
 — impressa.
 Elichrysum proliferum.
 — spectabile.
 Escallonia rubra.
 Fuchsia gracilis.
 — — multiflora.
 — tenella.
 — macrostemon.
 — venusta.
 — Thompsoniana.
 — globosa.
 — — major.
 — microphylla.
 Fuchsia Waltoniensis.
 — Smithii.
 — conica.
 — coccinea.
 — arborescens.
 Gompholobium grandiflorum.
 — — setifolium.
 — latifolium.
 — venustum.
 Gardoquia Hookeri.
 Hovea purpurea.
 — celsii.
 — pannosa.
 — villosa.
 — chorizemifolia.
 Hakea linearis.
 Indigofera incana.
 — australis.
 Kennedy.
 — splendens, and indeed all the species.
 Lalage ornata.
 Lightfootia Loddigesii.
 Linum flavum.
 Lachnæa purpurea.
 Lechenaultia formosa.
 — multiflora.
 Liparia spherica.
 Lupinus Cruickshankii.
 Melaleuca, all the species.
 Metrosideros speciosa.
 — semperflorens.
 Mirbelia dilatata.
 Nierembergia filicaulis.
 — gracilis.
 — calycine.
 Nerium splendens.
 — Oleander.
 — — pleno.
 — — alba.
 — odorum.
 Oxylobium retusum.
 — cordifolium.
 — arborescens.
 Pimelea decussata.
 Penæa squamosa.
 Petunia linearis.
 Prostanthera lasianthos.
 Pelargoniums of any kinds.
 Proteas of all kinds.
 Podolobium trilobata.
 Pultenæa stricta.
 — paleacea.
 Polygala grandiflora.
 Punica nana.

Pyrus floribunda.		Salvia splendens.
Prostanthera violacea.		Stenanthera pinifolia.
Roellia ciliata.		Stenochilus maculatus.
Rhododendron arboreum.		Senecio elegans pleno.
— — —	album.	Styphelia tubiflora.
— — —	fimbriatum.	Templetonia retusa.
Sphenogyne odorata.		— glauca.
— pilifera.		Tecoma Capensis.
Salvia fulgens.		

SHORT NOTES ON THE PECULIAR TREATMENT OF EACH.

AZALEA.

For the successful culture of these plants, see Vol. I. page 192, 126, and 127.

ACACIA.

A. DEALBATA is very ornamental, the foliage is very delicate, the flowers lovely, and emit a very pleasant fragrance. A mixture of equal parts of loam and heath mould, with a small portion of very rotten dung, or leaf mould, suits it well. The best way of increasing it is by seeds, which are produced pretty freely, and should be sown as soon as ripe; it also grows readily from cuttings of the young and tender wood, planted in pots of fine sand, covered with glass and treated much after the manner of *Ericas*.—*A. lunata*. The flowers of this species are of a very brilliant yellow, and make a great show in the greenhouse all the spring months. It may be propagated by cuttings of the tender wood planted in pots of sand under bell-glasses, and plunged in a brisk heat; but it is propagated most readily by cuttings of the roots planted in pots of heath mould, and plunged in a cucumber frame or bark bed.—*A. prænsans* is another lovely species, with singular but very handsome flowers; it should be treated precisely in the same manner as *A. dealbata*.

ANTHOCERCIS.

A. VISCOSA. This beautiful white flowering plant ought to be in every collection. It grows readily in equal parts of heath mould and light loam, and is propagated by cuttings of half-ripened wood, planted in fine sand under a bell-glass. Great care is necessary during damp weather and winter not to overwater it, as perhaps more plants perish from this cause than any other; give a good drainage, and only water when the soil in the pots appears dry.

BOSSIÆ.

B. MICROPHYLLA. This plant always grows best when its roots have plenty of room; it is therefore advisable, if convenient, to plant it out in the open border of the conservatory, where it will flourish and blossom in great profusion, but rarely produces seed; and cuttings not growing very freely the plant remains scarce. If the plant be grown in a pot, it is necessary to give plenty of drainage with potsherds, as stagnant water is very injurious to it. *B. heterophylla* is another beautiful species; it also is very shy of propagation by cuttings, but seeds are occasionally produced, which should be sown in fine heath mould as soon as ripe.

BOUVARDIA.

B. VERSICOLOR. This species is very rarely met with in collections, and yet scarcely any plant is more beautiful when in full flower. It is usually propagated

by cuttings of the roots, which should be planted in pots filled with heath mould and loam, plunged in a little heat, and covered with a glass; for general culture see *Bowardia triphylla*, Vol. I. page 225.

BEAUFORTIA.

B. DECUSSATA. All the species of this genus are splendid; they flourish in a soil composed of three-parts sandy heath mould and one part light loam; they grow very freely in the conservatory, and are increased by cuttings of the ripe wood, planted in sand, plunged in heat, and covered with a glass.

BRUGMANSIA.

B. BICOLOR, or SANGUINEA. This splendid species is a native of South America, where it is found growing amongst rubbish upwards of 7000 feet above the level of the sea. It is a very free-growing plant, and should be placed in a warm part of the conservatory, and treated in the same manner as *B. suaveolens*. It is easily propagated by cuttings, planted in pots of soil, and plunged in a brisk heat under a glass.

BURTONIA.

B. CONFERTA. This plant is rather difficult to keep, from its liability to damp off; it requires a dry airy situation in the greenhouse, and to be well drained with potsherds, as the least stagnation of water will cause it to perish. The soil most suitable is composed of three parts sandy heath mould and one part loam, with a little leaf mould. Cuttings of the tender wood planted in pots of sand, under a glass, and treated like erica cuttings, will soon strike root. Seeds are also occasionally produced, which should be sown as soon as ripe.

BORONIA.

B. SERRULATA and DENTICULATA are both very handsome little shrubs; for their culture see Vol. I. page 173.

CROWEA.

C. SALIGNA. This is a very interesting plant, with fragrant leaves, and a very free flowerer, continuing in bloom during the whole summer; it requires a dry airy situation in winter, or it is liable to suffer from damp. It is increased by cuttings, treated in the same manner as those of *Boronia*, and should be potted in peat.

CHORIZEMA.

All the species of *chorizema* are short-lived, but very beautiful; they require a little more heat than the generality of New Holland plants; they also thrive best if slightly shaded by other plants, as the full power of the sun is very apt to change the bright colour of the leaves. They are increased by cuttings of half ripened wood, and by seeds; for further particulars see Vol. II. page 171.

CAMELLIAS.

For the treatment of these see Vol. I. page 32, and Vol. II. pages 25 and 73.

CALLISTACHYS.

C. LANCEOLATA. This is a quick growing, very handsome plant, very suitable for a large conservatory. It is a native of New Holland, from whence it was introduced in 1814. It is easily increased by seeds, which are produced plentifully; also by cuttings planted in either sand or soil, and covered with a glass. A common mixture of loam and heath mould suits it well.

CALOTHAMNUS.

C. QUADRIFIDA is a beautiful little shrub of delicate growth; it thrives in sandy heath mould, mixed with a little light loam, and requires to be carefully watered, or it is very liable to drop off in damp weather. It is increased by cuttings, which will require to be treated like those of Erica. See Vol. I. page 237, 238, and 113.

CORRÆA.

C. SPECIOSA and VERSICOLOR are well known and easily cultivated plants, growing readily in heath mould and light loam. They are propagated by cuttings of the ripe wood planted in sand, and covered with a glass, but not plunged in a hotbed, or they are liable to damp off; the best way is to treat them in the same way as Erica cuttings. They grow slowly, and are therefore considered rather difficult to strike, but if planted thinly, and allowed plenty of time, they grow very freely.

CROTALARIA.

C. PURPUREA. A handsome species of very easy growth, easily propagated by both seeds and cuttings of half-ripened wood, which should be covered with a glass.

CASSIA.

C. PULCHELLA grows easily in a mixture of heath mould and loam, and strikes freely from cuttings of the ripe wood, also from seeds; but they seldom ripen in our greenhouses unless planted in very favourable situations.

CRASSULA.

C. COCCINEA and VERSICOLOR are two succulent plants, usually potted in the same kind of soil as Cactææ; but we prefer growing them in a mixture of rich loam and leaf mould, or very rotten dung. The flowers produced from this compost are of a very deep rich colour, and the leaves have not that unhealthy appearance they have in a poor soil. All the care requisite is not to overwater them, as the danger is greater by this mode of growing them than in the usual one; give a good drainage, never water overhead, and let the soil always appear dry before any be given in the pot. They increase freely by cuttings, which should be laid a day or two on a shelf to dry, afterwards planted close round the edge of a small pot, filled with the above soil, and be plunged in a cucumber frame, where they will scarcely require any water until after they are potted off.

CRATÆGUS.

C. GLABRA, now usually called PHOTINIA SERRULATA, is rather a rare plant, it has bright shining leaves, and will grow very freely in any light rich loam; they grow beautifully planted out in the border of a conservatory, and also thrive well in the open air trained against a wall, or in warm situations in the open border. Cuttings of the ripe wood planted in sand about the middle of September, on a warm south border, covered with a hand glass, will strike root very freely; it may also be grafted and inarched on the common thorn and other plants of a similar habit.

CALLISTEMON.

C. SCABRA. This beautiful species (usually called *metrosideros*) is a most desirable plant for a conservatory. It is nearly hardy, and thrives well in the open borders in warm situations; heath mould mixed with about a third of light loam

will suit it well. Cuttings of the ripe wood planted in sand, and covered with a glass, in heat, will strike very well.

DAVIESIA.

D. CORDATA. This little plant grows freely in sandy heath mould, mixed with a little light loam. Cuttings of half ripened wood will grow very freely if planted in sand, covered with a bell-glass, and treated in the same way as *Ericas*. If placed in a moist heat the cuttings usually perish with damp.

DRACÆNA.

D. STRIATA. A noble ornament for a warm greenhouse, but rarely flourishes in a cold conservatory. It should be potted in a rich light loam, and may be propagated by cuttings of half-ripened wood planted in pots of soil, plunged in a good hotbed, and very carefully watered.

DILLWYNIA.

D. GLYCINIFOLIA and **PUNGENS** are both very beautiful and delicate plants; they should be potted in a soil composed of three parts very sandy heath mould, and one part light loam. Cuttings of half-ripened wood planted in sand, covered with a bell-glass, and treated after the manner of *Ericas*, will grow very freely. See Vol. I. page 236.

ERICA.

For the culture of *ERICAS* see Vol. I. page 236.

EPACRIS.

E. GRANDIFLORA and **IMPRESSA.** All the species of *Epacris* are of easy culture. See Vol. I. page 53.

ELYCHRISUM.

E. PROLIFERUM and **SPECTABILE** should be in every collection. The sort of soil best suited for them is very sandy heath mould, having a small portion of light loam mixed. They require a dry airy situation in the greenhouse, and to be watered carefully; for if they are overwatered, they soon perish, and if allowed to become very dry they rarely recover. Cuttings of half-ripened wood planted in sand, and covered with a bell-glass, without heat, will strike very readily.

ESCALLONIA.

E. RUBRA. For the culture, see Vol. II., page 51.

FUCHSIA.

1. This genus of plants are universal favourites, and, being extremely easy of culture, are found in the possession of almost every lover of plants; the greater part of the species mentioned in the above list are nearly hardy, and make a very handsome show planted together in clumps viz.; *F. coccinea*, *gracilis*, *tenella*, *gracilis multiflora*, *macrostemon*, *Thompsoniana*, *globosa*, *globosa major*, *Smithii*, *canica*, and *virgata*. But the *F. microphylla*, *Waltoniensis*, *venusta*, *arborescens*, &c., will scarcely do so well planted in the open ground, but, with the exception of *F. venusta*, should be treated as greenhouse-plants generally are; the *venusta*, however, ought to be placed in a brisk moist heat early in spring to push it into flower, and afterwards placed amongst the greenhouse plants.

2. All the species are easily raised from cuttings, and from seed for new

varieties. The best time for taking off the cuttings is in the month of May ; when the young shoots have become about an inch and a half long, slip them off and plant them in pots filled with a mixture of light sandy soil and leaf mould, either with or without being covered with a bell-glass.

3. After the cuttings are planted, plunge the pots in a cucumber frame or other gentle hotbed ; in the course of a fortnight they will have struck root, and may be potted off.

4. In potting, place each plant in a 60-sized pot, with as good a sized ball as can be obtained, and fill the pots with a soil composed of heath mould, light rich loam, and very rotten dung, well mixed together in equal proportions ; drain the pots well with potsherds, and give the plants a good watering overhead with a rose.

5. When potted, replace them in a brisk heat for a short time until they have begun to form new roots ; they may then be gradually exposed to the air, until the middle of June, when they may be taken out and placed amongst the greenhouse plants ; but previous to this, it is advisable to repot them in 48-sized pots, and those intended for the borders should now be turned out ; it is, however, best to keep them in pots for the first year, and plant them in the borders when a year old, because they are then fine showy plants and flower very finely.

6. When the plants have been a summer in the open ground and are cut off by frost on the approach of winter, either take them up and pot them, or cut them down to about six inches of the ground ; turn a pot over them filled with sawdust, and draw the earth a little round the pot, then covering the hole securely to prevent the entrance of water, the plants will endure the most severe winters without injury.

7. In spring, when the weather becomes fine, remove the covering gradually ; first, by drawing away the soil from the side of the pot ; then, by taking out the sawdust ; and lastly, by removing the pot altogether.

8. In consequence of the plants being cut down in the autumn they will put up many young shoots ; these must be thinned to three or four of the strongest, and the shoots taken off may be planted for cuttings.

9. Notwithstanding we have recommended the plants to be headed down on the approach of winter, it is only in the event of their first being cut off by severe frosts ; for, if they will endure the weather, it is best not to mutilate them at all. In some situations, both in England and Ireland, they appear to suffer little from the most severe winters ; we have seen some plants established in the open borders in the north of Ireland at the seat of Roger Hall, Esq., Warrenpoint, which appear to endure the winter almost as well as any other hardy border plant.

10. In propagating by seed, take it when well dried, and sow it in pans of light soil sifted fine ; place the pans in a gentle hotbed, and water carefully until the plants appear ; when they have attained three or four leaves, transplant them into thimble pots, and treat them in the same manner as recommended for rooted cuttings.

11. Several of the species, as *gracilis*, *virgata*, *microphylla*, &c., form excellent standards ; in a large and lofty conservatory nothing can surpass the loveliness of

one of these plants with a fine straight stem upwards of twenty feet high, as some of the plants at Chatsworth are, and forming a large spreading head, the branches gracefully drooping, and shining with rich pendent scarlet blossoms; the beauties of which are seen to the greatest advantage, from the circumstance of the spectator viewing them from beneath.

12. In training, the following rule must not be lost sight of, viz.; never to strip more than two thirds of the leaves from the stem until the plant has risen to its intended height and has formed a head; the reasonableness of this will be immediately seen, when it is remembered that plants breathe chiefly by means of their leaves: the removal of too many at once will check the growth of the plant and cause it to sicken, and, if persevered in, certainly die.

GOMPHOLOBIUM.

All the species of *Gompholobium* thrive in sandy heath mould and a little loam; they require similar treatment to *Elychrysum* and other delicate plants of the same habit; if either overwatered or allowed to become too dry, they quickly perish. Cuttings of the tender wood, planted in pots of fine sand, covered with a glass, and treated like those of *Erica*, will speedily strike root.

GARDOQUIA.

G. *HOOKERI*. This very beautiful little plant is rather scarce, and considered somewhat difficult to keep. The best soil for it is a mixture of three parts very sandy heath mould and one part light sandy loam. Whilst the plants are young, it is necessary to place them in a brisk heat to keep them growing; for if, whilst small, they are stopped in their growth and prematurely thrown into flower, they rarely come to any perfection afterwards. They may be propagated by cuttings of the young wood planted in sand, under a glass in heat; but the best way of propagation is by seeds, which are usually produced, and should be sown early in spring.

HOVEA.

All the species named in the above list are so beautiful that they ought to be in every collection of plants; they are liable, however, to perish suddenly when grown in pots, but they flourish remarkably planted out in the border of a conservatory. They are somewhat difficult to propagate. Cuttings of the young wood, planted in sand, and covered with a glass, will strike root, provided they be not exposed to a moist heat, which takes them off immediately; they also produce seeds, which should be sown as soon as ripe.

HAKEA.

H. *LINEARIS*. A beautiful white flowering plant; the sort of soil most suitable for it is, equal parts of pure sand, sandy heath mould, and leaf mould; the pots must be well drained with potsherds, as the plants (whilst young, particularly) are very impatient of wet. Cuttings of the ripe wood, planted in the autumn in pots of sand, covered with a glass, and placed in a cool dry part of the greenhouse, but by no means be plunged in a bottom heat.

INDIGOFERA.

Both the species mentioned in the list are nearly hardy, and may be planted out in the open border, where they will flourish very well during the summer

months; but they will not endure frost, and therefore require, on the approach of winter, to be either taken up and potted, or sheltered by a pot being turned over them. In the border of a conservatory they grow finely, and do much better than in pots; the soil should be sandy heath mould and light loam, in equal proportions. They are propagated by cuttings of the tender wood slipped from the old plants when about an inch and a half long, and without any other preparation except taking off a little at the end of the slips to make them level and smooth; plant them in pots of the same kind of soil as that in which the plants grow, plunge them in heat, and cover them with a bell-glass. Also seeds are occasionally produced, which should be sown early in spring.

KENNEDYA.

For the successful culture of these plants, see Vol. II. pages 85, 99, 186, 260; and page 26, of the present volume.

LALAGE.

L. ORNATA. No plant of a similar habit is a more beautiful object than is this when in full flower; it requires an airy situation in the greenhouse, and the common treatment of other New Holland plants. It strikes very readily from cuttings of half-ripened wood, planted in pots of sand, under a glass.

LIGHTFOOTIA.

L. LODDIGESII. This plant is of simple culture, growing freely in equal parts of heath mould and loam, and cuttings of the tender wood strike root freely if planted in May in pots of soil, and covered with a glass, in a gentle hotbed. Seeds are occasionally produced, which should be sown as soon as ripe.

LINUM.

L. FLAVUM. Though we have arranged this plant amongst greenhouse plants it is nearly hardy, growing with the greatest freedom in the open borders in any light soil, and is very easily propagated by cuttings, planted under a hand-glass, on a warm border, about the beginning of May.

LACHNÆA.

L. PURPUREA is a remarkable free flowering plant, continuing in bloom greater part of the summer: its roots require to be somewhat cramped to throw it into flower, the plant is also liable to perish by overwatering during winter. To avoid this, always drain the pots well with potsherds, never water unless the soil in the pot appears dry, and then administer it sparingly. The plant should be potted in sandy heath mould, and is readily propagated by cuttings of the tender wood, planted in pots of sand, plunged in heat, and covered with bell-glasses.

LECHENAULTIA.

These are pretty little plants, very suitable for planting out in summer in small beds in the open ground; they love a soil about two parts sandy heath mould and one part loam. Cuttings of the young wood planted in pots of sand, placed in a cucumber frame, and covered with glasses, will grow very freely.

LIPARIA.

L. SPHÆRICA. This noble plant thrives best if planted out in the conservatory, as the roots are very impatient of being cramped in a pot; if, however, it is not

convenient to plant it out, give the roots as much room as conveniently can be spared ; pot in light sandy loam and heath mould. Great caution is necessary in watering ; perhaps more *Liparias* are killed by being overwatered, than by any other means. Never water unless the soil appears dry, and be very sparing in quantity during the winter months ; also, unless the weather be excessively dry, under no circumstances water overhead—good drainage with potsherds is indispensable, as any stagnation is almost immediate death. The best way of propagation is to cut off the young tops about an inch and a half long, and plant them in fine sand, cover them with a bell-glass, and place the pot in a rather dry heat, wipe the glass every morning, and water the pots round the outside of the glass when necessary, in preference to pouring water amongst the cuttings, which might speedily damp them off.

MELALEUCA.

All the species of *Melaleuca* deserve cultivation, and are of easy growth ; they should be potted in a mixture of two parts sandy heath mould and one part light loam. Cuttings of the ripe wood planted in September in pots of sand, covered with a bell-glass, and set in a cool airy place till spring, then plunged in a cucumber frame or other moist heat, will grow readily.

METROSIDEROS.

The culture of these is precisely the same as for *Melaleuca*.

MIRBELIA.

M. dilatata. A small shrub of great value in a collection, on account of the bluish-purple colour of the flowers. It should be potted in a very sandy loam, mixed with equal parts of sandy heath mould ; it is propagated by cuttings of the tender wood, which should be planted in May in sand, and covered with a glass, and plunged in a hotbed.

NIEREMBERGIA.

All the species should be treated in the same manner as *Petunia linearis*, for which, see Vol. II., page 219.

NERIUM.

N. splendens and *oleander* are both very fine plants, and require to be potted in very rich soil, say equal parts of heath mould, rich loam, and leaf mould, or very rotten dung ; the plants should, if convenient, be placed in a little heat in spring to bring them into flower ; they are very readily increased by cuttings of half-ripened wood, which should be taken off in April, placed in vials of water instead of soil, subjected to a brisk moist heat, or hung up in the stove, and afterwards be potted in the above soil. The *N. odorum* should be kept in a warm part of the greenhouse, because it is more liable to be affected by cold than either of the other species ; but, in other respects, treated the same as *splendens* and *oleander*.

OXYLOBIUM.

These plants should be treated in the same way as *Gompholobium*, *Hovea*, and other New Holland plants of similar habit.

PIMELEA.

P. decussata is the handsomest species of the whole genus ; it should be kept in a very airy situation in the greenhouse, potted in sandy heath mould. The plants

must not be allowed to flag for want of water, neither should they be overwatered, either of which are usually fatal. Cuttings of the young wood taken off in April, planted in pots of sand covered with a bell-glass, and plunged in a gentle heat, will strike root very freely.

PENÆA.

P. SQUAMOSA. A remarkable plant with rose-coloured flowers; it is very scarce, and is generally considered difficult to keep. The great nicety is in watering; if not well drained, and there is the least stagnation of water, the plant is soon seriously injured, if it does not totally perish. A good soil for it is equal parts of leaf mould, heath mould, and sandy loam. Cuttings of half-ripened wood planted in pots of sand, plunged in a gentle hotbed, and covered with a bell-glass, will quickly strike root.

PETUNIA.

For the culture of *Petunia*, see Vol. I. page 7; and Vol. II. pages 173, and 219.

PROSTANTHERA.

P. LASIANTHUS. This is very handsome, but the flowers are remarkably fugitive; it should be potted in a mixture of equal parts of sandy loam and heath mould, and should stand in an airy part of the greenhouse. Cuttings of half-ripened wood planted in pots of soil, and plunged in a gentle heat, will readily strike root.

PELARGONIUM.

The beautiful varieties of this extensive genus are so numerous, and the names so arbitrary, that any attempt at giving a list would be quite superfluous, they are all very beautiful and very easy of culture; the general particulars of which may be stated as follows:—

1. All the species and varieties which are natives of the Cape of Good Hope, require the shelter of the greenhouse; but, with a few exceptions, all will flourish in the open borders during the summer months.

2. The tuberous rooted kinds should all be potted in a mixture of equal parts of light turfy loam, heath mould, rotten dung, and sand. They also require particularly well draining, and when not in a growing state they must be kept perfectly free from water; but at the seasons of growth and flowering they require a good supply.

3. All the tuberous rooted kinds are propagated by a division of the roots during the season of their torpidity.

4. The herbaceous species and varieties will thrive in any light rich soil, and are usually propagated by cuttings of both the stems and roots, also by seeds.

5. The succulent kinds should be potted in the same soil as the tuberous rooted ones. They must be well drained, as recommended above, and require but little water at any time, but especially during the winter months.

6. All the shrubby kinds are of the most easy growth. A soil composed of two parts of sandy loam, two parts well rotted dung, one part heath mould, and one part fine sand.

7. They are propagated most readily by cuttings of the half-ripened wood any time, either in spring or summer. The best way, if convenient, is to prepare a gentle hotbed, place a frame over it, and cover it with about six inches of old bark

from a pine-pit; plant the cuttings in thimble pots or not larger than 60-s, placing a cutting in the centre of each pot, using the same soil as recommended for the old plants; water them, and afterwards plunge the pots up to the rim in the tan, put on the lights, and shade them from the sun for the first day with a mat. Afterwards fully expose them to the sun, and give no air except the sun be very powerful; but keep them well watered, and in little more than a fortnight they will have made good roots, and be ready to pot off.

8. The best time for potting is in February, when the plants are beginning to grow, and immediately after they have done flowering.

9. During the time they stand out of doors in the summer months, never allow them to be exposed to the full effects of the sun at mid-day, and never allow them to flag for want of water.

10. Never take the plants out of the house before the second week of May, and never allow them to stand out later than the first week of October. And previous to their being brought into the house again, take off some of the surface soil from each of the pots, and top-dress them with the compost recommended above.

11. Both before the plants are taken out, and after they are brought again into the house, give as much air day and night as the weather will permit; but on no account expose them to the effects of frost, which would inevitably destroy them.

12. During the months of April, May, June, July, and August, they require abundance of water, and two or three times in a week it is advisable to water them overhead. But before April, it is not well to wet the leaves at all; and after August they must receive a less quantity of water, and the soil must be allowed to become quite dry before any be administered.

13. The most difficult months to preserve *Pelargoniums* healthy are November, December, and January. During these months, the floor on which they stand should be kept dry and clean, and the soil in the pots rather dry than otherwise. All dead leaves must be carefully picked off, and as much air given as the season will allow; and should the house become very damp, a little fire to dry it up is very beneficial.

14. From the beginning of May to the beginning of September always water the plants in an evening; but, from the beginning of September to the beginning of May, water them in the morning after the sun has risen, that the dampness may be dried up before night. In winter this rule must be particularly attended to.

15. Always sow the seeds of *Pelargoniums* as early as convenient after being ripe, by which means a year is gained in the growth.

16. Many persons who have no greenhouse to preserve these plants in during the winter months, are much at a loss how to safely dispose of them till the following spring. As there are usually a greater quantity propagated for furnishing the borders than can be conveniently placed in the house windows, there are several ways of preserving them, of which we give the following:—

17. At the end of September, or not later than the first week in October, take up the roots of all the Cape species of *Pelargoniums* which are growing in the borders, shake the earth away from the roots, and cut all tender and succulent

wood; fix a common frame in a warm situation, fully exposed to the sun, place a foot thickness of soil round it to prevent the frost from making an entrance, make a dry bottom of broken stone, and lay about a foot thickness of dry sand, in which plunge the roots in rows, as thick as they can be conveniently placed, cover them with lights, and with mats whenever there is danger of frost. If the cultivator possesses no frame a box will answer the purpose, placing the plants close together, and setting the box in the window of a shed or other room, where light is admitted, giving them no water until the following March; and, by the second week of May, they may again be planted in the open border, where they will grow vigorously and flower very finely.

18. Another way of preserving them is, to take them up from the borders on the approach of winter, to shake the soil from the roots, and hang them up in a cellar, or other dark room, not affected by changes of weather, until the season of planting out again in May. When planted out, let them be sheltered from the light and sun for a day or two, and afterwards gradually exposed, as they become strong.

19. Perhaps as good a way as any is to raise a quantity of young plants, in preference to taking the old roots up; to do this successfully, take off in September or October as many cuttings as will be necessary for the next year's use, and plant them in a light soil, under a hand-glass, on a warm south border. Shelter them a while until they have begun to grow, which will be in little more than a week; in winter, be careful not to overwater them; keep them clean from dead leaves; cover them safely with a mat in frosty weather; give them air in favourable weather; and, when the weather becomes fine in the spring, gradually expose them, until they will bear the open air; after which, plant them out in the places appointed for them. If it is not convenient to plant them under a hand-glass, use a flower-pot for the purpose, giving a good drainage, by half-filling the pot with broken potsherds, and afterwards placing it in the window of a house, or any other convenient place, until the following spring.

20. If the time of taking off the cuttings should chance to be prolonged until the frosts have nipped the plants, if not very severely cut, they may still be propagated; it will be observed, that although the plants appear to be killed, there is usually at the extremity of each of the branches a piece about an inch or more long which appears perfectly fresh and green; let these ends be taken off and planted as speedily as possible, or they will quickly perish for want of nourishment.

PROTEA.

For the successful culture of this genus, see Vol. I., page 231.

PODOLOBIUM.

P. TRILOBATA should be treated precisely in the same manner as *Gompholobium*, &c.

PULTENÆA.

These species require the same treatment as the last.

POLYGALA.

A very pretty genus of easy growing plants, requiring to be potted in a soil composed of two parts heath mould, one part rotten leaves, and one part very light

loam. The plants should always stand in an airy part of the greenhouse. Cuttings of the tender wood, slipped off when about two inches long, and planted in pots of fine clean sand, under a glass, and placed in a cucumber frame, or other situation where they will receive a brisk heat, will very shortly grow. As soon as they are rooted pot them off, and place them again in the frame for a short time, until they begin to grow.

PUNICA.

P. NANA. This plant is seldom seen in flower in our collections, although under most cultivators' care it grows very freely; perhaps this deficiency may be accounted for by the plants being constantly kept in the greenhouse. For successful management it is indispensable to introduce this species, in the spring months, into a good brisk heat, either of a plant stove, pine pit, or cucumber frame, until it has made wood; after which, gradually expose it to a cooler air, until it will endure the greenhouse, and in general it will flower very freely. The soil most suitable is composed of two parts of rich light loam and one part heath mould. The pots should be well drained. Cuttings of the ripe wood, planted in pots of soil or sand, under a glass in September, if set in a cool dry place in the greenhouse through the winter, and in March plunged in a brisk heat, will strike root very freely.

ROELLIA.

R. CILIATA. A very beautiful little plant, of rather short duration, being very liable to damp off in winter. It requires to be potted in a mixture of three parts sandy heath mould and one part rotten leaves, and set in a very dry and airy part of the greenhouse, close to the glass. Cuttings of the tender wood slipped off, and planted in pots of fine sand under glass, and placed in a rather dry heat, will strike root freely.

RHODODENDRON.

R. ARBOREUM with its varieties. See Vol. I. page 101, Vol. II. page 98, and Vol. III. page 64.

SPHENOGYNE.

S. ODORATA and *PILIFERA* are both of common culture, growing very freely in any light rich soil, and are easily increased by cuttings of half-ripened wood, planted in pots of soil.

SALVIA.

S. FULGENS is a most beautiful species, usually grown in the open air, in the summer months planted out in beds, where it makes a most splendid show. It is very easily propagated by cuttings of the half-ripened wood, planted either under a hand-glass, or in pots; they grow quicker if placed in a little heat.

S. SPLENDENS is more tender than the last; it is apt to become very unsightly in winter if overwatered; the best way is to be very sparing of water,—to set the plant in a warm, and dry, but very airy part of the house. Early in spring introduce the plant into a brisk heat, where it will make fine shoots, and show flower finely, when it may be removed to the greenhouse. Propagation is performed by cuttings planted in pots of soil and placed in a cucumber frame.

STENANTHERA.

S. PINIFOLIA. A very elegant shrub, flowering from September to January; but the flowers are very fugitive. It is a native of New South Wales. A soil

composed of very sandy heath mould and light loam suits it well; it is very impatient of water, the pots must therefore be well drained with potsherds, the general treatment is much the same as that of Cape heaths; exposure to hot sunshine is always injurious. Propagated by cuttings of half ripened wood, planted in sand, under a bell-glass, with a dry heat; it also produces seeds, which should be sown as soon as ripe.

STENOCHILUS.

S. MACULATUS. This plant should be planted in sandy heath mould, and be placed in a very airy part of the greenhouse. It is propagated by cuttings of half-ripened wood, planted in sand under glass, and placed in a gentle heat.

SENECIO.

S. ELEGANS PLENA should be grown in light rich soil, and cuttings planted in pots of soil, and placed in a cucumber frame, strike root very freely.

STYPHELIA.

S. TUBIFLORA. This plant belongs to *Epacrideæ*, for the culture of which, see Vol. I. page 53.

TEMPLETONIA.

T. GLAUCA grows to a much finer size if planted out in the pit of a conservatory, than when in a pot. It grows freely in a mixture of equal parts of loam and heath mould. Cuttings of half-ripened wood, planted in pots of sand under a glass, and placed in a gentle heat, will grow, although with difficulty.

T. RETUSA has very slender branches, and though not a climber, is nevertheless a beautiful plant to train against a trellis in the greenhouse. It should be planted wholly in peat, and cuttings treated as those of the *T. glauca*.

TECOMA.

T. CAPENSIS. For the culture of this, see Vol. II. page 86, on *Bignonia Capensis*.

USUAL SEASONS OF FLOWERING.

Flowering in February.

FLOWERS YELLOW.	FLOWERS SCARLET.
Acacia dealbata.	Epacris grandiflora.
	FLOWERS ROSE-COLOURED.
	Epacris impressa.

Flowering in March.

FLOWERS SCARLET.	FLOWERS WHITE.
Beaufortia decussata.	Anthocercis viscosa.
— carinata.	Pyrus floribunda.
— speciosa.	
Corræa speciosa.	FLOWERS BLUE.
— pulchella.	Hovea Celsii.
Lechenaultia formosa.	
— multiflora.	FLOWERS ROSE-COLOURED.
Stenochilus maculatus.	Helichrysum proliferum.
	— spectabile.
FLOWERS PURPLE.	Mirbelia dilatata.
Dracæna stricta.	Penæa squamosa.
Hovea pannosa.	Styphelia tubiflora.
— purpurea.	
Melaleuca squamea.	FLOWERS YELLOW.
Nierembergia filicaulis.	Daviesia cordata.

Flowering in April.

FLOWERS YELLOW.

Gompholobium venustum.
— *latifolium.*
— *grandiflorum.*
— *setifolium.*

Pultænea stricta.
— *palacea.*

Cassia pulchella.
Acacia prænsans.
Bossia microphylla.

Lalage ornata.
Liparia spherica.
Sphenogyne odorata.
Oxylobium arborescens.

FLOWERS BLUE.

Hovea villosa.
Prostanthera violacea.

FLOWERS ORANGE AND YELLOW.

Chorizema nana.
— *rhombea.*

Linum flavum.
Oxylobium retusum.

FLOWERS PURPLE

Petunia linearis.

FLOWERS SCARLET.

Bouvardia versicolor.
Brugmansia bicolor.
Calothamnus quadrifida.

FLOWERS BLUE.

Roellia ciliata.

FLOWERS WHITE.

Prostanthera lasianthos.

FLOWERS SCARLET.

Crassula coccinea.
— *versicolor.*
Fuchsia macrostemon.
Callistemon scabra.

FLOWERS ROSE-COLOURED.

Pimelea decussata.

FLOWERS SCARLET AND RED.

Stenochilus maculatus.
Gardoquia Hookeri.

FLOWERS WHITE.

Hakea linearis.

FLOWERS YELLOW.

ecoma Capensis.

FLOWERS PURPLE.

Boronia serrulata.
— *denticulata.*
Polygala grandiflora.

FLOWERS SCARLET OR RED.

Templetonia glauca.
Metrosideros speciosa.
— *semperflorens.*
Dillwynia glycinifolia.
— *pungens.*

FLOWERS ROSE-COLOURED.

Chorizema Henchmanni.
Indigofera incana.
— *australis.*
Lachnæa purpurea.

Flowering in May.

FLOWERS WHITE.

Rhododendron album.
— *arborescens fimbriatum.*

FLOWERS SCARLET AND RED.

Fuchsia gracilis multiflora.
— *tenella.*
— *globosa.*
— — *major.*

Salvia fulgens.
— *splendens.*
Rhododendron arborescens.

Flowering in June.

FLOWERS YELLOW.

Callistachys lanceolata.
Podolobium trilobatum.

FLOWERS PURPLE.

Senecio elegans plena.
Crotalaria purpurea.
Jacaranda tomentosa.

FLOWERS ROSE-COLOURED.

Stenantha pinifolia.

Flowering in July.

FLOWERS PURPLE.

Burtonia conferta.

FLOWERS BLUE.

Lightfootia Loddigesii.
Lupinus Cruickshankii.

Flowering in August.

FLOWERS ROSE-COLOURED.

Crowea saligna.
Fuchsia arborescens.
Nerium splendens.
— *oleander.*
— *odorum.*
Salvia involucrata.

Flowering in September.

FLOWERS PURPLE.		FLOWERS WHITE.
Fuchsia venusta.		Cratægus glabra.
FLOWERS YELLOW.		FLOWERS SCARLET AND RED.
Bosseæ heterophylla.		Escallonia rubra.
Sphenogyne pilifera.		Punica nana.

OPERATIONS FOR SEPTEMBER.

ACACIAS, &c., may now be increased.

BORONIA PINNATA may still be propagated in a pot of sand, under a hand-glass. They must be watered and shaded with great caution, or the cuttings will damp off.

CLIANTHUS PUNICEUS now propagated, will make good plants for next season; the flowering shoots should be rejected in selecting the cuttings.

COLUMNÆA SCANDENS, &c., cuttings will now succeed if put in sand, under a bell-glass, in a moderate cool part of the propagating house.

FUCHSIAS. Cuttings of these plants may now be put in. They will require air occasionally while in the striking pot, on account of the young members being liable to damp off, if the glass be not sometimes removed.

HYDRANGÆA HORTENSIS now in full bloom, should have a good supply of water, to enable it to support and retain its colours.

ILICIAM FLORIDANUM, ANISATUM, &c., may now be propagated from cuttings with success.

KENNEDYA DILATATA, &c., may now be put in.

MANETTIA CORDIFOLIA may, with success, be propagated any time this month. See Vol. II. pages 85, 87. 267.

NERINE SARNIENSIS, or GUERNSEY LILY, should early this month (if not done as recommended last month) be potted, observing, while growing, to give them a good supply of air and water; other autumnal bulbs may now be planted.

PORTULACA GILLIESII. Young plants of this handsome species should be raised this month; they strike freely from the leaf, or a small portion of the stem in a pot, with a very little heat under a hand-glass. Obtain a good stock before winter sets in, for they are apt to go off during that season.

PRIMULA, AURICULA, &c., now sown, and the young plants kept through the winter, will next season make strong plants for flowering the succeeding spring.

SCOTTIA DENTATA. Cuttings of this plant may now be propagated. See Boronia.

TREVIRANA COCCINEA should now be supplied with plenty of water.

TROPÆOLUM PENTAPHYLLUM, &c., now propagated, will make pretty plants for next season's use. They will strike tolerably free in a pot of sand, carefully watered under a hand-glass.





HELICONIA BRAZILIENSIS.

(BRAZILIAN HELICONIA.)

CLASS.

PENTANDRIA.

ORDER.

MONOGYNIA.

NATURAL ORDER.

MUSACEÆ.

GENERIC CHARACTER.—*Spathes* universal and partial. *Calyx* none. *Corolla* three petals, superior. *Nectary* two-leaved. *Stigma* one. *Capsule* three-celled, with one-seeded cells.—*Encyclopædia of Plants*.

SPECIFIC CHARACTER.—An evergreen stove perennial, from seven to eight feet high, smooth. *Stem* clothed with the sheathing bases of the leafstalks. *Leafstalks* cylinder-shaped, shiny, two feet long. *Leaves* from ten inches to two feet in length, ovate or oblong-lanceolate, acute, marked with parallel and oblique nerves; upper surface approaching a velvety green, beneath paler. *Flower stem* something shorter than the leaves, furnished at the end with five or six spreading boat-shaped and taper-pointed deep reddish spatha, attached to a zigzag rachis. *Perianth* of six linear lanceolate acute segments. *Stamens* perfect, rather longer than the perianth, and inserted at the base of its inner segment. *Pistil* germen inferior tapering downwards, three-celled. *Style* the length of the filaments, slender, swollen in the middle. *Stigma* obtuse.

IN the natural order *Musaceæ*, to which the genus *Heliconia* belongs, is found plants which, for their rich and noble foliage, gigantic stature, and surpassingly splendid flowers, may be classed amongst the noblest and most useful objects in the vegetable world; for, while in point of ornament it embraces the genus *Strelitzia*, esteemed for the resplendent orange, scarlet, and white blossoms its different species display, it possesses, in point of usefulness, the genus *Musa*, so much prized in the tropics for the wholesome food some species produce.

The species represented in the accompanying plate, is one of extraordinary beauty, and when seen in a state of nature, presents one of the richest ornaments known to our collections, the brilliant scarlet being so admirably blended and distinct; and when viewed in contrast with the green of the leaves, is seen in its highest perfection; and what, in addition to the above, recommends this species to the notice of all lovers of exotic plants, is the length of time the flowers remain perfect; upwards of a fortnight the detached specimen from which our drawing was made remained, with a slight exception, unimpaired, being only now and then during that time supplied with fresh water.

It is a native of Brazil, and was added to our collections some years ago. In Dr. Hooker's Ex. Fl. t. 190, a figure and accurate description of it is given.

To our much valued friend Mr. Cooper, of Wentworth, our warmest acknowledgements are due for his kindness in putting into our hands so handsome a species. In the rich assemblage of exotic plants cultivated there, it produced its flowers about April last.

All the species of *Heliconia* require a strong stove-heat, and to grow them well, a good rich loamy soil with a little sand must be used; good drainage is indispensable in potting the plants; when growing, they consume a good deal of water, still, at all times, it is well to administer it with caution. Young plants are obtained by divisions at the roots.

The generic name indicates the affinity of this genus to the genus *Musa*.





Calluna vulgaris.

COLLINSIA BICOLOR.

(TWO-COLOURED COLLINSIA.)

CLASS.
DIDYNAMIA.

ORDER.
ANGIOSPERMIA.

NATURAL ORDER.
SCROPHULARINÆ.

GENERIC CHARACTER.—*Calyx* five-lobed, persistent, inferior. *Corolla* monopetalous, five-parted. *Capsule* two-valved, bifid.

SPECIFIC CHARACTER.—A hardy annual, growing about eighteen inches high. *Leaves* lanceolate, sinuated, and smooth, of a dark green colour. *Flowers* numerous, in whorls. *Corolla* of four lobes, the two upper ones nearly white, the two lowermost of a fine deep blue, throat white. *Stamens* four, united, equal. *Style* filiform.

THIS is another of the many beautiful hardy annuals sent to the Horticultural Society of London, by the late Mr. David Douglas, from California.

The drawing was taken from a plant which flowered beautifully in His Grace the Duke of Devonshire's collection, at Chiswick, about May last.

In the Botanical Register, page 1734, Dr. Lindley gives the following accurate hints on this very handsome plant. "It grows from a foot to a foot and a half high, and produces its pretty two-coloured blossoms most copiously in May and June, when it has been sown the previous autumn; if sown in May, it will flower in August and September."

We are enabled to give the following hints from our own observation. When sown in the autumn, where the plants are intended to produce their flowers the succeeding spring, nothing can surpass the richness its masses of cheerful blue flowers present; we have observed it to be almost universally the case with annuals coming from this part of the world (North America), that if allowed to shed their seeds where they are to remain, or be sown very thick in autumn, the effect is very



imposing in comparison with transplanted beds or groups; they also commence flowering as the early bulbs are fading, a season when there very generally exists a scarcity of flowers out of doors for a month. When sown in summer, they do not last long, the generality of their roots being small and fibrous; they are, in consequence, apt to get scorched by the sun; but when sown in autumn or very early in the spring, they allow the season to get sufficiently advanced for substituting in their stead Geraniums, Petunias, &c.; these, if well selected, will last the whole season. We kept some plants of *Collinsia bicolor* in pots during the winter, and they looked exceedingly lively through the months of February and March, a desirable addition at that season.

The genus is dedicated, by Dr. Lindley, to the name of Mr. Zaccheus Collins of Philadelphia, a gentleman of talent as a Botanist and Mineralogist. The specific name *bicolor* alludes to the two distinct colours in the flower, viz., the dark blue of the lower lobes of the corolla, and white of the upper.



Mimulus Cardinalis

MIMULUS CARDINALIS.

(SCARLET-FLOWERED MIMULUS.)

CLASS.

DIDYNAMIA.

ORDER.

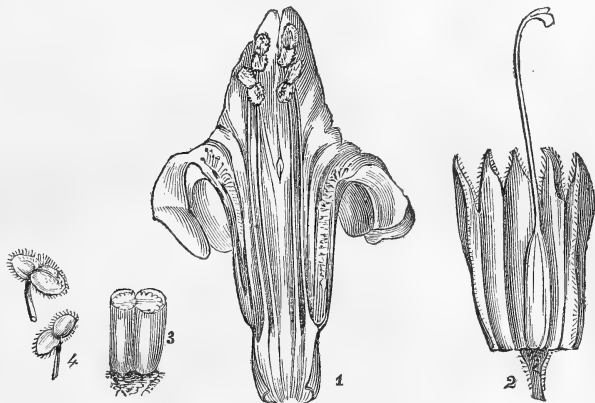
ANGIOSPERMIA.

NATURAL ORDER.

SCROPHULARINÆ.

GENERIC CHARACTER.—See Vol. I. page 29.

SPECIFIC CHARACTER.—A hardy herbaceous plant, growing from four to six feet high. *Stem* erect, breaking into many loose, partially upright, axillary branches, the strongest from the four or five lowermost buds, covered with long delicate glutinous hairs. *Leaves* opposite, of a yellowish green colour, and of an oblong-ovate figure, irregularly toothed from a little more than the middle of each to the point at the base, connate, somewhat attenuated and quite simple, also covered on both sides with hairs less glutinous than those on the stem, and shorter. *Flowers* produced on long, nearly erect, solitary, axillary footstalks, hairy like the stem. *Calyx* alike hairy, strongly ribbed, terminated by five acute regular teeth, covered on the outside with dark velvety markings towards the base. *Corolla* consisting of four oblong reflexed lobes, each of which is notched at the end and feathered with marginal hairs, the two side ones bent back so as to press not unfrequently on the sides of the calyx; the lowermost lobes the broadest, and likewise reflexed, internally, of a bright scarlet, and externally of a reddish yellow colour. *Throat* streaked and mottled with dark pink upon a yellow ground, opposite the front lobe are two rows of glandular hairs which extend from the orifice nearly to the base of the tube. *Stamens* four, two of which are the longest, erect, springing from near the base of the corolla. *Filaments* pale yellow. *Anthers* yellow and hairy. *Style* erect, concave, terminated by a kind of two-valved stigma; each valve, when the flower is sufficiently matured, opens apparently for the reception of the pollen. The whole plant emits a slight smell of musk.



DESCRIPTION OF CUT.—1. Corolla laid open; 2. The Calyx laid open to show the pistil and seed-vessel; 3. Section of the seed-vessel; 4. Anthers magnified.

SEEDS of this fine plant were forwarded from California to the London Horticultural Society twelve or eighteen months ago, by our friend Mr. Douglas, to whose unwearied exertions in the cause of botanical science we are indebted for many choice and beautiful plants now so conspicuous in our collections.

In the autumn of 1835, we obtained a plant and a little seed from the above society; and having succeeded in raising a few seedling plants, it became our chief object to

preserve them safe until the following spring. To our satisfaction, the plants grew rapidly, and shortly sent out four or five strong branches from the axils of the lowermost leaves; perceiving them to be luxuriant growers, attention was paid to potting and to the selection of soil, so that nothing was wanting to render them healthy and strong. Thus progressing, they continued without intermission from the early part of February until the beginning of June, when the plants had reached the height of seven feet from the base of the stem to the extreme point of the leading shoot; and in diameter, the lowermost branches measured six feet, and the whole was from top to bottom thickly decorated with their singularly formed and pretty bright scarlet blossoms; these elegantly contrast with the pale yellowish-green leaves, which produce an effect that cannot but prove a valuable accession to our flower-garden ornaments.

Plants plunged in a border in the flower-garden about May last, are now upwards of five feet high, and being in full bloom, make a good show; still we may expect them to depart on the approach of winter, and their place to be supplied with newly raised seedlings. Such as are supplied with plenty of pot room and soil composed of loam and leaf-mould, and the pots allowed to stand in feeders constantly full of water, besides supplying them well in the usual way on the surface of the soil, will grow and flower beautifully and make noble ornaments; or young plants, raised in the autumn or early in the spring, will, if planted in the flower-garden, make a gay appearance in the autumn.



We observe the colours of the flowers to vary on different plants; the flowers of some being of a rich bright scarlet, while others assume a more dull and yellow aspect; also, in an instance or two, have we met with flowers having a very dark eye: from these minor differences, the attentive amateur may expect to raise some handsome hybrids, by crossing with *M. roseus*, *variegatus*, &c. It is most probable that in the winter, it will require a dry part of the greenhouse, possibly a cold frame may be too low a temperature for it to be safe in.

The generic name will be found explained at page 30, Vol. I. The specific name *cardinalis* was given by its lamented discoverer, on account of the brilliant scarlet of its flowers.

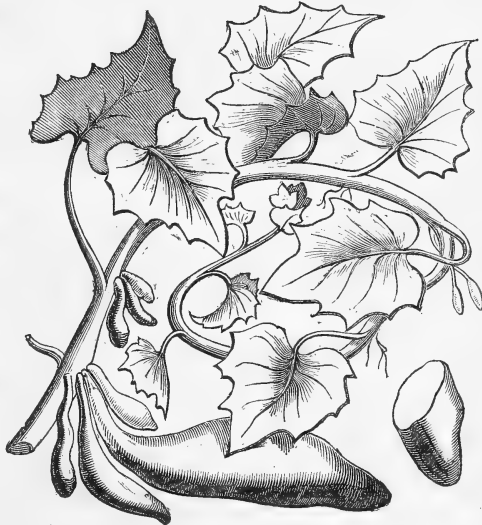
Our drawing was made from a plant that flowered in the greenhouse at Chatsworth about July last.

ON ESCULENT ROOTS *.

THE SWEET POTATO, (fig. 1,) was introduced into England, by Sir Francis Drake and Sir John Hawkins, in the middle of the fifteenth century. Attempts were made to naturalise it in this country, but it was found too tender to thrive in the open air through an English winter. Gerarde cultivated it in his garden in 1597, where it flourished during the warm season; but as soon as it was assailed by the cold weather it drooped, and perished in the ground. The roots were, at that time, imported into England in considerable quantities from Spain and the Canaries, and were prized as a confection rather than as a nourishing vegetable. A more abundant supply of fruit of home growth has caused the *batata* gradually to decline in favour, and for many years it has ceased to be an article of importation into this country.

This plant is an herbaceous perennial, which sends out many trailing stalks, extending six or eight feet every way; these are round and of a pale green colour; at each joint roots are put forth, which, in a genial climate, grow to be very large tubers, so that from a single plant forty or fifty large roots are produced. The leaves are angular, and stand on long petioles. The flowers are purple. Several varieties of this plant are to be found in the different countries where it is cultivated, and which differ from each other in size, shape, and the flavour of the roots. The *batata* is propagated by laying down the young shoots in the spring; indeed, in its native

Fig. 1.

Sweet Potato.—*Convolvulus batata*.

climate, it multiplies itself almost spontaneously; for, if the branches of roots that have been pulled up are suffered to remain on the ground, and a shower of rain falls soon after they have been broken off, their vegetation will recommence. The roots are sweet, nourishing, and though rather insipid, of no unpleasant flavour. In warm climates the *batata* is of very abundant growth and easy of propagation; and, therefore, it is matter of surprise that, in Brazil, the mandioc should be cultivated in preference as food for the negroes, the *batata* being raised more as a luxury for the planter's table. In the national garden at Paris, this plant is raised in a hotbed, whence it is transplanted at the latter end of the spring into the open ground, and

* Extracted from the volume of the "Library of Entertaining Knowledge," devoted to vegetable substances used for the food of man.

treated like the common potato. In favourable seasons a tolerable crop is produced; and hopes are entertained that, in the course of some years the *batata* will be so far acclimatised as to be the object of successful field culture in the south of France.

The YAM, *Dioscorea sativa*, is a native of the east; and is supposed to have been transplanted thence to the West Indies, as it has never been found growing wild in any part of America; while in the island of Ceylon, and on the coast of Malabar, it flourishes in the woods with spontaneous and luxuriant growth. It is very extensively cultivated in Africa, Asia, and America, for its root, which is nutritious and of good flavour, and is used either roasted or boiled as a substitute for bread. This root is farinaceous, and resembles the potato, but is of a closer texture.

Some yams were first brought into this country from the West Indies, in 1733; and they are now occasionally imported, more, however, as an article of curiosity than of commerce.

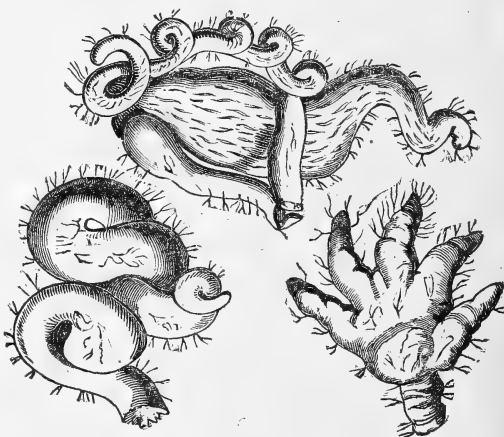
The yam is a climbing plant with tender stalks, of from eighteen to twenty feet in length; it has smooth, sharp-pointed leaves, on long footstalks, from the base of which arise spikes of small flowers. The root is flat and palmated, about a foot in breadth, white within, and externally of a dark brown colour, almost approaching to black.

The WINGED YAM, *Dioscorea alata*, is another species very generally cultivated: its roots attain to a larger size, being frequently about three feet long, and weighing about thirty pounds. Both these kinds are cultivated like the common potato. They are usually planted in August, and are fit for use in the November and December following. Brown* directs that the roots for planting should be cut so as to leave a small portion of skin to each piece; "for by that alone," he affirms, "they germinate, the roots having no apparent buds or eyes, but casting out their weakly stems from every part of the surface alike."

Fig. 2.

Yam.—*Dioscorea sativa*.

Fig. 3.



Different sorts of Yam root.

or eyes, but casting out their weakly stems from

* History of Jamaica.

When dug out of the earth, the roots are placed in the sun to dry, and are then put into sand or casks, where, if guarded from moisture, they may be preserved a considerable length of time, without being in any way injured in their quality.

ON THE RELATION OF VEGETATION TO SEASONS*.

REPOSE from growth seems periodically necessary to most plants, and accordingly we find there is no country without a season of growth and a season of rest, whether they are called by the name of winter and summer, or rainy season and dry season. This fact is connected with several considerations, to which it may be necessary to advert. What is about to be said has reference to the seasons of the north of Europe; it is left to the reader to apply the observations to the climate of other parts of the world. In the winter we commonly say that all vegetation is at rest;—that the sap ceases to flow, new parts to be developed, and old parts to enlarge; but this is not exactly true. It appears, from experiment, that vegetation is at all times more or less active, and that we ought to say, that it is languid in winter, and energetic in the spring and summer. The fact of many plants retaining their leaves, of others swelling their buds, and of all forming an addition more or less considerable, to the points of their roots during winter, sufficiently attest the movement of the fluids, and the existence of vegetation even at that season. This is further proved by the well-known fact, that trees planted in the autumn become turgid with the fluid absorbed by their roots during winter; and M. Biot has succeeded in obtaining a flow of sap from certain trees, even in the midst of that dreary season. But whatever power of attracting sap by its roots a plant may possess during winter, it is obvious that it has little means of parting with any part of it again by evaporation at that period of the year; so that during the winter the whole of the tissue must acquire a state of turgidity, which will go on increasing till the leaves and new branches are developed to carry off the sap, or decompose and assimilate it.

This turgid state is eminently favourable to rapid growth when vegetation once resumes its activity; for it acts as a force from behind, which continually presses on the new born tissue and causes it to expand. It is well known that, after very long winters, or when a plant has been prevented, by artificial means, from shooting at its usual season, its branches and leaves are developed with extraordinary vigour; a circumstance which has been ascribed to *accumulated irritability*, but which is, in fact, owing to the turgid state of the tissue. It is when the temperature of the

* Extracted from the part *Botany*, published under the superintendence of the Society for the Diffusion of Useful Knowledge, attributed to the pen of Dr. Lindley.

air is raised sufficiently high, that the vital energy of a plant is excited, and buds are developed with their leaves. Light has certainly nothing to do with this phenomenon, although it afterwards colours and consolidates the young parts; for if a plant be exposed to an elevated temperature in total darkness, its growth takes place as if in the light. The common experiment of introducing into a hothouse the branch of a vine growing in the open air is another familiar illustration of this fact; the temperature of the hothouse excites the buds into action, they immediately attract fluid from beneath them, and thus the whole system is put in motion, although the vine-plant may be exposed beyond the house to the inclemency of the winter. De Candolle has proved, by a simple experiment, that in such a case as this the fluid consumed by the young leaves is really attracted out of the earth, and not absorbed from the atmosphere of the hothouse. If you select a tree with two principal branches, and two principal roots to correspond with them, and adapt to each root in the earth a bottle of water, you will find that the bottle which corresponds with the branch in the hothouse will be quickly emptied, while that which is connected with the branch in the open air remains nearly full. It may be supposed that in a natural state of things, a corresponding effect is produced upon the roots by the warmth of the surface of the soil, and that they also are stimulated into activity; but it is doubtful whether this amounts to much, if, indeed, it is of any importance whatever; for provided only the earth is not frozen, it appears from experiments that heat applied to the branches alone, is quite sufficient to determine and maintain all the phenomena of growth. Once set in action, the branches of a tree go on growing according to the laws which have now been explained. They and their leaves, by degrees, gain their full growth: bark and wood separate, and cambium is deposited between them; the leaves decompose the fluid they receive, send their fibres down within the substance of the branches, gradually secrete the substance peculiar to each peculiar species, and transfer them to the bark; and, finally, becoming clogged at every pore, by the earthy and carbonaceous matters that are deposited during the process of digestion and evaporation, cease to act efficiently as leaves.

In this state they are principally protectors of the young buds in their axils. If the latter have been formed very early, they are so far advanced in their growth by the middle of summer, that they have already arrived at the same state as later formed buds will be in at the commencement of another spring. Acted upon by the temperature of the season, they develop and call into play the same class of phenomena as took place in the beginning of the spring; the sap which had become languid as the leaves had become impotent, is again stimulated by a rapid movement, and is secreted anew in increased quantity. This is indicated by what gardeners call the running of the bark, that is to say, the bark and wood of exogens separate spontaneously as in the spring, depositing a layer of cambium between them. Thus are formed what are called midsummer shoots, which only occur in plants which bud very early in the spring.

In the course of the autumn, the increased and prolonged heat and drought complete the destruction of the leaves, which had already begun to languish; and their vital actions are destroyed by the quantity of foreign matter with which their

cells, their stomates, their vessels, and their intercellular passages are filled, and they drop off. At this time a plant is nearly exhausted of its fluid sap, the watery portion of which it had exhaled during the summer and autumn, all the parts are dry and solidified, so as to suffer little from evaporation; and the roots themselves, having for some time been but feebly in action, are firm and not liable to be easily broken; every thing is in a state of languor, and prepared to renovate the enfeebled powers of the plant by the slow and gradual absorption of fluid during the winter.

It is in the autumn, then, that both theory and practice direct us to transplant trees. At that season every circumstance concurs to render the operation practicable; but if we wait till the spring, the spongelets, which form during the winter, are likely to be destroyed, and many causes may call the already turgid plant into growth before the roots have had time to form new spongelets.

The seasons of growth and repose are so essential to vegetation, that, as is familiar to all gardeners, it is scarcely possible to prevent plants preparing themselves for their annual changes, whatever artificial means may be employed to maintain them in a uniform atmosphere, and to protect them from those causes which usually bring about repose: and this is certain, that if we succeed in preventing the cessation of growth, the plants which are the subject of the experiment uniformly, in the end, fall victims to the forced and unnatural condition in which they are maintained.

If annual changes in their condition be requisite to the well-being of plants, so in like manner are the diurnal changes of light and darkness. If plants were kept incessantly growing in light, they would be perpetually decomposing carbonic acid, and would, in consequence, become so stunted that there would be no such thing as a tree, as is actually the case in the polar regions. If, on the contrary, they grow in constant darkness, their tissue becomes excessively lengthened and weak, no decomposition of carbonic acid takes place, none of the parts acquire solidity and vigour, and, consequently perish. But under natural circumstances, plants, which in the day become exhausted by the decomposition of carbonic acid, and by the emptying of their tissue by evaporation, repair their forces at night by inhaling oxygen copiously, and so forming a new supply of carbonic acid, and by absorbing moisture from the earth and air, without the loss of any portion of it. Such being the case, we must conclude that plants grow chiefly by day, and this is conformable to the few observations that have been made on the subject. Oneyer found the stem of a *Belladonna* lily, and plants of wheat and barley, grow by day nearly twice as fast as at night; and Mulder states that he has arrived at a similar result in watching the development of other plants.

GARDEN IMPLEMENTS.

THE tools (implements) used in the application of art to the practice of cultivation in the various branches of gardening are so numerous, and with many, comparatively speaking, little understood, that we have thought a page now and then of our Magazine devoted to an explanation of them, with their application, could not prove otherwise than useful to many of our readers. Not to say but every one who has noticed the routine operations in the kitchen garden, and the less uniform performances in the flower garden, must be well aware of the purposes to which the spade, the rake, and the dibble are appropriated, and that the hand-shears and slashing-hook are justly necessary to keep the thorn hedge bordering the park, and box-edging encircling the flower-clump, within due limits; but there are others less generally known, whose uses are not so frequently called for, still all are essential to the efficient accomplishment of the purposes to which they apply. Nor does it appear more necessary to point them out by letter-press explanations, and wood-cut illustrations, in order that each may be properly understood, than to bring before a numerous body of readers (friends to horticulture) the many and great improvements that have been effected, in many instances, in the design and make of tools, by which the labour of the operative has been lessened, and the work carried on with proportionately increased facility.

In the early or primary age of gardening, when looked upon solely as an art of culture, and that of the simplest character, we necessarily conclude that the number and character of the required implements would be very limited and simple; merely consisting of a few tools for breaking and regulating the surface of the ground for the reception of the seed, and a few implements for thinning and otherwise dressing the trees or storing their produce.

How different is the present state of the art! how infinite in size and shape are the agents employed! how equally diversified are the shades of culture to which they apply, all tributary assistants tending to advance that noble end—improvement in horticulture and its sister agriculture; pursuits which every day are absorbing more and more of the attention and study of the British population.

The following diagrams representing implements in common use for horticultural purposes, may be classed under the head "*Tools*;" which also comprises the hoe, rake, &c. Diagrams of the latter will afterwards be given.

Fig. 1. The spade, as will be seen in the diagram, consists of two parts, viz., the blade, which is made of plate iron and which is riveted on the upper part; the handle, which is usually made of ash-timber, for which purpose choice is made of the root-cut, as being more tough and durable. They are employed little or more in almost every performance in the garden, but their chief use is to break up the soil previous to planting or sowing it; they are also indispensable agents in making up edgings, as well as for many purposes of husbandry, &c. They are manufactured of different sizes, generally with a flat blade, although semicircular and perforated blades are sometimes prized, on account of the soil, if adhesive, freeing from them

better; and are known amongst gardeners, &c., by their numbers, which run from 2 to 6, but 3 and 4 are the common sizes used in gardening.

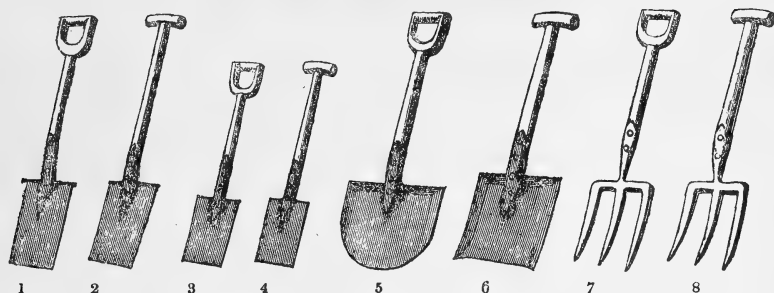


Fig. 2 varies in nothing from the preceding, except the part at the top, which is invariably occupied by the hand. Instead of being one piece of wood, as fig. 1., the cross piece at the top is mortised on the upright, and is by some people much preferred to the former, being considered more ready and easy.

Figures 3 and 4 are in shape and material the same as the former, size excepted. This sized spade is proper for using in digging flower borders, the size of the blade and proportionate smallness of the handle rendering them more adapted for using among the plants, &c. in the flower-garden.

Figures 5 & 6 are two species of shovel, both useful in gathering up loose soil, &c., in the flower or kitchen-garden. The heart-shaped or pointed-mouthed one (fig. 5) is most frequently used for lifting earth out of trenches, &c. The square-mouthed one (fig. 6) is best adapted for the ordinary purposes in gardening.

Figures 7 and 8 are two species of fork used chiefly for moving the earth where roots are very thick, or taking up roots; such as potatoes, &c., or for stirring up the earth about the roots of fruit trees, or in the flower-borders where flowering bulbs, &c., are concealed under ground, also very useful where couch-grass, &c., prevail. The bottom part or prongs are made of wrought iron, and may be either made round or flat, both ways will be found useful for different purposes. The handles are made as before noticed for the spades.

HIBISCUS ROSA SINENSIS.

CHINESE ROSE HIBISCUS.

THEY who know this charming plant, and particularly they who possess it, or any of the varieties, must, we conceive, congratulate themselves and acknowledge that it is almost, without exception, one of the most beautiful of nature's productions. We meet with it but very rarely, and some consider that its delicate and tender foliage (so we have read, however) render it liable to be defaced by the "aphis." True it is that the shrub is subject to the green fly, which seizes upon the extremities of the young shoots; but we never saw a plant that with us sustained less injury from its assailants; and these indeed are readily displaced by fumigating with tobacco, or by the application of a little Scotch snuff.

The catalogue in the *Encyclopædia of Gardening*, p. 586, enumerates *one species*, and four varieties, namely,

H. ROSA SINENSIS, single rich red ; from East Indies in 1731.	
<i>rubro plenus</i> —double red ditto	—
<i>flavo plenus</i> —double buffed . . . ditto	—
<i>variegatus plenus</i> —double striped . ditto	—
<i>luteus</i> —double yellow ditto	1823

and there we read that, “although its native country is unknown, it is spontaneous, as well as cultivated, both in China and Cochin China, and that it is so common in the latter that they have entire hedges of it in their gardens.” “The variety with double flowers is most frequently cultivated, both in the east, and in European hothouses ; the plant is indeed rarely seen with single flowers.”

The latter is a circumstance much to be lamented, for the single greatly surpasses any of the varieties with *full* flowers (*double* is an incorrect mode of expression). The blossom is large, mallow-shaped ; the petals, while not fully expanded, folding over one another in rather a spiral direction, of a gorgeous deep scarlet colour, approaching to crimson, each having a large spot or patch of a deeper hue near its base. The figure and splendour of the flower, the tubular column supporting the stamens, and the five velvety stigmas, altogether present a structure of fascinating beauty. The only defect which we have to complain of is the fugitive nature of the blossoms ; they seldom continue open more than thirty-six hours, even in the shade ; but then the succession is numerous during the three summer months, and the rich glossy foliage is durable, and elegantly disposed.

The reader who can refer to the first volume of this work, page 77, will find, in the figure given of *Hibiscus Lindlei*, a faint resemblance of *Hibiscus Rosa Sinensis* ; but the former, though a handsome plant, is much inferior to the latter.

All the varieties are of ready culture, easily raised by cuttings, either of the younggreen wood of the spring, or of the half-ripened wood of the summer ; but that which renders the plant extremely estimable is its hardihood of constitution. It was long believed that the temperature of the stove during winter (from 55 to 65 degrees) was indispensable to its safety ; but our experience during the very severe and fitful winter of last year (1835), taught us a useful and gratifying lesson. We possessed six or seven plants of the single red and full-flowered buff ; our house underwent an alteration, which required the absence of all the stove plants during several weeks. They were exposed, unavoidably, to severe attacks of sudden frost, and finally were deposited in a cellar. Some perished ; but although the *Hibiscus* lost their leaves, we perceived a firmness of the wood, and a healthy hue on the bark, which led us to entertain hope. At the turn of the year the plants were taken into the vinery, and after remaining torpid a few weeks, evinced signs of vegetation. The leaves gradually expanded, and have subsequently attained a size and richness of verdure far surpassing those of former seasons.

Pure loam is recommended for the shrubby *Hibiscus* ; but loam is an ill-applied term. Our treatment consists in striking some young plants, by cuttings of rather young wood, taken off a little below a leaf, and inserting two buds in the soil composed of a light sandy loam and heath mould, in equal portions, having first formed

holes in the soil close to the side of the pot, and poured a little of the best white sand into the hole. The cutting being thrust into this prepared hole, and its lower extremity made tight and secure, the hole is filled with sand and the earth pressed around the plant as compactly as possible. Water is given directly, and subsequently from time to time ; and if a little bottom heat be applied, and the pot be covered with a striking glass, roots will, in most instances, be produced in a month or six weeks. If only one cutting be placed in a small sixty, enclosed in another deeper pot, a flat piece of glass may be used to cover the top ; and as soon as roots are formed, and the plant begins to grow, it may be removed to a larger sixty, containing a soil composed of *two parts* of the loam from couch-grass roots decayed, and one part of black heath or moor soil. In this mixed soil the plants grow and bloom freely, and may be cut back just before the period of growth in the following year.

During winter, a heat of 45 degrees affords ample security ; and the torpidity, or state of repose thus induced, tends to add vigour and beauty to the future development of foliage and flower.

ON THE CULTURE OF THE CAMPANULA PYRAMIDALIS.

THIS species of *Campanula* is deserving of the attention of every admirer of free flowering plants, and, if well grown, will amply repay, when in bloom, by the brilliancy of its colours and the long period it continues to display them, for all time and trouble spent upon it. The following directions, adduced from experience, if attended to, will not fail to realise the most sanguine expectations. In the spring of the year, offsets or cuttings are taken off the large plants intended for flowering, and planted in any shady part of the garden till they have struck root ; they are then taken up and planted in rows in a very fine shady situation, where they should remain twelve months from the following March. Some are taken up in the first March after this planting, but are seldom strong enough to flower very large ; if they are not planted in a shady place, they generally flower the first year ; they are then taken up with good balls and put into pots from ten to twelve inches in diameter ; and those who have the advantage of a green-house, should occupy the coolest part of it with them, exposed, however, to as much light and air as possible ; but where there is not the convenience of a green-house, the windows of the dwelling-house would answer very well, or the most sheltered part of the garden, until the month of May, when the plants ought to be put under cover. The soil most suitable for them is good rich loam and rotten dung, well pulverised ; they are not only greatly aided in strength, but also in the brilliancy of their colours, by the richness of the compost they grow in. It is to be regretted that this plant has long been in a measure neglected ; by the above treatment it will commonly attain seven, and occasionally eight, feet high, and be equally strong in proportion. A leading stem eight feet high, with a mass of laterals, when in flower, forms a most beautiful pyramid, in some instances measuring twelve feet in circumference.

REMARKS ON THE NATURAL ORDER COMBRETACEÆ.

IN noticing this natural order we except the genus *Combretum*, having in Vol. I. page 14, treated of it at some length. We proceed to make a few remarks on the remaining genera, in doing which we shall also endeavour to point out the merits and other necessities peculiar to each genus, in a manner that we trust the readers of the Magazine of Botany will at once see, without further reference, every particular connected with the subjects brought within the limits of this the Myrobaian tribe. The order *Combretaceæ* is called the Myrobalan tribe. To attempt an improvement of the definitions of this order, further than that already given by Dr. Lindley in his excellent introduction to the natural arrangement, would be vain indeed; we therefore borrow a copy of the essential characters as found in the above work, page 66, which may be read as follows. *Calyx* superior, with a four or five-lobed deciduous limb. *Petals*, arising from the orifice of the calyx alternate with the lobes, sometimes wanting. *Stamens*, arising from the same part, twice as many as the segments of the calyx, very rarely equal to them in number, or three times as many; *filaments* distinct, subulate; *anthers*, two-celled, bursting longitudinally. *Ovarium* one-celled, with from two to four ovules, hanging from the apex of the cavity; *style* one; *stigma* simple. *Fruit* drupaceous, baccate, or nut-like, one-celled, by abortion, one-seeded, indehiscent, often winged. *Seed* pendulous, without albumen; *embryo* with the radicle turned towards the hilum; *plumula* inconspicuous; *cotyledons* leafy; usually convolute, occasionally plaited. Here ends the definitions as given by Dr. Lindley; and in this place it may not be amiss to notice the situation of this order in the natural arrangement, for the assistance of the reader; and moreover, that we may not deviate from our promise made at the commencement, viz. to give a fair representation of it. The order *Combretaceæ*, then, belongs to the first grand division or class of the vegetable world, called vasculares, from *vas*, a vessel, which in its general meaning may be understood to embrace all flowering plants, at the same time is meant all plants with spiral vessels. But, in order that we may arrive at a right understanding of this (at first sight) perplexing subject, it will be necessary to show that this grand division, or first class, is divided into two *subclasses*; to the first of which, *Exogenceæ*, in allusion to such plants the seeds of which have two cotyledons, better known by the compounded terms, Dicotyledonous plants, from *dis*, two, and *Kotyledon*, (two Cotyledons), belongs the natural order *Combretaceæ*. Here we are informed, without extending our inquiries, that the plants in the order under consideration produce flowers furnished with perfect sexes; from this it follows as a sure result that they will, if left to the rule of nature, mature seed. Each perfect seed when ripe, will be capable of separation into halves (similar to peas when dried and split for cookery). Each of these halves, in the language of the Botanist, is called a cotyledon; so that we understand, in consequence of the seed thus naturally dividing, that the plant producing it must be *dicotyledonous*: and being *dicotyledonous*, a question arises whether the seed before separation from the plant was inclosed in a pericarp or whether it was destitute of such; and finding it furnished with one, we ascertain

that it belongs to the first tribe, *Angiospermeæ*, this term being used to designate all plants whose seeds are provided with a covering or seed-vessel, this covering or seed-vessel being called a pericarpium. If the seed had not been so enclosed, the order would have been placed by the side of those brought under the second tribe, *Gymnospermie*. Here another perplexity is presented to the inquiring mind, for as yet it appears that we have adduced nothing that can lead to a ready acquaintance with the situation of this order in the natural arrangement—the truth is, after what has been said, the inquirer who has attentively followed in the track we have so indifferently beaten out, must see much encouragement to persevere in the acquirement of an extended acquaintance with this amusing and profitable pursuit—but to stop here would be unkind indeed; our next aim is to come more close and direct to the subject. After what we have advanced to show that this order makes one of the many in the first great class *Vasculares*, or flowering plants, and belongs to the first subclass *Exogenæ*, or dicotyledonous plants; and by its seed being enclosed in a pericarpium, to the first tribe *Angiospermie*; we shall be able to trace the remaining portion of our task by the simple dissection of a single flower. The first question is, whether the flower has distinct petals; and finding it to be the case, we learn that it is polypetalous, and placed under the head *Polypetaleæ*. Next we turn our attention to the stamens, for the purpose of observing the situation of these parts; are they *hypogynous*?—that is, situated below or adhering to the ovarium—and finding they do not accord with either of these, we satisfy ourselves that we cannot find this order under the head *Thalamiflora*. Our next step then will be whether the stamens are *perigynous*, that is to say, are they inserted in the calyx, or in the disk of the calyx; finding them according to the latter, leads us with certainty to look for the term *Calyciflora*, (referring to the stamens being placed on the calyx, and compounded from *calyx* and *flos*). We might add more still: from what has been advanced, it is hoped the anxious reader will be able, upon procuring and examining a flower and afterwards the fruit of any of the species in this order, to ascertain correctly to what portion of the natural arrangement it belongs, and not only the constituents of this one order, but any other bearing the same essential differences. Having acquired thus much, he will at once see the grand aim and noble object of the natural system, which will create a thirst for a more minute acquaintance, that can only be satiated by frequent investigation and the application of the different parts of a flower to the characters given of them in the work noticed at the commencement of this article, and another by the same author, viz. *Ladies' Botany*. These works are at once instructive and pleasing, and possess many advantages, particularly to those desirous of making the natural system of botany their study.

Having given, we hope, such a view of the situation of the order as will enable our readers to know its proper place, we shall next endeavour to advance something we trust equally profitable on the plants contained in it. The order contains, excepting *Combretum*, upwards of twelve genera; these comprise a good number of species, some of which, as the *Quisqualis Indica*, are among the most splendid of our climbing plants, and in the tropics are said to adorn the trees from which their twiningly disposed branches hang, with garlands of white, crimson, and yellow

flowers; they are mostly, if not all, natives of the tropical parts of India, Africa, and America. The medicinal properties are, for the most part, astringent. *Bucida Buceras* yields a bark that possesses a good portion of the tanning principle, for which purpose it is sometimes used. The expressed juice of *Terminalia venix* is used by the Chinese as a substitute for varnish; its principle is caustic, and its exhalations are said to be dangerous, but whether it is or is not may be doubted. In Brazil one of the plants called *mangroves* (*Conocarpus racemosus*) yields bark which is in good use at Rio Janeiro for tanning. *Terminalia Benzoin* produces the medical resin of that name, viz., *Benzoin*. Several species produce eatable nuts, the expressed oil of which has the unusual property of not becoming rancid. The genera are divided into two tribes, viz., *Terminaliæ*, *Combretæ*, and are thus arranged,

Tribe 1. *Terminaliæ* includes those plants whose flowers are destitute of petals (*Apetalous*).

BUCIDA.—Flowers furnished with both stamens and pistils, but destitute of petals. Calyx with a pitcher-shaped five-toothed limb.

TERMINALIA. Flowers usually from abortion, some male, some female, and others hermaphrodite (Polygamous). Calyx bell-shaped, five-cleft. *Apetalous*.

AGASITHANSES. Flowers males on one plant and females on another plant of the same species (Dioecious). Calyx five-parted.

PENTAPTERA. As in *Terminalia*, except the fruit which is furnished with five or more projecting perpendicular wings.

CONOCARPUS. Flowers same as *Bucida*, except in the number of stamens, which vary from five to ten, while the other is invariably provided with ten.

Tribe 2. *Combretæ* includes those flowers which have only from four to five petals.

QUISQUALIS. Flowers same as *Bucida*. Calyx five-cleft, tubular.

BUCIDA. The species of this genus may be grown in a mixture of loam and peat in the stove; there is nothing remarkable in any except the *Buceras* before spoken of, and in addition to what has been there said, we may notice the derivation of the genus, which is taken from *βους*, an ox, referring to the ripened fruit which bears some resemblance to the horns of that animal. Naturally it grows in low wet places in Jamaica, where it is remarkable for its crooked slender branches, and the densely-tufted disposition of its leaves. The timber is reckoned good, and the bark is used as before noticed.

TERMINALIA. Whether all the species at present referred to this genus properly belong to it is doubtful, on account of its being divisible by the fruit, and this in many being totally unknown. They are trees and shrubs, with alternate leaves usually crowded at the top of the branches, which is the most remarkable feature the plant has, and perhaps in no one is it seen more conspicuously than in the species *Angustifolia*. The genus is called *Terminalia* on account of the leaves growing in bunches at the ends of the branches. They require the heat of the stove, and may be grown in loam and peat. Cuttings will strike freely, if not deprived of their leaves, in sand, under a hand-glass, plunged in a moderate heat.

AGATHISANTHES. *Javanica* is the only described species of this genus, and may be grown as recommended for *Terminalia*. In Java, it is found on the

highest mountains, and is termed by the natives *Hirung*. In growth, it exceeds 100 feet, and is crowded with oblong, entire, coriaceous leaves; the solitary or twin-stalked flowers, spring from their axes. The generic name refers to the flowers being disposed in pedunculate heads.

PENTAPTERA. This genus is so named from *penta*, five, and *pteron*, a wing, in consequence of the fruit being furnished with five wings. This is a doubtful genus, and it is very probable that many of the species, when better known, will be found referable to the genus *Terminalia*. They are large trees, growing in the East Indies from forty to fifty feet high, and produce flowers of a whitish-green colour. For culture, &c., see *Bucida*.

CONOCARPUS. The fruit produced by the plants of this genus are said to resemble the *cone* of an *alder*; hence the generic name. Of the species said to belong to it, four are mentioned by Mr. Loudon, in his *Hortus Britannicus*; two in the *Encyclopædia of Plants*, by the same author; while the author of the "*General System of Gardening and Botany*" enumerates seven, one of which, he says, is doubtful, not being sufficiently known. They are plants of no particular interest or beauty. *C. erecta* is a timber tree in Jamaica, growing nearly thirty feet high, and producing pale yellow flowers; the remainder are shrubby, varying in height from six to eight feet. They require stove heat, and will grow well in sandy loam or loam and peat; cuttings planted in sand will root with freedom if they be covered with a glass, and the pot plunged in a moderate bottom heat.

QUISQUALIS. We have in this genus some species which for elegant flowers and graceful appearance are equal to the best species of *Combretum*. The best are *Q. Indica* and *pubescens*; these plants, in short the whole genus, are great favourites with the admirers of stove plants. Few plants are grown with less difficulty, and few repay more liberally; their flowers are of a delicate changeable colour, varying from white to red. A plant of the *Q. Indica* continued in a free state of flowering upwards of two months in the stove at Chatsworth last season; and being trained to a trellis on the back wall, a good opportunity was afforded it for displaying its almost numberless pretty blossoms, which were so delightfully fragrant, that every one, on approaching it, was so pleased with the agreeable scent the flowers exhaled, as to render it the object most frequented in the house while in this state.

Good loam, mixed with a small quantity of peat, will suit them well; in the stove, they require a great deal of light, and to be frequently syringed all over to keep off insects, &c.; in a growing state they consume a good deal of water, but when they are not in a growing state this element must be given with much caution. Strong and well-established plants grow and flower well if planted in a good border in the stove, and the branches conducted up the rafters or other convenient and suitable place. Cuttings put in a pot of fine sand, and covered with a hand-glass, will root freely, if they have a little heat.

The genus takes its name from the Latin words *quis*, who, and *qualis*, what kind, in consequence of its being uncertain to what class and order the genus belonged when the name was assigned it.

There are a few more genera placed in this order, but as we judged they would be of little interest or profit to the readers of the magazine we omit to notice them.

NEW AND RARE PLANTS,

FIGURED IN THE THREE LEADING BOTANICAL PERIODICALS AND FLORISTS' MAGAZINE FOR AUGUST.

BOTANICAL MAGAZINE. Edited by Sir William Jackson Hooker, LL.D., &c., each number containing eight figures; beautifully coloured 3s. 6d., plain 3s.; and corresponding letter-press.

BOTANICAL REGISTER. Edited by Dr. Lindley, each number containing eight figures; beautifully coloured 4s., plain 3s.; and corresponding letter-press.

BRITISH FLOWER-GARDEN. Edited by David Don, Esq., Professor of Botany in King's College, each number containing four plates; beautifully coloured 3s., plain 2s. 3d.

FLORIST'S MAGAZINE. Edited by Mr. F. W. Smith, each number containing four elegantly coloured plates, with occasionally two or more plants on each plate. Large Quarto, 4s., Octavo 2s. 6d. The letter-press is pleasing, and the hints on culture very correct.

Of the above plates, we have only selected such plants as are new or very rare; and only such new ones, as are handsome and deserve to be extensively cultivated. For descriptions and figures, reference must be made to the works themselves.

CLASS I.—PLANTS WITH TWO COTYLEDONS (DICOTYLEDONEÆ).

PROTEACEÆ.

DRYANDRA PTERIDIFOLIA. Fern-leaved Dryandra. This remarkable and variable plant was raised from seeds, collected by the late very indefatigable botanic voyager, Mr. W. Baxter, during his first visit to the south-western shores of Australia in 1823. The plant flowered for the first time in Britain last spring, in the Royal Gardens at Kew, and it is believed to be the only living species in Europe. It exhibits a dwarf bushy shrub, with short flexuous branches, clothed with a whitish wool. The leaves crowded and pinnatifid. Flowers in terminal heads surrounded by coloured leaves of a faint honey-scent, and the colour may be said to be a mixture of white and orange. The soil recommended for proteaceous plants is good fresh loam, with which, if stiff, must be added a portion of sand, so as not to admit of its being retentive of water; they require to be potted and watered with great care, and at no time allow any quantity of soil to lay on the top roots. *Bot. Mag.*, 3500.

COMPOSITÆ.

COREOPSIS FILIFOLIA. Thread-leaved Coreopsis. An interesting species of this somewhat handsome genus, with very narrow foliage, most like that of *C. tenuifolia*. Seeds of it were sent to this country by Mr. Drummond, from Texas, in the spring of 1835. It is an annual, and quite hardy, producing its yellow flowers about August and September. *Bot. Mag.* 3505.

ERICÆ (THE HEATH TRIBE).

RHODODENDRON ARBOREUM, var. UNDULATUM. Wavy-leaved Tree Rose-bay. A bushy evergreen shrub, with purple branches, raised by Mr. William Smith some

years ago, from seeds of a hybrid of *R. arboreum* that had been fertilised by some other species, most probably *R. Ponticum*. It surpasses all the other varieties in the deep-toned purple of its blossoms, which are also remarkable for their singularly waved appearance. It flowered in the beginning of May, and is probably quite hardy; sandy peat and loam will suit it best. *Brit. Fl. Gard.*, 341.

COMPOSITEÆ.

ISMELIA MADEIRENSIS. Madeira Ismelia. A rather pretty shrubby species with yellow flowers, recently introduced by Mr. Webb, from Madeira. It is not quite hardy, therefore requires to be protected in a frame or in the greenhouse in winter; it is increased by cuttings, and established plants should be grown in a light sandy soil. *Brit. Fl. Gard.*, 342.

THE PEA TRIBE (LEGUMINOSÆ).

LATHYRUS MAGELLANICUS. Cape Horn, or Lord Anson's Pea. An extremely beautiful perennial plant, producing fine light blue flowers in great abundance. It is quite hardy, and well worthy of a place in every flower-garden; in such a situation it produces its flowers about the month of June. Its original introducer was Cook, of His Majesty's Ship Centurion, commanded by Lord Anson, in 1747, since which time, native specimens have been found by Sir Joseph Banks and Dr. Solander, at Port Desire, in the Straits of Magellan. It being a maritime plant, a little common salt may be beneficial as a stimulant. Increased both by cuttings and seeds. *Brit. Fl. Gard.*, 344.

THE ROSE TRIBE (ROSACEÆ).

CRATÆGUS PLATYPHYLLA. Broad-leaved Thorn. A European hawthorn, elegant in foliage and handsome in general appearance; in its growth it spreads its graceful bending arms on all sides, the leaves are a deep rich green, and, after the common hawthorn, is flowerless; it is loaded with large masses of snow-white blossoms, retaining its vigour till late in the autumn, so that the rich colour of its blackish purple fruit is not impaired in effect by the fading tints of the foliage. *Bot. Reg.*, 1874.

CRATÆGUS PYRIFOLIA. Pear-leaved Thorn. A native of rocky woods in North America, from Pennsylvania to Carolina, flowering in June. It is one of the largest leaved species of the genus, with a good deal of beauty in the spring, when the leaves are green and the branches loaded with flowers, but less valuable as an ornament of autumn scenery, because, although the tints of the orange-coloured fruit and of the foliage are pleasing, yet the tree has an open inelegant head, and the leaves drop off, while the fruit remains behind adhering to the branches: it is known from the other species by the strong plaits which give the leaves something the appearance of being furrowed from the midribs towards the margin. *Bot. Reg.*, 1877.

THE EVENING PRIMROSE TRIBE (ONAGRARIÆ).

GODETIA VINOSA. Wine-stained Godetia. An extremely pretty species with pale pink flowers, introduced by the Horticultural Society from California. It is quite hardy, and, among other annuals about July and August, it makes a pretty show. *Bot. Reg.*, 1880.

THE FIG-WORT TRIBE (SCROPHULARINÆ).

CALCEOLARIAS, VICTORIA and POLYPHEMUS. Both these varieties are new and desirable flowers; those of the former are of an orange brown, having the under petal freckled with small spots; the flowers of the latter are of a deep transparent blood-colour, very beautiful. Accompanying this, and the other plates, are some pleasing directions for culture, &c. *Fl. Mag.*, 13.

THE CHICKWEED TRIBE (CARYOPHYLLÆ).

CARNATIONS. BERTRAND, PRINCE DE NASSAU, BIJOU DE CLERMONT. The first, a bizarre rose, is a flower of great brilliancy, the petals are not crowded but are admirably arranged, of a fine texture, and very broad. The centre is well filled out; in short, few flowers of this class have more claims upon the attention of the amateur.

The *Prince de Nassau*, a purple flake, is a free flowering plant; the white of the flower is very remarkably pure, and the purple flakes are exceedingly rich and brilliant, and equally disposed through the flower.

Bijou de Clermont, a scarlet bizarre, is another flower of exceeding merit. The colour is fine, rich, and vivid, and the chocolate colour with which it is bizzarded is remarkably decided and bold. *Fl. Mag.*, 13.

THE FIG-WORT TRIBE (SCROPHULARINÆ).

MIMULUS WHEELERI. Wheeler's Monkey-flower. This is a bold flower; and by the rich colour by which every lobe to the base of the limb is covered, and the bright yellow of the throat, and the small glands and bright spots therein, a fine contrast is created, which places the flower very high among the many *Mimuluses* that now decorate our flower gardens. *Fl. Mag.*, 13.

CLASS II.—PLANTS WITH ONE COTYLEDON (MONOCOTYLEDONEÆ).

SPIDER-WORT TRIBE (COMMELINÆ).

TRADESCANTIA VIRGINICA, *fl. albo.*, VIRGINIAN SPIDER-WORT. White-flowered variety. A variety of the old species with purple flowers, so common in our gardens. The present variety, which has nearly white flowers, is far from being so common, still it is quite as hardy, and is deserving a place in all collections. *Bot. Mag.*, 3501.

THE ORCHIS TRIBE (ORCHIDÆ).

RODRIGUEZIA PLANIFOLIA. This deliciously fragrant plant is distinguished from *Gomezia (Rodriguezia recurva)*, by Professor Lindley, on account of the even (not striated) surface of its leaves, and the entire (not emarginate) lip. It flowers freely, in which state it remains a long time, and is in the orchideous house a very interesting plant. It is a native of Brazil, and flowers in February. *Bot. Mag.*, 3504.

THE LILY TRIBE (LILIACÆ).

FRITILLARIA RUTHENICA. Russian Fritillary. A very singular species, producing flowers of a purple and yellow colour mixed. It was received from the Berlin garden in August 1835, and flowered this spring in the greenhouse, at Cannonmills, near Edinburgh. It no doubt is quite hardy. *Brit. Fl. Gard.* 343.

THE ORCHIS TRIBE (ORCHIDÆ).

BIFRENARIA AURANTIACA. Orange-coloured Bifrenaria. This pretty epiphyte is a native of Demerara, where it is found in great quantities. In its growth and whole habit it much resembles the *Oncidiums*, but differs in the structure of the flower; in which particular it agrees with the genus *Bifrenaria*, which before only consisted of one species, viz. *B. atropurpurea*. The colours of the flowers are a deep orange, mottled with deep brown spots. The treatment usually applied to *Oncidiums* and *Maxillarios* seem to suit it. Flowers of it were first produced from a plant in His Grace the Duke of Devonshire's stove at Chiswick, about the month of October, 1835.—*Bot. Reg.* 1875.

THE CORN-FLAG TRIBE (IRIDEÆ).

IRIS ALATA. Small-winged Iris. This species was found by Desfontaines in moist places near Algiers, flowering in the winter. According to Bivonia, a native of sterile meadows and rocks in Sicily; Clusius speaks of it as a common plant in Portugal and Spain, at the foot of hills, especially about Antequera and Cordova, flowering in January and February. In this country it flowers a little later; to this state it may be brought by planting it in an open border, and affording a slight protection in bad weather with a mat or other material. Its flowers have a pleasant smell, between that of the hyacinth and the elder.—*Bot. Reg.* 1876.

THE LILY TRIBE (LILIACEÆ).

SCILLA CUPANIANA. Cupani's Squill. The bulbs of this plant were sent by the Hon. William Strangways, from Sicily, where they are found wild near Villafrata, Ogliaastro, and Castrogiovanni. It is quite hardy, and in this country is rather scarce. It flowers about June, in which state the dull purple of the petals contrasted with the bright blue pistils produce a pretty appearance.—*Bot. Reg.* 1878.

THE ORCHIS TRIBE (ORCHIDÆ).

EPIDENDRUM BIFIDUM. Hare-lipped Epidendrum. This remarkable and distinct species of Orchidæ is described as found upon branches of trees in the West India Islands, especially St. Christopher's, St. Bartholomew's, and Santa Cruz. Messrs. Loddiges, with whom it flowered in 1835, obtained it from Tortola. The flower is quite pretty; the sepals are a light green, slightly blotched near the extremity with pink; the column is white, except at the point, which is yellow: these, contrasted with the bright yellow of the petals, and flesh colour of the lip, rendered the flower rather remarkable. The slit in the lip is a peculiarity which will at all times distinguish this species from all at present known. The general treatment observed in the growth of the other species of this genus will also apply to this.—*Bot. Reg.* 1879.

THE LILY TRIBE (LILIACEÆ).

TULIF, DUTCH CATAFALQUE. This is a flower of much merit, having retained its original and present value, while many others of great merit have excited much interest for a time, and then fallen into the common file. It is of Dutch origin, and is pretty frequent in the collections of this country; still it is rare to witness so fine a specimen as that just figured in the *Florists' Mag.* for July, No. 13.

OPERATIONS FOR OCTOBER.

ATTEND to climbers in the greenhouse, stove, &c.; regulate the greenhouse in other respects; take care not to overwater stove plants; withhold water from dormant bulbs; nourish growing ones by carefully watering, potting, &c. Syringe with due caution, and water with particular care, all newly propagated plants; guard against damp, &c., where propagation is going on. Remove from the flower-garden all unsightly herbaceous plants, but retain all that remain green, remembering that the succession of flowers at this season is not so great as in the summer months. Make preparations, if not already done, for securing a good show in the flower-garden, &c. next spring; this is of the first importance to gardeners; attend to trenching and manuring flower borders when required.

ANEMONES, RANUNCULUSES, &c. Seeds of these may now be sown, if not previously done.

AURICULAS, STOCKS, MIGNONETTE, &c., should now have the protection of a cold frame for preservation through the winter, observing to secure a good drainage at the bottom of the pot for the escape of water, by placing them on coal ashes or other efficient material; expose them at all times when the thermometer is above the freezing point and the weather fine, but keep them close at all times on rainy or very muggy days.

CALCEOLARIAS. The propagation of these may still be carried on.

GERANIUMS (PELARGONIUMS). Desirable kinds of these may still be propagated.

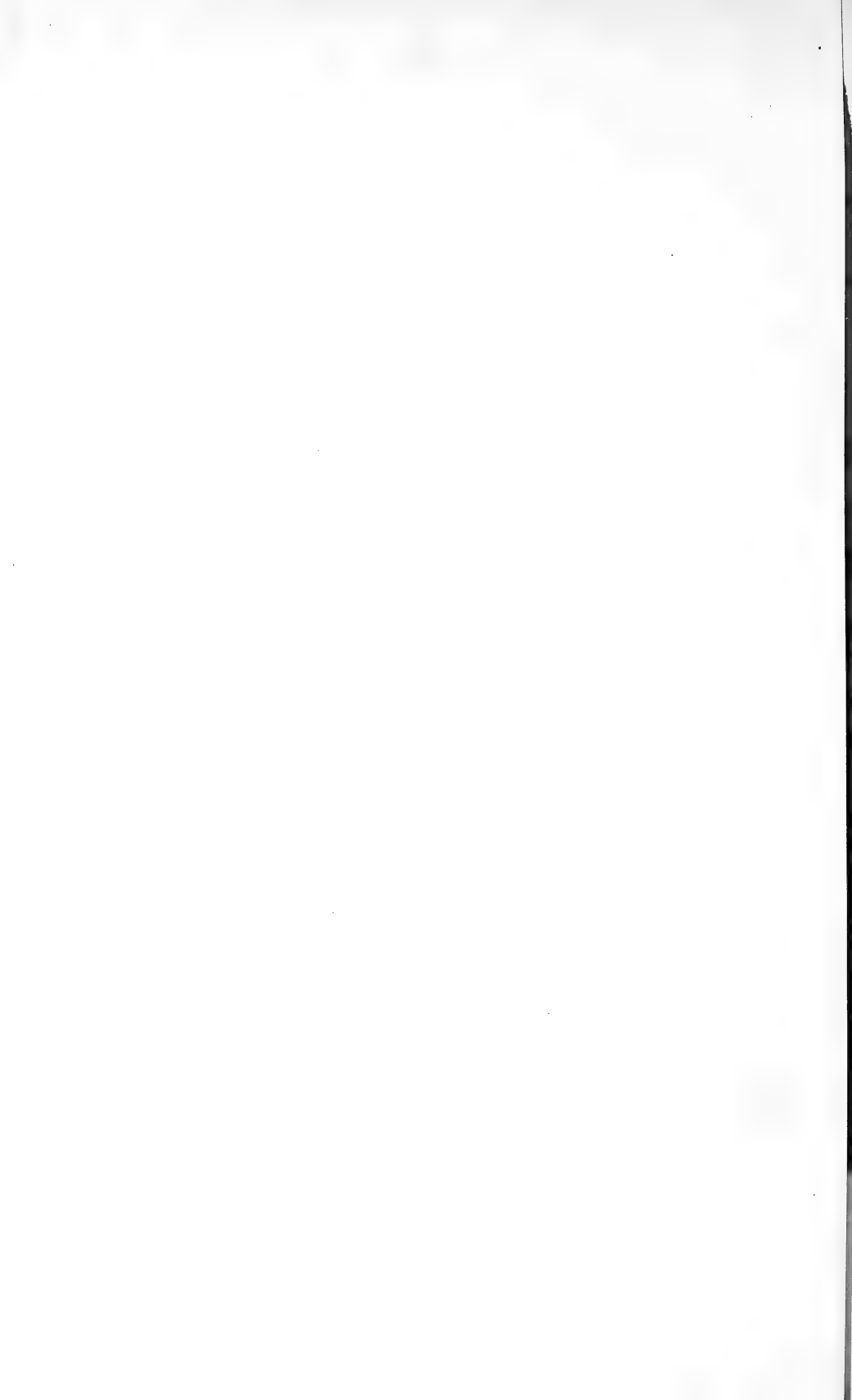
GREENHOUSE PLANTS require now to be attended to, as recommended, Vol. I. pages 138, 219. The quantity of water requisite for them at this season is not so great as has been required for the preceding four months, their exertions being now on the decline.

HYACINTHS, &c. may now be looked over, and the most promising bulbs potted and plunged in a little bottom heat; when they are a little excited take out the pots and place them in a moderately warm but light situation; where the novelty of using water-glasses is practised this is the season for bringing them into use.

SCHIZANTHUS RETUSUS just established in small pots, and intended to stand through the winter; for next season's flowering must be cautiously watered at this season. It is also particularly advisable to water all plants of a similar habit with the utmost caution during the succeeding three months. A little seed of the other species and varieties, such as *pinnatus*, and *pinnatus humilis*, may be now sown, and if carefully attended to during winter, and liberally potted and watered in the spring, they will make a good show.

SWEET WILLIAMS, &c., sown in the spring, may now be planted out.





CLERODENDRUM SPECIOSISSIMUM.

(BEAUTIFUL SCARLET CLERODENDRUM.)

CLASS.

DIDYNAMIA.

ORDER.

ANGIOSPERMIA.

NATURAL ORDER.

VERBENACEÆ.

GENERIC CHARACTER.—*Calyx* five-toothed, bell-shaped. *Corolla* cylindrical. *Limb* five-parted, spreading. *Stamens* four, very long, shooting from between the lobes of the limb. *Fruit* drupaceous, four seeded, with a one-seeded nut.

SPECIFIC CHARACTER.—*Plant*, a branching shrub, about four feet high. *Stem* erect, compressed nearly square, slightly furrowed, covered with very minute pubescence: leaf-stalk long, also pubescent, something swollen at the base. *Leaves* cordate and pointed, margin crenate, upper surface of a dark green, under much paler, clothed on both sides with minute hairs; veining conspicuous. *Flowers* produced in large spreading terminal panicles, of a vivid scarlet colour, each averaging two inches in length.

THIS is one of the finest plants we have had the good fortune to figure; it is far superior in beauty to any of the fine family to which it belongs. The colours are so brilliant that the representation here made falls considerably short of doing it justice; indeed it is beyond the reach of the artist to give a faithful likeness of its colours. Being a plant of easy culture, no collection, however small, ought to be without it.

Messrs. Leucombe, Pince, and Co., of the Exeter Nursery, received the plant from Belgium last year; it flowered profusely in their nursery in August and September. To these gentlemen we are indebted for the opportunity of giving publicity to one of the finest plants we have seen for a considerable time.

A plant received at Chatsworth in September, from Messrs. Leucombe, Pince, and Co., is now, Oct. 20, coming beautifully into flower.

The following particulars respecting this species, we received, some days back, from Messrs. Leucombe, Pince, and Co. "The *Clerodendrum speciosissimum* may be looked upon as one of the greatest acquisitions to our ornamental conservatory, and summer border plants, that has yet been introduced. The plant which furnished the sample of your drawing, is in the house, but we have also a very fine one planted out in the open border: the plant in the house we have treated with a temperature of from sixty-five to seventy-five degrees, with a plentiful supply of water:

it has grown amazingly, and is now a fine plant, four feet high, covered with beautiful luxuriant foliage, and each shoot terminated with large spreading panicles of rich scarlet flowers, each flower two inches long ; and the whole plant having open, all at once, several hundred blossoms. It has now been in this splendid state for more than six weeks, and promises to continue quite as long again. It thrives in equal parts of heath-mould, loam, and vegetable soil, and delights in being frequently washed with the syringe."

Established plants may be obtained of the above nurserymen. Cuttings of the young wood will root freely, if planted in sand or mould, in a moderate heat, under a bell or hand-glass.

The generic name is from *κληρος*, accident, and *δενδρον*, a tree, in reference to the varied effects in medicine by its various species.

The specific name, under which this species was received in this country, is retained, and alludes to the beauty of the blossoms.





*Leptosiphon
androsacae.*

*Leptosiphon
densiflorum.*

LEPTOSIPHON ANDROSACEUS.—1.

(ANDROSACE-LIKE LEPTOSIPHON.)

CLASS.

PENTANDRIA.

ORDER.

MONOGYNIA.

NATURAL ORDER.

POLEMONIACEÆ.

GENERIC CHARACTER.—*Calyx* campanulate of five equal linear acute teeth. *Corolla* funnel-shaped, limb rotate, consisting of five ovate obtuse lobes. *Stamens* five, alternate with the lobes of the limb. *Anthers* oblong.

SPECIFIC CHARACTER.—A hardy annual, growing from ten inches to a foot high. *Stem* taper, round. *Leaves* opposite, sessile, divided near the base into a number of linear, nearly round, segments, assuming the appearance of whorls. *Flowers* terminal, collected into heads; at their base surrounded by a number of floral leaves, resembling in appearance the linear segments of the stem-leaves, from the midst of which arises the tube of the corolla, displaying at top five spreading, oval-shaped lobes, in colour varying from white to pale blue and pink.

THIS pretty annual is a native of California, whence it was introduced to our collections about three years ago by Mr. Douglas.

In the Botanical Register for October, 1834, Professor Lindley makes the following remarks on this plant:—"Although it is perfectly hardy, yet it cannot bear our summer heats, and only flourishes in the spring, or more particularly the autumn, when the sun has lost his power, and the nights are cool with heavy dews. It should therefore either be sown in the autumn, so as to flower early, or in June, in order that it may be ready for blossoming in September."

It thrives in almost any kind of soil, and in point of situation we find one partially shaded the best.

It flowers very freely, and continues to display them a great length of time, so that it is a desirable feature in our collections of hardy annuals. It does not seed very freely, therefore great care is required in collecting it, which should, if possible, be done on a fine dry day. A few plants raised in a sunny situation would be more likely to produce good seed than when sown in one partially shaded.

Both species flowered beautifully at Chatsworth this summer, about the month of June, when our drawing was made.

LEPTOSIPHON DENSIFLORUS.—2.

(THICK-FLOWERED LEPTOSIPHON.)

IN its general appearance, before flowering, this is very like *L. androsaceus*, only it is somewhat gayer in consequence of its leaves being more glandular. When in flower it is very different; its corolla is three times as large, with broader and blunter segments, and with a short, thickish tube, instead of a long and slender one. Its colours vary in the same manner from purple to blue and white, but they are less lively, and are not produced in the same abundance; and it must be considered decidedly inferior in point of beauty*.

The treatment recommended for the preceding species will also suit this.

The generic name alludes to the structure of the corolla, and literally signifies a slender tube.

* Bot. Reg. 125.



Taraxacum purpureum.

SARRACENIA PURPUREA.

(PURPLE SIDE-SADDLE FLOWER.)

CLASS.
POLYANDRIA.ORDER.
MONOGYNIA.NATURAL ORDER.
SARRACENIÆ.

GENERIC CHARACTER.—*Calyx* of five sepals, at their base concave. *Corolla* of five petals, contracted at the base. *Stamens*, many hypogynous. *Anthers* oblong, two-celled. *Ovary* one, globose, furrowed. *Style* in the form of columns, (*columnar*,) surmounted by a broad, leafy, circular, five-angled stigma. *Capsule* globose, crowned by the remaining style and stigma.

SPECIFIC CHARACTER.—*Plant*, a frame perennial growing only a few inches high, with very short leaves, contracted at the top, with the tube protuberant and inflated, and the covering, or wing, or helmet-like appendage, erect, broadly cordate, and now and then emarginate.

A SINGULAR, yet handsome plant, found inhabiting the swamps of North America, whence it was introduced to our gardens many years ago.

The singularity of it consists in the novel form of the leaves, which are of a tubular shape, very similar to the body of a common pitcher, and like it are capable of holding water; and, as has been alleged to prevent the exhalation of the water, each leaf is furnished with a lid or cover, which shrinks and fits quite close over the mouth of the tube in dry weather; thus making a resort in time of drought for birds to drink. Notwithstanding these singularities, which, to the admirer of nature, are of peculiar interest, the plant in the flowering state is very handsome; the flower-stalk rises a foot or more high from the centre of the leaves, surmounted at the top with the flower, which, by a curve near the extremity of the flower-stalk, is reversed, so as to turn the top part of it to face the leaves, seemingly proud of its peculiar formation and gay purple colour.

Although found inhabiting the low swamps in North America about Quebec, Lake Horn, and probably common throughout Canada, and as far north as Bear Lake, and as far south as Carolina, they have not been found to endure the open air in Britain: they are found to do best in a frame in a shaded situation, or in a stove, planted in pots filled with pieces of peat at the bottom, and *sphagnum* or *water-moss* at the top, and the pots placed in pans of water; they also do very well

planted in moss, without pots, in a frame ; but either way they must be kept rather moist and quite shaded. At Chatsworth they are planted in small 48-sized pots, filled with the *Hypnum proliferum* moss, and plunged in a large deep flat filled with the same kind of moss, which is kept quite wet ; thus treated, and enjoying a shaded situation in one corner of the stove, they thrive and flower well. A plant treated after this manner produced the sample from which our drawing was made in the stove at Chatsworth about June last.

The generic name is given by Tournefort, in honour of Dr. Sarrazin, a French physician resident in Quebec : it is called Side-saddle Flower, in allusion to the resemblance of the style and stigma to a woman's pillion.

ON THE CLIMATE OF HOT-HOUSES.

BY PROFESSOR DANIELL, KING'S COLLEGE, LONDON.

THE principal considerations which generally guide the management of gardeners in this delicate department, are those of temperature; but there are others, regarding moisture, which are, I conceive, of at least equal importance. The inhabitants of the hot-house are all natives of the torrid zone; and the climate of that region is not only distinguished by an unvarying high degree of heat, but also by a very vaporous atmosphere. Captain Sabine, in his meteorological researches between the tropics, rarely found, at the hottest period of the day, so great a difference as ten degrees between the temperature of the air and the dew point; making the degree of saturation about seven hundred and thirty, but most frequently five degrees, or eight hundred and fifty; and the mean saturation of the air could not have been below nine hundred and ten. Now I believe that if the hygrometer were consulted, it would be no uncommon thing to find in hot-houses, as at present managed, a difference of twenty degrees between the point of condensation and the air, a degree of moisture falling short of five hundred. The danger of over-watering most of the plants, especially at particular periods of their growth, is, in general, very justly appreciated; and, in consequence, the earth at their roots is kept in a state comparatively dry; the only supply of moisture being commonly derived from the pots. The exhalation of the leaves is not enough to saturate the air; and the consequence is, a prodigious power of evaporation. This is injurious to the plants in two ways: in the first place, if the pots be at all moist, and not protected by tan, or any other litter, it produces a considerable degree of cold upon their surface, and communicates a chill to the tender fibres with which they are lined. The danger of such a chill is carefully guarded against in the case of watering; for it is one of the commonest precautions, not to use any water of a temperature at all inferior to that of the air of the house: inattention to this point is quickly followed by disastrous consequences. The danger is quite as great from a moist flower pot, placed in a very dry atmosphere.

The custom of lowering the temperature of fluids in hot climates, by placing them in coolers of wet porous earthenware, is well known; and the common garden pot is as good a cooler for this purpose as can be made. Under the common circumstances of the atmosphere of a hot-house, a depression of temperature, amounting to fifteen or twenty degrees, may easily be produced upon such an evaporating surface. But the greatest mischief will arise from the increased exhalations of the plants so circumstanced, and the consequent exhaustion of the powers of vegetation. The flowers of the torrid zone are, many of them, of a very succulent nature, largely supplied with cuticular pores; and their tender buds are unprovided with

those integuments, and other wonderful provisions, by which nature guards her first embryo in more uncertain climates. Comparatively speaking, they shoot naked into the world; and are suited only to that enchanting mildness of the atmosphere, for which the whole system of their organisation is adapted. In the tropical climates the sap never ceases to flow; and sudden checks or accelerations of its progress are as injurious to its healthy functions, as they are necessary in the plants of more variable climates, to the formation of those hybernacula which are provided for the preservation of the shoots in the winter season. Some idea may be formed of the prodigiously increased drain upon the functions of a plant, arising from an increase of dryness in the air, from the following consideration. If we suppose the amount of its perspiration, in a given time, to be fifty-seven grains, the temperature of the air being seventy-five degrees, and the dew point seventy; or the saturation of the air being eight hundred and forty-nine, the amount would be increased to one hundred and twenty grains in the same time, if the dew point were to remain stationary, and the temperature were to rise to eighty degrees; or, in other words, if the saturation of the air were to fall to seven hundred and twenty-six. Besides this power of transpiration, the leaves of vegetables exercise also an absorbent function, which must be no less disarranged by any deficiency of moisture. Some plants derive the greatest portion of their nutriment from the vaporous atmosphere; and all are more or less dependent on the same source. The *Nepenthes distillatoria* lays up a store of water in the cup formed at the ends of its leaves, which is probably secreted from the air, and applied to the exigencies of the plant, when exposed to drought; and the quantity, which is known to vary in the hot-house, is no doubt connected with the state of moisture of the atmosphere.

These considerations must be sufficient, I imagine, to place in a strong light the necessity of a strict attention to the atmosphere of vapour in our artificial climates, and to enforce as absolute an imitation as possible of the example of nature. The means of effecting this, is our next object of inquiry. Tropical plants require to be watered at the root with great caution; and it is impossible that a sufficient supply of moisture can be kept up from this source alone. There can, however, be no difficulty in keeping the floor of the house and the flues continually wet; and an atmosphere of great elasticity may thus be obtained, in a way perfectly analogous to natural process. Where steam is employed, as the means of communicating heat, an occasional injection of it into the air may also be had recourse to; but this method would require much attention on the part of the superintendent, whereas the first cannot easily be carried to excess. It is true, that damp air, or floating moisture, of long continuance, would also be detrimental to the health of the plants; for it is absolutely necessary that the process of transpiration should proceed; but there is no danger that the high temperature of the hot-house should ever attain the point of saturation by spontaneous evaporation. The temperature of the external air will always keep down the force of the vapour; for, as in the natural atmosphere, the dew point at the surface of the earth is regulated by the cold of the upper regions, so in a house the point of deposition is governed by the temperature of the

glass with which it is in contact. In a well ventilated hot-house, by watering the floor in summer, we may bring the dew point within four or five degrees of the temperature of the air, and the glass will be perfectly free from moisture: by closing the ventilators, we shall probably raise the heat ten or fifteen degrees; but the degree of saturation will remain nearly the same, and a copious dew will quickly form upon the glass, and will shortly run down in streams. A process of distillation is thus established, which prevents the vapour from attaining the full elasticity of the temperature.

This action is beneficial within certain limits, and at particular seasons of the year; but when the external air is very cold, or radiation proceeds very rapidly, it may become excessive and prejudicial. It is a well known fact, but one which, I believe, has never yet been properly explained, that, by attempting to keep up in a hot-house the same degree of heat at night as during the day, the plants become scorched. From what has been premised, it will be evident that this is owing to the low temperature of the glass, and the consequent low dew point in the house, which occasions a degree of dryness, which quickly exhausts the juices. Much of this evil might be prevented by such simple and cheap means as an external covering of mat or canvass.

The heat of the glass of a hot-house at night, does not probably exceed the mean of the external and internal air; and, taking these at eighty degrees and forty degrees, twenty degrees of dryness are kept up in the interior, or a degree of saturation not exceeding five hundred and twenty-eight. To this, in a clear night, we may add at least six degrees, for the effects of radiation to which the glass is particularly exposed, which would reduce the saturation to four hundred and thirty-four degrees, and this is a degree of drought which must be nearly destructive. It will be allowed, that the case which I have selected is by no means extreme; and it is one which is liable to occur, even in the summer months. Now, by an external covering of mats, &c., the effects of radiation would be at once annihilated, and a thin stratum of air would be kept in contact with the glass, which would become warmed, and consequently tend to prevent the dissipation of the heat. But no means would, of course, be so effective as double glass, including a stream of air: indeed, such a precaution in winter seems almost essential to any degree of perfection in this branch of horticulture. When it is considered that a temperature at night of twenty degrees is no very unfrequent occurrence in this country, the saturation of the air may, upon such occasions, fall to one hundred and twenty degrees; and such an evil can only be guarded against, by diminishing the interior heat in proportion.

By materially lowering the temperature, we communicate a check, which is totally inconsistent with the welfare of tropical vegetation. The chill which is instantaneously communicated to the glass by a fall of rain or snow, and the consequent evaporation from its surface, must also precipitate the internal vapour, and dry the included air to a very considerable amount, and the effect should be closely watched. I do not conceive that the diminution of light which would be occasioned

by the double panes, would be sufficient to occasion any very serious objection to the plan. The difference would not probably amount to as much as that between hot-houses with wooden rafters and lights, and those constructed with curvilinear iron bars, two of which have been erected in the Horticultural Society. It might also possibly occasion a greater expansion of the foliage; for it is known, that, in houses with a northern aspect, the leaves grow to a larger size than in houses which front the south. Nature thus makes an effort to counteract the deficiency of light, by increasing the surface upon which it is destined to act.

The present method of ventilating hot-houses is also objectionable, upon the same principles which I have been endeavouring to explain. A communication is at once opened with the external air, while the hot and vaporous atmosphere is allowed to escape at the roof; the consequence is, that the dry external air rushes in with considerable velocity, and, becoming heated in its course, rapidly abstracts the moisture from the pots and foliage. This is the more dangerous, inasmuch as it acts with a rapidity proportioned, in a very high degree, to its motion. I would suggest, as a matter of easy experiment, whether great benefit might not arise from warming the air to a certain extent, and making it traverse a wet surface, before it is allowed to enter the house.

There is one practice universally adopted by gardeners, which is confirmatory of these theoretical speculations; namely, that of planting tender cuttings of plants in a hot-bed, and covering them with a double glass. Experience has shown them that many kinds will not succeed under any other treatment. The end of this is obviously to preserve a saturated atmosphere; and it affords a parallel case to that of Dr. Wells, of the anticipation of theory by practice.

The effect of keeping the floor of the hot-house continually wet, has been already tried at the Society's garden, at my own suggestion; and it has been found that the plants have grown with unprecedented vigour; indeed their luxuriance must strike the most superficial observer. To the human feelings, the impression of an atmosphere so saturated with moisture, is very different from one heated to the same degree, without this precaution; and any one coming out of a house, heated in the common way, into one well charged with vapour, cannot fail to be struck with the difference. Those who are used to hot climates, have declared that the feel and smell of the latter exactly assimilate to those of the tropical regions. But there is a danger attending the very success of this experiment, which cannot be too carefully guarded against. The trial has been made in the summer months, when the temperature of the external air has not been low, nor the change from day to night very great. In proportion to the luxuriance of the vegetation, will be the danger of any sudden check; and it is much to be feared, that, unless proper precautions are adopted, the cold long nights of winter may produce irreparable mischief. I am aware that a great objection attaches to my plan of the double glass, on account of the expense; but I think that this may appear greater at first sight, than it may afterwards be found to be in practice. It is, however, at all events, I submit, a point worthy of the Horticultural Society to determine; and, if the suggestion should be found to be effective, the lights of many frames, which are not wanted in the

winter, might, without much trouble, be fitted to slide over the hot-houses during the severe season; and in the spring, when they are wanted for other purposes, their places might be supplied at night by mats or canvass.

The principles which I have been endeavouring to illustrate, should be, doubtless, extended to the pinery and the melon-frame, in the latter of which a saturated moisture might be maintained by shallow pans of water. An increase in the size of the fruit might be anticipated from this treatment, without the loss of flavour, which would attend the communication of water to the roots of the plants. I have but few additional observations to offer upon the artificial climate of a greenhouse. The remarks which have been made upon the atmosphere of the hot-house are applicable to it, though not to the same extent. The plants which are subject to this culture seldom require an artificial temperature of more than forty or fifty degrees; and few of them would receive injury from a temperature as low as thirty-five degrees. When in the house, they are effectually sheltered from the effects of direct radiation, which cannot take place through glass; but the glass itself radiates very freely, and thus communicates a chill to the air, which might effectually be prevented by rolling mats. With this precaution, fire would be but rarely wanted, in a good situation to communicate warmth; but in this damp climate it may be required to dissipate moisture. The state of the air should be as carefully watched with this view, as where a high temperature is necessary to guard against the contrary extreme. Free transpiration, as I have before remarked, is necessary to the healthy progress of vegetation; and when any mouldiness or damp appears upon the plants, the temperature of the air should be moderately raised, and free ventilation allowed. When the pots, in the proper season, are moved into the open air, it would contribute greatly to their health, and preserve them from the effects of too great evaporation, to embed them well in moss, or litter: as a substitute for this precaution, the plants are generally exposed to a northern or eastern aspect, where the influence of the sun but rarely reaches them; but which would be very beneficial, if their roots were properly protected. The advantage of such a protection may be seen, when the pots are plunged into the soil; a method which communicates the greatest luxuriance to the plants, but unfits them to resume their winter stations.

When a greenhouse is made use of, as it often is after the removal of the pots, to force the vine, the same precaution should be attended to as in the management of the hot-house; and the elasticity of the vapour should be maintained by wetting the floor; but after a certain period, a greater degree of dryness should be allowed to prevail, to enable the tree to ripen its wood, and form the winter productions for its buds. In this its treatment differs from that of the tropical plants, which require no such change, and to which, on the contrary, it would be highly detrimental. The same observation applies to forcing-houses for peaches and other similar kinds of trees. As soon as the fruit is all matured, they should be freely exposed to the changes of the weather.

HINTS ON THE COMMON GARDEN BALSAM.

BALSAMINA HORTENSIS.

THERE are few who have any taste or convenience for the cultivation of ornamental flowering plants, that do not bestow some pains, and in many instances much labour on the growth of the balsam; and it cannot be said but in every instance, where any thing worthy of the name of treatment is resorted to in its growth, that the produce of bloom is an ample compensation for the time wasted therein; although with one grower the show of bloom doubly surpasses that of another, yet it is well known that this degree of superiority can only be in exact proportion to the application of the improved modes discovered in cultivation. The balsam when brought to bloom under ordinary treatment is a beautiful object, but when grown in that superior manner as exhibited at some of our leading Horticultural shows, with the leading stem wreathed in blossoms of various beautiful hues, often to the height of four or five feet, with proportionate branches thickly set from one end to the other, with large full-blown flowers, so as to form a conical figure of considerable circumference, and which on the stage amongst the exhibited treasures, for a grand display of bloom is not outvied by any of its neighbours, although by many of them in real value. From the many modes of cultivating it we select one, which we have proved to be successful. The balsam is a native of the East Indies, consequently must have a degree of heat above the out-door temperature; when the plants are young this is particularly necessary, for they seldom or never attain any size, if they are not brought while young into a tolerably brisk heat. Sow the seed some time in the early part of March, in a wide-mouthed pot, observing to divide it thinly over the surface of the soil, after which cover it lightly with mould, to the depth of an inch, then plunge it about half way in a free-heating hotbed, and in a short time the young plants will have made their appearance; and when they have fully developed their seed leaves, by which time they will have made young roots, they should be transplanted singly into large sixties, and the pot replunged into the dung; in the course of a week the roots will have reached the sides of the pot, when they should be immediately repotted into forty-eight sized pots, and again replunged. In a week's time again examine the roots, and if they have penetrated the new soil, repeat the operation of shifting, and so continue until they finally reach a size measuring no less than ten inches across. During their whole progress they require a liberal supply of water, and to be kept constantly in the hotbed, or a warm damp stove. The soil for them should be equal parts of loam and leaf mould, with a trifling addition of dung; these portions well incorporated, but not sifted. Plants thus treated attain the height of three and a half or four feet, measuring twelve or fourteen feet in circumference, with branches from top to bottom, and these covered with fine well-blown double flowers. One thing tending to weaken the plants and render them unsightly is their liability to be overdrawn in so humid an atmosphere, which can only be obviated by placing them at all stages of their growth as near as possible to the glass; if this is attended to the plants will not only be fine, but the flowers much

better. A method of propagating balsams from cuttings is given by G. J. Towers, Esq., in the first volume of the Horticultural Register, page 397, as follows:—“In the month of April I received a packet of seeds of the balsam from a friend, whose son had produced them in the preceding year, at Madras, and forwarded to his father. The seeds were to all appearance most perfect in their texture, and state of maturation; and, I believe, that of all I sowed scarcely one failed to produce a lively and healthy plant. I sowed the seeds in a pot of light sandy earth; I plunged this pot in the earth of a melonry, which was a glazed pit, containing a bed of leaves, chiefly oak and beech. The pit was constructed, on three of its sides, of nine inch brick work; the fourth, that to the south-west, having a glazed sloping light. The bottom heat of the leaves, at the depth of twelve inches might be about eighty degrees; but as a stratum of melon earth, full fourteen inches thick, was placed on the leaves, the heat at the bottom of the pot scarcely exceeded sixty-four degrees.

“The young plants rose, were potted out, repotted, kept near the glass, and finally kept in the open air, according to the customary routine; still, however, they evinced (with one exception only) not the slightest indication of producing blossom, although some had attained the height of three feet or more. At the close of the month of August I became impatient, and as I felt interested in the final result of my exertions, I determined to try how far I might be successful in an endeavour to extend the period of the growth of my plants into a second year, by attempting to propagate them by cuttings. My direct object was, as it is stated, to convert one of the members of the plant into a perfect vegetable body, possessed of roots and capable, under auspicious circumstances, of exerting its various vital functions throughout the winter; and finally, as I hoped, of producing perfect flowers and seeds in the ensuing spring. On referring to my diary I find, that on the 28th of August, 1831, one cutting was placed under a glass, such as a tumbler or small bell-glass. This cutting was about three inches long; it was taken off at the axilla of a leaf, that is, at the angle formed between the foot-stalk of the leaf and the main, or other principal stem of the plant. The soil in the pot was composed of very light sandy loam and peat earth, and the pot was immersed in the mould of the melonry. This cutting evinced certain signs of the formation of perfect roots, on the 12th of September, and on the 18th four other cuttings were placed in a similar situation; all of them succeeded, and each became covered with blossoms, though it was scarcely four inches in height. On the 12th of October the cutting of August 28th was eleven inches high; the stem was somewhat slender, and drawn up, owing to the absence of sunlight, but it was furnished with nine perfect semi-double flowers, the ground colour of which was a pale French white, and this was beautifully striped with a deep pinkish scarlet. When I witnessed the unexpected result of my experiment, I communicated it in a paper addressed to the Horticultural Society, without delay.

“It remains only to remark, that balsams may be forced into flower at the close of the autumn; that the cuttings of the young shoots at the axilla, or angles of the leaves, of the length of two, three, or four inches, will almost invariably produce rooted, flowering plants, provided they be placed singly, an inch deep, in small pots

of light rich earth, and then plunged in a very gentle bottom heat, under glass. These are horticultural facts, which I believe to be decidedly established; and I also consider, that in all probability such plants, if every flower-bud be timely removed, can be preserved through the winter, in a dry stove, or well-aired and warm greenhouse. I am not, however, enabled to speak unhesitatingly on the latter particular, because I was not prepared to afford the desired shelter during November and the early part of December, as my house was in an unfinished state, and the pit in which the young plants were placed, was far too much exposed to early damps and hoar frosts. I have fully succeeded, however, in securing a succession of other tender, herbaceous, and annual plants, by cuttings taken off in September or October, among which I may mention particularly, one of the *Coreopsis tinctoria*; this is now as fine and healthy a young plant as I ever beheld. I only wait for a favourable opportunity of prosecuting my inquiries, in order to furnish that information which may enable other horticulturalists to extend their researches, which if pursued with patience, and in a spirit of true philosophical investigation, may at no remote period of time lead to discoveries as interesting to the lovers of science, as they will be gratifying to those whose chief object it is to add to or extend the beauties of the greenhouse and flower garden.

SCIENTIFIC PRINCIPLES OF GRAFTING.

WHEN the finger is cut with a knife the blood-vessels soon after contract their cut extremities into an opening so narrow, that the thicker and red-coloured part of the blood cannot pass, and the bleeding therefore ceases, but even then there oozes out the thinner watery part of the blood consisting chiefly of matter the same, or similar to the white of an egg, which being thus separated from the rest of the blood thickens by the heat of the body, as the white of an egg does by boiling. If the lips of the finger cut, accordingly, be kept close together by sticking-plaster they will become united by means of this natural glue, as it may be termed, in little more than a day, upon the same principle. When I was a student of medicine I once succeeded, as others have done, in managing to unite the whole top-joint of a finger which a boy had chopped off by machinery; and experiments have been successful in causing the spur of a cock to unite and to grow upon his comb. It is upon similar principles that the science of grafting is founded; for if a young branch, like the boy's finger, be chopped off by a clean cut, and the cut extremities immediately joined, the descending pulp will thicken like the watery part of the blood, and while it remains soft the sap from the cut ends of the sap-vessels will force its way through to their continuation above in the cut slip, which, if the process be successfully managed, will grow as well, or nearly as well, as if it had never been cut. If again, instead of applying the same cut slip to the part it was cut from, a slip from another tree be applied, as if I had applied to the boy's finger the tip of another boy's chopped off by the same accident, there seems no good reason to doubt that a similar healthy joining might by care be effected; in the case of animals, indeed, such joinings are rare, because rarely tried; but in garden plants they are exceed-

ingly common, for the purpose of continuing esteemed varieties of fruits and flowers, accidentally produced by cultivation; as well as for forwarding the fruiting of young trees, since seedlings require years to arrive at the bearing state. On examining the joining of a graft about a fortnight after it has been made, I have found, as in a healing finger cut, a number of small roundish grains, in form of a thin layer, produced from the thickening of the pulp, and destined to form the hard substance, which in general projects a little externally, and the scar differs in appearance from the other parts of the bark. It is however only in the space between the pulp-wood and the bark that the uniting substance is formed, and, therefore it is evident the slip to be grafted must have this part applied to the same part of the stock, and, if these differ in thickness, at least on one side. Nothing can be more erroneous than the doctrine, that the buds of the graft send woody matter downwards, which passes through the cellular substance into the stock, and covers the wood of the stock with new wood; for every gardener knows that the graft never changes the wood of the stock; this is beautifully shown in the following figures after M. Turpin.

Fig. 1. *a*, a black heart cherry tree, naturally of soft texture, and of large diameter, grafted on a bird cherry, *b*, naturally hard, and of small diameter, *c* the scar much bulged, from the pulp being interrupted in its descent. *d*, a paper birch, with a smooth bark, grafted on the white birch, *e*, with rough thick bark. *f*, the scar where there is no bulging, because the descent of the pulp is not interrupted.

One of the most obvious principles of this process is, that the sorts to be grafted should be alike, or nearly alike, because in that case, the arrangement of the sap and pulp vessels being similar their cut ends will more readily apply mouth to mouth, and less obstruction or interruption of the circulating juices will take place. The ash may however be grafted on the olive.

Fig. 2. *a*, the *Pavia lutea*, a shrub, which never attains the size of a tree, cleft-grafted on the horse-chestnut, *b*, a tree of great size. It is remarkable that the *Pavia* is much enlarged near the junction *c*, like a tree near the ground, a circumstance which would not have occurred but for the graft; the bark of which remains distinct. *d*, the white lime-tree grafted on the European lime tree, *e*; each growing in diameter according to its particular

Fig. 1.

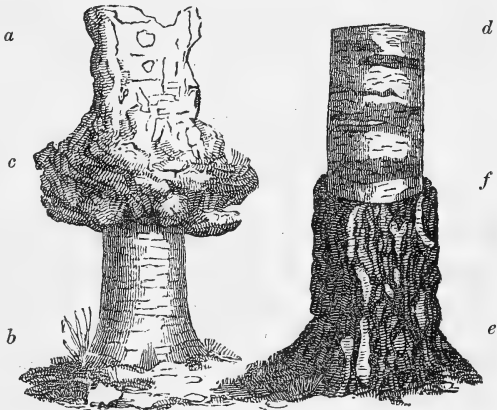
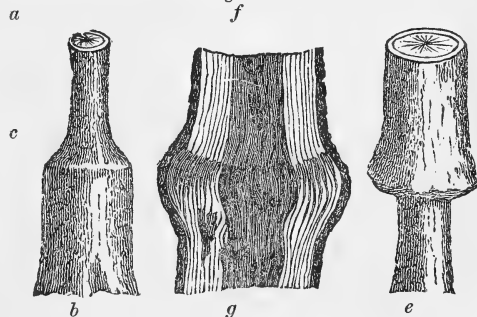


Fig. 2.



nature, without any intermixture at the line of graft, *c*. A vertical section, *f*, *g*, of an almond tree *f*, cleft-grafted on a prunus *g*, showing that not one of the characteristics of the two individuals ever passes the line of junction, *c*, *c*, any more than a spur grafted on the comb of a cock ever changes its hard horny nature for the soft fleshy nature of the comb.

To this principle there is an exception, arising from the peculiar design which the graft is intended to fulfil. When the design is to increase fruit-bearing the stock may be of firmer texture than the cutting, as in the preceding figure of the black heart and bird cherry; or when a peach cutting is grafted on a plum stock, which having narrow vessels, a part of the descending pulp is stopped short, and serves to strengthen the branch. If it be intended to increase the branches, and leaves, on the other hand, a plum cutting grafted on a peach stock might probably do so, by allowing the ascent of more sap. I refer for illustration to the figures on the preceding page from M. Turpin.—*Alphabet of Scientific Gardening*.

REMARKS ON THE GENUS NERIUM.

EVERY one who is familiar with the culture of stove and greenhouse plants, must be acquainted with the beautiful *oleander*, and its single, double (or full-flowered), and sweet-scented varieties; but yet we seldom see it in collections. There is no difficulty in purchasing the plant, nevertheless a person may visit fifty gardens and not meet with one plant in fine flower. It is our intention to direct the reader's attention to two methods by which we have successfully brought very small plants into a flowering state; and we recommend one of them in particular, as affording the means to secure a certain succession, of a size which is not only very ornamental, but perfectly convenient; taking up but little space, and being well adapted to decorate the parlour, hall, or sitting-room.

This shrub is propagated with great facility; cuttings of the half-ripened wood will strike freely, during the spring and summer, in a phial of rain or soft water, plunged into a bed of dung, tan, or leaves; or even, if placed, during warm weather, in the window of an apartment. White roots are emitted at the heel of the cutting, and when three or four of these become half an inch long, the plant may be safely transferred to a pot containing light sandy earth. To secure success, it should be placed cautiously on the soil, an inch below the rim of a very small pot; a little clear white sand, or sandy heath-soil, should then be laid over, and about the roots, pressing it equally and firmly around and among them; and, finally, over this half an inch of the compost should be placed and pressed down closely, and then the soil should be thoroughly soaked with rain water. It will be advisable to set the pot in a close frame, to shade it from the sun, for three or four days; and when the growth becomes established, to admit air freely, and thus harden the plant to greenhouse treatment by degrees. When the small pot shall become filled with roots, the soil to be used for a second, and all subsequent pottings, may be a free but unctuous loam; of this three or four parts, and one part of perfectly mellow reduced

manure, or, in preference, the black vegetable soil produced by the decomposition of leaves and stable manure, used for linings and hot-beds.

We have, by this treatment, succeeded in striking a cutting eight inches long, with the cluster of flower-buds fully formed. It was cut off from a plant in the open air in August, and struck in water. In three weeks or less the rooted cutting was transferred to soil, and being well watered, and plunged for a day or two into a shady part of a bed of leaves, it did not flag for a moment. The flower-buds enlarged, and soon became perfect. This mode of procuring very small plants may be considered as more amusing than profitable, or even desirable, yet it proves what may be effected.

The other method, and that which we recommend as by far the most likely to obtain handsome and early blowing plants in the spring, is the following:—Take cuttings of two or three joints from an old and strong plant, at any time during September and October; and, after removing the lower leaves, make the heel of each, immediately below the joint, perfectly smooth. We will suppose that a dozen cuttings are thus prepared, and that the mother shrub has stood exposed among greenhouse plants in the open air. Some of these will, in all probability, have the heads of the future bloom formed and enclosed in the heart of the upper leaves. Place plenty of drainage at the bottom of a 32-sized pot and cover it with a little moss. Upon the moss put the soil, consisting of five parts sandy heath-mould, and one part of rich loam, thoroughly incorporated; press it firmly into the pot, to within an inch of the rim; then make holes close to the edge of the pot, put half an inch of sand into each, and press it down with the setting-stick. Each hole is to receive one cutting, and this is to be inserted exactly one joint deep, the hole being then filled with sand, and that pressed as compactly as possible about the heel and wood. A good watering is finally to be given, and the pot placed in a pine pit or other warm and close frame. Water ought to be given occasionally, so as to keep the soil in free and gently moist condition.

From a pot of cuttings thus prepared, and kept at a temperature frequently below fifty degrees, we have acquired above two-thirds of their number of well-rooted plants in March; and these, potted off into sixties, in a moderately enriched loam, and placed in a temperate stove, have given us three or four little shrubs, which have supported *perfect bunches of fine large flowers* in April and May. It is extremely gratifying to obtain, by means so easy of adoption, a garland of the most beautiful rosy blossoms on plants hardly one foot in height.

Nerium-oleander, or Rose-bay, belongs to the fifth class, first order of the Linnæan System; it comprises plants of surprising beauty, with erect, straight stems, long rigid leaves, produced, as are the branches, usually in threes; the flowers are white, pale pink, or full rose-colour, supported on terminal open spikes, or corymbose bunches. There are three species and five varieties in the catalogue of the *Hortus Britannicus*, of which the most desirable are,

NERIUM SPLENDENS; from South of Europe in 1814.

————— ODORUM; sweet-scented, and full-flowers, a native of the East Indies, known here for above a hundred and fifty years.

These shrubs are hardy, or nearly so, but small plants will not perfect their

bloom freely, unless excited in a stove during the spring months. They will bear extremes, either of moisture or aridity, owing to the peculiar organisation of the vascular system of the foliage.

The natural system refers the family to the order *Apocynææ*, the juices of which furnish poison of very fatal character, acting chiefly on the nervous system. Caution ought, therefore, to be observed in tasting the fluids, which are yielded in abundance when the plants are cut or pruned.

The odour of the sweet-scented oleander discovers the presence of vegetable *Prussic acid*. It appears by the test of any of the neutral salts of iron, that the elaborated sap contains the gallic acid, for ink is immediately formed, and with it a faint shade of blue is discernible, which seems to indicate the existence of an extremely small portion of free *Prussiate*.

ON THE SCIENCE OF BOTANY,

AS A NECESSARY STUDY FOR THE YOUNG GARDENER.

THE study of the vegetable kingdom is one of the most pleasing employments the mind of man is capable of enjoying; contemplating nature in all the various seasons of the year, climbing the mountain or descending the vale, in the forest or in the mead, from the oak, whose majestic boughs tower toward the skies, to the moss, whose minute stem sports beneath its shade, everywhere there is something to amuse, in every thing something to instruct, something to aid us

To look through nature up to nature's God.

Surely he must be an unconscious observer who does not discover

The work of an Almighty hand!

The study of botany being a great acquisition to the scientific knowledge of the young gardener, we hope in this and future communications to give the juvenile reader a succinct review of the Linnæan and natural systems of botany. It is natural to suppose the first questions that may arise in the mind of the young Tyro are these:—"What is botany, and what does it treat of?" The answer is short. Botany is that science which arranges and distinguishes all plants or vegetables, and teaches us their peculiar properties and uses.

The vegetable kingdom is extremely numerous. Naturalists enumerate upwards of 30,000 species of plants, nor will this number be so very surprising when we consider that the whole surface of the earth is covered with them. About 2,000 of these are natives of our own isle, of which one third are mosses, ferns, sea-weeds, &c., but more botanically speaking Cryptogamic plants.

The honour of having first suggested the true sexual distinction in plants appears to be due to our own countryman Sir Thomas Millington, from whose hints Dr.

Grew, as he himself acknowledges, was led to the observations he has given on this subject in his *Anatomy of Plants*, page 171, published in the year 1682. After this, Camararius, Moreland, Geoffroy, Vaillant, Blair, Jussieu, and Bradley, pursued their inquiries and experiments, so far as to remove all doubt concerning these discoveries; and lastly, though not least, Dr. Linnæus, the professor of physic and botany at Upsal (a considerable town in Sweden, and noted for its university), founded his immortal system.

As it has justly been observed by the best writers, that every person who wishes to become a professed botanist should preserve and form into a collection the plants which he has examined; therefore, it is our aim; before proceeding with the science under consideration, to offer a few instructions to the young botanical researchers concerning the forming and arranging an *Hortus Siccus* (*Hortus*, a garden; *Siccus*, to dry.—Lat.) or Herbarium.

The first thing required is a botanical press, made of two small boards of hard wood, about eighteen inches long, twelve inches broad, and two inches thick, with screws fixed to each corner by nuts. Next, some sheets of brown and unsized blotting paper must be provided for drying. The specimens must be gathered when quite dry; and, if collected at a distance, they must be carefully carried home in a tin box, with their names affixed to them, to assist the memory. The specimens must be taken out of the box as soon as possible, and carefully spread on a sheet of brown paper, with the leaves and petals laid out regular, and another sheet of paper laid over them, and so on till the press is full; then screw them down, increasing the pressure every day; they must remain till quite dry, supplying them with dry paper daily. The best way for drying succulent and mucilaginous plants, such as *Cactus*, *Epiphyllum*, *Cereus*, *Melocactus*, &c., is with a hot smoothing iron, the specimens being placed between sheets of the blotting-paper, and ironed till they become sufficiently dry.

When properly dried, the specimens should be arranged into genera, classes and orders (which will be hereafter explained), and fastened in a book, provided for the purpose, with small slips of green paper; then at the base of the specimen should be written down the name of the genus and species, its native country, time of introduction (if of foreign produce), nature of the soil, colour of the flower, and time of flowering.

NEW AND RARE PLANTS,

FIGURED IN THE LEADING PERIODICALS AND FLORISTS' MAGAZINE FOR AUGUST.

BOTANICAL REGISTER. Edited by Dr. Lindley, each number containing eight figures ; coloured 4s., plain 3s. ; and corresponding letter-press.

BOTANICAL MAGAZINE. Edited by Sir William Jackson Hooker, LL.D., &c., each number containing eight plates ; beautifully coloured 3s. 6d., plain 3s. ; and corresponding letter-press.

BRITISH FLOWER-GARDEN. Edited by David Don, Esq., Professor of Botany in King's College, London, &c., each number containing four plates ; coloured 3s., plain 2s. 3d., with corresponding letter-press.

FLORISTS' MAGAZINE. By Mr. F. W. Smith, each number containing four monthly plates, highly coloured ; several plates with two figures, large size 4s., small 2s. 6d., and corresponding letter-press.

Of the above figures, we have only selected such as are very new and rare ; and amongst these only such as deserve to be extensively cultivated. For descriptions and figures, reference must be made to the works themselves.

CLASS I.—PLANTS WITH TWO COTYLEDONS (DICOTYLEDONEÆ).

THE ROSE TRIBE (ROSACEÆ).

CRATÆGUS TANACETIFOLIA. Tansy-leaved Hawthorn. A fine species of hawthorn, known from *Cratægus odoratissima* and *orientalis* by its yellow solitary sessile fruit, to which a small number of leafy bracts adhere irregularly ; but also by its regularly pinnatifid leaves, the fine toothings of which are all tipped with a gland. Like those species, this is hardy and very handsome ; it is multiplied by grafting on the common hedge hawthorn. *Bot. Reg.*, 1884.

Cratægus odoratissima. Sweet-scented Hawthorn. This species forms a common bush on the hills adjoining the Black Sea, and elsewhere in the Crimea. It is described by Bieberstein as growing to the size of the common hawthorn ; in this country when grafted upon that species it acquires a dense round-headed habit, which diminishes its beauty in some degree ; this is, however, compensated by its multitude of deliciously perfumed flowers, and the rich clusters of red fruit with which it is loaded in the autumn. *Bot. Reg.*, 1885.

THE PRIMROSE TRIBE (PRIMULACEÆ.)

DOUGLASIA NIVALIS. Snow-Douglasia. This elegant little plant was discovered by Mr. Douglas, when crossing the Rocky Mountains in April 1827, in latitude 52 degrees north, and longitude 118 degrees west ; at an estimated elevation of 12,000 feet above the level of the sea. The plant forms a thick tuft, consisting of numerous perennial branched stems ; which are round, of a bright purplish brown, covered with rigid branched hairs. *Leaves* are opposite, linear, glaucous green, covered with hairs. *Flowers* proceeding from the axils of the upper leaves, from three to six on each little branch ; at first sessile, but the footstalks lengthen by degrees until the fruit is ripe, when they are three quarters or a full inch in length, also covered with hairs. The corolla is of a vivid purple, funnel-

shaped, wholly destitute of pubescence. The plant is herbaceous, growing freely in peat and sand, and ripening its seed in small quantities. Dr. Lindley thinks it probable that it will thrive well under the treatment suited to alpine plants. *Bot. Reg.*, 1886.

THE CROW-FOOT TRIBE (RANUNCULACEÆ).

ÆONIA TERNIFOLIA; *var. plena*. This lovely variety was introduced some years ago by Mr. Goldie, Nurseryman at Ayr, from the Imperial Botanic Garden at St. Petersburg. The single-flowered variety has been long cultivated in our gardens, and although an extremely elegant flower is surpassed by the double-flowered variety in the size and splendour of its blossoms. The plant should be grown in a light loamy soil. *Brit. Fl. Gard.*, 345.

THE VERVAIN TRIBE (VERBENACEÆ).

VERBENA ERINOIDES; *var. Sabini*. A dwarf-tufted herbaceous perennial, with numerous angular, prostrate, leafy, branched stems, clothed with short, bristly, reversed hairs, producing flowers on a short crowded spike of a bright purple colour. It was introduced about two years ago, and is now generally cultivated in our collections under the name of *V. Sabini*. It is quite hardy, and continues to flower throughout the summer and autumn. It is readily multiplied by cuttings. *Brit. Fl. Gard.*, 347.

PENTSTEMON COBÆA. Cobæa-flowered Pentstemon. At page 70 of the present volume of the Magazine of Botany, we noticed a figure of this species given by Dr. Hooker in the Botanical Magazine. Mr. Don has figured the same species at 348 of the British Flower Garden; and on comparing the two figures, we find the flowers vary in size and colour, a circumstance that Mr. Don accounts for in the following manner. "It will be seen that the flowers in our specimen were larger and of a different colour from those represented in the 'Botanical Magazine,' circumstances attributable in a great measure to the different seasons of the year in which the plants bloomed." Mr. J. Macnab says, that the flowers vary in the shade of colour. The red streaks in some are more visible exteriorly, in others they are confined to the inside of the tube, or extend along the lobes. It is readily multiplied by cuttings, and will probably turn out hardy. *Brit. Fl. Gard.*, 348.

THE HOUSE-LEEK TRIBE (CRASSULACEÆ).

KALOSANTHOS SPLENDENS. Showy Kalosanthis. An hybrid, produced by Mr. Miller, of Bristol Nursery, between *Kalosanthos coccinea* and *K. versicolor*, and is certainly an improved variety of this beautiful and interesting genus. The specimen figured represents a plant with a single stem, from the base of which two off-sets arise; the main stem is crowned with a dense and beautiful cluster of flowers, with white and scarlet petals elegantly blended, making a rich and desirable acquisition to our collections of succulents. They strike freely, if planted in a little sandy soil, under a glass, in the front of a greenhouse. *Fl. Mag.*, No. 14.

THE ROSE TRIBE (ROSACEÆ).

ROSES. ROUGE DE LUXEMBOURG, ROSA DAMAS LEDA. The *Rouge de Luxembourg* is a brilliant and highly coloured moss-rose, of a beautiful form, and well filled up in the centre; the colour is carmine, and may be considered a rose of much merit.

Rosa Damas Leda is a flower that cannot fail to excite the admiration of all that are fond of roses. Its novelty alone will recommend it, but it is also a handsomely formed flower composed of regularly disposed petals, of a beautiful white; the outer rows are pleasingly decorated with blotches of bright purple, which give a very pleasing appearance. *Fl. Mag.*, No. 14.

CLASS II.—PLANTS WITH ONE COTYLEDON (MONOCOTYLEDONEÆ).

THE CORN-FLAG TRIBE (IRIDEÆ).

GLADIOLI CANDIDUS and INCARNATUS. *Candidus* produces a pure white flower of a good size and bold appearance.

Incarnatus produces flowers of a pale pink colour, large and well-formed. In a word, both are extremely rich and beautiful, and to be desired in every collection. They are both hybrids, produced by Mr. Miller, of Bristol Nursery, between *Gladiolus blandus* and *Gladiolus cardinalis*. *Fl. Mag.*, No. 14.

THE ORCHIS TRIBE (ORCHIDEÆ).

EPIDENDRUM SKINNERI. Mr. Skinner's Epidendrum. This beautiful species of epiphytal orchideæ flowered in James Bateman, Esq.'s, hothouse at Knyppersley, in January last. It was sent to him in the summer of 1835, from the neighbourhood of Guatemala, by his most excellent friend, G. U. Skinner, Esq. *Ep. Skinneri* is among the most free flowering of its tribe, every one of its shoots, both great and small, having been invariably succeeded by a spike of flowers. Dr. Lindley says, "this species is in the way of *E. elongatum*, and, I presume, requires the same management as that species." *Bot. Reg.*, 1881.

ONCIDIUM LANCEANUM. Mr. Lance's Oncidium. This remarkable plant has lately been published in the Transactions of the Horticultural Society of London, whence the following account is extracted:—

"In the year 1834, John Henry Lance, Esq., upon his return to England from Surinam, where he had been residing several years, brought with him a considerable collection of orchideous epiphytes, which he presented to the society. Among other interesting species was the subject of the following memorandum; a plant than which a more acceptable addition to the hothouses of this country has seldom been made.

"The genus oncidium already includes several very beautiful species, in particular *O. flexuosum*, *bifolium*, *ampliatum*, and *crispum*; but all these have flowers in which yellow or brown are the only colours; they owe their beauty to the graceful arrangement of their branches, and to the singular form of their petals, rather than to their colour; and moreover, their blossoms are destitute of fragrance. When, therefore, it was ascertained that among Mr. Lance's plants there existed an oncidium with violet-coloured sweet-scented flowers, great interest was excited, and no pains were spared to ensure its successful cultivation. Many plants were soon distributed by Mr. Lance's orders, one of which blossomed in the hothouse of the Messrs. Loddiges, and another shortly after in that of the society. The plant was found by no means difficult to manage, and in point of beauty and fragrance it more than answered all the expectations that had been entertained of it.

"The roots are flexuose, slender, simple elongations of the base of the stem,

evidently intended to grow upon places where the quantity of mould is insufficient to cover them ; they lengthen, independently of their growth, at the point, like the aerial roots of other epiphytal *Orchideæ*, and differ from those of other oncidiums, only in being of a greenish yellow colour. The leaves spread from a very short, woody, annulated root-stock, and are about a foot in length on the average ; they are of a broadly oblong figure, of a leathery consistence, are nearly flat, a little curved back at the point, and have a light green colour, faintly mottled with purple. The flowers are disposed in a short-branched rigid panicle, elevated on a stalk not quite so long as the longest leaves ; it is about six or nine inches long, and densely covered with flowers, which sometimes assume a corymbose, sometimes a racemose arrangement. The flowers when expanded measure an inch and three quarters from the tip of their back sepal to the point of their lip ; they emit a delicious fragrance, resembling that of the garden pink. The sepals are oblong, concave, obtuse, a little waved and greenish yellow at the edge, bright yellow in the middle, and regularly marked with broad blotches of crimson, which run together near the base. The two petals are similar to the sepals. The lip is bright violet, darkest at the lower half ; at the base it is prolonged on each side into a triangular tooth, and in the middle of the base there are three nearly equal tubercles, which towards the column terminate a ridge that gradually lowers, and then disappears at the expanded portion of the lip ; above the base it is narrow, it then expands again into a broad, thin, light purple, somewhat truncated and toothed extremity. The column has an oblique, rounded ear-like appendage on each side, and it is capped by a rich crimson anther. Such was the specimen from which the drawing was taken ; but it was far inferior to the one which I have just seen (June 29th, 1836,) in the rich collection of epiphytes, belonging to the Messrs. Rollisson, of Tooting. This plant, which I regard as the most perfect instance of successful cultivation I have yet witnessed among epiphytes, had leaves eighteen inches long, and upwards of thirty flowers two inches and a quarter in expansion, with all the markings of the sepals and petals of the richest chocolate brown, and of the lip of the deepest violet. In fragrance there was a resemblance to the spicy odour of that sweetest of all flowers, *Aërides cornutum*.

“ In the Society’s garden this plant is cultivated along with other epiphytes in a damp hothouse, facing the north ; it is planted in a mixture of sandy peat, potsherds, and decayed wood, and under these circumstances it thrives very well.

“ Mr. Lance has favoured me with the following account of the discovery and subsequent management of this remarkable plant in its native country. The first specimen of this splendid epiphyte I discovered, was growing on the trunk of a large tamarind tree, in a noble avenue of those trees close to the Government House in Surinam. I took it home with me, and planted it in a pot filled with rotten pieces of wood and a little light earth ; but though it remained alive, and flowered once or twice, it did not thrive, but wasted away and became less. I afterwards found a great number of the plants in different parts of the colony ; they were generally attached to the stems or branches of the tamarind, the sapodilla, or the calabash trees, appearing to prefer those to any other ; however, on being tied to the branches of the orange, the soursop, the mammee, and even the *Brugmansia*

arbores, it grew well upon them all, and produced vigorous stems, with upwards of twenty blossoms on each stem. The scent is extremely fragrant, and is retained after the flower is dried, only becoming fainter and more of a spicy flavour than when fresh. The plant remains in full beauty ten or twelve days, a long period in that climate; and I found that it always required a shady situation, and a living stem to grow upon, without which it would not produce its flowers in the highest perfection." *Bot Reg.*, 1887.

OPERATIONS FOR NOVEMBER.

FROSTY nights being now prevalent, the safety of all tender or half-hardy plants is consequently endangered: it is therefore advisable to put all such in places of security. Dry up any superabundance of moisture that may show itself in the greenhouse, &c., by occasionally warming the flues a little when the house is liberally ventilated; this is particularly necessary at this season, on account of the want of the assistance of the sun's influence, which before maintained a medium between the two extremes—excessive dryness and excessive moisture. Plants stationed in cold frames for the winter should be hourly watched, as they perhaps now, more than any other time, are liable to damp; this hint extends particularly to *Mignonette*, *Violets*, and others well known to suffer much from prevailing moisture. Prepare canvas and other necessaries for protecting tender, creeping, and climbing plants trained to the south wall, or other tender plants in the flower-garden or on the lawn. Seeds of different kinds, newly gathered, should be carefully dried and looked over, and each sort neatly packed, named, and stored till wanted, in some secure place.

BULBS of sorts, beds for, if not already in progress, should immediately be commenced with, as the roots should not be put in later than the latter end of this month, such as the *Tulip*, *Ranunculus*, *Hyacinth*, and *Anemone*.

DAHLIAS, if not already injured by the frost, may soon be expected to become so; seedlings, and others desirable to be preserved, should therefore, without delay, be covered by placing a temporary awning around them.

CHRYSANTHEMUMS, if not already housed, should be in the early part of this month; an idle vinery or a well-ventilated greenhouse will do well for them.

DECIDUOUS SHRUBS will now be hastily casting their leaves: when the most of them have fallen, pruning may be commenced on those kinds where the wood appears ripe and likely to bear the knife.

GREENHOUSE PLANTS. Such as have been plunged in the borders during summer should now immediately be taken up and placed in the back part of the house; they will probably be found useful for propagation in the spring, and not unlikely for planting out again in the summer; we allude to *Scarlet Geraniums*, *Fuchsias*, *Shrubby Calceolarias*, &c. &c.

SOILS. It will be of much advantage to the grower of plants in potting of the different kinds in the spring, if a selection of the different composts be made this autumn that are most likely to be called for; and afterwards placed in a convenient spot where the frost and air can act freely upon them.



Hovea Colvi

HOVEA CELSI.

(CELS'S HOVEA).

CLASS.

DIADELPHIA.

ORDER.

DECANDRIA.

NATURAL ORDER.

LEGUMINOSÆ.

GENERIC CHARACTER.—*Calyx* two-lipped, the upper lip half cleft, retuse, lower lip three-parted. *Keel* blunt. *Stamens* all connected. *Legume* sessile, rounded, inflated, two-seeded. *Seeds* covered with protuberances.

SPECIFIC CHARACTER.—*Plant* a greenhouse shrub from two to four feet high. *Leaves* lanceolate, somewhat rhomboid, blunt, mucronate. *Footstalks* axillary many-flowered; the branches, bracts, and calyxes, rather hairy.

ONE of a genus of excellent greenhouse plants, all natives of New Holland, and furnished with alternate simple leaves, and axillary purple or blue flowers, surmounting short pedicles or footstalks.

The accompanying coloured figure represents a species of much beauty, first known to our collections through Mr. Allen, nurseryman in the King's Road, who imported it from Monsieur Cels, of Paris; since that it has become quite a favourite in our greenhouses, and is justly an esteemed and beautiful feature among the Australian species.

In a flowering state it has an elegant appearance: the blue, which is the predominating colour of the flower, being of so bright a hue, which is rendered very conspicuous by the lighter portion in the centre; and even when out of flower if well grown it has a neat character, certainly a recommendation at all seasons. It flowers in general between March and July, but most frequently about the latter end of June.

This species cannot be said to be easy of cultivation, but like many more of equal beauty from the same quarter, it requires much and well-directed care in potting and watering, suffering materially from both if indifferently performed. The soil used for them, with the greatest success, is rather sandy loam and peat that has a fair portion of vegetable matter and sand in it. In potting employ good drainage; the best for the purpose is broken pots: after potting, let the plants

stand in a light airy situation in the greenhouse, and they will grow and flower well with due attention to watering, &c. Cuttings taken when the wood is middling firm, root freely in a pot of sand under a bell-glass. All who are accustomed to propagate New Holland plants, are well aware how necessary it is to guard against damp ; it is of importance then to water them with much pains, and when any quantity of vapour has condensed on the inner surface of the glass placed over them, to wipe it quite dry with a clean linen cloth. As seeds frequently mature in the greenhouse, they are much more easily increased by them than by cuttings : the seed should be sown early in the spring, or immediately after it is ripe.

The generic name is given in honour of Mr. Antony Pantaleon Hove, a Polish botanist, and traveller in Crimea and Persia.



Gardoquia Hookeri

GARDOQUIA HOOKERI.

(CAROLINA GARDOQUIA).

CLASS.

DIDYNAMIA.

ORDER.

GYMNOSPERMIA.

NATURAL ORDER.

LABIATÆ.

GENERIC CHARACTER.—*Calyx* tubular, five lobed, exterior marked with thirteen nerves. *Corolla* long, erect, or a little crooked; *limb* two-lipped, upper two-lobed, the lower three-lobed; lobes short and even. *Stamens* four, two of which are longest. *Filaments* erect. *Anthers* two-celled.

SPECIFIC CHARACTER.—A small upright shrub about a foot and a half high, branched. *Branches* weak, upright, scarcely pubescent. *Leaves* obovate, terminating with a point, dotted on both sides; of a glaucous green colour, and something attenuated at the base. *Footstalks* very short. *Flowers* arising from the axilla of the leaves, in general solitary. *Flowerstalks* short, furnished at the base with two lanceolate bracts. *Calyx* tubular, nearly smooth, throat hairy. *Corolla* of a rich scarlet colour, nearly three times longer than the calyx, the exterior covered with hairs; limb two-parted, tips equally extended, upper two-lobed, lower three-lobed; lobes short and rounded. *Stamens* four. *Filaments* white, smooth. *Anthers* two-celled, purple. *Style* filiform. *Stigma* two-celled, awl-shaped, recurved.

SYNONYMES.—*Gardoquia Hookeri*, *Bentham*, *l. c.* p. 401. *Cunila Coccinea*, *Hooker*, *Exot. Flor.* 3, t. 163. *Melissa coccinea*, *Sprengel*, *Syst.* 2, p. 224.

THIS striking little plant was gathered—says Professor Don, in the *British Flower Garden* for January 1836, where a faithful figure and accurate description of it is given—on the mountains of South Carolina, by Mr. Alexander Gordon, a collector sent out by Mr. Charlwood.

It is a deserving and certainly a pretty little ornamental shrub, delicate in its growth, but the blossoms are large and of a rich scarlet colour, nearly equal to the flowers of that beautiful species of *Salvia*, viz. *S. splendens*. It continues in flower a long time, and with seasonable management a considerable number are open at one time, which, if the plant be of a good size, look exceedingly handsome.

No person is more successful in the cultivation of this plant than our friendly contributor Mr. Bows, of Broughton, near Manchester, who, some time back, kindly permitted our artist to make a drawing from a fine plant in his collection at that

time in flower. Mr. Bows' gardener calling at Chatsworth, about twelve months ago, informed us that to ensure a good growth and a free state of flowering, it is necessary to keep the plant almost constantly excited, and to do this no place is better adapted than a greenhouse kept rather close. A plant at Chatsworth kept in the stove, assumes a delicate and drawn appearance, while others in a small house, intermediate between that and the greenhouse, look healthy, form handsome plants, flowering abundantly and richly from the latter part of May until late in October.

It grows well in a mixture of loam and peat, but of the latter only a small quantity is required, if the former be open and contain a little sand; watering appears to be a point calling for particular attention, this should never be administered with an immoderate hand, but at all times given with much care and caution; equal attention is necessary in draining the pots, which should be done with reduced potsherds, not broken too small, but left sufficiently large to take off freely any superabundant moisture. Cuttings planted in sand make roots with little trouble, if a hand or bellglass be placed over them and the pot receive a gentle bottom heat.

The genus* was dedicated by Ruiz and Pavon to Don Diego Gardoqui, Minister of Finance under Charles the Fourth of Spain, who greatly promoted the publication of the *Flora Peruviana*.

* D. Don.



Eucalyptus pungens.

EUTAXIA PUNGENS.

(PUNGENT-LEAVED EUTAXIA.)

CLASS.

DECANDRIA.

ORDER.

MONOGYNIA.

NATURAL ORDER.

LEGUMINOSÆ.

GENERIC CHARACTER.—*Calyx* two-lipped, upper somewhat emarginate, lower trifid. *Vexillum* (standard) broader than long. *Ovary* two-seeded. *Style* hooded. *Stigma* capitate. *Leguma* moderately ventricose. *Seeds* with an appendage.

SPECIFIC CHARACTER.—*Plant* a greenhouse shrub from two to four feet high. *Leaves* either scattered or whorled, something recurved, terminating in a pungent sharp point, smooth, with the margins turned back. *Peduncles* few-flowered, axillary much crowded. *Ovary* hairy, the branches and footstalks of the flowers clothed with hoary down.

SYNONYME.—*Dillwynia pungens*, *Cunningham's MSS.*

THE genus *Eutaxia* comprises two species, namely, *E. myrtifolia* and *E. pungens*, both peculiar to New Holland. The former has been long known to our collections, where it still remains a favourite; the latter has been more recently introduced, and, of the two, is the most handsome; still both, in a state of flowering, are truly elegant.

The subject at present under consideration, produces an immense number of yellow flowers near the extremity of the branches, each marked with a dull orange circle round the base of the vexillum, which greatly enlivens the dense cluster, and renders the whole extremely pleasing. The plant from which our drawing was taken, flowered in the manner represented, in the collection of Mr. Bows, about June last.

Both species grow freely in a compost of loam and peat, with the addition of a little sand, and the whole well incorporated, but not sifted. In shifting, the pots should be well and carefully drained with potsherds, for the escape of water, which should at all times be given with a degree of caution. Cuttings root with facility in a pot of sand under a glass; if a moderate bottom heat could be applied the success would be more certain.

The generic name is taken from *ευταξία*, signifying *modesty*, and alludes to the delicate and easy appearance of the plants when in flower. The specific name (*pungens*), implies pricking, and alludes to the sharp point at the end of the leaves.





Cypripedium Calceolus.

CYPRIPEDIUM CALCEOLUS.

(COMMON LADIES' SLIPPER.)

CLASS.

GYNANDRIA.

ORDER.

DIANDRIA.

NATURAL ORDER.

ORCHIDEÆ.

GENERIC CHARACTER.—*Lip* inflated, sometimes saccate. *Column* terminated at the back by a petaloid (petal-like) lobe, representing a barren stamen, and dividing the anthers. The interior sepal often united. *R. Brown.*

SPECIFIC CHARACTER.—*Stem* leafy. Appendage to the column elliptical, obtuse, channelled. *Lip* somewhat compressed, shorter than the petals. *Smith.*

It is a circumstance rather to be regretted, that so beautiful a feature in the *Flora of Britain* as the present species, should be rendered so scarce, and suffer so much from the rapacity of the curious, &c., who no sooner ascertain the place where it grows, than immediately they extract the roots from the soil, either with a view to profit, or to plant them in their flower-garden for the purpose of augmenting its riches, delighting it may be presumed, to see it aiding the beauties of the latter, rather than growing naturally as it does in the mountainous thickets about the North of England, where, in consequence, it is seldom met with, and the anxious, noble-aiming tourist, is often obliged in vain to prosecute his Botanical research in quest of a native soil specimen, whereby to effect a satisfactory investigation. Thus Joseph Woods, Esq., F.L.S. in his relation of a Botanical excursion in the North of England, observes. "I had been directed to seek for the *C. calceolus*, on the top of a steep rocky bank, opposite to an insulated rock, on each side of which the road passed, but we could find no such rock, and our search for the *Cypripedium* was vain. The plant suffers from the unceasing rapacity of gardeners; yet it does not bear a high price, and I suppose, from this circumstance, it is propagated without much difficulty; but at least in the gardens about London, it rarely flowers. I believe that in some places in the North of England, it is not only increased without difficulty, but also blooms freely;" and again he adds, "at Helmesly we heard again of *Cypripedium calceolus*, and a gardener who confessed that he had taken

up all the roots he could see, conducted us to the spot where it used to grow, which is a limestone bank near the head of the western branch of the little valley which penetrates the hills just behind Helmesly ; no trace of the *Cypripedium* remained, except the hole from which the last specimen was dug on the 15th of May, 1828, when it was in full bloom, and he had taken up five roots. We threatened him with an act of Parliament made expressly to hang him, but he did not appear so much alarmed as we could have wished*." It is certainly one of the most beautiful and interesting of the British Orchideæ, as will be seen in the accompanying drawing, which is a faithful representation ; although a native, it is attended with some trouble in cultivation. Sweet observes that they thrive best in a frame in peat soil, or in a shady border.

The generic name is taken from *Κυπρὸς*, Venus, and *ποδιον* a slipper, alluding to the slipper-like form of the labellum.

The genus contains ten species, most of which except the *C. calceolus*, are natives of North America and Nepal.

* Companion to Curtis's Botanical Magazine for May, 1836.

ON THE CULTIVATION OF VIOLA ODORATA,

Var. PALLIDA-PLENA, FOR WINTER AND SPRING FLOWERING.

OF *Viola odorata* there are eight varieties, none of which are considered equal to the Neapolitan for fragrance, or for the facility with which it may be forced, during the winter months. As we have been very successful in obtaining abundance of unusually fine flowers, perhaps our mode of culture may not be unacceptable to some of our readers, and as the same remarks are applicable to the other varieties of *Viola odorata*, it will be unnecessary to mention any other than the Neapolitan.

We take off cuttings as soon as they have done flowering in May, and plant them under hand-glasses in light garden mould at the foot of a south wall, where with gentle waterings and shading, they soon strike root; after they have been hardened by leaving the glasses off during the nights for a short time, they are removed to any part of the kitchen garden where the soil is light, and planted nine inches asunder; they must be watered during dry weather, and the soil frequently loosened with the hoe.

The first week in August we prepare a bed for their reception, of the size of the frame intended to place over them, in the following manner:—a layer of broken pots or brick rubbish about nine inches thick, for drainage, upon this a compost of the following proportions, one foot thick;—two barrow loads of leaf mould, one barrow of free loam, one barrow of well-rotted manure, and a half barrow of clear sand; these must be thoroughly mixed by frequent turnings, if mixed twelve months before using, so much the better. After the bed has been allowed a few days to settle, the plants are carefully taken up, trimmed of their runners, and planted four inches asunder. They should not be more than fifteen inches off the glass if possible; we prefer a western exposure, as gentle watering before sunset is very beneficial in making the plants throw up their blooms vigorously; the lights should be allowed to remain off during the autumn, except in very wet or cold weather, a lining of dry litter should be placed round the frame to exclude frost; when they are in flower we never give them any air, except to dry the plants occasionally should the weather prove wet, by which means we obtain much longer stalks to the flowers, and the moisture in the frame caused by evaporation induces the buds to expand more freely.

To insure a succession of flowers during the spring, we always transfer some plants to another bed about six weeks after the first; more hand-glasses may be filled with cuttings than are required for the frames, and if they are allowed to remain under them without protection, they will flower exceedingly well after those in the frames are over, never removing the glasses except for the purposes of watering or gathering the flowers. We also make it a rule to pot some plants of the Neapolitan and double blue in shallow thirty-two sized pots, and introduce them into any convenient place, where the heat will not be more than 65° of Fahrenheit, by which means they may be had from the latter end of October to April.

If the frames are exposed to a southern aspect they will require shading from the mid-day sun in March and April.

ON THE CULTIVATION OF CACTI IN MOSS.

To offer any observations on the management of Cacti will almost appear superfluous, after what we have advanced on the same subject, Vol. I. page 49, in the article appended to the figure of *Epiphyllum splendidum*; but as we purpose in this essay to detail a rather novel way of growing these plants, we trust it will be a sufficient apology for what otherwise might be taken for a recapitulation of our former paper. It is notorious, that a great many plants, especially those belonging to the natural order *Orchidiaceæ* grow admirably when planted in moss, and being cognisant of the fact, that in their native country some of the cactus tribe are sometimes found growing on rotten wood and other decomposed vegetable matter, induced us to try whether some of them would not grow in moss. Procuring a quantity of *sphagnum* (bogmoss,) we proceeded to put in strong year old plants of the following kinds;—*Epiphyllum speciosum*, *truncatum*, *Ackermanni*, and *splendidum*; *Cereus speciosissimus*, and *flagelliformis*; *Rhipsalis Cassutha*, *salicornioides*, *fasciculata*, and *grandiflora*; and *Pereskia aculeata* and *longispinus*. The plants were turned out of their pots, and all the loose earth removed from them, a small quantity of turfy peat was placed round each root, the whole covered with moss about two inches thick, and then neatly tied up with small tar-twine. The plants were then suspended in an inverted position from the rafters of a plant stove, and they were syringed twice a day through the growing season; they grew admirably; in three months the roots had protruded through the moss, so much as to require a second coat of moss. This experiment was commenced in February, and in the course of the season the whole of the plants, with the exception of the *Pereskias* produced bloom; some of them two or three times. Since then we have practised this system rather extensively, and we have now several dozen of strong plants, which flower abundantly. *Epiphyllum truncatum* thus treated is a most beautiful object, and may be had in flower throughout the whole year.

With regard to temperature it is our practice to keep the plants in a house heated from 55° to 65° during the time they are growing, but when the young shoots are matured, we remove them into a lower temperature—say from 40° to 50° until they are wanted to flower, when they are taken back to their former habitation.

To enhance the novelty of this system we have resorted to the expedient of grafting, and have now got them so amalgamated, that a stranger would scarcely recognise the original. We have one plant of *E. truncatum*, with all the *Rhipsalises*, *E. splendidum*, and *Ackermanni*, and *Cereus flagelliformis* grafted on it, and we have others with all the other kinds growing on them. Grafting is a very simple operation, it only being necessary to fit the scion and stock together, and then tie them with a little matting, and cover the whole with clay or moss to keep the air out, and indeed this is not required with some, for we stuck a small piece of *Cereus flagelliformis* on one of the young spines of *Pereskia aculeata*, and it has grown and formed a fine plant. Grafting on these plants may be performed at any time. We have two plants of *E. truncatum* grafted on stocks of *Pereskia aculeata*

about three feet high, with heads nearly two feet in diameter, and which produce from two to three hundred flowers every time they bloom, which they generally do about three times a year. These plants are grown in pots in the usual way.

Mr. Green, gardener to Sir E. Antrobus, Bart., one of the best cultivators of the cactus in the vicinity of London, has a most excellent article on this subject in Vol. I. Part V., second series of the Transactions of the Horticultural Society, which for the benefit of those who do not possess the Transactions, we shall transcribe.

“The compost that I use,” observes Mr. Green, “is an equal quantity of light turfy loam, and pigeon’s dung, and one third sheep’s dung, exposing the mixture one year to the influence of the summer’s sun and winter frost to mellow. When wanted for use, I add one third of sandy peat, in both cases mixing them well together.

“I grow the young plants from February to July, in the forcing flower-house kept from 55° to 60° Fahrenheit. I afterwards remove them to a shelf in an airy situation in the greenhouse, exposed to the mid-day sun, giving them plenty of air and little water. The plants that I want to flower the following September, are placed in the forcing house the first week in December, giving them very little water for the first ten days, and gradually increasing the water as the plants advance in growth. About the 1st of February I stop all the young shoots, which soon become well ripened; from this time I decrease the quantity of water until they become quite dry, in order to throw the plants into a state of rest. In the beginning of March I replace them in a cold shady situation in the greenhouse, treating them as before. For plants to flower in August, I place a quantity more in the forcing house the first week in January, treating them the same as those for September; only they are put to rest in the greenhouse a fortnight later, and replaced in the forcing house one week sooner.

“The first flowering plants are put in the forcing house the end of January, and will come in flower about the middle of March. When these plants have done flowering, and are removed from the drawing-room, or greenhouse, I prune out most of the old shoots that have flowered, so that the plants are furnished regularly with young shoots for flowering the ensuing year; these plants are also placed in the forcing house for ten days, to ripen the young wood and dry up the moisture, and are then put to rest in the greenhouse as usual: such plants will flower a second time in October. Others put in the forcing house the middle of February will flower about the end of April; if then pruned, and dried, and put to rest as before, they will flower a second time in November, and so on in proportion. I replot them at all seasons whenever the plants may require it, always observing to keep the pots well drained with potsherds, that the moisture may pass off readily. This process may be considered troublesome, but superior growth, and abundance of flowers, amply repay the care bestowed. By the above treatment, *C. speciosus* and *Jenkinsoni* have generally produced from ninety to a hundred fine expanded flowers, at one year old. The plants that I brought to the Society (May 21, 1833,) were about two years old; the *C. speciosus* bore two hundred flowers, *C. specio-*

sissimus seventy-two, *C. Jenkinsoni* one hundred and ninety-four. I prefer growing them in wooden tubs, with nice stakes fixed to the tub, to the usual mode of supporting them by sticks driven into the ball of the plant, which I consider injures the fibre, and makes the plant appear unsightly."

By the above treatment, Mr. Green grows most beautiful specimens; indeed the plants that he has at different times exhibited at the Horticultural Society's Gardens, and in Regent Street, are the most splendid we ever remember to have seen.

DIONÆA MUSCIPULA, OR VENUS'S FLY TRAP.

FOR a woodcut figure of this singular plant, we refer to the first volume, page 61, of our Magazine of Botany, where an interesting account of its peculiar properties will be found; the following is selected from the August number of the Companion to Curtis's Botanical Magazine, edited by Professor Hooker, and which will be found to contain some very pleasing remarks on this very remarkable feature of vegetation.

"This interesting plant, now common in all the gardens of the curious, but long supposed to be confined in its native country to almost a single habitat, is thus mentioned by Mr. M. A. Curtis, in his 'Enumeration of the plants growing spontaneously around Wilmington, in North Carolina.' The *Dionæa muscipula* is found as far north as Newbern, North Carolina, and from the mouth of Cape Fear River nearly to Fayetteville. Elliot says, on the authority of General Pinckney, that it grows along the lower branches of the Santec, in South Carolina, and I think it is not improbable that it inhabits the savannahs more or less abundantly from the latter place to Newbern. It is found in great plenty for many miles around Wilmington, in every direction.

"I venture a short notice of this interesting and curious plant, not being aware that any popular description of it has been published in this country. The leaf, which is the only remarkable part, springs from the root, spreading upon the ground, or at a little elevation above it. It is composed of a petiole, or stem, with broad margins, like the leaf of the orange tree, two to four inches long, which at the end suddenly expands into a thick and somewhat rigid leaf, the two sides of which are semicircular, about two thirds of an inch across, and fringed around their edges, with somewhat rigid cilia, or long hairs, like eye-lashes. The leaf, indeed, may be very aptly compared to two upper eye-lids, joined at their bases. Each portion of the leaf is a little concave on the inner side, where are placed three delicate, hair-like organs, in such an order that an insect can hardly traverse it, without interfering with one of them, when the two sides collapse and inclose the prey, with a force surpassing an insect's attempts to escape. The fringe, or hairs, of the opposite sides of the leaf interlace like the fingers of the two hands clasped together.

"The sensitiveness resides only in these hair-like processes on the inside,

as the leaf may be touched or pressed in any other part without sensible effects. The little prisoner is not crushed and suddenly destroyed, as is sometimes supposed, for I have often liberated captive flies and spiders, which sped away as fast as fear or joy could hasten them. At other times I have found them enveloped in a fluid of mucilaginous consistence, which seems to act as a solvent, the insects being more or less consumed in it. This circumstance has suggested the possibility of the insects being made subservient to the nourishment of the plant, through an apparatus of absorbent vessels in the leaves. But as I have not examined sufficiently to pronounce on the universality of this result, it will require further observation and experiment on the spot, to ascertain its nature and importance. It is not to be supposed, however, that such food is necessary to the existence of the plant, though like compost, it may increase its growth and vigour. But however obscure and uncertain may be the final purpose of such a singular organisation, if it were a problem to construct a plant with reference to entrapping insects, I cannot conceive of a form and organisation better adapted to secure that end than are found in the *Dionæa muscipula*. I therefore deem it no credulous inference that its leaves are constructed for that specific object, whether insects subserve the purpose of nourishment to the plant or not. It is no objection to this view, that they are subject to blind accident, and sometimes close upon straws as well as insects. It would be a curious vegetable indeed, that had a faculty of distinguishing bodies, and recoiled at the touch of one, while it quietly submitted to violence from another. Such capricious sensitiveness is not a property of the vegetable kingdom. The spider's net is spread to ensnare flies, yet it catches whatever falls upon it, and the ant-lion is roused from his hiding place by the fall of a pebble; so much are insects also subject to the blindness of accident."

ON THE CULTURE OF PEPPER AND OF RICE.

BLACK pepper thrives luxuriantly in most soils, and when once reared requires comparatively little care and labour. The preference in choosing a situation is usually given to level grounds along the banks of rivers (provided they are not so low as to be inundated,) on account of the rich vegetable mould found in those localities, and for the advantages of water carriage. Plantations of this tree are seldom made on rising ground, unless the ascent be very gentle, otherwise the soil is likely to be loosened and washed away from the roots of the vines. The goodness of pepper is considered to depend more upon the natural qualities of the soil than the care bestowed upon its cultivation. It is a hardy tropical plant, and grows readily from cuttings, or layers, rising in several knotted stems, which cling round any neighbouring support, and adhere to it by means of fibres, that shoot from every joint at intervals, of from six to ten inches, and through which it probably imbibes its nourishment. If left without any means of climbing upwards, the stalk unable to support itself, creeps along the ground; the fibres at the joints then become roots, but in this situation the plant would never exhibit signs of fructification.

Like ivy, it is encouraged by support to throw out bearing shoots. If left in its natural state, it climbs to twenty or twenty-five feet high; but it is more fruitful when not allowed to attain this height. Restrained in its growth to from twelve to fifteen feet high, it bears both foliage and flowers within a foot of the ground; but in the former case the lower part of the stem is entirely devoid of these.

In order to give to the pepper vines the support they require, it is usual to plant some other trees with them for that purpose.

The IACA tree (*Artocarpus integrifolia*) is selected in Malabar thus to lend its support, since the same soil is equally adapted to the growth of both plants. In Sumatra a thorny tree, called by the natives ching-kariang (*Erythriora corallo-dendron*) is employed. In Borneo the vines are supported like hops, by poles; but there is a great disadvantage attendant on this method, as the poles thus exposed decay at the end of two or three years, while the plants last many years, and they are much injured in the removal of the old poles, and the placing of the new ones. Besides this, the use of poles has another disadvantage in the absence of foliage, which during the dry season is of service in sheltering from the too ardent rays of the sun.

When a piece of ground is to be converted into a pepper plantation it is marked out by means of a line into regular squares, having their sides about six feet, the intervals at which the plants are intended to be placed from each other. The points of intersection are noted by slight stakes, and at each of these points a tree intended for the prop, is planted; for this purpose, cuttings of about two feet long are put into the ground a span deep; sometimes cuttings six feet long are used, but these often fail, are not so vigorous as the shorter ones, and generally grow crooked.

When the shoots of the ching-kariang are twelve or fifteen feet high—a height they generally attain during the second year of their growth—they are lopped, and not allowed to grow much above this altitude. The branches are lopped annually at the commencement of the rainy season in November, leaving little more than the stem, or otherwise the droppings from the leaves might injure the vines.

The usual mode of propagating the pepper plant is by cuttings of a foot or two in length, taken from the horizontal shoots which spring forth from the foot of the old vines. One or two of these cuttings are planted close to the ching-kariang tree, sometimes as soon as the latter has taken root, but oftener after a lapse of six months from its being first planted. A few cultivators allow an interval of twelve months, fearful lest the growing vine should overpower its support; but in general, if this be a healthy and vigorous shoot, so long a priority is unnecessary for its thriving, as it advances its sustaining power. The vine rises about two feet in the first year, and four or five more in the second; at this time, or between the second and third year of its growth, it first begins to put forth blossoms.

Sir Joseph Banks made several experiments on the cultivation of mountain rice in England, and as it flourishes under some circumstances through much cold, it was supposed that these attempts would have been followed with success. The

result, however, proved otherwise. Six different samples of this rice were sown in separate compartments in the most favourable situations. The grains were sown very thin in the middle of May, and they soon put forth a most luxuriant vegetation, each root tillering so much that the ground was entirely covered with the grassy verdure of the plants. The blades grew vigorously, attaining to the length of two feet; but the stalks showed no disposition to rise; and unless the ground was kept constantly moist, either by natural or artificial watering, the plants drooped. They continued to vegetate thus, until an early night frost in September entirely destroyed them. Some few of the plants had been transplanted into pots, and placed in a hothouse, but in this situation they soon died. Other plants which had been originally reared in a hothouse succeeded in sending forth flowering stalks, which bloomed, but the blossoms never fructified. These experiments led Sir Joseph Banks to conclude, that though rice would not succeed in this country as a grain-bearing plant, it might, perhaps, be advantageously cultivated as fodder for cattle, because it furnished such an abundance of blades. Since the above-named unsuccessful experiment, a crop of rice has been obtained in England, on the banks of the Thames, near Windsor.

The Chinese conduct this cultivation with great care, endeavouring in this, as in all the offices of husbandry in which they engage, to draw from the soil the greatest possible produce.

The care of the cultivator begins before the seeds are placed in the earth. The grains destined for that purpose are put in baskets, and immersed in water, in which situation they remain for some days; this softens them, and tends to hasten their germination. The land which is to be sown with this crop is previously saturated with water, until the surface is like soft mud. In this state it is stirred up with a plough of very simple construction, to which is yoked a single buffalo. A rude kind of hurdle, drawn also by one buffalo, succeeds the plough, the driver sitting upon the hurdle to increase its weight, by which means the clods are broken down and the ground made smooth. All stones are carefully removed, and as far as possible, every weed is extirpated. Water is then again let in upon the land, in just sufficient quantity to cover its surface, and a harrow, with several rows of great iron teeth, still further smooths and completes the preparation of the ground. Only those grains which have sprouted in the water are selected for sowing, since as they have begun to germinate, their goodness is ascertained; all the rest are rejected.

The seed is sown thickly and evenly on only part of the ground; this serving as a nursery for the rest. A day after the seeds have been sown the points of the plants appear above the surface of the ground. As soon as the plants have acquired a little strength they are sprinkled with lime-water, for the purpose of destroying insects, which might otherwise prey upon the young shoots. This operation is performed with a small basket attached to a long handle, the basket being filled by immersion from another vessel; it is moved over the plants, and the fluid runs through, and is thus equally distributed over them.

When the young plants begin to appear in thick vegetation they are thinned;

the superfluous plants being carefully taken up with their rootlets, and transplanted into a quincunx order in the unoccupied portion of the land which has been prepared for their reception. No delay must take place in this work, so that the plants may be as short a time as possible out of the ground; a calm day is usually selected for the purpose. As soon as completed the water is admitted to overflow the plants. For the advantage of irrigation the rice fields are usually situated near to a rivulet, pond, or other water, from which they are separated only by a bank, and through this a communication is readily made. Sometimes, however, it happens that the water is below the level of the fields; in this dilemma, the moisture so essential to the success of the crop is supplied by means of buckets, which is a most tedious and laborious operation. The grounds are kept perfectly clean from weeds, which are taken up by the root with the hand, although the soil is in such a swampy state that the labourers employed in this task cannot step upon the ground without sinking knee deep. The maturity of the grain is known by its turning yellow in the same manner as wheat; it is then cut with a sickle, tied in sheaves, and conveyed into sheds or barns, where it is thrashed with flails very similar to those used in England.

The manner of cultivating rice in North America differs somewhat from the methods practised in the East. For this purpose the ground is trenched in about the middle of March, the ridges being about a foot and a half from each other from centre to centre. At the bottom of the trenches the seed is put in by hand, and not scattered; this office is generally performed by women. Water is then, by means of flood-gates, let into the fields, over which it flows several inches deep. It remains thus for five days and is then drawn off, leaving the ground dry till the young plants spring up three or four inches high. In about a month after sowing it will have arrived at this state. The land is then again overflowed, and the water suffered to remain in this situation for a fortnight, that, while it nourishes the rice, it may destroy the weeds. For two months after this period the land is left dry, during that period it is repeatedly hoed for the double purpose of destroying the weeds and loosening the soil. At the end of this time water is again admitted, and the rice comes to maturity in this situation. The gathering in of the crop commences at the end of August, and usually continues to October. It is cut with sickles by men, the task of making it into bundles devolves on women.

This branch of agriculture, thus conducted, is most prejudicial to the health of the cultivators. The alternate flooding and drying of the land in a hot climate, where evaporation is rapidly going on, is extremely insalubrious. The care of the rice grounds is therefore left entirely to negro cultivators, none of the white population caring to expose themselves to so unwholesome an atmosphere. The hospitals are filled in the autumn with the victims to this unhealthy occupation; the destruction of life consequent on it is very great; and fresh supplies of negro slaves from the more northern slave states are constantly required, to make up the numbers of those who are unfortunately destined to shorten their days amid the marshy exhalations of a rice ground.—*Porter, in the Oriental Agriculturist.*

AN ORNAMENTAL CAST-IRON GARDEN-CHAIR.

THE accompanying design of an ornamental garden chair was communicated some time back by our worthy correspondent, Mr. Saul, of Lancaster, who it will be recollected, designed and communicated the flower-stand figured at page 30 of the present volume of the Magazine of Botany. The chair represented in the woodcut below is made of cast-iron, and the whole is so contrived, that the back, seat, feet, &c., may be detached at pleasure, and conveniently packed in a box, and transferred to any part of the country at a moderate cost. When complete, as shown in the drawing, it forms an agreeable object, and if painted so as to agree with the natural objects surrounding the situation where it is intended to stand, it will have a very pleasing effect, and will not, as is the case with chairs of this description made of wood, be liable to become unsightly by rot, &c., but may after a long series of years be repainted and brought to reassume its former clean and respectable appearance, with the least trouble, and if needed less expense. We have frequently noticed the root part of oak, ash, and other trees cut level on the top, so as to admit of being sat upon, and ornamental chairs and stools made of wood and well painted occupying the recesses in retired parts of the pleasure-ground, &c., where the drip of trees and constant humidity of the atmosphere in such situations have not only in time rotted the latter, and clothed the former in loathsome and unsightly *fungi*, but both have been at times for want of repair, &c., rendered unfit for use. In such situations we think Mr. Saul's ornamental cast-iron chair preferable to wood, as it will at all times and seasons be found in good order, and if painted once in two or three years always neat and tidy. To private retreats in the more immediate neighbourhood of the mansion, where chairs are in constant use Mr. S.'s chair is well adapted. As an ornament it is agreeable and pleasing, and answering the accommodation of a chair, besides possessing the advantages of durability, it recommends itself to almost any situation in the pleasure-grounds or flower garden.



WOODEN RUSTIC ORNAMENTAL VASES FOR THE FLOWER GARDEN OR PLEASURE-GROUND.

FOR the following novel and interesting specimens of wooden rustic ornamental vases, we are obliged to the kindness of Mr. Clowes, of Broughton, near Manchester, who has them placed in his pleasure-ground on the lawn, constructed on the simple economical scheme detailed below.

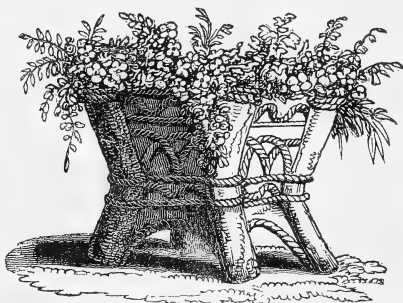
The principal supports of these ornaments, are strong portions of firwood, cut to the required length, and roughly though securely fastened together, so as to present a rude outline of the more perfect effect intended ultimately to be produced, leaving in the centre a cavity for soil, &c. This rude outline is afterwards cased over with the outside portion of old larch trees, cut thin—say two and a half or three inches thick, including the bark which is left on each piece is nailed on, leaving the bark face to form the outer surface. After the whole is covered in the manner described, it has the appearance exteriorly of an uniform coating of rough bark, which is relieved by having lengths of old, otherwise useless cable-rope nailed on in different ways, sometimes in a spiral direction, sometimes perpendicular, sometimes horizontal; and in any central part, a heart or a diamond figure is formed, and now and then the cords cross in different ways: thus embellished, and neatly finished, the effect is very pleasing. And when the sides are hung over in graceful festoons, formed by the pendulous character of the plants suitable for such purposes, and enriched by the striking colours of their flowers, the whole exhibits at once an agreeable and elegant object.

In thus usefully disposing of these simple materials, Mr. Clowes has evinced a taste, and effected an improvement in the construction of rustic ornaments for the flower garden, &c., that has not been in practice before, and one which is, undoubtedly, calculated to do good and become very useful by being generally adopted in such place, as have convenience for it. Any gentleman having a small flower garden or pleasure-ground, and desirous of giving it a picturesque appearance, may resort to the ready and novel way of doing it here laid down, without incurring a great expense. The mode above adverted to, of embellishing either flower baskets or vases, is decidedly preferable to the common plan of nailing split sticks, of different lengths, with various coloured bark, to a flat surface, for the reason that



the disposal of the rope, as an ornament, may be made to assume almost any shape or form, and always maintain an easy elegant appearance, while the other must necessarily at best be stiff and formal.

One or two differing in shape may be situated round or even brought within the boundary of the flower garden with good effect. Others constructed on a somewhat larger scale, may be placed in suitable situations at a more distant part of the pleasure-ground; and here and there one judiciously disposed in terrace walks, &c. &c., would greatly aid the interest of these places. The open space formed in the centre should be made up with good compost, in order that the plants intended ultimately to decorate the whole by their long drooping branches and pretty flowers, may receive support sufficient to enable them to complete a vigorous growth: any loamy soil will answer the purpose well. The following plants may be regarded as proper for planting in ornamental baskets, vases, &c.



<i>Scientific Name.</i>	<i>English Name.</i>	<i>Colour.</i>	<i>Time of Flowering.</i>
<i>Adonis vernalis.</i>	Vernal Adonis.	Yellow.	May.
<i>Alyssum saxatile.</i>	Alysson Rock-flower.	Yellow.	June.
<i>Campanula Carpatica.</i>	Bell-flowered Carpathian.	Blue.	June.
— <i>nitida.</i>	Shining Campanula.	Blue.	June.
<i>Cobæa scandens.</i>	Climbing Cobæa.	Blue.	July.
<i>Dianthus Hispanicus.</i>	Broad-leaved.		June.
<i>Eceremocarpus scaber.</i>	Rough Eceremocarpus.	Yellow.	July.
<i>Gentiana acaulis.</i>	Stemless Gentian.	Blue.	May.
— <i>asclepiadea.</i>	Swallow-wort-like.	Blue.	July.
— <i>cruciata.</i>	Crossed Gentian.	Double blue.	June.
— <i>pneumonanthæ.</i>	Wind-flower.	Blue.	August.
<i>Lophospermum scandens.</i>	Climbing Lophos.	Blush.	July.
— <i>erubescens.</i>	Smaller blush-flowered.		July.
<i>Mamandia Barclayana.</i>	Barclay's Mam.	Blue	July.
— <i>semperflorens.</i>	Ever-flowering.	Rose.	July.
<i>Mimulus moschatus.</i>	Musk-scented.	Yellow.	June.
— <i>rivularis.</i>	River	Yellow.	June.
— <i>smithii.</i>	Smith's.	Spotted.	June.
<i>Ænothera rosea.</i>	Rose-coloured.	Rose.	July.
<i>Pentstemon campanulatus.</i>	Bell-flowered.	Purple.	July.
— <i>pubescens.</i>	Downy.	Lilac.	July.
<i>Potentilla atrosanguinea.</i>	Dark-red Cinquefoil.		July.
— <i>formosa.</i>	Beautiful.	Purple.	May.
— <i>recta.</i>	Upright.	Yellow.	June.
<i>Rhodochiton volubile.</i>	Climbing.	Rich dark purple.	July.
<i>Scutellaria Alpina.</i>	Skull-cap Alpine.		
<i>Sollya heterophylla.</i>	Various-leaved.	Blue.	July.
<i>Tropæolum majus.</i>	Tall Nasturtium.	Orange.	July.
— <i>peregrinum.</i>	Fringe-flowered.	Yellow.	July.
<i>Verbena melindres.</i>	Scarlet Vervain.	Scarlet.	June.

NEW AND RARE PLANTS,

FIGURED IN THE THREE LEADING BOTANICAL PERIODICALS AND FLORISTS' MAGAZINE FOR SEPTEMBER.

BOTANICAL MAGAZINE. Edited by Sir William Jackson Hooker, LL.D., &c., each number containing eight figures; beautifully coloured 3s. 6d., plain 3s.; and corresponding letter-press.

BOTANICAL REGISTER. Edited by Dr. Lindley, each number containing eight figures; beautifully coloured 4s., plain 3s.; and corresponding letter-press.

BRITISH FLOWER-GARDEN. Edited by David Don, Esq., Professor of Botany in King's College, each number containing four plates; beautifully coloured 3s., plain 2s. 3d., and corresponding letter-press.

FLORISTS' MAGAZINE. By Mr. F. W. Smith, each number containing four elegantly coloured plates, with occasionally two or more plants on one plate; large quarto 4s., octavo 2s. 6d. The letter-press is pleasing, and the hints on culture very correct.

Of the above plates, we have only selected such plants as are new or very rare; and only such new ones as are handsome and deserve to be extensively cultivated. For descriptions and figures, reference must be made to the works themselves.

CLASS I.—PLANTS WITH TWO COTYLEDONS (DICOTYLEDONEÆ).

THE GREEK VALE RIANTRIBE (POLEMONIACEÆ).

GILIA TENUIFLORA. Slender-flowered Gilia. A hardy annual, sent by Mr. Douglas from California to the London Horticultural Society, under the name of *Gilia Splendens*. The outside of the corolla is of a pale rose colour, while the inside is of a uniform violet: for the flower garden, Dr. Lindley says, it is not worth cultivating, but it is very pretty in nosegays, or as an ornament to rooms. *Bot. Reg.*, 1888.

THE ROSE TRIBE (ROSACEÆ).

CRATEGUS SPATHULATEA. Spathula-leaved Thorn. This species possesses but little attraction, although it is somewhat singular on account of the fruit even when ripe remaining green. It grows about four feet high, and retains its leaves late in the autumn. *Bot. Reg.*, 1890.

THE PEA TRIBE (LEGUMINOSÆ).

LUPINUS LATIFOLIUS. Broad-leaved Lupin. A hardy perennial, collected in California by Mr. Douglas; it, like the other species of this genus, flowers freely; in the present instance, the flowers are of a purple violet-colour, and are produced from July to September. *Bot. Reg.*, 1891.

MYRSINEÆ.

ARDISIA ODONTOPHYLLA. Tooth-leaved Ardisia. A very desirable species not only on account of its being a handsome evergreen, but more particularly for its delicious fragrance; the flowers are of a pale salmon-colour, slightly streaked

with red. It was introduced by Thomas Carey Palmer, Esq. of Bromley, and flowered, for the first time, in Mr. Knight's nursery of the King's Road, in 1834. It is a stove shrub and native of Bengal, towards the Sylhet borders, and about Gualpara. *Bot. Reg.*, 1892.

THE FIGWORT TRIBE (SCROPHULARINÆ).

ANTIRRHINUM GLANDULOSUM. Glandular Snapdragon. A pretty plant, and certainly a geographical curiosity on account of it being the first species of this genus found wild in the New World: specimens of *A. orontium* have been met with in the United States, but they are believed to have been introduced from Europe. It is quite hardy, and produces its pinkish white flowers about August and September, which continue to open till the frosts come; any soil will suit it, it ripens seed in abundance. *Bot. Reg.*, 1893.

SARRACENIA RUBRA. RED SIDE-SADDLE FLOWER (SARRACENIÆ).

A truly beautiful species, and as Dr. Hooker says, rarely met with in this country, owing, most probably, to its being difficult to cultivate, and shy of flowering. The most striking feature in the flower is, the rich colour of the petals, which is of a deep red, except a little green at the base; they are five in number of a broadly-ovate figure, spreading at the base, the other portion suddenly decurved and flaccid. Many roots were sent from New Orleans by Mr. Drummond, one of which flowered in the Glasgow Botanic Garden in the spring of the present year 1836. *Bot. Mag.*, 3515.

THE JUSTICIA TRIBE (ACANTHACEÆ).

STROBILANTHES SABINIANA. Mr. Sabine's Strobilanthes. A very beautiful stove plant, a native of Nepal, whence it was introduced to our gardens by Dr. Wallich, who named it in compliment to Joseph Sabine Esq., to whom horticulture, no less than natural history in general, is most deeply indebted. Its flowering season is the latter end of winter, when several of the numerous purple spikes (the flowers are a bluish purple) have a succession of flowers; two on each, never more, being open at one time. In many collections this species is called *Ruellia Sabiniana*, and was thus named in *Bot. Reg.*, t. 1238. *Bot. Mag.*, 3517.

BEGONIACEÆ.

BEGONIA SANGUINEA. Blood-red Begonia. This plant, more remarkable for the colour and texture of its leaves than elegant in its form, was raised at the Botanic Garden of Berlin, from seed transmitted by M. Sello, from Brazil, in 1823, and communicated to the Botanic Garden, Edinburgh, in 1832. It flowers in the stove in April. *Bot. Mag.*, 3520.

THE BERBERRY TRIBE (BERBERIDEÆ).

BERBERIS EMPETRIFOLIA. Crow-berry-leaved Barberry. This species forms a low procumbent shrub, with slender, twiggy, angular branches, covered with a chesnut coloured bark. The flowers are solitary, or in pairs of an orange yellow colour, rather large and spreading. It is found in the straits of Magellan,

whence it was introduced to the Clapton nurseries by Mr. Anderson. Its habit is extremely delicate, but is said to be readily increased by layers. *Brit. Flo. Gard.*, 350.

THE CROWFOOT TRIBE (RANUNCULACEÆ).

PÆONIA ALBIFLORA; var. *Pottsii*. Potts's Chinese Pæony. This is certainly the most splendid of the five varieties of *Albiflora* now cultivated in our gardens. It was introduced by Mr. John Potts from China, in 1822, and named by Mr. Sabine, in compliment to that zealous collector who had been sent out by the Horticultural Society, and who died shortly after his return to this country. The flowers, Mr. Don says, are mostly solitary, erect, double. Petals obovate, concave, lobed and toothed, of a rich crimson. It is quite hardy; flowers very freely, and requires the same treatment as the other kinds. *Brit. Flor. Gard.*, 351.

THE CHICKWEED TRIBE (CARYOPHYLLÆ).

CARNATIONS. Pugh's Lady Hill, and Hogg's Colonel of the Blues. These two flowers are new, and as beautiful as any of their classes. Lady Hill was raised by Mr. Pugh, about three years since, who says, "It produces invariably a very large, handsome, and well-formed flower, strongly and definitely marked or ribboned with a most brilliant scarlet on a clear white; the edges of the petals are perfectly entire; it is remarkably constant for so high-coloured a flower, it scarcely ever runs in colour; the petals are even and fleshy."

Hogg's Colonel of the Blues is a most striking flower, each bloom is large and well flaked, with a most brilliant blue purple, the white is very pure, and the flower has a beautiful chaste appearance. *Flor. Mag.*—No. 15.

THE EVENING PRIMROSE TRIBE (ONAGRARIÆ. FUCHSIÆ).

FUCHSIA GROOMIANA. Mr. Groom's Fuchsia. This variety is one of uncommon beauty; the flowers are large and profuse, and the general habit of the plant is strong and elegant. It appears to be a free grower, and much larger in all its parts than any other; but is a strict greenhouse variety. *Flor. Mag.*, 13.

THE CHICKWEED TRIBE (CARYOPHYLLÆ).

PINKS. Middlesex Beauty, Warden, and Omega. These three beautiful varieties are from specimens grown by Mr. Hogg, and may be considered by every Pink-grower to be indispensable.

Hogg's Middlesex Beauty, is a very brilliant and attracting subject, perfect in its form and free in its growth.

White's Warden is a sparkling flower; the dark colour contrasted with its pure white ground gives it a peculiar prominence in the pink-bed.

Unsworth's Omega is a large and well-filled flower; the colour of the lacing is pure and bright; it is certainly a noble and valuable variety. *Flor. Mag.*, 13.

CLASS II.—PLANTS WITH ONE COTYLEDON (MONOCOTYLEDONEÆ).

THE ORCHIS TRIBE (ORCHIDÆ)

CIRRHÆA TRISTIS. Sad-coloured Cirrhæa. A deliciously scented species, native of Mexico, whence it was obtained by Messrs. Loddiges. It is an interesting species, the flowers are of a dark purple colour, and on the scape represented are no

fewer than thirteen flowers. Like its other botanical allies it grows upon the branches of trees, and most likely in a pendulous manner. *Bot. Reg.*, 1889.

THE LILY TRIBE (LILIACEÆ).

YUCCA DRACONIS. Dragon-tree-leaved Adam's Needle. A most beautiful and stately species, found growing along the sea-shore of Carolina, frequently intermixed with *Yucca gloriosa*, and flowers from May to August: it sometimes grows as much as nine or ten feet high. *Bot. Reg.*, 1895.

(YUCCA FLACCIDA) WEAK-LEAVED ADAM'S NEEDLE.

This species was first noticed in the garden of Mr. Vere, of Kensington Grove, where it had probably been raised from North American seed. It is a pretty, and, apparently, distinct species, well marked by its thread-edged scabrous leaves, pallid flowers, and stemless habit. It is readily multiplied by offsets, and like the rest of the genus, thrives most in sandy soil, resembling that of the sea-shore, along which so many of the species are found wild in North America. "Nothing," says Dr. Lindley, "can be better adapted than these plants for ornamenting, either artificial or natural masses of rock-work, precipitous banks, or other situations, where the singular stems can be so much above the eye, as to form a bold and prominent object, standing out in strong relief against the sky. They are hardy perennials, and easily procured in the nurseries. *Bot. Reg.*, 1893 and 1894.

THE ASPHODEL TRIBE (ASPHODELEÆ).

ALLIUM SICULUM. Sicilian Garlic. A remarkable species of this genus found growing abundantly in the shady valleys of Madonia, a mountain 35 miles S. E. of Palermo. The flowers, as represented, are variously marked with purple and white; and in the whole, form an umbel of twenty-seven blossoms. The scent is more powerful than that of any other species in the genus. *Brit. Flor. Gard.*, 349.

THE CORN-FLAG TRIBE (IRIDEÆ)

CROCUS SUAVEOLENS. Fragrant Crocus. This very pretty vernal crocus is found wild about Rome, and in other parts of Italy; and was first recognised as a distinct species, by Professor Bertoloni. The leaves are narrow and erect, of a deep green colour, and the flowers being of a rather pale purple, give the plant an air of attractiveness and gaiety, when the latter are expanded under the early dawns of the sun in spring. *Brit. Flor. Gard.*, 352.

THE ORCHIS TRIBE (ORCHIDEÆ).

BLETIA PATULA. Spreading-Flowered Bletia. A very handsome species received at the Botanic Garden, Edinburgh, from Dr. Fischer, St. Petersburg, in 1830, and said to be a native of Hayti. The flowers, which are large, are extremely handsome, being of a reddish-lilac colour except about the base of the labellum where they are white, and form a raceme of above twenty blooms upon a scape of three feet high. *Bot. Mag.*, 3518.

THE LILY TRIBE (LILIACEÆ).

TULIP. Duchess of Kent. This is a good flower, quite pure at the base and of very firm texture; grows sufficiently high for a third row flower, and in size, certainly is rather above the general dimensions of the family. The prevailing colour of the petals is white, except the margins which are prettily feathered with dark purple; and the centre is, as it were by accident, yet with regularity blotched with a something paler purple colour. *Flor. Mag.*, 13.

 OPERATIONS FOR DECEMBER.

AT this season of the year it appears necessary, perhaps something more than at any other, to call the attention of those having the management of plants, to a few particular points, essential to be observed by them in the discharge of that duty; such embrace the medium of temperature most advisable to be kept in the different houses appropriated to the growth of plants, and which must be regulated according as the plants therein require. The greenhouse in fine weather—that is to say when there is no frost—should have a free admission of air by means of the back ventilators, and the thermometer kept about 45°; and in the night, even when fire is required to expel frost, not more than 40° Fahrenheit.

The Dry Stove, or House, containing succulents, &c., should now be kept unusually dry, and the thermometer in the day from 45° to 50°, and in the night should not be permitted to fall below the former point.

The moist stove, containing *Orchideæ* and other tropical plants, should now have less water, and consequently less air, than usual; in the day the thermometer should average 65°, and the night from 55° to 60°, but not lower.

CHRYSANTHEMUMS now in full flower, should be freely supplied with water and air when the weather will allow.

DAHLIA roots taken up, and undergoing the necessary preliminaries before storing, should be cleaned, that is, all large balls of soil should be taken from amongst the tubers, and well dried; the latter process must be gradual, or they will be likely to rot.

FRAME PLANTS give air to when the weather will allow, but safely secure from frost.

HYACINTHS, &c., in the forcing house, should now be well attended to; give them plenty of water and light, introduce fresh ones, in order to maintain a succession.

PINKS, CARNATIONS, ROSES, RHODODENDRON, &c., should, if desired to flower early, be introduced to the forcing-house.

POLYANTHUSES, &c., must be well secured from frost; still on fine days have plenty of air.



Mess Merisch del. - Smith sc.

Penstemon Murrayanus

PENTSTEMON MURRAYANUS.

(MR. MURRAY'S SCARLET PENTSTEMON.)

CLASS.
DIDYNAMIA.ORDER.
ANGIOSPERMIA.NATURAL ORDER.
SCROPHULARINEÆ.

GENERIC CHARACTER.—*Calyx* five-parted. *Corolla* two-lipped, inflated. *Filaments* five, one of which, the fifth, is longer than the rest, and bearded at its upper end. *Capsule* two-valved and two-seeded. *Seeds* very numerous, of a sub-globose shape.

SPECIFIC CHARACTER.—*Plant* perennial, growing from four to five feet high. *Stem* round, erect. *Leaves* quite glaucous, entire, opposite. *Root* leaves oblong, from seven to eight inches in length, amplexicaul. *Stem* leaves perfoliate and cup-shaped. *Flowers* arising from the axils of the stem leaves, and forming a kind of paniculate raceme, each pair of leaves producing two, four, and even six, slightly drooping flowers, each flower terminating a lengthened peduncle. *Calyx* of five, nearly equal, somewhat spreading, oblong segments. *Corolla* nearly two inches long, enlarging upwards, of a splendid, bright, scarlet colour. *Limb* two-parted, upper part small and divided; lower, large, striking into three oval lobes. The fifth and imperfect filament, red and curved at the end. *Germen* egg-shaped, of a green colour. *Style* red, filiform. *Stigma* obtuse.—*Botanical Magazine*, t. 3472.

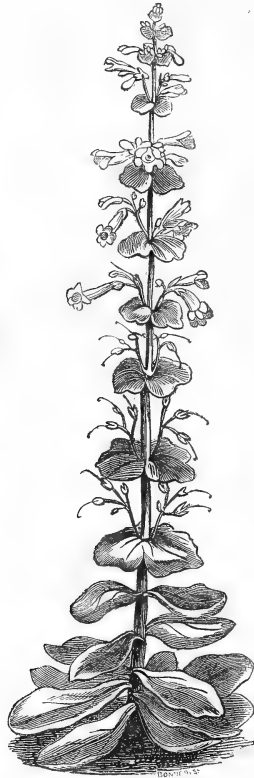
SEEDS of this very beautiful herbaceous perennial were sent to the Glasgow Botanic Garden in the spring of 1835, by the late Mr. Drummond, who found it at San Felipe in Texas; a more splendid addition to our hardy plants has not been introduced for a long period, and what makes it doubly valuable, is its flowering at the latter part of summer and autumn. The late lamented Mr. Douglas sent home some new species of this genus from the north-west coast of North America. *Pentstemon speciosa* is nearest in beauty to the present species, but is a difficult plant to keep and cultivate; from what we know of the present species, it requires no extra care in its cultivation, flourishing in sandy peat, in the open border, where it attains the height of from four to five feet, and produces great abundance of its rich, glossy, scarlet blossoms; on a dried native specimen Sir W. Jackson Hooker counted fifty-six flowers on one raceme: in a state of high cultivation, there is no doubt it will be much finer.

We recommend this plant to the attention of all our readers, as one of the most desirable now cultivated. Messrs. Leucombe, Pince & Co., of Exeter, have now (the 20th of November) plants in full flower in the open border. The accompanying beautiful drawing was made by Miss S. Morrish, of that city.

At the very moment we received Messrs. Leucombe and Pince's drawing, our artist was engaged in figuring a fine plant in flower in the Clapton nursery, belonging to Mr. Lowe.

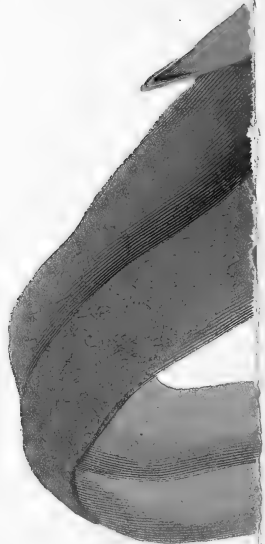
The generic character is taken from *Pente*, five, and *Stemon*, a stamen, on account of there being four perfect and one imperfect stamen peculiar to the genus.

The specific name is given by Sir W. Jackson Hooker, in compliment to Mr. Murray, the Curator of the Botanic Garden at Glasgow.



PENTSTEMON MURRAYANUS.





ISMENE AMANCAES.

(NARCISSUS-FLOWERED ISMENE.)

CLASS.

HEXANDRIA.

ORDER.

MONOGYNIA.

NATURAL ORDER.

AMARYLLIDÆ.

GENERIC CHARACTER.—*Corolla* funnel-shaped, with a long tube; *limb* six-parted. *Nectary* twelve-parted, membranous. *Stamens* inserted on the edge of the nectary.

SPECIFIC CHARACTER.—*Plant* a bulbous perennial, growing upwards of two feet high. *Bulb* egg-shaped. *Leaves* three or more, of a bright green colour. *Scape* from two to three feet high, compressed, two-edged. *Spathes* tapering to a sharp point (cuspidate). *Flowers* from three to six, of a deep yellow colour, in length about six inches, occasionally sessile, and sometimes pedunculated. *Tube* upright, three-cornered, green, fleshy; *limb* nodding, six-parted; *segments* linear-lanceolate, sharp-pointed. *Crown* a little shorter than the limb, twelve-parted, every alternate one narrower, the six broadest bearing the stamens, which are abruptly bent inwards, every stamen marked with a green streak at the base. *Filaments* rather higher than the parts on which they stand, short. *Anthers* incumbent. *Germen* green, three-cornered. *Style* filiform, three-cornered, something thicker than the filaments. *Stigmas* three, very short.

SYNONYME.—*Panocratium Amancaes.*—*Bot. Reg.* 600. *Bot. Mag.* 1224.

THIS rare and beautiful species was imported from the Brazils by Messrs. Middlemist and Wood in 1808, and was afterwards figured in the *Bot. Reg.*, and *Bot. Mag.*, under the above synonyme.

It is a native of Peru, said to be found in abundance on the hills called Amancaes or Hamanchaes, in the neighbourhood of Lima. Along with *Begonia tuberosa*, the beautiful and delightfully fragrant blossoms are said to be used by the South American females as an ornament for their hair. The plant grows about two feet high, and produces its rich yellow blossoms about June and July; from a fine plant, in the possession of the Messrs. Rollison and Sons, our drawing was made about June last.

The genus was named *Ismene*, by the Hon. and Rev. Wm. Herbert, from *Ismene*, a daughter of *Cedipus*.

The following treatment is recommended in Bot. Cult. 108, for the genus *Pancreatum*, to which the above is nearly allied.

Pancreatum.—"Several of the species are very handsome and fragrant, and are met with in most collections of stove plants. A mixture of light turfy loam, with nearly one third fine sand, and a little turfy peat to keep it open, is the best soil to grow them in. If peat cannot be easily procured, half rotten leaves will answer the same purpose. To grow them very fast, it is best to place them in a hot-bed frame or pit in summer, were they will grow to double the size they would in the house. When they are growing freely they require a good supply of water, and as the pots are filled with roots to be shifted into larger ones ; by that means they will flower two or three times in the season, but care must be taken not to give them too much water, when they are not in a growing state. They are to be increased by suckers, or from seeds, which often ripen freely. If any plant happen to lose its heart, if it be kept dry it will throw out abundance of suckers, which is the readiest way of propagating it."



Hibiscia corymbosa

WITSENIA CORYMBOSA.

(CORYMBOSE WITSENIA.)

CLASS.
TRIANDRIA.ORDER.
MONOGYNIA.

NATURAL ORDER.

IRIDEÆ.

GENERIC CHARACTER.—*Corolla* tubular; limb six-parted. *Stigma* marginate, or slightly trifold. *Capsule* three-celled, many-seeded.

SPECIFIC CHARACTER.—*Plant* an evergreen greenhouse perennial, growing more than a foot high, with corymbose smooth flowers.

THIS, although long known to our collections, is by no means a despicable plant; on the contrary, when in flower, in which state it is generally seen about August or September, it makes a conspicuous figure in the greenhouse, with its rather small, lively bright blue flowers, produced in dense corymbs at the extremity of the principal shoots, which, contrasted with the green lance-shaped leaves at their base, render it at all times worthy of a place in every collection.

It was introduced some years ago from the Cape of Good Hope, and although found in many of the collections of this country, it is, comparatively speaking, rare to meet with plants in a free growing state; the fact is, it may be looked upon as one of the many that require particularly steady attention in cultivation. Plants at Chatsworth are treated after the following manner:—The plants, in the first place, are allowed plenty of room in the pots, which are well drained; after which, rather sandy peat soil is used, and when growing, a good supply of water is given; but in the winter they require scarcely any. In the greenhouse they require to have plenty of light, and stand free of other plants, but they do not like to be exposed to a direct current of air, so that they never should stand very near the place where air is admitted.

Our drawing was made from a plant which flowered in the greenhouse at Chatsworth about September last.

The generic name is given in honour of Mr. Witsen, a Dutch consul in India, a lover and patron of botanical science.

The specific name implies that the flowers are produced in corymbs, that is, a kind of raceme or panicle, in which the lower flowers have stalks longer than those of the upper, by which all the flowers are brought nearly on the same level.



Clevecordium speciosissimum

CLERODENDRUM SPECIOSISSIMUM.

(BEAUTIFUL SCARLET CLERODENDRUM.)

WHEN we figured this plant in the November number of the magazine, we had unfortunately seen only a few flowers sent in a box from Exeter, accompanying the drawing; these flowers were no doubt much disfigured in the carriage, for on our plant blooming, we were so much struck with the brilliancy of the colours, and the beauty of the plant, that we determined to make our subscribers a present of an extra plate, to enable them to appreciate more fully the beauty of this lovely exotic. We have not much to add respecting its culture or management, except that to have it fine, we think it should be shifted into a larger sized pot about every month; and well supplied with water while growing. It is also our opinion that it will never flower in the open air in this country; and in this we are partly borne out by the following remarks communicated and extracted from a letter lately received from Messrs. Leucombe, Pince & Co., Exeter.

“ Our plant, which was the first to flower in England, and from which the drawing of the November number was taken, is still in full flower in our warm conservatory, 65°: it however grows best in a temperature of from 65° to 75° Fah. The plant we planted in the open border was cut with the frost on the 20th of October; strong plants should be tried in warm sheltered situations, planted out early in May, it would then perhaps flower finely: at all events the Belgian nurserymen assert that they have flowered it thus.”



CLERODENDRUM SPECIOSISSIMUM.

The above engraving represents the character of our plant at Chatsworth, from which the accompanying coloured figure was taken.

CULTURE OF TELOPEA SPECIOSISSIMA.

PERHAPS this plant may be set down as one of the most lovely that was ever introduced into our greenhouses, whether we take into account its splendid scarlet blossoms, or its fine upright growth; like most of the *Proteaceæ* it is very liable to perish from many causes, and is therefore remarkably scarce, being found in very few collections, and in those few seldom growing in perfection. This deficiency probably arises from too cold an atmosphere in winter, or too much or too little water at any time. To cultivate it successfully, attend to the following rules:—

First. Pot the plant in a mixture of equal parts, very sandy, heath mould, light loam, and leaf mould; if the heath mould cannot be obtained very sandy, a portion of sand must be added to it.

Second. Always be careful to fill about one-third of each pot with broken potsherds, to prevent the soil from ever becoming too sodden.

Third. Drought is as injurious to this plant as too much moisture, therefore by no means ever allow it to flag for want of water; during summer, a good deal of attention is required, particularly as it always locates in an airy situation; a good plan to prevent any evil effects is, at the time of potting, to mix some pieces of coarse soft freestone, broken to about an inch diameter, with the soil; after Mr. M'Nab's plan, these stones retain the moisture longer than the earth, and when the roots have once grown about them, they will derive sufficient nourishment to prevent the plant drooping much longer than it otherwise would; and in winter they keep the passage through the soil more open, for the escape of the water.

Fourth. Never water at the roots, except the soil in the pot appears dry, for if overwatered in winter, it is inevitably destroyed, and in summer is almost sure to be seriously injured.

Fifth. Always place the plant in a dry airy part of the greenhouse, where it will not be smothered by other plants, as nothing spoils the foliage more than too close confinement of this kind.

Sixth. Propagation.—It is propagated by cuttings, which should be made of the ripe wood taken off from the extremities of the branches, just at the close of winter, and planted in sand and covered with a glass.

Seventh. Make no cutting of less length than an inch and a half, take them off at a joint, cut the bottom smooth with a very sharp knife, and take off the leaves from that part to be inserted in the sand, but leave every other leaf entire.

Eighth. In preparing the cutting pots, fill them nearly three parts full of potsherds, the upper ones broken fine; on this bed of drainage lay as much fine sand as will fill the pot level, insert the cuttings deep enough to reach just through the sand, and rest upon the fine potsherds. This system is advantageous for three reasons: first, because there can be no possible stagnation of water, which, to a cutting, would be immediate death; secondly, because the bottoms of the cuttings coming in contact with the broken potsherds, they derive a degree of moisture in so

gradual a manner, as to greatly facilitate their striking, just by the same rule that a cutting planted close to the edge of a pot strikes root much sooner than another planted in the middle of the same pot and subjected precisely to the same treatment; and thirdly, because at the time of potting, the tender roots are more readily taken up without breaking, than they would be if allowed to enter into soil, and go to the bottom of the pot.

Ninth. Plant the cuttings an inch apart, gently water them, but not over the leaves, and when the water has a little dried up, place on the glasses and set them in a warm but dry place, and never plunge them, or you are sure to lose them. The nearer they stand to the glass, the more perfect will be the success.

Tenth. Take off the glasses every day, to allow all damp to dry up, and always be careful, after wiping the glasses dry, to place them on perfectly air-tight.

Eleventh. Shade, during sunshine for the first fortnight, by placing a sheet of paper over the glasses, but afterwards they will require no shading, except the sun be very warm.

Twelfth. As soon as they have made good roots, pot them off into small pots; if this is not speedily done, they will lose their leaves by being so long confined, and may probably all die.

Thirteenth. When potted, place them in the stove for a week or two, until they begin to grow again, when they may be gradually exposed, until they will bear to be removed to the greenhouse, where they may be treated as old plants.

Fourteenth. To grow seedlings, sow the seed in spring in light soil, and as soon as they are up, pot them into small pots, and treat them as cuttings.

OPERATIONS FOR JANUARY.

AURICULAS will be much improved in flowering, if they be top-dressed about the end of this month, or the beginning of February, being careful during this month not to overwater them, as they thrive best if not overwatered during winter.

CAMELLIAS brought into a little heat, either in the window of a warm room, where they will be exposed to the sun, or any other convenient situation, will soon come into flower.

Continue to take plants into the forcing house, such as *Lilacs*, *Pinks*, *Carnations*, &c.

MIGNONETTE and *Ten-Week Stocks* sown in pots about the middle of this month, and placed on a slight hot-bed, will come into flower in May, immediately succeeding those sown in the Autumn.

PLANTS in the forcing house, in, or showing flower, should have a free supply of water.

RANUNCULUSES now planted in frames, will, if the weather be fine, come into flower about April.

ROSES now brought into the forcing house will flower about March.

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