



N 4971

ILLUSTRATIONS OF
ORCHIDACEOUS PLANTS:

A SERIES OF ONE HUNDRED FIGURES,

CHIEFLY SELECTED FROM THE BOTANICAL REGISTER AND BRITISH FLOWER GARDEN,

REPRESENTING THE PRINCIPAL GROUPS OF ORCHIDS;

ACCOMPANIED BY

DESCRIPTIONS OF THE CULTIVATED SPECIES

OF THE GENERA FIGURED;

AND

DIRECTIONS FOR CULTIVATION.

EDITED BY

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A D V E R T I S E M E N T.

THE intention of the present issue of "ILLUSTRATIONS OF ORCHIDACEOUS PLANTS" is to place within easy access of those who take an interest in their study and cultivation, a series of accurate figures, which shall delineate, in some measure, the almost endless variety of structure and appearance occurring in this grotesque-flowered race of plants, and at the same time portray with accuracy the most popular kinds. This the Publisher is enabled to do, in consequence of having become possessed of the original plates from which the numerous fine figures of these plants published in the later volumes of the Botanical Register, under the immediate superintendence of Dr. Lindley, were obtained. To these it is proposed to make such additions as will render the volumes illustrative of all the genera worthy of cultivation. The figures will be carefully coloured; but in order to meet the convenience of an increased number of readers, it is proposed also to issue copies with the plates uncoloured, at a corresponding reduced price. The text will comprise a popular descriptive enumeration of all the species known in a cultivated state, with ample instructions for their cultivation, in the preparation of which the Editor will secure the assistance of able practical cultivators.

The plan of publication which has been thought most convenient, is that of completing one genus or more in each part, except in the few cases in which the larger genera will require to be divided into portions of convenient length. The parts will be charged at the rate of 3s 6d for six plates coloured, with accompanying descriptive letterpress; and the edition with the plates uncoloured will be published at 2s.

The letterpress of each genus will be paged separately, so as to admit, when bound up, of being separated from the rest, and with the corresponding plates re-arranged in any form that may be preferred, whether alphabetical, systematical, or miscellaneous. The genera will be published nearly in the order in which they occur in Dr. Lindley's *Folia Orchidaceæ*, that excellent work being taken as the authority for the nomenclature adopted.

A SKETCH

OF THE

TREATMENT OF ORCHIDACEOUS PLANTS.

IN order to render the cultural hints given under the respective genera the more readily understood, as well as to avoid unnecessary repetition, it is proposed here to give a connected sketch of the general features of Orchid culture.

This superb and justly admired race comprises two distinct classes which are very varied in their general appearance, and are of very different habit; consequently, they require different treatment in cultivation. One class, styled *EPIPHYTAL*, are only found inhabiting tropical or sub-tropical countries, where they adhere by their tortuous roots to the branches of trees, or luxuriate amongst the decaying vegetable matter that collects about all trees growing in a hot humid climate. The other class, called *TERRESTRIAL* from the fact of their growing naturally in the earth, are natives of mountains or meadows, or wet swampy places, many of them occurring in temperate climes. The species belonging to these two groups, known to botanists, have been estimated at 3,000, but perhaps not more than one-third of these are in cultivation. Of the latter many are small and insignificant, while the flowers of a considerable number of them are among the most resplendent and attractive to be found in the whole vegetable kingdom.

The first consideration in the cultivation of these plants

is the proper kind of SOIL, &c., for unless the materials used are of a suitable description, all efforts to attempt their cultivation will be futile, or attended with but little success. The kinds of soil necessary to be procured are:—good light brown fibry peat of a spongy texture, not too much decayed; sphagnum moss; leaf mould; turfy loam; and silver sand.

The POTS used should be of various sizes, according to the habit of the plant. This after all is in great measure a matter of taste; it is, however, a good rule, and always safe, never to over-pot a plant, as in that case the soil is liable to get consolidated, and if it gets too wet the roots will perish. There are some pots manufactured by Mr. Phillips of Weston-super-Mere, which are admirably adapted for the growth of Orchids. They are of various sizes, and are cut longitudinally or obliquely into slits, so as to admit plenty of air to the roots, and to allow the water to pass away freely; they are moreover very light and ornamental, but require to be handled carefully as they are easily broken. The most desirable form of pot for general use, is shallow, with its sides perforated throughout to within a short distance of the rim with holes about half an inch in diameter. Shallow pans constructed in the same manner, are found advantageous for many species.

Some kinds instead of pots require planting in open-work BASKETS. These light, airy receptacles should be made of copper wire, iron being objectionable on account of its speedily becoming oxidised, unless indeed it is galvanized, after being made, when it answers well for a large basket of fifteen inches or upwards in diameter. The less wire used in making these baskets the better, only just enough being required to make them firm. Rustic baskets may be formed of wood, which answer exceedingly well, and for many kinds of plants are far preferable to wire; they too may be made ornamental if constructed with taste. A light useful form is made with hazel or oak sticks, about an inch in diameter, fastened at each corner by a brass

pin passing through their ends; this form is very easily constructed, and as the rods decay fresh ones may be readily added.

BLOCKS of wood, which are required for certain species, should be of various sizes, according to the size of the plant. The wood of the elder is preferable to any other, being the hardest and most durable under the vicissitudes of dryness and wetness to which it becomes exposed. That of the oak is likewise good. The trunks of arborescent ferns, or the husks of the cocoa-nut are also excellent receptacles for the aërial species.

Having procured the materials, the next consideration is how to use them. This brings up the subject of POTTING, or its equivalent, the planting them on baskets or on blocks.

First of the *Epiphytal* kinds. These will generally succeed either in pots, in baskets, or on blocks; the particular kinds best suited to each mode of growth will be noticed hereafter. Whether planted on pots, in baskets, or on blocks, nearly the same kind of material is used. If pots are employed, the plant must be elevated above the rim in this way:—Invert a small pot inside the larger one and fill around it with charcoal or broken potsherds nearly to the top; then with a mixture of the light fibry peat, chopped sphagnum, and potsherds or charcoal broken small, pot the plant in the centre of the pot, fixing it with a strong hook if it requires any support to steady it, and making the soil a little firm, but not solid, as the chief aim is to keep the roots in an open porous medium. If the soil becomes at all solid, so that the water does not pass readily away the plants soon become sickly, and in such cases should be taken out and repotted in looser material. When baskets are used, a thin layer of long sphagnum moss should be first laid in them to prevent the other materials from falling through. Place the plant high in the centre, with not more than from two to four inches

thick of the soil-mixture under it. The baskets should be shallow, as it is principally surface room that is required. After planting, clip round the basket with a pair of shears to secure a neat appearance. Plants put on blocks should be firmly fixed with zinc or copper wire, and a little sphagnum moss should be placed about their roots to retain moisture. The plant is to be placed about the middle of the block; and when fixed suspended in an inclined position. There are many kinds that will not thrive except thus planted upon blocks; and if a plant of an epiphytal species becomes sickly, it is often restored by being placed on wood, and kept in a shady place.

The TERRESTRIAL kinds should be potted in a mixture of turfy loam, leaf mould, fibry peat, and charcoal or potsherds broken to about the size of a nut or larger, using sufficient of the latter to keep the whole mass porous. The Cape and New Holland species, with one or two others, are best cultivated in a mixture of peat and gritty sand in equal proportions. Good drainage, in all cases, is most essential, it is indeed indispensable to their well being; these may be potted in a similar way to woody plants—that is, not elevated, but kept within the pots, not deep but just allowing sufficient room for water.

Small houses or pits are infinitely better STRUCTURES for the cultivation of Orchids than large ones, the obvious reasons of which are, that a more congenial atmosphere, and a more equable temperature, can be maintained in them with greater facility, than could possibly be the case in larger houses. In all large structures it is found by experience, that plants do not grow with the same amount of energy and vigour, and are less easily stimulated into vital action, than when placed in houses of small magnitude, where a close humid atmosphere can readily be kept up. For some plants large structures are essential, as for example, Palms, Musas, Tree-

Ferns, Bamboos, and other robust growing tropical trees,—for these could not be contained in small houses, except when in a young state, when of course they can never develop their natural character, nor be seen to advantage; but all small or low growing plants, are best kept in small and low-built houses. That for Orchids should have an east and west aspect, and should be eight or nine feet high in the centre, and glazed with small squares. The width may be about twelve or fourteen feet, and the length whatever is required. Two or three houses are necessary; or if one house, it should be divided into compartments, one house or division being devoted to the East Indian species which require a high temperature; another to the Mexican ones which require a cooler atmosphere; and a third to be kept comparatively cool and dry, into which the plants should be removed during their flowering season, for this will have the effect of prolonging their blossoms twice or thrice the time they would last if allowed to remain in the hot damp atmosphere of the growing house.

SHADING is necessary to be had recourse to, to prevent the powerful rays of the sun, which would soon injure them, from coming in contact with the plants. There are several kinds of canvas shading used. Those which are too dense are not the best, and those which are too thin or light are not quite effectual. The best are those that allow to pass through a little sunlight somewhat similar to the dull sunshine of the winter season. Painting the glass on the outside, is advantageous, if it is a south aspect, and this does away with the necessity of any other kind of shading. It has been successfully adopted in the case of houses glazed with large sheets of glass and does not darken too much in the winter season. Canvas shading requires to be used from about the beginning of March to the end of September.

VENTILATION must be attended to. Fresh air should be

admitted on every opportunity in mild weather, during the day-time, if only for a short time, as it sweetens the house, and invigorates the plants. A sufficient degree of ventilation should be afforded to allow the leaves to become dry during the middle part of the day, the house being closed with plenty of moisture, early in the afternoon. If the weather will admit of it, a little air may be given later, and left on through the night.

The TEMPERATURE required varies with the different groups, and according to the season of the year. In the "East Indian" house the thermometer should range from 70° to 85° or 90° during the season of growth; that is, the higher temperature should be kept up during the day-time in sunshine, and it should gradually decrease to 70° by the morning. During the resting season, the minimum temperature should be about 65°, and maximum about 70°. In the "Mexican" house the thermometer should range during the growing season, from 65° to 75° or 80°, the higher temperature being that to be maintained during the day, and the lower during the night; while in the season of rest it should range from about 55° to 60°.

The application of MOISTURE depends entirely upon the amount of heat kept up. Sufficient must always be made use of to prevent that aridity which is uncomfortable to one's feelings on entering the house, the perception of which can only be acquired by practice. Let us take a lesson in this particular from the book of nature. We find that as the summer advances the heat increases, and with it the moisture increases in the same ratio. So in the artificial climate during the growing season: when a high temperature is kept up, water should be given copiously, syringing over head night and morning in hot weather, and throwing abundance of water about the house during the day, to keep up a humid atmosphere. As the season advances less syringing over head,

and less humidity, will be required, until the resting season arrives, when syringing is dispensed with altogether. The application of water to the roots is one of the most important operations in their culture, and should be performed with caution and judgment. It is better in most instances to give too little than too much; for though in the former case, that is, if the plants do not receive a sufficient quantity of water while growing, there will result a poor weakly growth; yet in the latter, if so much is applied that they become saturated, and are unable to perform their proper functions, they soon disappear altogether. Some kinds require much more water than others; but, as a general rule, the pseudo-bulbs should never be allowed to shrivel. During the growing season the plants should be assisted by every possible means; and the proper time to apply more heat and moisture is when they begin to shew signs of new growth; this is likewise the best time to pot them, if they require it. During the resting season they should enjoy an uninterrupted repose, water should be withheld and the plants kept cool, and all but absolutely dry; many kinds will only require water but twice or thrice during the whole winter.

The method of propagating Orchids is very simple. It is easily effected by division of the plant. Care should however be taken in the case of the epiphytal kinds, that the rhizome or stem is separated so that each part may have roots. The terrestrial kinds should be separated between the pseudo-bulbs, so as to leave two or three to each portion, which will soon form a good plant. It is not advisable to divide them to single pseudo-bulbs, or into very small pieces, as this renders them weak, and they require a long time to gain sufficient strength to enable them to flower. Some kinds have been propagated by seed, but the method is too tedious to be of much practical utility. Some species are easily propagated by cuttings, which strike root freely from every joint, if put

into silver sand under a bell-glass, and plunged in a little bottom heat.

NEWLY IMPORTED PLANTS, on their first arrival, should be carefully examined, and all that are alive should be kept in a cool shady part of the house, without water for some time. They may be laid close together with a little sphagnum moss amongst them, and occasionally sprinkled with water if they become very dry. If they were at once subjected to a violent heat, with abundance of moisture, the transition being too sudden, many of them would decay. As soon as they begin to shew signs of growth, they should be potted, or put upon blocks or in baskets as may be required ; but they must be watered very sparingly for some time. Both water and heat should be applied gradually, until the plants become thoroughly established. Much of their future success depends on the season when they are imported, and also when they were taken from their native habitats. If they are removed from their native localities during their growing season, and before their growth is complete, packed up in close cases and subjected to a long sea voyage, it is almost certain that they will never survive the transit, or if they do, it is with great difficulty that they become established. If they arrive late in autumn or during winter, they are so chilled as to be scarcely able to recover, if they are not indeed destroyed altogether by frost. They should never arrive before April or May, and not later than October ; and should be collected after their growth is completed.

Few plants are less liable to DISEASE or ACCIDENT, or are less infested with INSECTS, than Orchideæ, when they occupy a house by themselves ; but they never succeed well when mixed with other plants, excepting, perhaps, the ferns. Climbing plants trained on the rafters look very well, and afford a little shelter ; but if these are introduced, they should consist of such kinds as are not liable to be attacked with mealy bug or red spider, otherwise they may become infested

with these insects at a time when syringing over head is withheld, and in that case they soon overspread the house. The most troublesome pests that attack Orchids, are the thrip, scale, and cockroach, which should be exterminated, if possible, as soon as they make their appearance. The plants will never thrive well unless they are kept clean. To destroy the thrip or red spider, take the plant out of the house and syringe it well all over, then wash it clean with a sponge. Fumigating with tobacco will destroy the thrip, but it requires to be repeated many times to be effective, although one fumigation will destroy the green fly. Cockroaches are the most destructive enemies of these plants, and if they once gain admission into the house, they are not easily exterminated; arsenic mixed with treacle or tallow, is a good means of destroying them, or treacle put into phials or cups and placed in different parts of the house becomes a good trap for them. The plants should be carefully searched over by candle light, when these pests may be easily found, and destroyed.

The following Genera succeed best when planted in pots, being mostly of terrestrial habit of growth; they should be potted within the pot in the ordinary way:—

Acanthophippium.	Cyrtopodium.	Phajus.
Ania.	Disa.	Physurus.
Ansellia.	Eulophia.	Platanthera.
Anætochilus.	Goodyera.	Pelexia.
Aporum.	Govenia.	Pleione.
Arundina.	Grammatophyllum.	Prescottia.
Bletia.	Hæmaria.	Satyrium.
Bromheadia.	Houllettia.	Sauroglossum.
Calanthe.	Isochilus.	Sobralia.
Calopogon.	Limatodes.	Spathoglottis.
Catasetum.	Liparis.	Spiranthes.
Cœlia.	Lissochilus.	Stelis.
Clowesia.	Mormodes.	Stenorynchus.
Chloræa.	Myanthus.	Uropedium.
Cyathoglottis.	Ophrys.	Vanilla.
Cyenoche.	Orchis.	Warrea.
Cymbidium.	Paxtonia.	Zygopetalum.
Cypripedium.	Peristeria.	

The following succeed well in pots, though they are of epiphytal habit. In potting, however, they require to be elevated considerably above the level of the pot-rim :—

Acriopsis.	Dichæa.	Pachyphyllum.
Acropera.	Dicrypta.	Paphinia.
Aganisia.	Dinema.	Pholidota.
Angræcum (some sp.)	Epidendrum (some sp.)	Pilumna.
Anguloa.	Eria.	Pleurothallis.
Arpophyllum.	Eriopsis.	Polystachia (some sp.)
Aspasia.	Galeandra.	Promenæa.
Batemannia.	Grobya.	Restrepia.
Bifrenaria (some sp.)	Hartwegia.	Rodriguezia.
Brassia.	Huntleya.	Scaphyglottis.
Cattleya.	Lælia (some sp.)	Stenia.
Cœlogyne.	Lycaste.	Trichocentron.
Coryanthes.	Maxillaria.	Trichopilia.
Cryptochilus.	Masdevallia.	Trigonidium.
Cyrtochilum.	Miltonia.	Xylobium.
Dendrobium (some sp.)	Odontoglossum.	
Dendrochilum.	Oncidium (some sp.)	

The following Genera are adapted for being planted on blocks or in baskets ; those of them marked (*b*) should be planted in baskets only :—

Acineta (<i>b</i> .)	Dendrobium (some sp.)	Ornithidium.
Aerantes.	Epidendrum (some sp.)	Phalænopsis.
Aerides.	Epiphora.	Polystachia (some sp.)
Angræcum (some sp.)	Epithecium.	Renanthera.
Barkeria.	Fernandesia.	Saccolabium.
Bifrenaria (some sp.)	Gongora (<i>b</i> .)	Sarcochilus.
Brassavola.	Ionopsis.	Sarcanthus.
Broughtonia.	Lacæna (<i>b</i> .)	Scelochilus.
Burlingtonia.	Læliopsis.	Schomburgkia.
Bolbophyllum.	Lælia (some sp.)	Scuticaria.
Camaridium (<i>b</i> .)	Lepanthes.	Sophronitis.
Camarotis.	Malachadenia.	Stanhopea.
Chysis (<i>b</i> .)	Megaclinium.	Trichosma.
Cirrhæa.	Mormodes.	Trizeuxis.
Cirrhopetalon.	Nanodes.	Vanda.
Cleisostoma.	Oberonia.	
Comparettia.	Oncidium (some sp.)	

THE GENUS SARCOPODIUM.

THE SARCOPODIUMS have been separated from *Bolbophyllum*, on account of certain differences in the structure of the flowers of the few species which are known. Dr. Lindley considers them intermediate between the Bolbophyls and Dendrobes, differing from the former, in having four pollen-masses and a hornless column, and from the latter, in having coriaceous flowers with the lateral sepals inflated and expanded below, and the tough leathery lip enlarged, not contracted, at the base. The genus was proposed by Dr. Lindley, and consists of a dozen or more tropical Asiatic pseudo-bulbous epiphytal herbs, having solitary leathery leaves, and conspicuous flowers, which either grow singly or few together on radical flower-stalks springing from the base of the pseudo-bulbs. They have the creeping habit of Bolbophyls.

The genus is named from the Greek *sarx*, flesh, and *podos*, a foot; alluding no doubt to the fleshy foot-like development of the base of the column.

In the blossoms of the Sarcopods, which are thick or fleshy in texture, the sepals are ringent; the lateral ones, which are adnate with the foot of the column, being expanded in a ventricose or swollen manner at the base, and sometimes as large, and sometimes smaller, than the dorsal one. The petals are smaller than the sepals. The lip, which is also small, and articulated with the base of the column, is moveable, and subcordate at the base, sometimes furnished with three short crests, and sometimes being without such appendages. The column is short. The four pollen-masses are waxy, nearly equal, collateral, and wholly separate.

The *Sarcopods* require the same kind of treatment as the closely allied *Bolbophyls*. With the ordinary attentions of Orchid management, they are, however, plants of remarkably easy culture.

They may be cultivated in pots, and succeed admirably in a compost consisting of two parts fibrous peat to one part of chopped sphagnum or water moss as it is commonly called, adding to the mixture a few potsherds broken small; the whole must be thoroughly mixed together. The pots require to be filled with drainage materials to within two inches of the rim; over this should come a layer of sphagnum, and then the pots should be filled up with the compost, a couple of inches or so above the level of the pot, disposing it in a bluntly conical form. The plant is to be placed on the top, and secured with a few neat hooked pegs. Those pots are the most suitable which are shallow, and wide across the top. If placed in a genial atmosphere, after being thus potted, the plants will soon root freely from the base of the pseudo-bulbs, and along the rhizomes.

If it is preferred, they may be grown on blocks of wood. In this case a portion of sphagnum should be packed about the roots, and secured with metallic wire. Plants in such a position, however, will be found to require much more frequent attention as to watering.

The *Sarcopods* may almost be said to be perpetual growers, consequently they require very little rest during the winter months, but should merely be kept somewhat drier at that season, in a temperature of from 60° to 65°. When the winter is past, the usual routine of the East India house will be all that is required; that is, a strong sweet heat, and an atmosphere saturated with moisture. In summer the plants should receive water twice a day at least, and the temperature should be kept about 80° by day, and about 65° at night. In winter

[SARCOPODIUM.—3.]

for a few weeks very little water will be required, only as much as to keep the pseudo-bulbs from shriveling.—H. B.

With the exception of Lobb's Sarcopod, which is really a handsome plant, the species possess more botanical than horticultural importance.

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1. Lobb's Sarcopod [Plate I.]—SARCOPODIUM LOBBII, *Lindley in Paxt. Flow. Gard.* i. 154, *fig.* 98. BOLBOPHYLLUM LOBBII, *Lindley in Bot. Reg.* 1847, under *t.* 29; *Bot. Mag.* *t.* 4532. SESTOCHILUS, *Herb. Hooker.*—Native of Java.

A fine and showy-flowered epiphyte, the blossoms being as much as four inches across. The sepals are deep buff yellow, the dorsal one marked externally with purple spots arranged in lines, the lateral ones falcate, and streaked and clouded with purple; the petals are like the upper sepal, but smaller, and streaked with purple lines; the lip is cordate-ovate, acuminate, reflexed, with a long claw, and is yellow with minute orange dots.

There is in cultivation a smaller flowered plant [also represented in Plate I.], differing from *S. Lobbii* in the petals being more sickle-shaped, and scarcely more than half the breadth of the dorsal sepal, and in the blossoms being altogether smaller, paler coloured, and much less marked with purple spots. It is known in gardens under the name of *S. Henshallii*, and was sent, in 1848, from Java by Mr. Henshall the collector of Messrs. Rollisson. This variety, like the species, is of a creeping habit, and forms its pseudo-bulbs at short intervals along the stems; they are tapering, usually from an inch and a half to two inches long, and one inch through the widest part, and are partially enveloped in a fibrous skin. Each pseudo-bulb produces one leaf, which is from five to seven inches long, and upwards of an inch wide, tapering to an obtuse point. The flower-stem rises from the base of the pseudo-bulb, and is six inches in height, bearing a solitary flower two and a half inches across the points of the sepals. The colour is a soft buff on the upper surface, the back of the sepals beautifully marked with small spots of a reddish purple, very thickly studded together, leaving a narrow white margin; the column is also very delicately spotted with the same colour. The lip is almost arrow-shaped, with the point curved abruptly downwards, and so delicately poised that the least touch causes it to oscillate with a tremulous motion. This peculiarity compensates in some measure for the absence of vivid colour in the flower. The two petals are gracefully curved, and, taking the column for the

[SARCOPODIUM.—4.]

body, have a marked resemblance to the wings of the swift (*Cypselus murarius*), when performing its impetuous gyrations. The flowers are abundantly produced through most of the summer months, and last long in perfection.

2. **Large-flowered Sarcopod** [Plate II.]—*S. MACRANTHUM*, *Lindley in Paxt. Flow. Gard.* i. 155; *BOLBOPHYLLUM MACRANTHUM*, *Lindley in Bot. Reg.* 1844. t. 13.—Native of Singapore.

This species, though bearing the name of “large-flowered,” is neither so large nor so showy as *S. Lobbiani*, and is one of the instances constantly occurring which prove the impracticability of employing really discriminative scientific names. The use of such an appellation is explained by the circumstance of its having been the largest known at the time the name was given. The scape is one-flowered, and the flowers themselves expand remarkably flat, and are pale lemon-colour in the centre, much mottled with dark chocolate-coloured spots towards the tips of the sepals and petals. The lip is very small.

3. **Hand-flowered Sarcopod**.—*S. CHEIRI*, *Lindley in Paxt. Flow. Gard.* i. 155. *BOLBOPHYLLUM CHEIRI*, *Lindley in Bot. Reg.* 1844, misc. 56.—Native of Manilla.

A very singular species, with comparatively large flowers, the sepals being an inch and a half long, clear olive green, marked with brownish stripes. Its peculiarity is that the sepals and petals converge much like the human fingers when they are brought together without being bent. The lip is jointed so loosely with its support that it falls forward every time the flower is put in motion.

4. **Capped Sarcopod**.—*S. PILEATUM*, *Lindley in Folia Orchidaceæ.* *BOLBOPHYLLUM PILEATUM*, *Lindley in Bot. Reg.* 1844, misc. 73.—Native of Singapore.

This species has large yellow-ochre-coloured solitary flowers. The lip is nearly flat, moveable, stained with two purple ridges near the base, between which is a little bright yellow valley. The anther is cone-shaped like an old-fashioned high-crowned hat, whence the name.

REFERENCE TO THE PLATES OF THE
GENUS SARCOPODIUM.

Plate I.—SARCOPODIUM LOBBII, *Lindley*.
With the variety *Henshallii*.

Plate II.—SARCOPODIUM MACRANTHUM, *Lindley*.
Fig. 1.—The lip, showing its moveable apex.



Miss C. C. Sowerby del.

Ac. Aglio, Jun. 1870. Zinco

SARCOPODIUM

II



Miss Drake del

J. Barclay sc

THE GENUS CIRRHOPETALUM.

THE genus CIRRHOPETALUM, proposed in 1824 by Dr. Lindley, and synonymous with Reinwardt's *Zygoglossum*, consists of a score or more species of small growing Orchidaceous epiphytes, inhabiting the East Indies, and the Islands of the Eastern Archipelago. They are not so remarkable as many of this family for showiness, but they are nevertheless a singular group, in many instances pretty and highly curious.

The structure of the flowers of the *Cirrhopetalums* is as follows:—The sepals are ringent, the upper ones much shorter than the lateral ones, which are acuminate, very much lengthened, and oblique, their base adnate with the column; the petals are short, apiculate; the lip entire, articulated with the base of the column. The column itself is short, much produced at the base, and two-horned at the apex. The anther is two-celled, with four pollen-masses, connate in pairs, the two inner much smaller. They are pseudo-bulbous plants, with a creeping rhizome bearing one-leaved pseudo-bulbs, the leaves leathery and veinless. The flowers are densely racemose, sometimes radiate or umbellate, at the apex of a radical scape, or in some species solitary.

The name is derived from *kirros*, tawny, and *petalon*, a petal; and is given in allusion to the prevailing colour in the flowers of several of the species.

The species of *Cirrhopetalum* are dwarf growing plants, not easily distinguished from *Bolbophyllums*, except by the formation of their flowers, which have two long drooping

[CIRRHOPE TALUM.—2.]

petals, by the presence of which they are readily recognised. They are of nearly uniform habit, having a creeping rhizome, with small or moderate-sized pseudo-bulbs, each furnished with a solitary leaf. Some of them are charming little things, others are remarkable for their grotesque singularity, and some others are only subjects for the botanist. The peculiar arrangement of their flowers, which are disposed around a common centre, is one striking characteristic.

To cultivate them successfully, they should be planted upon billets, or small pieces of wood, choosing that having rough bark, such as the elder or oak. On these, the rhizomes should be fastened by means of zinc wire, a little sphagnum moss being put about them to prevent too much aridity. If the wood is smooth, it may be covered all over with a thin coat of sphagnum, which will contribute materially to the well-doing of the plants. When the wood decays it is easily replenished. The plants, when in flower, show to much better advantage on wood, than in any other way.

The coolest part of the 'East Indian' house is the most appropriate place in which to grow the plants. Most of them thrive admirably when suspended against the wall, where the influence of moisture can always be brought to bear upon them, and where they will not be exposed to excessive heat. A shady moist situation is, in fact, what they delight in, especially during their growing season. When they are not growing, a temperature of 55° to 60° is quite sufficient, with the atmosphere dry in proportion. They require more attention and are more troublesome to cultivate than many larger growing kinds, chiefly on account of their occupying but a small space, so that they are readily over-looked. If they are exposed too much to air or sunshine, they invariably suffer, by becoming too dry. To avoid this, syringe them over head three or four times a day, if the weather is hot to render this necessary; but always use tepid water, and prevent the clear

[CIRRHOPETALUM.—3.]

scorching rays of the sun from acting upon them. When in flower, if they are removed to a cool atmosphere, they remain for a much longer period in perfection, than if kept in the higher temperature and moister atmosphere congenial to their growth.

Like the majority of Orchidaceous plants these are increased by division, the parts being separated, and suffered to remain otherwise undisturbed, until they are firmly established. Their removal is of course best effected at potting time, which is just before growth recommences.—J. H.

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1. **Sheathing Cirrhopetalum.**—*C. VAGINATUM*, *Lindley, Wall. Cat.* 1979; *Bot. Reg.* 1842, *under t. 12.*—Native of Singapore.

This plant resembles *C. Medusæ*, but is smaller. It also differs in its whole coloured flowers of a pale tawny colour; in its flowers being ciliated, and having the petals oblong, not triangular and acuminate; and in the distant sheaths of the scape, which supports a short recurved raceme of four or five blossoms.

2. **Medusa's head Cirrhopetalum.**—*C. MEDUSÆ*, *Lindley, Bot. Reg.* 1842. *t. 12.*—Native of Singapore.

A much larger plant than *C. vaginatum*, with pale tawny flowers speckled with pink. Both have the lateral sepals very much lengthened and pendulous, and in the scape being clothed with ventricose scales; but in this, the dorsal sepal is shorter, the petals triangular acuminate, and the lip ovate-acuminate instead of being oblong. The pseudo-bulbs are four-cornered. Alluding to the pendulous filiform sepals, Dr. Lindley remarks: "Certainly, if ever there was a Medusa, this must be the prototype before her Gorgonship's beautiful tresses were changed into serpents; nor are wanting the scales with which her form was guarded." It is a plant of the curious class.

3. **Tufted Cirrhopetalum.**—*C. CÆSPITOSUM*, *Wallich MS., Bot. Reg.* 1838 *misc. 53.*—Native of India.

A small growing species, with ovate pseudo-bulbs. The scape is filiform, terminated by an umbel of small pale yellow-ochre coloured flowers.

4. **Horned Cirrhopetalum.**—*C. CORNUTUM*, *Lindley, Bot. Reg.* 1838, *misc. 138. Bot. Mag. t. 4753.*—Native of India: Khasiya.

A curious species, having oblong-ovate pseudo-bulbs. The leaves are large, being as much as six or eight inches long. The flowers have the lateral sepals dull purple, and connate into a horn, whence the name; the upper sepals and petals greenish, streaked with purple.

[CIRRHOPETALUM.—4.]

5. **Spotted Cirrhopetalum.**—*C. MACULOSUM*, *Lindley, Bot. Reg.* 1841, *misc.* 173.—Native of India.

A species of little beauty. The flower stalks and flowers are of a very pale green, finely speckled with dull purple.

6. **Chinese Cirrhopetalum.** [Plate II.]—*C. CHINENSE*, *Lindley, Bot. Reg.* 1842, *misc.* 29; 1843, t. 49.—Native of China.

One of the prettier species of the genus; the flowers, which are comparatively large, are, in general appearance like those of *C. maculosum*; the petals and upper sepals purple, the lateral sepals yellowish green. They are arranged in a circular manner on the umbel, each with the face turned outwards. Dr. Lindley observes in allusion to this arrangement of the curious flowers, that there need no longer be any speculations as to the causes which have led Chinese artists to invent strange figures of men and women with their chins in perpetual motion; for here we have a Chinese plant, one of the lobes of whose flowers—the lip—is exactly a tongue and chin, and so unstable as to be in a state of continual oscillation, presenting all around the umbel, a row of grinning faces, and wagging chins.

7. **Thouars' Cirrhopetalum.** [Plate III.]—*C. THOUARSII*, *Lindley, Bot. Reg.* t. 832 (in text); 1838, t. 11; *Gen. et Sp. Orch.* 58; *Bot. Mag.* t. 4237. *EPIDENDRUM UMBELLATUM*, *Forster, Prod.* 321. *ZYGOGLOSSUM UMBELLATUM*, *Reinwardt, Bot. Zeit.* 1825, ii. 4. *CYMBIDIUM UMBELLATUM*, *Sprengel, Syst. Veg.* iii. 723.—Native of the Society Islands, the Philippines, Java, Mauritius, and Madagascar.

A curious plant, with four-cornered pseudo-bulbs, and a half umbel of pale reddish cinnamon coloured flowers, with a little purple dotting about the sepals and petals. The long strap-shaped sepals growing from one side of the flowers, and almost bearing them down by their weight, are very remarkable, as in others of this family, and offer a singular instance of unequal force of development in the parts of the flower.

8. **Wallich's Cirrhopetalum.**—*C. WALLICHII*, *Lindley, Wall. Cat.* 1980; *Bot. Reg.* 1839, *misc.* 119.—Native of India: Nepal.

A small species, with ovate pseudo-bulbs, and a radical scape terminated by an umbel of 4-8 flowers, which are said to be pale fulvous, the petals and upper sepals somewhat stained with red at the base, and the lip spotted within.

9. **Macrae's Cirrhopetalum.**—*C. MACRÆI*, *Lindley, Gen. et Sp. Orch.* 59 *Bot. Reg.* 1841, *misc.* 105; *Bot. Mag.* t. 4422.—Native of Ceylon.

This species has the habit of *C. Thouarsii*, and bears a short raceme of blossoms, which have long dull brownish yellow sepals and purple petals; they are curious, but not very attractive.

10. **Painted Cirrhopetalum.**—*C. PICTURATUM*, *Loddiges, Bot. Reg.* 1840, *misc.* 106.—Native of India.

[CIRRHOPETALUM.—5.]

A pretty small species, the pseudo-bulbs oblong and angulate, and the flowers purple deeply stained with dark red, growing in flat umbels supported on a scape five or six inches high.

11. **Gold-edged Cirrhopetalum.** [Plate IV.]—*C. AURATUM*. *Lindley, Bot. Reg.* 1840, *misc.* 107 ; 1843, t. 61.—Native of the Philippine Islands.

One of the most interesting species of the genus. Its habit is to hang down from the branch of a tree, which it overruns with its delicate roots, and small egg-shaped furrowed pseudo-bulbs. The leaves are very thick, deep green above, and convex ; stained with purple beneath. The flower-stem is as slender as a small thread, and too weak to bear the umbels of flowers, which therefore hang down gracefully, and are balanced in the air. As in many others of this genus, the umbels are so arranged that the flowers are all on one plane, and diverging equally from the centre form a circle, whose interior is occupied by the lower part of the flowers, and whose circumference is formed by the long flat strap-shaped lateral sepals, which look like so many party-coloured ribbons collected into a balloon. The flowers themselves have a yellowish ground, striped and mottled with crimson. The upper sepal and two petals, badly drawn in the figure, are fringed with golden hairs, and tapered into a fine point. The lateral sepals are quite destitute of hairiness, and only faintly stained with purple. It differs from *C. picturatum* in its party-coloured, not purple, flowers ; in its petals being far less taper-pointed, and not villous ; and in the lip not having a central ridge, which is conspicuous in *C. picturatum*.

12. **Cuming's Cirrhopetalum.**—*C. CUMINGII*, *Lindley, Bot. Reg.* 1843, *under t.* 49.—Native of the Philippine Islands.

A species, with four-cornered pseudo-bulbs, and many-flowered umbels of whole-coloured deep-purple flowers, having long yellow hairs on the petals, and on the back sepal. It is one of the more showy species.

13. **Nodding Cirrhopetalum.**—*C. NUTANS*, *Lindley, Bot. Reg.* 1839, *misc.* 118. *Bot. Mag.* t. 4418.—Native of the Philippine Islands.

This is a neat little plant, nearly allied to *C. Wallichii*. It has ovate roundish rugose pseudo-bulbs, and many-flowered nodding umbels of pale straw-coloured flowers, at the end of a weak scape about six inches long. The leaves are thick, short, oblong.

14. **Fringed Cirrhopetalum.**—*C. FIMBRIATUM*, *Lindley, Bot. Reg.* 1839, *misc.* 120 ; *Bot. Mag.* t. 4391.—Native of India : Bombay.

A pretty and very distinct small growing species. The pseudo-bulbs are ovate, somewhat four-cornered. The flowers grow in umbels at the end of an erect slender scape, and have the long lower green sepals united into a channelled rather stiff strap, while the upper sepal and the petals are broken up at the margin into beautiful purple fringes.

[CIRRHOPETALUM.—6.]

15. Chandelier Cirrhopetalum.—*C. CANDELABRUM*, *Lindley, Lodd. Cat.*
—Native of the Philippine Islands.

A pretty species, with a stoutish scape, bearing the flowers in a circle at its apex. The lateral sepals are pinkish, the other sepals and petals a light straw colour, streaked with purple, and the lip yellow, with a marginal fringe. The leaves are purplish beneath.

REFERENCE TO THE PLATES OF THE
GENUS CIRRHOPETALUM.

Plate I.—C. MEDUSÆ, *Lindley*.

Fig. 1. The petals, the lip and the column; fig.
2, The lip separate.

Plate II.—C. CHINENSE, *Lindley*.

Fig. 1. The petals and lip.

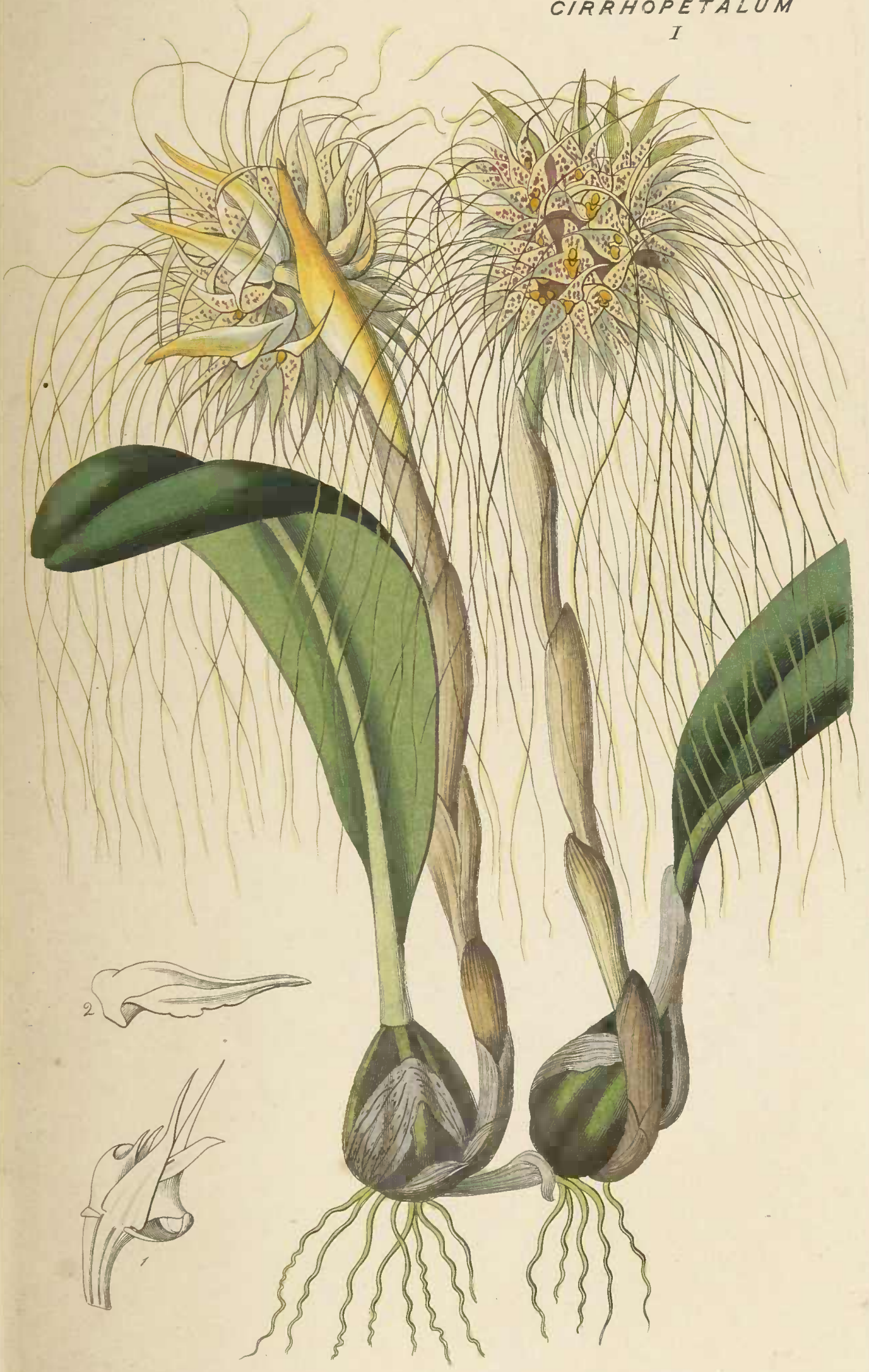
Plate III.—C. THOUARSII, *Lindley*.

Fig. 1. A flower, with the lateral sepals removed,
magnified; fig. 2. The pollen-masses.

Plate IV.—C. AURATUM, *Lindley*.

Fig. 1. A flower, with the lateral sepals removed,
magnified; fig. 2. The lip.

CIRRHOPETALUM
I



Miss. D. ...

CIRRHOPETALUM
II



CIRRHOPE TALUM
III



Miss Drake Del.

CIRRHOPETALUM
IV



Miss Dinsch d.

J. Burley

THE GENUS CÆLOGYNE.

THE CÆLOGYNES are a race of highly desirable and for the most part very ornamental Orchidaceous plants. Though not attaining quite the first rank in the class to which they belong, yet several of the species possess so rich a fragrance, and so much delicate beauty and chasteness, and in some cases, even showiness of colouring, that among Orchid admirers they are held in high estimation. They are essentially an Eastern race; and among the many fine plants of this order which India is known to produce, there are some of the CÆLOGYNS which do not in the least suffer from comparison with the most gaudy which are known, though their beauty is in many instances, of a different order.

Cœlogyne is a genus sufficiently distinct to be recognised from all others, with little difficulty. The prominent peculiarities of its structure, which is of course framed upon the unsymmetrical trimerous plan of the Orchid type, consist in the sepals or outer series of three organs, being equal petaloid and free, often obtuse at the base; in the lip being cucullate and marked with two three or more crested veins; in the column being erect, free, winged, and membranaceously marginate at the apex; in the stigma being prominent, deeply excavated and two-lipped; in the anthers, inserted below the apex of the column, being moveable, though scarcely deciduous; and in the four pollen masses being free, incumbent, and cohering with plates of granulose matter.

In addition to these peculiarities, there are other variable

teatures: thus, the petals are either like the sepals, or very much narrower, the sepals themselves are connivent or spreading, the lip is three-lobed or else undivided, often saccate at the base, and sometimes connate with the base of the column—differences of lesser moment indeed, though affecting materially the aspect of the individual species.

The whole genus is pseudobulbous, and inhabits tropical Asia. The majority of the species are epiphytal, but some of them, *e. g.* the Pleiones, are of terrestrial habit. The flowers in this group are usually produced singly. In other cases, they grow in racemes, which assume either a gracefully pendulous or an erect, or spreading position. In almost all cases, the blossoms are beautiful, either on account of the delicacy or showiness of their colouring.

The number of known species, as enumerated in the *Folia Orchidaceæ*, is forty-four; and of them about one-half are in cultivation.

The name *Cælogyne*, given by Dr. Lindley, applies specially to the deeply excavated stigma, and is compounded of two Greek words, *koilos* and *gyne*, which bear a meaning applicable to this structure.

This rather extensive group contains some singular, and other very beautiful, plants. They are found in hot moist places, growing on trees and on rocks overhanging the rivers, or occupying other positions where they receive abundance of moisture while growing. The dry season is their season of rest. In their management under artificial conditions, the cultivator must try to imitate these natural peculiarities of climate as nearly as possible.

There are some of them, however, which continue in active growth throughout the year: *Cælogyne speciosa*, for

[CŒLOGYNE.—3.]

instance, will grow and flower all the year. Such as these, therefore, will not require so much rest as others whose growth is more seasonal.

Most of the species are evergreen dwarf growing plants, and do not require so much pot room as do many other Orchids. There are three different modes of treating them. They may be grown in pots; or in baskets, and suspended from the roof of the house; or they may be grown very well on billets of wood, with a little moss or fibry peat fastened to the blocks. For pot culture, fibry peat and sphagnum moss chopped fine and mixed with some broken potsherds or charcoal, will be a suitable compost. The pots must be well drained; they should be filled a little more than half full with potsherds, and over this should be spread a layer of moss.

The plant must then be taken carefully out of the old pot, and if the roots are found to be attached to the pot, it must be broken, and those pieces taken away which have no roots attached to them. A little of the soil should be placed in the pot so as to elevate the plant above the rim, and then the soil must be placed carefully around and over the roots until the pot is filled, after which, it should be clipped over, to remove the straggling pieces, and should have a gentle watering to settle the soil.

The compost already described will be suitable for basket culture. The best materials of which to make the baskets, are copper wire or maple wood. When made of wood, they have a less artificial appearance, and blend better with the natural habits of the plants, having a more natural-like appearance than when made of wire. It is a good plan to get some large pieces of potsherds and lay them over the bottom of the basket, and then to take some long sphagnum moss, well cleaned, and place a good layer of it over the crocks and up the sides of the basket, to prevent the soil from falling

[CŒLOGYNE.—4.]

out between the bars ; then place in some of the soil, as for potting, and cover the roots in the same way, fastening them with a few wooden pegs. After this is done, take some clean moss and lay it over the surface, to prevent the soil from being washed on to other plants that may be beneath them. Then give them a gentle watering.

If grown on blocks of wood, they will require the blocks to be rather large. In preparing them, place first some fibry peat, and over it, some long moss, which must be fastened on with some copper wire and a few copper nails. The plant is to be firmly fastened on the sphagnum with the wire.

The proper time for potting them is just before they begin to grow, and this will be at various periods, for there will be some of them growing at different seasons of the year. Never pot them when they are in full growth. When they are in a growing state, they will require abundance of water at their roots ; but it must not be allowed to lodge in the leaves of the young shoots when they are tender, as it is sure to rot them. There is nothing worse for plants of this kind than allowing their leading shoot to damp off ; it is some time before they form another, and then it is generally much weaker than the former one. The supply of water must of course be regulated by the state of the plant and the season of the year, giving less in winter and when in a resting state, than in summer, when growing vigorously ; but the impropriety of carrying the drying and resting process too far, may be more particularly pointed out. They require a hot, moist atmosphere, such as that of the "East India" House, while they are making their growth, and at this time, let them have a slight syringing over head once a day ; a free circulation of air must be permitted, taking care to admit the fresh air by the ventilators under the pipes, so that it may be heated before it circulates in the house. At this stage keep the temperature about 70° to

[CÆLOGYNE.—5.]

75° by day, and 65° to 70° by night, allowing it to rise a few degrees higher by the influence of the sun. During the season of rest, they will require but little water; in fact, only sufficient to keep the bulbs from shrivelling. They should also be placed in a lower temperature, from 55° to 60° will be quite sufficient for them.

Cælogyne asperata, known in gardens as *C. Lowii*, is a strong-growing species, and therefore requires more pot room than any of the others. It commences growing in April, and produces its flowers from the young growth, on a drooping spike about a foot long, in June, remaining about a fortnight in perfection. It is a fine species.

Cælogyne cristata is a very beautiful Orchid with ever-green foliage: its flowers are produced from the base of the bulbs on a drooping spike, five or six together. The time of flowering is February, and it will last a long time in flower. This is probably the best of the genus.

The *Cælogynes* are increased in the same way as *Miltonias*, that is, the rootstock should be divided between the bulbs, making the incision at intervals, not all at one time, and this when they are at rest. This by checking the flow of sap from the leading bulbs will induce those behind them to form young shoots. They may then be entirely separated and treated as independent plants. They are best started on blocks of wood, when first taken from the plant, and until they are well rooted, when they may be treated as recommended for established plants. They are very subject to the red spider, and the white scale; but sponging them over with a little soap and water will soon rid them of these pests. It is necessary to keep a sharp look out for the small snails and woodlice, both of which are very destructive to the young roots.

It is the habit of some of the *Cælogynes* to produce long

[CŒLOGYNE.—6.]

rhizomes or creeping stems as they would be called, and it has been suggested that instead of allowing these to overhang the pots as they naturally do, it is a good plan, to place in the pots a short upright block clothed with moss, on which as the plant advances in growth, it is to be trained with copper wire. The roots thus derive nutriment from the moisture absorbed by the moss, and the plant forms a handsome elevated mass.

The little group of *Pleiones*, sometimes called Indian Crocuses, have a different habit from the rest, and require a different treatment. They are deciduous terrestrial plants and produce their flowers in the winter and spring from the base of their bulbs; their flowers are large and of a beautiful colour, and remain perfect about a fortnight.

These plants must be grown in pots. The time for potting is after they have done flowering before their young roots begin to appear. The pots must be well drained; they do not require large pots as they are all small growing plants, but they will require fresh potting every year. They are propagated by separating the bulbs at the time of potting; but are not readily increased as they seldom make more than one or two bulbs in a season, on which account they still remain scarce.

The compost which suits them best is fibry peat, turfy loam, half decayed leaves, and a small portion of well decomposed cow dung, rubbed well together, mixed with some sharp sand and used rather fine. Six inch pots will be quite large enough for them. In potting place a layer of moss over the drainage to keep it from being choked up with soil, and also to prevent the water from passing off too freely. On the drainage place sufficient compost to fill the pot level with the rim; allow five or six bulbs to each pot, keeping the bulbs on the surface of the soil; give them a gentle watering to settle the soil around them.

[CELOGYNE.—7.]

The best position for them is on a shelf in the stove as they require to be near the glass ; but if there is not this convenience they must be placed as much in the light as is possible. They may also be grown very well in a pit with bottom heat. When they first begin to grow they must receive but little water as the young shoots are very apt to damp off, if kept too wet ; but when they have begun to form their bulbs they must receive a larger supply, increasing the quantity of water as they increase in growth. The larger the leaves and bulbs can be grown the finer they will flower. To this end when they have half finished their growth, a little weak manure water will be very beneficial to them.

Their growing season will commence in March and continue until September, during which time they will require a temperature of 75° to 80°, with abundance of moisture, syringing them overhead once or twice a day, and allowing a free circulation of air in all favourite opportunities in order that the foliage may become dry once a day. By the end of September the leaves will begin to turn yellow and fall off. That will show that they require rest ; remove them therefore to a cool house where the temperature is 55° to 60°, and place them if possible in the full sun so that they may thoroughly ripen their bulbs. When in this state, they will not require much water ; only sufficient to keep their bulbs plump. Never allow them to shrivel, for if this happens their flowers will come crippled, and will not expand. As soon as they begin to show signs of flowering give a little more water, but the amount must not be overdone, for if it is the bulbs will rot. While in flower the plants may be removed to the conservatory or the drawing room for a few days ; and as soon as the flowers are past they should be repotted dividing the bulbs and treating them as before stated. It is of some importance to do this as soon as the bloom is past, for the young leaves

[CŒLOGYNE.—8.]

and new roots soon begin to push, and the potting should take place before this occurs. This indeed is the case with all orchids. The new roots would be damaged in the operation of potting, and the consequence would be, that the growth of that season would sustain injury in proportion to the damage done to the roots. The red spider will frequently attack them, therefore wash them often with a sponge and clean water, to keep them healthy.—R. B.

Mr. Smith of Kew recommends the cool division of the orchid house for these *Pleiones*, and points out that as regards culture their habit is similar to that of the well known *Bletia hyacinthina* and similar plants. The secret of their successful cultivation in England, observes Dr. Lindley, “lies in keeping them cool and dry while at rest, and forcing them with heat, moisture and bright light as long as they are inclined to grow.”

§ NEOGYNE, *Reichenbach fl.*—*Epiphytal.* *Flowers closed.*
Sepals carinate saccate. Lip bisaccate (Lindley).

1. **Gardner's Cœlogyn.**—CŒLOGYNE GARDNERIANA, *Lindley in Wall. Pl. As. Rar.* i. 33, t. 38. C. TRISACCATA, *Griffith Itin. Notes*, 72.—Native of India—Nepal and Khasia, at an elevation of 4000 feet.

A very fine epiphytal early flowering species, having large flowers arranged in long drooping racemes; they are pure white, stained with yellow on the lip, and have a pair of wavy crests. “They scarcely ever expand.”

§ CŒLOGYNÆ VERÆ. *Epiphytal.* *Flowers expanded.*
Lip unisaccate (Lindley).

FLACCIDÆ.—*Racemes pendulous.*

2. **Drooping Cœlogyn.** [Plate I.]—CŒLOGYNE FLACCIDA, *Lindley Gen. et Sp. Orchid.* 1; *Bot. Mag.* t. 3318; *Bot. Reg.* 1841, t. 31.—Native of India—Nepal.

[CÆLOGYNE.—9.]

A neat but not very attractive epiphytal plant. The flowers grow in long pendulous racemes, and are white, the lip being marked near its base with several crimson veins, and in the centre towards the apex it is yellow. They have a disagreeable odour. The lip has three elevated wavy lines.

3. **Shell-like Cœlogyn.**—*C. TESTACEA*, *Lindley in Bot. Reg.* 1842, *misc.* 34.—Native of Sincapore.

In this species the flowers are small, dirty white, marked with brown blotches on the lip; they grow in drooping racemes. The lip has four papilloso-crested veins.

4. **Freckled Cœlogyn.**—*C. LENTIGINOSA*, *Lindley in Folia Orchid.* No. 4.—Native of India—Moulmein.

The flowers are white, the lip finely freckled with brown near the base, the short lateral lobes bordered with the same colour, and the middle lobe tinted with yellow. The lip has a pair of elevated lines, which are even and slightly curved.

5. **Rugged Cœlogyn.**—*C. ASPERATA*, *Lindley in Journ. Hort. Soc.* iv. 221. *C. LOWII*, *Paxton Mag. Bot.* xvi. 225.—Native of Borneo.

This is a handsome plant. The drooping racemes are a foot long; and the blossoms measure three inches in diameter; they are cream colour, the lip "richly marked with brownish-yellow veins springing from a rugged bright orange central ridge."

6. **Fiddle-shaped Cœlogyn.**—*C. PANDURATA*, *Lindley in Gard. Chron.* 1853.—Native of Borneo.

This fine species has drooping racemes a foot and a half long, the flowers large with pale green sepals and petals, and a curiously warted lip, fiddle-shaped, and marked with deep broad black veins and stains upon a greenish yellow ground. It is said to be highly perfumed. The lip has two double warted lines on each side a three-ribbed central disk.

ERECTÆ.—*Racemes erect, simple. Petals similar to the sepals.*

7. **Ochraceous Cœlogyn.** [Plate II.]—*C. OCHRACEA*, *Lindley in Bot. Reg.* 1846, t. 69; *Bot. Mag.* t. 4461.—Native of India—Bootan, Khasia.

This is a very neat and pretty species. The pure white flowers have bright orange-yellow blotches on the lip, and are moreover extremely sweet scented. There are two elevated ridges on the lip.

8. **Ocellate Cœlogyn.**—*C. OCELLATA*, *Lindley Gen. et Sp. Orch.* no. 8; *Bot. Mag.* t. 3767—Native of India—Sylhet, Khasia, Bootan, Sikkim-Himalaya; elev. 7000 feet.

A handsome species with erect racemes six inches long. The flowers are pure white, with two very bright orange-yellow spots on each of the lateral lobes of the lip,

[CÆLOGYNE.—10.]

and two others of the same colour, but smaller at the base of the middle lobe, besides some lateral streaks of brown; the column has also an orange yellow border. There are three crests on the lip.

9. **Cuming's Cœlogyn.** [Plate III.]—*C. CUMINGII*, *Lindley in Bot. Reg.* 1840, *misc.* 178; and 1841, *t.* 29; *Bot. Mag.* *t.* 4645.—Native of Singapore.

The present, when in good bloom is a very pretty species, with fine white flowers, having a bright yellow blotch on the lip. The elevated ridges on this part are three in number, the intermediate one being the shortest; they are terminated by a deep orange stain, and have a small outlying toothed appendage on each side.

10. **Crested Cœlogyn.** [Plate IV.]—*C. CRISTATA*, *Lindley, Coll. Bot.* 33; *Bot. Reg.* 1841, *t.* 57. *CYMBIDIUM SPECIOSISSIMUM*, *Don, Prod. Fl. Nep.* 35.—Native of India—Nepal, Sylhet, Kamaon, Sikkim.

This is one of the most beautiful species of the genus, fragrant, free-flowering, and having large blossoms which are of the purest white, except on the lip, which in its centre is decorated with five bright yellow glandular fringes and three wavy plates. They grow in pendent racemes, and measure four inches in diameter. The accompanying figure has been made from a small specimen, in which the number of flowers on the raceme is fewer than in vigorous plants.

PROLIFERÆ.—*Racemes proliferous, emerging from imbricated scales immediately below the flowers.*

11. **Tall Cœlogyn.**—*C. ELATA*, *Lindley, Gen. et Sp. Orchid. no.* 5; *Bot. Reg.* 1839, *misc.* 151.—Native of India—Nepal, Sylhet, Bootan, Sikkim, Kamaon.

This species has white flowers stained with yellow near the point of the lip which bears two wavy crests; eight or nine of these flowers grow on a scape from among the imbricated scales by which it is terminated. The flowers have an odour resembling that of berry blossoms. The inflorescence is terminal to the pseudobulbs.

12. **Proliferous Cœlogyn.**—*C. PROLIFERA*, *Lindley, Gen. et Sp. Orch.* *no.* 6.—Native of India—Nepal, Khasia, Sikkim.

This species has a proliferous raceme of greenish-yellow flowers, whose lip bears two elongated lines. It is not very ornamental.

FILIFERÆ.—*Flowers solitary, or in simple racemes; petals filiform.*

13. **Russet Cœlogyn.**—*C. FUSCESCENS*, *Lindley, Gen. et Sp. Orch. no.* 10.—Native of India—Nepal.

This has a drooping raceme of five or six pale brownish-green flowers, the lip having a few brown spots near the centre; they are large, but want brilliancy of colour.

[CÆLOGYNE.—11.]

C. BRUNNEA, Lindley, (*Gard. Chron.* 1848, p. 71), is considered to be a variety of this species. In it the lip has some acutish lateral lobes; the colour is pale-greenish yellow; the lip has a few brown marks near the base, a broad band in the middle of each lobe, and three vermilion streaks in the centre. It is from Khasia and Sikkim.

14. **Showy Cœlogyn.** [Plate V.]—*C. SPECIOSA*, Lindley, *Gen. et Sp. Orch.* 39; *Bot. Reg.* 1847, t. 23. *CHELONANTHERA SPECIOSA*, Blume, *Bijd.* 384, t. 51.—Native of Java.

This is a fine species, with the flowers in pairs at the end of a slender stalk; but the colours—pale tawny sepals and petals, and pitch-brown lip—detract somewhat from its beauty, notwithstanding that they are relieved by a broad white column, and a pure white termination to the lip. The flowers are nearly four inches in diameter when fully expanded; they have a singular appearance, and are attractive so long as the white remains unchanged. The lip has a pair of thick muricated crests.

15. **Fringed Cœlogyn.**—*C. FIMBRIATA*, Lindley, *Bot. Reg.* t. 868; and 1838 *misc.* 172; *Bot. Cab.* t. 1425.—Native of China, and of India.

An unornamental plant, with small pale dirty yellow flowers, and a dull purple-fringed lip.

16. **Oval Cœlogyn.**—*C. OVALIS*, Lindley in *Bot. Reg.* 1838, *misc.* 171. *C. FIMBRIATA*, Lindley in *Wall. Cat.* 1957.—Native of India—Nepal, Kamaon.

Similar to the last, but the flowers are about twice the size, and the edges of the lip more shaggy.

17. **Sooty-lipped Cœlogyn.**—*C. FULIGINOSA*, Lindley in *Loddiges' Cat. Bot. Mag.* t. 4440.—Native of India—Khasia, Sikkim.

This is an ornamental species. The flowers which grow in an erect raceme are rather large, ochre-yellow, the lip having a dark purple-brown disk, and being furnished with a pair of slightly wavy crests.

§ **PLEIONE**, Don. (*Gomphostylis*, Wallich).—*Terrestrial.*
Flowers large membranaceous, appearing before or after the fugitive leaves. (Lindley.)

18. **Bottle Cœlogyn.**—*C. LAGENARIA*, Lindley in *Folia Orchid.* no. 39. *PLEIONE LAGENARIA*, Lindley in *Paxton's Flow. Gard.* ii. t. 39, fig. 2.—Native of the Alps of India.

The whole of the species of this group form beautiful little plants of small stature, growing in dense masses, and bearing comparatively large flowers. The present has the blossoms deep rose colour, the lip white towards the front, with a yellow disk and

[CÆLOGYNE.—12.]

broad crimson longitudinal streaks at the edge. The lip has fine yellow fringed veins extending nearly its whole length.

19. **Spotted Cœlogyn.**—*C. MACULATA*, *Lindley in Wall. Pl. As. Rar.* i. 45, t. 53; *Bot. Mag.* t. 4691. *PLEIONE MACULATA*, *Lindley in Paxton's Fl. Gard.* ii. t. 39. fig. 1. *GOMPHOSTYLIS CANDIDA*, *Wallich, Ic. ined.*—Native of the Alps of India; elev. 4-5000 ft.

This beautiful little plant has the flowers white, except the lip, which is yellow on the disk, streaked with purple-crimson from the margin inwards, and bearded with seven fringed veins.

20. **Humble Cœlogyn.**—*C. HUMILIS*, *Lindley, Gen. et Sp. Orchid.* 43. *PLEIONE HUMILIS*, *D. Don. Prod. Fl. Nep.* 37; *Paxton's Flower Garden*, ii. t. 51. *EPIDENDRUM HUMILE*, *Smith, Exot. Bot.* t. 98.—Native of the Alps of India; elev. 7-8000 ft.

The flowers of this species have the sepals and petals narrower, and more lengthened than the last, as in *C. lagenaria*. The colour is pale fleshy-lilac, almost white. There are two varieties, in one of which the lip is spotted and veined with rose-colour; in the other, spotted and stained with yellow, the column having a few crimson spots. The edge of the lip is fringed, as are about half a dozen of the longitudinal veins on its face.

21. **Early Cœlogyn.**—*C. PRÆCOX*, *Lindley, Gen. et Sp. Orch.* no. 20. *C. WALLICHIANA*, *Griffith Notulæ*, 402; *Bot. Mag.* t. 4496. *PLEIONE PRÆCOX*, *Don. Prod. Fl. Nep.* 37. *EPIDENDRUM PRÆCOX*, *Smith, Exot. Fl.* t. 97.—Native of the Alps of India; elev. 4-8000 ft.

There are three forms of this species, of which at least two are in cultivation. The general characteristics are similar, the flowers being large, showy and deep rose-coloured. In one the leaves are crimson. The differences otherwise occur in the flowers, and are minute and technical. In *C. præcox*, the "bracts are very deciduous; the lip lacerated at the end, with the crests reaching nearly to the point."—(*Lindley*.) The lip has five of the crested veins, and the colour is pink, white, and yellow, here and there dashed with red spots. It flowers in spring.

The other cultivated variety, *Wallichiana*, (*C. WALLICHIANA*, *Lindley Gen. et Sp. Orch.* 43; *Bot. Reg.* 1840, t. 24. *PLEIONE WALLICHIANA*, *Lindley in Paxt. Fl. Gard. under* t. 51), is represented in our Plate VI. It has, according to Dr. Lindley, the "bracts deciduous; the lip plaited and toothed at the end, with the teeth of the crests very short and confined to the disk." The colour is rich transparent rose, the interior of the lip being marked with a broad streak of yellow on its disk, and traversed by five parallel ridges of white fringe, with a few deep crimson stains scattered on its surface.

REFERENCE TO THE PLATES OF THE
GENUS CÆLOGYNE.

Plate I.—CÆLOGYNE FLACCIDA, *Lindley*.

Fig. 1.—The column, with the lip bent downwards and flattened; fig. 2, the pollen-masses, with their granular base.

Plate II.—CÆLOGYNE OCHRACEA, *Lindley*.

Fig. 1.—The lip spread open.

Plate III.—CÆLOGYNE CUMINGII, *Lindley*.

Fig. 1.—A portion of the lip flattened.

Plate IV.—CÆLOGYNE CRISTATA, *Lindley*.

Fig. 1.—The lip spread open; fig. 2, two of the pollen-masses.

Plate V.—CÆLOGYNE SPECIOSA, *Lindley*.

Fig. 1.—The lip, seen from above.

Plate VI.—CÆLOGYNE WALLICHIANA, *Lindley*.

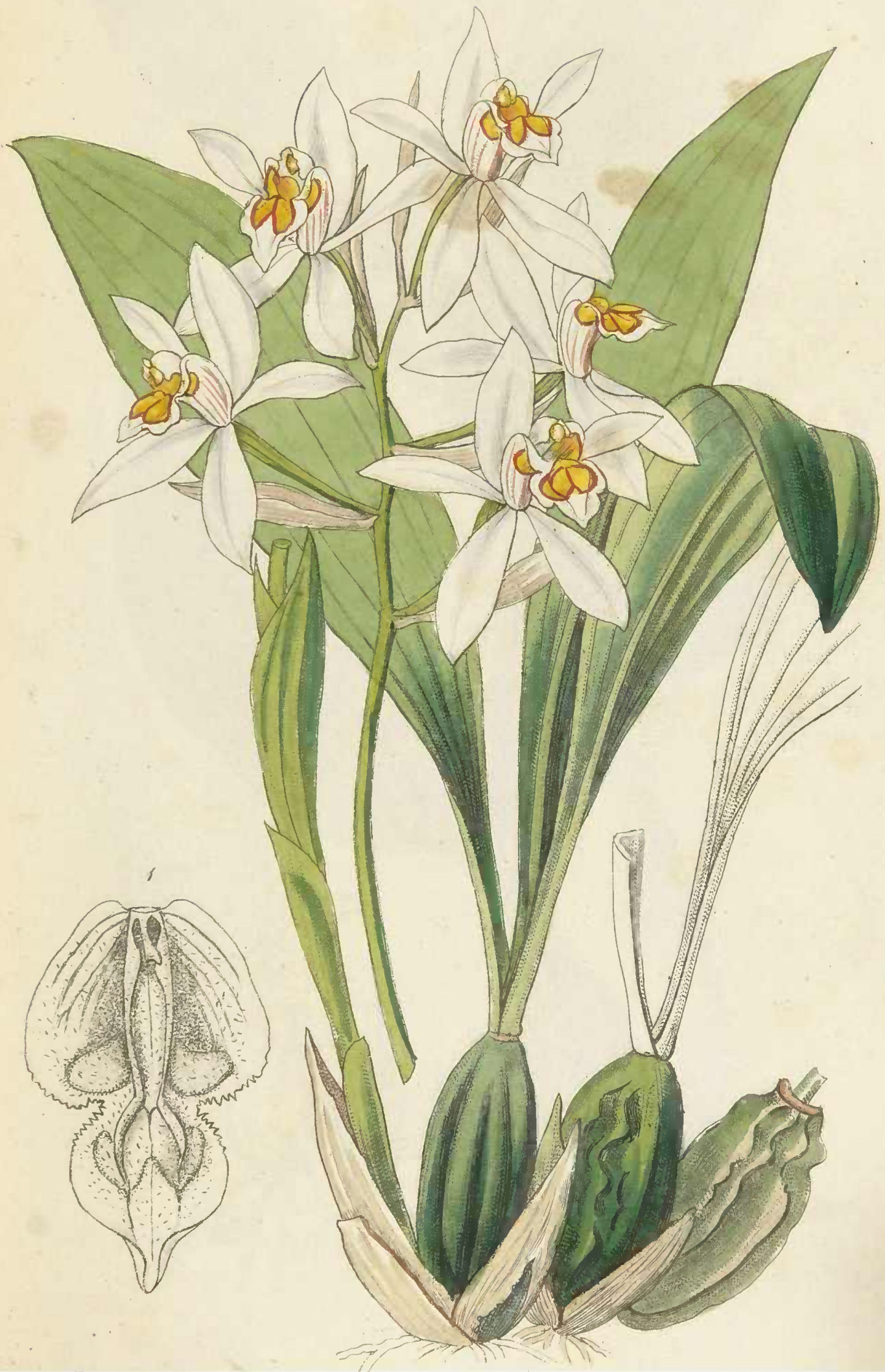
Fig. 1.—The interior of the lip; fig. 2, the column with the projecting hollow stigma, and the anther lifted up, and turned back; fig. 3, the pollen masses, showing their adherence to two thin plates of pulverulent matter, bent back upon themselves.

COELOGYNE
1.



Gussone del.

J. Burdett sc.



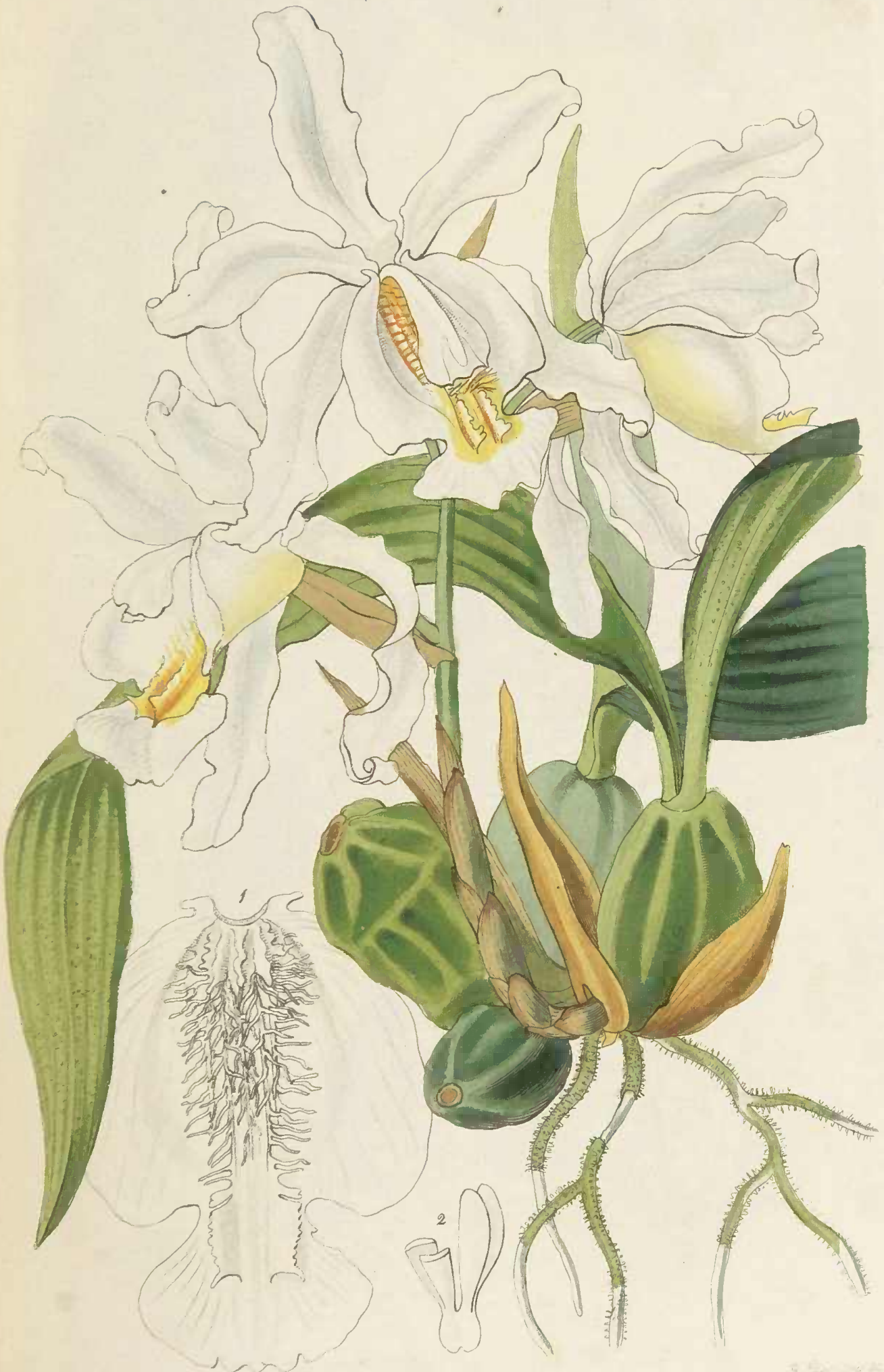
CŒLOCYNE.
III



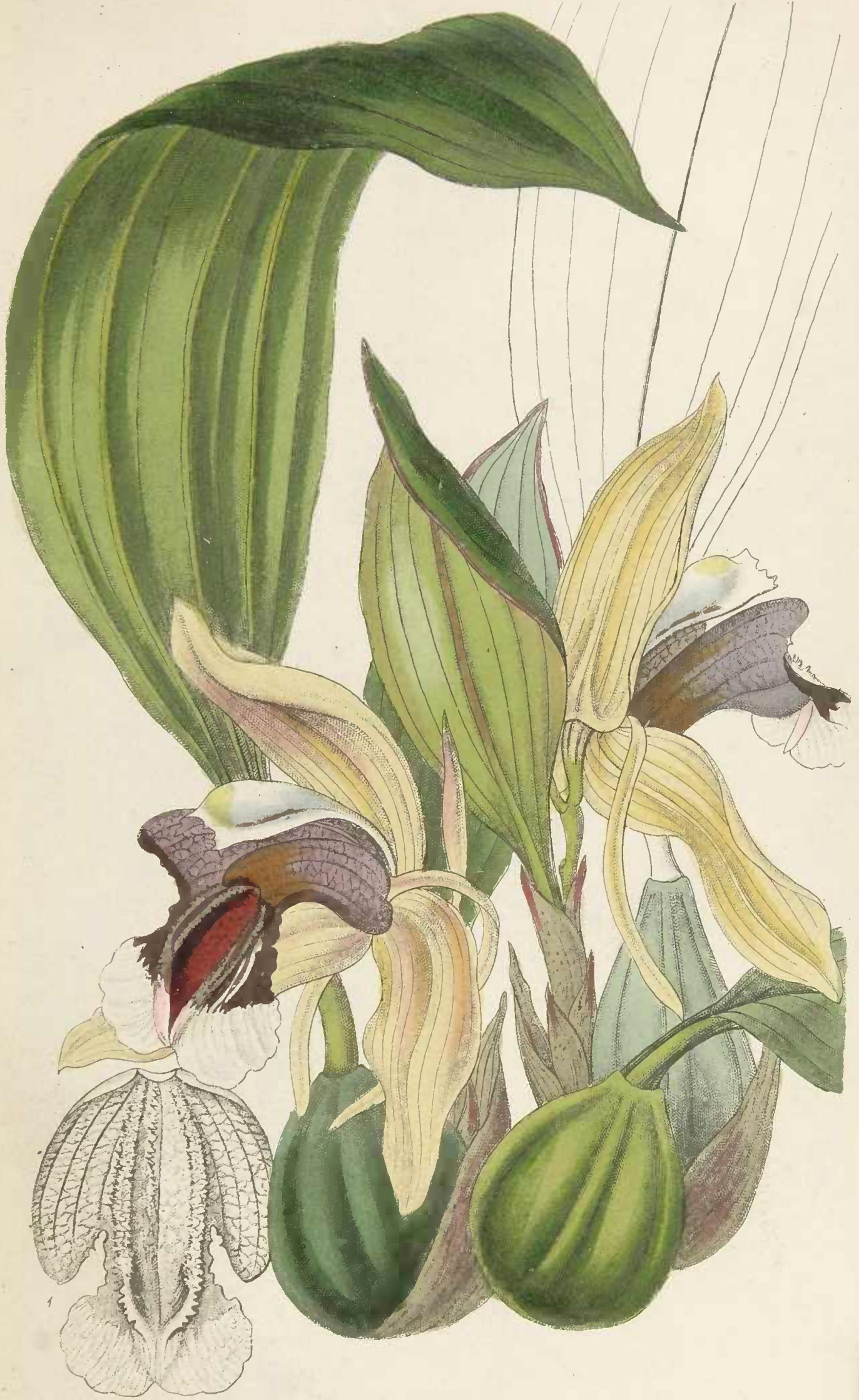
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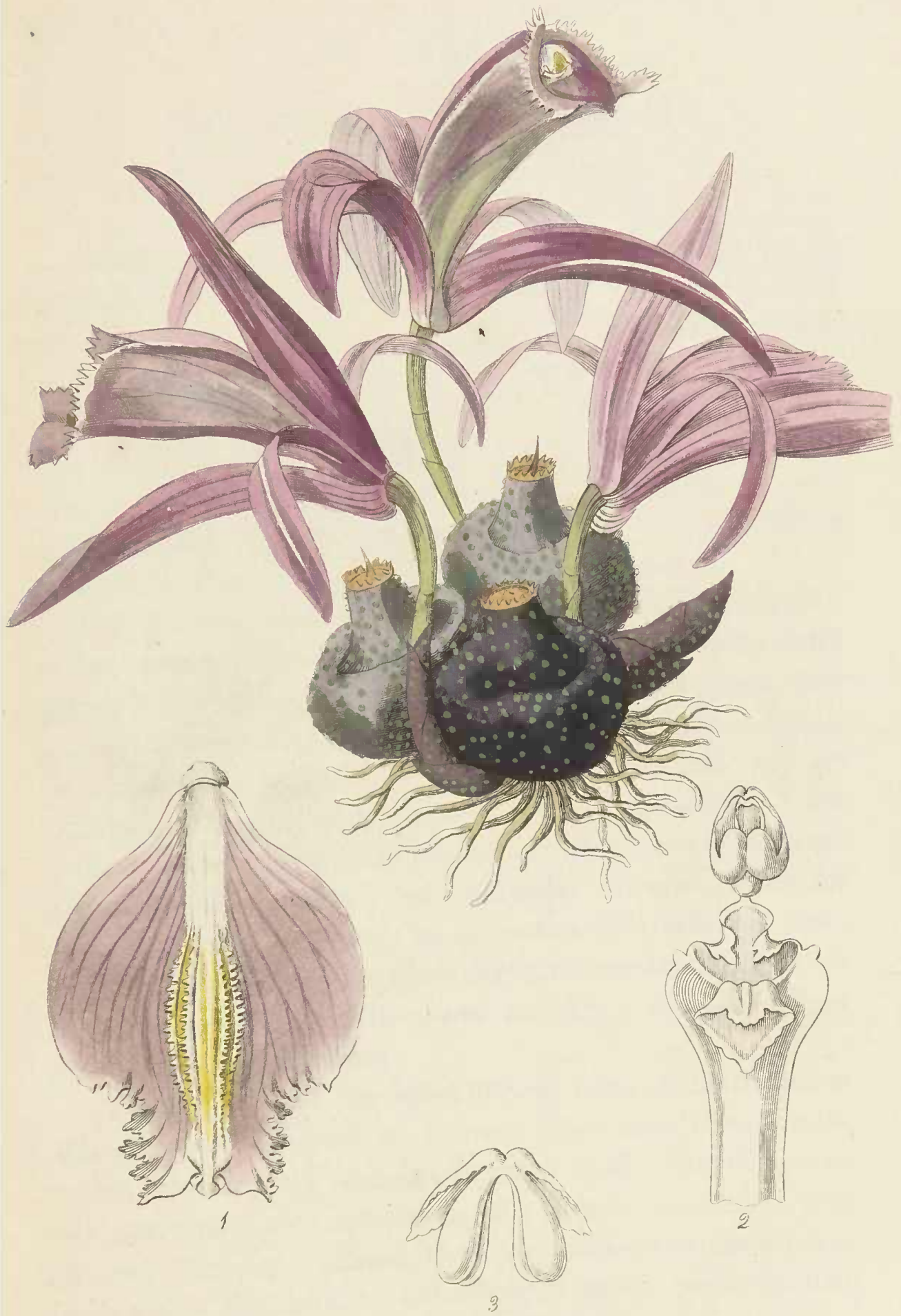
COELOGYNE.
IV



L. D. S. del.



CÆLOCYNE,
VI.



Cælocyne Willd.

Franchet

THE GENUS EPIDENDRUM.

EPIDENDRUM is one of the most extensive genera of Orchids, and is one of the few which have been established since the days of Linnæus. It is remarkable for the variety of habit and aspect, no less than for the multitude of species which it comprises. Notwithstanding, however, that differences almost justifying generic separation occur in their manner of growth, there is so little variation in the essential points of structure, that the best authorities on this subject consider any proposal of new genera as unadvisable.

The *Epidendrums* are epiphytal or terrestrial herbs, with either pseudo-bulbous, or elongated erect or creeping leafy stems. The number and disposition of the flowers are very varied; in some they are solitary, in others arranged in spikes, in racemes, in corymbs, or in panicles; sometimes they are terminal to the axis of development, sometimes lateral. A few of the species are decidedly handsome, many more of them are prettily marked, though not brilliantly coloured, while the majority are unimportant, in an ornamental point of view. Dr. Lindley in the *Folia Orchidaceæ*, enumerates 310 species, of which, according to the same authority, upwards of one hundred are in cultivation.

The structure of the more obvious parts of the flowers in this genus is somewhat as follows: They have three sepals, which are spreading and nearly equal sized. The two petals are sometimes very similar to the sepals, sometimes very diverse. The lip is clawed, the claw parallel with the column, with which it is connate, either wholly or in part; its limb

[EPIDENDRUM.—2.]

entire or divided, and often developing tubercles at the base. The column is elongate-semiterete, supporting a marginate often fringed anther-bed.

The essential character of the genus, according to Dr. Lindley, consists “in the lip being more or less united by a fleshy base to the edges of a column, which is hornless and considerably elongated, but not petaloid and winged; in the pollen-masses being four equal compressed with as many pulverulent caudicles folded back on them; and finally, in the presence of a cuniculus, more or less deep at the base of the lip.”

The generic name indicates one of the general peculiarities of orchidaceous plants—that of growing on trees, which peculiar feature has acquired for them the title of epiphytes; it is compounded of *epi* upon, and *dendron* a tree.

The *Epidendrums* belong geographically to the New World, in the warmer parts of which they are abundant, extending through the more temperate regions as far north as the coast of Carolina.

In nearly all the families of plants which contain a large number of species, and especially among Orchids, there are peculiarities of external appearance, arising from their habit of growth, the particular mode of development of their inflorescence, or similar circumstances, which greatly assist in their recognition, without having recourse to a minute investigation of the structural details of their flowers. Such, however, is not the case in the genus *Epidendrum*, the species of which could not be detected with certainty by a non-practised eye, in the absence of flowers, owing to their varied habit. In some, the pseudo-bulbs are three or four feet long, uniform throughout, with distichous leaves and a terminal inflorescence;

[EPIDENDRUM—3.]

these have considerable analogy with *Dendrobis*. In others, the pseudo-bulbs are from six inches to a foot long, tapering towards each extremity, with a few leaves at their apices; these resemble *Cattleyas*, only their flower scape arises from the base of the pseudo-bulb. Others have the pseudo-bulbs ovate, oblong or elliptical, and thus have resemblance to *Brassias*, or *Maxillarias*. One section has long pseudo-bulbs much resembling small states of *Ansellia* or *Schomburgkia*; another has very small pseudo-bulbs on a creeping rhizome, this habit being similar to that of *Cœlogyne* or *Bolbophyllum*; and still others may be met with which bear a very striking resemblance to other genera. With these modifications in view, it is obvious that a student could not become familiarly acquainted with *Epidendrums*, except by close examination during their flowering season.

It is, moreover, remarkable that this genus, although so extensive, should be wholly confined to the Western hemisphere, where the species are to a greater or less extent disseminated throughout the West Indian Islands and South America, none of them having been detected in the Eastern hemisphere. They appear to occupy the same position in the West, as the *Dendrobis* in the East; with this difference, that the *Epidendrums* are more abundant and almost invariably produce less showy flowers, and are consequently of much less importance to the cultivator.

In such a variable and extensive group of species, as is found in *Epidendrum*, it might be surmised that the majority of them would be interesting only in a botanical point of view, for the purpose of increasing collections or enlarging catalogues, and would prove of little utility for general cultivation; and this is precisely the fact, for their flowers are in most cases small and insignificant. There are, however, some twenty or thirty species, which unite with a good habit of growth a pro-

EPIDENDRUM.—4.]

fusion of moderately large and in some cases richly coloured, exceedingly beautiful, and frequently very fragrant flowers ; and these may with propriety be considered indispensable in all first-rate collections.

Epidendrums belong to the epiphytal group of orchids. Many of them growing on mountains or at high elevations, require but a moderate stove temperature to bring them to perfection, whilst others luxuriate in a greater degree of heat, if well supplied with moisture during their growing season. Those which are natives of Mexico and Central America, do not require so high a temperature as is essential to East Indian orchids, but thrive best in what is called the 'Mexican'—a cooler—house, along with *Oncidiums*, *Odontoglossums*, *Lælias*, *Cattleyas*, *Sobralias*, *Acinetas*, and others from similar localities. Their cultivation is comparatively easy. Cleanliness in all stages is one of the most important points to attend to, for if the plants are allowed to become infested with insects, all other efforts will soon be defeated, and they will ultimately dwindle away ; therefore keep them clear of such pests as scales, thrips, cockroaches, &c. which may be done by perseverance. If they become much infested with scale, wash them thoroughly with a sponge and clean water, using a little soap, and with clean water afterwards.

Their treatment, when first imported, is not different from that of other epiphytal [orchids.] The newly arrived plants must be kept moderately warm and only sprinkled occasionally with water, if they get too dry ; both heat and moisture being increased as they advance in growth. Their propagation is very simple. Some of them are viviparous ; of these the young shoots can be taken off the old stems, and will soon form distinct plants. The others are easily increased by division, retaining a couple or three pseudo-bulbs to each piece.

As this genus contains a large number of species, sub-

[EPIDENDRUM.—5.]

divided into many sections which vary considerably in habit, and likewise require some difference in cultivation, it may be both useful and interesting to learners as well as cultivators if these groups are noticed separately, with a more detailed account of the method of cultivation most proper for them.

§ EPICLADIUM.—The two cultivated species of this section, of which *E. aurantiacum* is the best, have long pseudo-bulbs, very similar to some kinds of *Cattleyas*. They may be successfully grown on logs of wood suspended to the roof, or treated as pot plants, which is perhaps preferable. In potting, they must be elevated considerably above the rim, using very open light materials, such as pieces of light brown fibry peat, with potsherds or charcoal, so that the water may drain freely away from them. If the compost gets too solid, as it usually does when a plant remains several years without repotting, it should be removed by shaking it away from the roots, and the plants should then be repotted in the open light compost, which keeps the roots in a healthy condition. When the soil becomes solid, and very wet, the delicate roots of these plants cannot perform their proper functions, and they consequently decay, being choked with moisture. A temperature of from 70° to 80° is most suitable for these while growing, the plants being syringed overhead every warm day, and the house kept moist by watering the paths and sides. When the thermometer rises to 75°, admit a little air if mild, and more in proportion as it gets higher, but always cautiously, only a little at a time. Shade them, when requisite, from the direct rays of the sun. During winter, they may have all the light possible; the thermometer should then range from 55° to 65°, and the plants should be kept rather dry.

§ ENCYCLIUM.—This section includes many of the most showy kinds. Some of them are of dwarf habit, scarcely

[EPIDENDRUM.—6.]

exceeding six inches high, and others attain the height of two or three feet, bearing large panicles of very fragrant flowers. The rare and beautiful *E. vitellinum*—a dwarf-growing species, which is a valuable acquisition to any collection, from its richly-tinted flowers, of a colour rarely met with among orchids—belongs to this section. All the larger growing kinds can be more conveniently cultivated on pots than on logs of wood, as they are then managed with greater facility when in flower. The smaller kinds succeed best on billets of wood or in rustic baskets. The whole of them, while small, or if sickly, may with advantage be placed upon wood, being secured with small copper wire and a little sphagnum, and suspended in a rather shady place near the glass; they must, however, never be allowed to get too dry, on which account they should be examined every day, and when they have become dryish, the wood should be soaked in tepid water, so as to wet it thoroughly; this plan is also effective in the destruction of woodlice, cockroaches, &c. that may harbour about them. Those which are grown in pots must be kept well up above the rim. As to repotting or shifting into larger pots, there is no particular season for performing this operation; the best time is just as they commence to grow. If they are in small pots, and the roots are firmly attached to the sides of the pots, so that they cannot be readily disengaged, it is better merely to crack the pot all round and place it inside the larger one, filling up the space with rough pieces of fibry peat, charcoal, &c. Many of the species of this section are from the West Indies, Brazil, or the hotter parts of South America, and will bear a tolerably high temperature while making their growth; if kept very humid, the thermometer may range from 70° to 85°. Syringe overhead once or twice every day when the house is warm. If air is admitted, close early in the

[EPIDENDRUM—7.]

afternoon so as to take advantage of the sun heat. During winter, about 60° is sufficient. Those species that come from Mexico should be grown at the coolest end of the orchid house, if a second cooler 'Mexican' house is not at hand.

§ DIACRUM.—Only a solitary species of this group is in cultivation; this is *E. bicornutum*, one of the best of Epidendrums, a rare plant in collections, and one of the most difficult to cultivate. It has pseudo-bulbs or fusiform stems, about a foot long, with a flower-stalk springing from the apex, bearing several delicately-coloured flowers, each two inches across. This plant succeeds best when grown in a shallow rustic basket filled with sphagnum and potsherds, or on a log of wood suspended near the glass, and kept rather warmer than the generality of Epidendrums, that is, for instance, in the most temperate part of the 'East India' house. Syringe it overhead two or three times a-day, when making its growth. This species is exceedingly difficult to establish when first imported; if the pseudo-bulbs are small, weak, bruised, or have been removed from their habitats before they are mature, they will rarely ever succeed. The only possibility of obtaining a good plant, is by importing strong, sound, mature, healthy pseudo-bulbs, which, on their arrival, should be kept moderately warm, but not watered until they begin to grow, and then very sparingly until the plants become well established.

§ HORMIDIUM.—The smallest of the cultivated species belong to this section, which is of little other than botanical importance. They have a creeping habit, with small pseudo-bulbs, and insignificant yellowish or greenish flowers. They delight in a hot, shady, humid atmosphere, and will creep about like a *Lycopodium* or fern, on a piece of peat, or on a log of wood suspended to the roof of the house. In the economy of nature they doubtless fill an appropriate niche, but to the cultivator of showy plants, they are useless.

[EPIDENDRUM.—8.]

§ PSILANTHEMUM.—One or two interesting species occur in this section, in which the flower-stalk arises from the base of the pseudo-bulbs. The best in cultivation is *E. Stamfordianum*, of which there are two distinct varieties, the one having larger flowers of a much deeper and brighter colour than the other. The plants may be grown on billets, on pots, or in rustic baskets; it is immaterial which method is preferred, as they will succeed either way. If grown on wood or suspended, the drooping flower-stems have a pretty and graceful appearance. Their treatment is in all respects similar to that of the section *Epicladium*.

§ AULIZEUM.—The few cultivated species belonging to this section are, with the exception of *E. aloifolium*, much more interesting to the botanist than to the horticulturist. One or two of them have good foliage, much resembling that of some species of *Cattleya*, and large plants of these in a good state of cultivation flower copiously, and produce a tolerably good effect. They are best grown on pots in open materials, mounted above the rim, and succeed very well with the treatment given to Brazilian *Cattleyas*. *E. aloifolium*, one of the most distinct of the genus, is of slender pendulous habit, on which account it should be grown on a log of wood, or in a rustic basket, suspended to the roof of the house, so that its long slender leaves and stem may assume their natural position. It requires a temperature of from 70° to 80° while growing, and delights in a rather shady situation, and requires to be frequently syringed over head while growing, but watered at all times very moderately at the root. Rough pieces of light brown fibry peat, sphagnum, and charcoal or potsherds intermixed are the most suitable materials in which to plant it. Treated thus it is easily grown, and flowers copiously. The flowers are large, at first white, afterwards creamy white, becoming of a deeper yellow with age; they

[EPIDENDRUM.—9.

remain in perfection for a long time. This species may be grown in a pot, but the effect is unnatural.

§ OSMOPHYTUM.—The cultivated species of this section are uninteresting except to a botanist. Their flowers although sometimes prettily marked or coloured, are in general small and unattractive, being much more curious than showy. The pseudobulbs assume several very different forms. They require a tolerable heat and plenty of moisture, and are then easily cultivated.

§ LANIUM.—The species referred here, are small and unattractive creeping plants. They prefer a hot humid atmosphere, and will creep over a log of wood suspended from the roof of the house; or they may, if preferred, be grown in a shallow open basket.

§ SPATHIUM.—A couple or three species of this section, namely, *E. colorans*, *armeniacum*, and *leucochilum*, are perhaps worth cultivating, the remainder being of no horticultural importance, their flowers being usually small, and greenish, or whitish yellow. In some instances the plants attain the height of three or four feet, having leafy stems uniform throughout. They are easily grown in a shady humid atmosphere heated to from 70° to 80°, and are best adapted for pot culture. In potting they should be elevated considerably above the rim of the pot, and very open light materials should be used; in all other respects they should have the general treatment of the genus.

§ AMPHIGLOTTIUM.—Great uniformity of habit occurs among the species of this section; the stems are leafy and of the same thickness throughout, varying from six inches to three or four feet in length. Some of the species are among the most useful and ornamental belonging to the genus, while others are quite inconspicuous, and not worth cultivating.

[EPIDENDRUM.—10.]

Among the best kinds are *E. Skinneri*, *cinnabarinum*, *Schomburgkii*, *patens*, *ellipticum*, *radicans*, *lacerum*, *costatum*, and the orange variety of *polyanthum*. The majority of them succeed when cultivated in pots amongst very open light materials, and treated as other West Indian or Brazilian orchids; that is, kept tolerably warm, and with plenty of moisture while growing, and at the same time shaded from the direct rays of the sun. *E. ellipticum* will succeed well trained against a warm wall, or may be suspended, and if kept within compass will form a beautiful and useful object, as it flowers copiously, and is an excellent kind to cut for bouquets. *E. Skinneri* is one of the most beautiful plants of the order, but is often found difficult to manage. If kept too hot it soon becomes covered with thrips, which sicken it; and if kept too wet it speedily decays. It requires to be grown in a medium temperature of from 56° to 70°, on a log of wood without sphagnum, suspended near the glass, and syringed overhead two or three times a day when making its growth. It should be placed where a little fresh air can reach it every time the sash is opened, and not too much exposed to the direct rays of the sun. Let it be kept dry during the resting season. The blooming season is autumn or winter, and its flowers remain for two months in perfection.

§ EUEPIDENDRUM.—The cultivated kinds of this section, with the exception of *E. stenopetalum* and perhaps *E. diffusum*, are only of botanical interest, their flowers being small, greenish or yellowish, and not attractive. They are low growing kinds; and are without difficulty cultivated on pots or on logs of wood, treated like the rest of the genus. *E. stenopetalum* is a compact growing plant of close erect habit, about nine inches or a foot high, and has exceedingly pretty flowers, which are large for the size of the plant. It is rare in collections, although from its habit and the beauty of its

[EPIDENDRUM.—11.]

flowers it is well worth cultivating. It grows well in a small basket or on a log of wood, suspended near the glass, in a close humid atmosphere of from 75° to 80°.

§ PLEURANTHEMUM.—Only a solitary representative of this small section is at present known in our gardens. It is one of the most unattractive of *Epidendrums*, but has the peculiarity of the flowers springing from the side of the stem, as occurs among *Dendrobes*. It may be grown as a pot plant, for which mode of treatment its habit is best adapted; and it should be kept in the shady humid atmosphere proper for other Brazilian or West Indian kinds.

§ EPICLADIUM, *Lindley*.—*Lip free. Flowers growing from a spathe. Stems elongately pseudobulbous.*

1. Orange Epidendrum.—*E. AURANTIACUM*, *Bateman in Bot. Reg.* 1838, *misc.* 11; and in *Orchid. Mex. et Guat.* t. 12.—Native of Mexico and Guatemala.

A handsome plant with clavate stems. The flowers are rich orange-colour, numerous, in a dense short somewhat drooping raceme. It grows “on exposed rocks on the precipitous brows of ravines, where it is subject to great extremes of heat and cold.”

2. Booth's Epidendrum.—*E. BOOTHIANUM*, *Lindley in Bot. Reg.* 1838, *misc.* 7.—Native of Cuba.

The flowers, which grow in a lax raceme, are nodding, sweet-scented, yellowish-orange spotted with purple, the lip white.

§ ENCYCLIUM, *Lindley*.—*Lip free. Flowers naked. Stems pseudobulbous.*

a. LIP ENTIRE.

3. Yolk-coloured Epidendrum. [Plate I.]—*E. VITELLINUM*, *Lindley Gen. and Sp. Orchid.* 97; *Bot. Reg.* 1840, t. 35; *Sert. Orchid.* t. 45;

[EPIDENDRUM 12.]

Bot. Mag. t. 4107.—Native of Mexico and Guatemala, at from 5-6000 to 9000 feet elevation.

A very beautiful species. The flowers are brilliant orange in erect many-flowered racemes. It grows on cloud-capped mountains amidst continual mists.

4. **Golden Epidendrum.**—*E. AUREUM*, *Lindley in Folia Orchid.* no. 5. *BROUGHTONIA AUREA*, *Lindley in Bot. Reg.* 1840, *misc.* 22.—Native of Mexico.

The flowers of this species are bright yellowish red, the lip with three parallel central veins.

5. **Freckled Epidendrum.**—*E. NÆVOSUM*, *Lindley in Folia Orchid.* no. 6. —Native of Mexico; elev. 4000 ft.

A diminutive species with flexuous 3-5 flowered scapes; the flowers drooping, the sepals and petals white, the lip yellow richly dotted with crimson, the anther crimson.

6. **Brasavola-like Epidendrum.**—*E. BRASAVOLÆ*, *H. G. Reichenbach in Bot. Zeit.* 1852, 729.—Native of Veragua; elevation 8000 ft.

The flowers are said to be paniculate, yellow tinged with brown purple, the lip yellow purple at the point.

7. **Swarthy Epidendrum.**—*E. SUBAQUILUM*, *Lindley in Bot. Reg.* 1846. *under t.* 64.—Native of Central America.

A small species, with the flowers pale dull-brown, with a whitish lip.

8. **Livid Epidendrum.**—*E. LIVIDUM*, *Lindley in Bot. Reg.* 1838, *misc.* 91. *E. ARTICULATUM*, *Klotzsch in Allgem. Gartenzeit.* 1838—Native of Columbia and La Guayra.

Flowers small, on a few flowered scape, dull purple a little tessellated, the lip pale dirty yellow with a few dull purple veins.

9. **Three-spotted Epidendrum.**—*E. TRIPUNCTATUM*, *Lindley in Bot. Reg.* 1841. *misc.* 143. ? *E. GHIESBREGHTIANUM*, *Richard and Galeotti, Orch. Mex.* 31.—Native of Mexico.

The flowers here grow on a short scape; they are dull yellow green, the column deep purple with three minute lobes, each tipped with a pale orange spot, the lip pale citron.

10. **Eared Epidendrum.**—*E. AURITUM*, *Lindley in Bot. Reg.* 1843, *misc.* 4. *DINEMA PALEACEUM*, *Lindley in Bot. Reg.* 1840, *misc.* 112.—Native of Mexico and Guatemala.

[EPIDENDRUM.—13.]

In this species the flowers are borne 3 or 4 on a short raceme, and are sweet-scented like heliotrope; pale green or almost white, with a violet blotch at the base of the lip.

11. **Fan-lipped Epidendrum.**—*E. FLABELLATUM*, *Lindley in Folia Orchid. no. 15.*—Native of Mexico.

The flowers which grow on a branched scape, are dull yellowish brown, the lip hooded, flabellately wedge-shaped, crisped, yellow with well-defined crimson veins and a white callus.

b. LIP THREE TOOTHED AT THE APEX, FLESHY.

12. **Glaucous Epidendrum.**—*E. GLAUCUM*, *Lindley in Bot. Reg. 1840, misc. 56.* *E. BRACHIATUM*, *Richard and Galeotti, Orch. Mex. 40.* *EPITHECIA GLAUCA*, *Knowles, Floral Cab. ii, 167, t. 87.* *PROSTHECHEA GLAUCA*, *Knowles Fl. Cab. ii, 111.*—Native of Mexico.

The small flowers are green stained with dull purple, in a short pendulous panicle.

13. **Bordered Epidendrum.**—*E. LIMBATUM*, *Lindley in Bot. Reg. 1843, misc. 104.*—Native of Guatemala.

This has the appearance of *E. glaucum*, but is larger, and the flowers have roundish dull purplish-brown sepals and petals with a narrow yellowish border.

14. **Ochre-coloured Epidendrum.** [Plate II.]—*E. OCHRACEUM*, *Lindley in Bot. Reg. 1838, misc. 15, t. 26.*—Native of Mexico and Guatemala.

The minute flowers of this species, which grow in terminal lax spikes are dull-orange inside, green without.

c. LIP THREE LOBED, THE LATERAL LOBES ROUNDED, THE MIDDLE ONE NEARLY LIKE THEM, NOT LARGER, MEMBRANACEOUS.

15. **Wing-fruited Epidendrum.** [Plate III.]—*E. PTEROCARPUM*, *Lindley in Hook. Journ. iii. 82; Bot. Reg. 1841, misc. 128; 1844, t. 34.* ? *E. CINNAMOMEUM*, *Richard and Galeotti, Orch. Mex. 36.*—Native of Mexico.

This has long thin terminal racemes of brown flowers, the lip yellow streaked with crimson.

d. LIP THREE-LOBED, THE LATERAL LOBES NARROW, THE MIDDLE ONE UNLIKE, OFTEN MUCH LARGER, MEMBRANACEOUS.

* *Middle lobes of lip very acute or acuminate.*

16. **Two-eared Epidendrum.**—*E. DIOTUM*, *Lindley in Bot. Reg. 1843, misc. 97.*—Native of Guatemala.

[EPIDENDRUM.—14.]

The flowers are largish with a slight odour of elder leaves, dull cinnamon colour with a little yellow, and some chocolate veins on the lip.

17. **Saddle-bearing Epidendrum.**—*E. SELLIGERUM*, *Bateman in Bot. Reg.* 1838, *misc.* 66. *E. VIOLODORA*, *Galeotti in Herb. Hook.*—Native of Mexico and Guatemala.

The flowers, which are highly perfumed,—smelling like the tuberose according to Mr. Bateman, the violet according to Galeotti,—grow in a somewhat branched scape; they are dull dingy purple, the lip pale violet.

18. **Folded-lipped Epidendrum.**—*E. REPLICATUM*, *Lindley in Paxt. Flow. Gard.* ii, *no.* 443, *fig.* 224.—Supposed to be a native of New Grenada.

This species has a terminal scape four feet long bearing a large drooping panicle of pretty flowers, the sepals and petals dull yellowish brown, stained especially the petals, with dark chocolate in the middle below the point, and having a yellowish border; the lip is white streaked with pink, and folded backwards.

19. **De Candolle's Epidendrum.**—*E. CANDOLLEI*, *Lindley in Bot. Reg.* 1839, *misc.* 77. *E. OEPIFORME*, *Hooker in Bot. Mag.* t. 3765.—Native of Mexico.

The flowers are paniced dull brown with a dull yellow striped lip.

20. **Oncidium-like Epidendrum.**—*E. ONCIDIODES*, *Lindley in Bot. Reg.* t. 1623.—Native of Surinam and Demerara.

The flowers are extremely fragrant, in long panicles, yellow blotched with brown. A variety, *GRANITICUM*, *E. graniticum*, *Lindley (Hook. Journ.* iii. 83) has the flowers smaller, green dotted with red, the lip white rose-coloured at the base.

21. **Sword-stemmed Epidendrum.**—*E. ENSICAULON*, *Richard and Galeotti, Orchid. Mex.* 34.—Native of Mexico.

The terminal compressed scapes, bear about two or three yellow-lipped flowers.

22. **Horned-columned Epidendrum.**—*E. CERATISTES*, *Lindley in Bot. Reg.* 1844, *misc.* 92.—Native of New Grenada.

The flowers grow in a narrow drooping divaricately branched panicle three feet long, and are green with a whitish lip streaked with red; they are very sweet scented.

23. **Plaited-lipped Epidendrum.** [Plate IV.]—*E. PPLICATUM*, *Lindley in Bot. Reg.* 1847, t. 35.—Native of Cuba.

The flowers grow in a raceme. The lip and back of the petals are crimson; the sepals and inside of the petals green, the former tinted, the latter richly spotted with crimson.

[EPIDENDRUM.—15.]

24. **Sweetest Epidendrum.**—*E. ODORATISSIMUM*, *Lindley in Bot. Reg.* t. 1415. ? *E. GLUTINOSUM*, *Scheidweiler in Allg. Gartenzeit.* 1843, p. 110. *MACRADENIA LUTESCENS*, *Loddiges, Bot. Cab.* t. 1556. *ENCYCLIA PATENS*, *Hooker Bot. Mag.* t. 3013.—Native of Brazil.

The flowers are in nearly simple racemes, olive-green with yellowish edges and very sweet scented.

25. **Stained Epidendrum.**—*E. FUCATUM*, *Lindley in Bot. Reg.* 1838, *misc.* 17. *E. POLYANTHUM*, *of French gardens.*—Native of Cuba.

This has a nodding many-flowered panicle of small dull yellow tessellated flowers having a pink spot in the middle of the white lip.

26. **Green and White Epidendrum.**—*E. CHLOROLEUCUM*, *Hooker in Bot. Mag.* t. 3557. *E. CHLORANTHUM*, *Lindley in Bot. Reg.* 1838, *misc.* 28.—Native of Guiana.

This species has a paniculate raceme of pale green spotless scentless white-lipped flowers.

** *Middle lobe of lip blunt ; rachis smooth.*

27. **Twiggy Epidendrum.**—*E. VIRGATUM*, *Lindley in Hook. Journ. Bot.* iii. 83.—Native of Mexico.

The flowers are arranged in gracefully-branched panicles, on a very tall scape ; they are small, numerous, dull green stained with brown, the lip whitish yellow.

28. **Link's Epidendrum.**—*E. LINKIANUM*, *Klotzsch in Allg. Gartenzeit.* 1829. *E. PASTORIS*, *Link and Otto Abbild.* t. 12.—Native of Mexico.

This has a few-flowered raceme of small dull yellow flowers streaked with purple, the lip whitish.

29. **Egg-like Epidendrum.**—*E. OVULUM*, *Lindley in Bot. Reg.* 1843, *misc.* 71.—Native of Mexico.

The flowers are olive-green, except the lip which is white with rose-coloured side lobes, and crimson glandular radiating veins.

30. **Bractescent Epidendrum.**—*E. BRACTESCENS*, *Lindley in Bot. Reg.* 1840, *misc.* 122.—Native of Mexico.

The flowers are small but pretty, scentless, dingy purple, with a white lip delicately painted.

31. **Acicular Epidendrum.**—*E. ACICULARE*, *Bateman in Bot. Reg.* 1841, *misc.* 98. *E. ESCULENTUM*, *Hort. Kew.* *E. LINEARIFOLIUM*, *Hooker in Bot. Mag.* t. 4572.—Native of Mexico, and the Bahamas.

[EPIDENDRUM.—16.]

The flowers are rather pretty, dull purple with a white lip marked with rosy veins; they are arranged in a slender erect raceme.

32. **Painted Epidendrum.**—*E. PICTUM*, *Lindley in Bot. Reg.* 1838, *misc.* 43.—Native of Demerara.

The flowers, in an erect paniculate raceme, are dull yellow striped with crimson.

33. **Small-bulbed Epidendrum.**—*E. MICROBULBON*, *Hooker, Icones Plant.* t. 347.—Native of Mexico.

This grows with a few-flowered raceme of rose coloured flowers, the lip dotted with red on a yellow ground.

34. **Obtuse Epidendrum.**—*E. OBTUSUM*, *Alph. De Candolle, Plant. Rar. Genev.*—Native of Mexico.

The flowers grow on a longish drooping scape, and are greenish brown, the lip whitish streaked with dull purple.

35. **Slender Epidendrum.**—*E. GRACILE*, *Lindley in Bot. Reg.* t. 1765.—Native of the Bahamas.

This species has a long simple raceme of green flowers, with a yellow lip, marked with purple lines.

36. **Green-flowered Epidendrum.**—*E. VIRIDIFLORUM*, *Lindley in Bot. Reg.* 1842, *misc.* p. 30. *ENCYCLIA VIRIDIFLORA*, *Hooker, Bot. Mag.* t. 2831.—Native of Brazil.

An unattractive species, with a slender panicle of green flowers stained at the base with purple.

37. **Rufous Epidendrum.**—*E. RUFUM*, *Lindley in Bot. Reg.* 1845, *misc.* 42. *E. PRIMULINUM*, *Bateman in Paxt. Flow. Gard.* i. *under t.* 30.—Native of the Bahamas, and said to be also from Brazil.

The flowers are brownish yellow, with the odour of primroses; and grow in a narrow panicle.

38. **Tallest Epidendrum.**—*E. ALTISSIMUM*, *Bateman in Bot. Reg.* 1838, *misc.* 61.—Native of the Bahamas.

This species has a very long paniculate scape, bearing yellowish flowers blotched with brown, and having a strong odour like that of beeswax.

39. **Winged Epidendrum.**—*E. ALATUM*, *Bateman Orch. Mex.* t. 18. *E. LONGIPETALUM*, *Lindley in Paxt. Fl. Gard.* i. t. 30. *E. CALOCHEILUM*, *Hooker in Bot. Mag.* t. 3898.—Native of Guatemala and Honduras.

A fine species with a long loose panicle of very sweet-scented flowers, of which the

[EPIDENDRUM.—17.]

sepals and petals are greenish at the base, purple upwards, and the lip straw-coloured bordered with yellow and lined with rose.

40. **Green Epidendrum.**—*E. VIRENS*, *Lindley in Paxt. Flow. Gard. i. under t. 30.*—Native of Guatemala.

This has green flowers, with the lip white veined with crimson in the middle lobe, green with crimson veins but white at the point in the lateral lobes.

41. **Aromatic Epidendrum.**—*E. AROMATICUM*, *Bateman, Orch. Mex. t. 10.* *E. INCUMBENS*, *Lindley in Bot. Reg. 1840, misc. 84.*—Native of Guatemala.

The flowers of this species, are pale dull yellow, sweet-scented, in large panicles.

42. **Doubtful Epidendrum.** [Plate V.]—*E. AMBIGUUM*, *Lindley in Folia Orchid. no. 56.* *E. ALATUM*, *Lindley in Bot. Reg. 1847, t. 53,* (not of Bateman, which is No. 39 above.—Native of Guatemala.

A pretty species, with pale yellowish green flowers, and a straw-coloured lip spotted and streaked with rose; they are very sweet-scented, and grow in a lax panicle.

43. **Rugged-lipped Epidendrum.**—*E. TRACHYCHILUM*, *Lindley in Folia Orchid. no. 57.* *E. ALATUM*, *Lindley in Plant. Hartw. 92.*—Native of Mexico.

The flowers of this plant are leathery, olive brown, with a “ deep yellow lip studded with red warts, white and spotted with pink on the callus, brilliant green with red warts on the lower lobes;” they grow in densely branched panicles.

*** *Middle lobe of lip blunt; rachis and ovary asperous.*

44. **Wood Epidendrum.** [Plate VI.]—*E. NEMORALE*, *Lindley in Hooker's Jour. Bot. iii. 82.* *E. VERRUCOSUM*, *Lindley in Bot. Reg. 1844, t. 51; Bot. Mag. t. 4606.*—Native of Mexico.

A very ornamental species, bearing a drooping raceme of large rich rose-coloured flowers.

45. **Glandular-fruited Epidendrum.**—*E. ADENOCARPUM*, *La Llave.* *E. PAPPILLOSUM*, *Bateman in Bot. Reg. 1838, misc. 8; Bot. Mag. t. 3631.* *E. CRISPATUM?* *Knowles Flor. Cab. ii. 79.*—Native of Guatemala and Mexico.

The flowers are greenish yellow, the lip being white with three short purple lines; they grow in erect simple or many-flowered panicles.

46. **Gravid Epidendrum.**—*E. GRAVIDUM*, *Lindley in Jour. Hort. Soc. iv. 114.*—Native of Mexico.

The flowers of this species are small and green, and grow on a fewflowered scape.

[EPIDENDRUM.—18.]

47. **Wagener's Epidendrum.**—E. WAGENERI, *Klotzsch in Allgem. Gartenzeitung*, 1851.—Native of Venezuela.

The flowers, growing in long paniculate racemes, are sweet-scented, yellowish green, the lip white changing to buff.

48. **Guatemalan Epidendrum.**—E. GUATEMALENSE, *Klotzsch in Allgem. Gartenzeit.* 1852.—Native of Guatemala.

The flowers grow in a nearly simple raceme, and are pale yellowish green, the lip white, striped with purple.

**** *Middle lobe of lip manifestly bilobed.*

49. **Tessellated Epidendrum.**—E. TESSELLATUM, *Bateman in Bot. Reg.* 1838, *misc.* 91.—Native of Guatemala, Mexico, and Caraccas.

The flowers are dingy orange-brown with a pale coloured lip, tessellated with crimson.

50. **Varicose Epidendrum.**—E. VARICOSUM, *Bateman in Bot. Reg.* 1838, *misc.* 37. E. LEIOBULBON, *Hooker Jour. Bot.* iii. 308, *t.* 10. E. PHYMATOGLOSSUM, and E. CHIRIQUENSE, *H. G. Reichenbach Bot. Zeit.* 1852. E. LUNÆANTUM, *A. Richard in Hort. Par.* E. QUADRATUM, *Klotzsch in Allgem. Gartenzeit.* 1850.—Native of Guatemala, Costa Rica, Veragua, and Mexico.

The flowers are small dull brown, on a slender scape.

51. **Violet-scented Epidendrum.**—E. IONOSMUM, *Lindley in Bot. Reg.* 1838, *misc.* 87.—Native of Demerara.

The flowers are racemose, dull reddish green, the lip delicately streaked with deep lilac; they are very sweet-scented.

52. **Pear-shaped Epidendrum.** [Plate VII.]—E. PYRIFORME, *Lindley in Bot. Reg.* 1847, *t.* 50.—Native of Cuba.

The scape bears about two rather large reddish yellow flowers, of which the lip is pale straw-coloured veined with crimson.

53. **Bifid Epidendrum.**—E. BIFIDUM, *Aublet.* E. PAPILIONACEUM, *West. S. Cruz*, 230. E. AUROPURPUREUM, *Lindley, Gen. et Sp. Orchid.* 14. E. ATROPURPUREUM, *Willdenow Sp. Pl.* 115.—Native of the West Indies.

The flowers of this species are light green, with a dull purple spot near the ends of the sepals and petals, the lip rose-coloured with its lateral lobes yellow; they grow in a branching scape.

54. **Two-coloured Epidendrum.**—E. DICHROMUM, *Lindley in Bot. Reg.* 1843, *misc.* 119.—Native of Pernambuco.

[EPIDENDRUM.—19.]

In this plant the flowers, which grow in a lax few-flowered raceme, are white, with a rose-coloured lip, yellow at the base.

55.—**Hanbury's Epidendrum.**—E. HANBURI, *Lindley in Bot. Reg.* 1844, *misc.* 60.—Native of Mexico.

This has the flowers racemose, dull purple, the lip pale rose with crimson radiating veins, its lateral lobes white at the tip.

56.—**Purple Epidendrum.**—E. PHENICEUM, *Lindley in Bot. Reg.* 1841, *misc.* 120.—Native of Cuba.

A very fine species. The flowers are large scentless paniculate, deep purple a little mottled with green, the lip clear bright rosy purple with deep crimson veins and stains in the middle.

A variety called VANILLOSUM, *E. Grahmi*, Hooker (*Bot. Mag. t.* 3885) is deliciously perfumed like Vanilla, and has the lip white spotted with rose.

57. **Large-lipped Epidendrum.**—E. MACROCHILUM, *Hooker Bot. Mag. t.* 3534; *Bateman Orchid. Mex. t.* 17.—Native of Guatemala, Panama, Colombia and Caraccas.

A very fine species, with the flowers large, in a short raceme; in one variety purple with a deep rose-coloured lip; in another green with a white lip.

§ DIACRIUM,* *Lindley.*—*Lip free. Flowers naked. Stem fusiform.*

58. **Two-horned Epidendrum.**—E. BICORNUTUM, *Hooker in Bot. Mag. t.* 3332.—Native of Trinidad and Demerara.

A handsome species, with large white flowers slightly tinged with rose-colour; the lip yellow at the base, with crimson specks on the middle lobe.

§ HORMIDIUM, *Lindley.*—*Lip adnate. Stem pseudobulbous. Flowers sessile.*

59. **Pigmy Epidendrum.**—E. PYGMÆUM, *Hooker Journ. Bot. i.* 49; *Bot. Mag. t.* 3233. E. UNIFLOBUM, *Lindley in Bot. Reg.* 1839, *misc.* 13.—Native of Brazil and Jamaica.

Small, with one or two diminutive greenish yellow flowers.

60. **Miserable Epidendrum.**—E. MISEBUM, *Lindley in Bot. Reg.* 1841, *misc.* 62.—Native of Mexico.

Diminutive; the flowers small dull greenish brown.

* Misprinted Diacrum on p. 7.

[EPIDENDRUM.—20.]

§ **PSILANTHEMUM**, *Klotzsch*.—*Lip adnate. Stem pseudo-bulbous. Flowers racemose or paniculate. Inflorescence radical.*

61. **Stamford's Epidendrum**.—*E. STAMFORDIANUM*, *Bateman Orch. Mex.* t. 11. *E. BASILARE*, *Klotzsch in Link Kl. and Otto's Ic. Plant.* t. 45.—Native of Guatemala and Santa Martha.

The flowers of this species are deliciously scented, and grow in a large panicle; they are pale yellow, with a vivid violet spot at the base of the lip, and are very showy.

62. **Purplish Epidendrum**.—*E. PURPURASCENS*, *Focke in Tijdschrift Nederl.* iv. 64.—Native of Surinam.

Dr. Lindley marks this little known species as a cultivated one. The flowers are purplish outside, purplish green within, the lip white.

§ **AULIZEUM**, *Lindley*.—*Lip adnate. Stem pseudobulbous. Flowers racemose or paniculate. Inflorescence terminal. Lip divided.*

a. LIP THREE PARTED.

63. **Ciliated Epidendrum**.—*E. CILIARE*, *Linnæus Sp. Pl.* 1349; *Bot. Reg.* t. 784; *Bot. Mag.* t. 463. *E. CUSPIDATUM*, *Loddiges Bot. Cab.* t. 10; *Bot. Reg.* t. 783. *E. VISCIDUM*, *Lindley in Bot. Reg.* 1840, *misc.* 190. *AULIZA CILIARIS*, *Salisbury in Trans. Hort. Soc.* i. 261.—Native of Tropical America.

There are several forms of this plant, which bears large fringed-lipped flowers white changing to straw-colour. They differ chiefly in the proportion of the parts of the flowers.

64. **Falcate Epidendrum**.—*E. FALCATUM*, *Lindley in Ann. Nat. Hist.* 1840. *E. LACTIFLORUM*, *Richard and Galeotti Orch. Mex.* 57. *E. PARKINSONIANUM*, *Hooker Bot. Mag.* t. 3778. *E. ALOIFOLIUM*, *Bateman Orch. Mex.* t. 25.—Native of Mexico.

A fine species with short branching stems, bearing large pale yellowish flowers, from two to four or more in each spathe.

65. **Viviparous Epidendrum**.—*E. VIVIPARUM*, *Lindley in Bot. Reg.* 1841, *misc.* 27.—Native of Demerara.

A species with fusiform stems, and small white flowers in a few-flowered raceme.

66. **Club-shaped Epidendrum**.—*E. CLAVATUM*, *Lindley in Bot. Reg.* t. 1870.—Native of Cumana.

Stem club-shaped. Flowers green, the lip white.

[EPIDENDRUM.—21.]

b. LIP THREE-LOBED THE LOBES OFTEN ROUNDED.

67. **Volute Epidendrum.**—*E. VOLUTUM*, *Lindley in Paxt. Flow. Gard.* no. 427.—Native of Central America.

A species of no beauty, with a terete stem, and greenish white flowers.

§ **OSMOPHYTUM**, *Lindley*.—*Lip adnate. Stem pseudo-bulbous. Flowers racemose or paniculate. Inflorescence terminal. Lip entire.*

68. **Tiger-spotted Epidendrum.**—*E. TIGRINUM*, *Lindley in Orch. Lind.* no. 52.—Native of Venezuela, and supposed to be also of Brazil.

A very handsome plant, bearing racemes of large flowers of which the petals are “orange yellow spotted with red, the lip white, washed with purple.”

69. **Variegated Epidendrum.** [Plate VIII.]—*E. VARIEGATUM*, *Hooker in Bot. Mag.* t. 3151; *Bot. Reg.* 1839, t. 11.—Native of Brazil.

This species, which is a variable one, has fragrant flowers, green spotted with purple, the lip white with a crimson horse-shoe shaped mark; and growing in a many-flowered raceme. The most important cultivated variety is the following:—

E. v. CORIACEUM, the *E. coriaceum*, *Hooker (Bot. Mag.* t. 3595) which has cream-coloured flowers, spotted on the sepals and petals, and streaked on the lip with dull purple.

70. **Collared Epidendrum.**—*E. COLLARE*, *Lindley in Bot. Reg.* 1843, *misc.* 85.—Native of Guatemala.

This has fusiform stems, and white flowers, which change to yellow and brown as they fade.

71. **Fragrant Epidendrum.**—*E. FRAGRANS*, *Swartz Fl. Ind. Occ.* iii. 1847; *Bot. Mag.* t. 1669; *Bot. Cab.* t. 1039. *E. ÆMULUM*, *Lindley in Bot. Reg.* t. 1898. *E. LINEATUM*, *Salisbury Stirp.* 10.—Native of the Tropics of America.

This fragrant species has fusiform stems, and pale green or cream-coloured flowers, marked with crimson lines on the lip.

The variety *MEGALANTHUM*, *Lindley*, has the flowers four inches in diameter, the lip marked with vivid stripes of rich crimson.

72. **Glumaceous Epidendrum.** [Plate IX.]—*E. GLUMACEUM*, *Lindley in Bot. Reg.* 1840, t. 6.—Native of Brazil.

[EPIDENDRUM.—22.]

The flowers are white tinged with pink, the lip delicately striped with pink at its base.

73. **Inverse Epidendrum.**—*E. INVERSUM*, *Lindley in Bot. Reg.* 1839, *misc.* 135.—Native of Brazil.

Flowers straw-coloured, with a few purple streaks on the column, and at the base of the lip; heavily scented.

74. **Reed-like Epidendrum.**—*E. CALAMARIUM*, *Lindley in Bot. Reg.* 1838, *misc.* 163.—Native of Brazil.

This has the flowers pale yellowish green, with small violet spots at the base of the lip.

75. **Three-spotted Epidendrum.**—*E. TRIPUNCTATUM*, *Lindley in Folia Orch.* no. 126.—Native of Brazil.

Flowers yellowish with three deep purple spots on the lip in front of the calli, and a few smaller ones above.

76. **Attenuate Epidendrum.**—*E. ATTENUATUM*, *Lindley in Folia Orchid.* no. 127.—Native of Venezuela.

Flowers small, with reddish petals, and a yellow lip, having five forked dark coloured veins.

77. **Shell-lipped Epidendrum.**—*E. COCHLEATUM*, *Linnæus; Bot. Mag.* t. 572. *ANACHEILUM COCHLEATUM*, *Hoffmansegg, Linnæa*, xvi. 229. (a paler variety).—Native of the West Indies, and Mexico.

Flowers green, the lip bordered and stained below the middle with purple.

78. **Lance-leaved Epidendrum.** [Plate X.]—*E. LANCIFOLIUM PAVON*; *Bot. Reg.* 1842, t. 50.—Native of Mexico.

Flowers pale green, the lip streaked with crimson-purple radiating lines on a cream-coloured ground.

79. **Ray-lipped Epidendrum.** [Plate XI.]—*E. RADIATUM*, *Lindley in Bot. Reg.* 1841, *misc.* 123; 1844 t. 45. *E. MARGINATUM*, *Link, Klotzsch and Otto Ic. Pl.* t. 36.—Native of Mexico and Guatemala.

Flowers pale green, the lip streaked with purple radiating lines or rays; it has a cinnamon odour.

§ *LANIUM*, *Lindley*.—*Lip adnate. Stem creeping scaly.*

80. **Small-leaved Epidendrum.**—*E. MICROPHYLLUM*, *Lindley in Hook.*

[EPIDENDRUM.—23.]

Journ. Bot. iii. 85. ? *E. SARCOPHYLLUM*, *Focke Tijdsch. Neder.* iv. 67.—Native of Demerara.

A small creeping plant with woolly! dull purple or greenish flowers.

§ *SPATHIUM*, *Lindley*.—*Lip adnate. Stem erect leafy. Inflorescence terminal. Spathe one or more large herbaceous.*

a. SPATHE NEARLY SIMPLE; FLOWERS RACEMOSE.

81. **Trinidad Epidendrum.**—*E. TRINITATIS*, *Lindley in Bot. Reg.* 1844, *misc.* 82.—Native of Trinidad.

Flowers small pale greenish yellow, the lip deep apricot; they grow in a long raceme.

82. **Coloured Epidendrum.**—*E. COLORANS*, *Klotzsch in Allgem. Gartenzeit.* 1851.—Native of Guatemala.

Flowers small pendulous, white changing to pink.

83. **Apricot-coloured Epidendrum.**—*E. ARMENIACUM*, *Lindley in Bot. Reg.* t. 1867. *ENCYCLIA MACROSTACHYA*, *Pöppig and Endlicher*.—Native of Peru and Brazil.

Flowers in a slender drooping raceme, small apricot-coloured.

b. SPATHE NEARLY SIMPLE; FLOWERS SUBUMBELLATE.

84. **White-lipped Epidendrum.**—*E. LEUCOCHILUM*, *Klotzsch in Allgem. Gartenzeit.* *E. FLAVIDUM*, *Lindley Orch. Lind.* no. 48.—Native of New Grenada and Caraccas.

This has a drooping many-flowered subumbellate raceme of large yellowish green flowers with an ivory-white lip, and is a rather showy and desirable species.

c. SPATHES SEVERAL IMBRICATE.

5. **Frog Epidendrum.** [Plate XII.]—*E. RANIFERUM*, *Lindley Gen. et Sp. Orch.* no. 64; *Bot. Reg.* 1842, t. 42.—Native of Mexico and Demerara.

The flowers are here pale greenish deeper outside and profusely marked in front with rich purplish spots. In a variety called *LUTEUM* by Dr. Lindley, the flowers are bright yellow with red spots, and the lip is whiter.

86. **Clowes's Epidendrum.**—*E. CLOWESII*, *Bateman in Bot. Reg.* 1844, *misc.* p. 16.—Native of Guatemala.

Flowers yellowish white, growing in a short raceme.

[EPIDENDRUM.—24.]

87. **Harrison's Epidendrum.**—*E. HARRISONIÆ*, *Hooker in Bot. Mag.* t. 3209. *E. AERIDIFORME*, *Booth in Bot. Reg.* 1845, *misc.* 12.—Native of Brazil.

Flowers in a nodding raceme, green, sometimes touched with reddish brown.

§ **AMPHIGLOTTIUM**, *Lindley*.—*Lip adnate. Stem leafy erect. Inflorescence terminal. Spathes many imbricate dry membranous.*

a. FLOWERS TRULY PANICLED.

88. **Nodding Epidendrum.**—*E. NUTANS*, *Swartz Fl. Ind. Occ.* i. 1499; *Hook. Exot. Bot.* i. t. 50.—Native of the West Indies.

Flowers sweet-scented at night usually greenish; but in the variety *DIPUS* [Plate XIII]. *the E. dipus* *Lindley (Bot. Reg.* 1845, t. 4.) they are brownish green with a white lip.

89. **Pallid-flowered Epidendrum.**—*E. PALLIDIFLORUM*, *Hooker Bot. Mag.* t. 2980.—Native of Dominica.

Flowers pale yellowish green stained with purple and growing in a loose panicle.

90. **Wart-lined Epidendrum.**—*E. SERIATUM*, *Lindley in Folia Orch.* no. 183.—Native of Mexico.

This has a narrow lax panicle of dirty yellow flowers.

91. **Eye-lashed Epidendrum.**—*E. BLEPHARISTES*, *Barker in Bot. Reg.* 1844, *misc.* p. 20.—Native of La Guayra and Venezuela.

A gay species, the sepals and lip rich rose colour, "the column has the deepest tint of the garnet."

92. **Many-flowered Epidendrum.**—*E. POLYANTHUM*, *Lindley Gen. and Sp. Orchid.* no. 50. *E. FUNIFERUM*, *Morren Ann. Gard.* iv. t. 198. *E. BISETUM*, *Lindley in Bot. Reg.* 1841, *misc.* 148.—Native of Mexico and Vera Cruz.

A very pretty species, with an upright panicle of numerous many-flowered simple racemes of small but rich orange or salmon-coloured flowers, having the odour of cowslips.

A variety called *DENSIFLORUM*, the *E. densiflorum*, *Hooker (Bot. Mag.* t. 3791), and *E. rubrocinctum*, *Lindley (Bot. Reg.* 1843, *misc.* 20) has the flowers greenish with a little pink on the edges and in the centre of the lip.

[EPIDENDRUM.—25.]

b. FLOWERS RACEMOSE, RARELY IN PANICLED RACEMES WHEN LUXURIANT. LIP UNDIVIDED.

93. **Corymbose Epidendrum.**—*E. CORYMBOSUM*, *Lindley in Folia Orch. no. 190*. *E. DICHOTOMUM*, *Lindley in Bot. Reg. 1838, misc. 146*; not of *Presl.*—Native of Brazil, Demerara, and Venezuela.

A small green-flowered species.

94. **Keeled Epidendrum.**—*E. CABINATUM*, *Lindley in Folia Orchid. no. 191.*—Native of Mexico.

A small and unattractive species.

95. **Hooded Epidendrum.**—*E. CUCULLATUM*, *Lindley in Bot. Reg. 1838, misc. 47*. *E. BIFORATUM*, *Lindley in Bot. Reg. 1843, misc. p. 15.*—Native of Brazil.

Flowers small, white.

96. **Antennæ-bearing Epidendrum.**—*E. ANTENNIFERUM*, *Lindley in Paxton's Flow. Gard. i. no. 234.*—Native of Mexico.

A curious inconspicuous plant, remarkable for the elongation of its filiform petals.

97. **Skinner's Epidendrum.**—*E. SKINNERI*, *Bateman in Bot. Reg. t. 1881; Bot. Mag. t. 3951*. *E. FUCHSII*, *Regel.*—Native of Guatemala.

This is one of the most beautiful of the Epidendrums. The flowers in long many-flowered racemes, are large, and deep rose-colour. It appears to inhabit a cool climate.

98. **Costate Epidendrum.**—*E. COSTATUM*, *Richard and Galeotti, Orch. Mex. 22.*—Native of Mexico.

A very handsome plant. Flowers rich crimson in drooping panicles.

c. FLOWERS IN RACEMES, RARELY WHEN LUXURIANT PANICLED. LIP LOBED, THE SEGMENTS ALWAYS ENTIRE.

99. **Fuscous Epidendrum.**—*E. FUSCATUM*, *Swartz Nov. Act. Ups. vi, 69; Bot. Reg. t. 67; Bot. Mag. t. 2844*. *E. ANCEPS*, *Jacquin Amer. 224*. *AMPHIGLOTTIS LURIDA*, *Salisbury.*—Native of the West Indies and Tropical America.

The unattractive flowers of this plant vary from dull greenish purple to green and greenish yellow.

In a variety called *VIRESCENS*, the *E. virescens*, Loddiges (*Bot. Cab. t. 1867*), and the *E. musciferum*, Lindley (*Hook. Journ. i, 6*), the flowers are smaller and greener. Another variety, *VIRIDIPURPUREUM*, the *E. viridipurpureum*, Hooker

[EPIDENDRUM.—26.]

(*Bot. Mag.* t. 3666), has the flowers larger than usual, and in this the lip is violet edged with yellow.

100. **Emerald-green Epidendrum.**—*E. SMARAGDINUM*, *Lindley in Bot. Reg.* 1838, *misc.* 44.—Native of Demerara and Brazil.

This has small bright green flowers in a few-flowered drooping spike.

101. **Vanda-leaved Epidendrum.**—*E. VANDIFOLIUM*, *Lindley in Journ. Hort. Soc.* iv. 269.—Native of Mexico.

The flowers of this are dull purple, freckled, and sweet-scented; they grow in short drooping racemes.

d. FLOWERS RACEMOSE, RARELY WHEN LUXURIANT PANICULATE. LIP LOBED, THE SEGMENTS LACERATE, THE MIDDLE ONE LAMELLATE.

102. **Cinnabar Epidendrum.** [Plate XIV.]—*E. CINNABARINUM*, *Salzmann; Bot. Reg.* 1842, t. 25.—Native of Brazil and Venezuela.

This is one of a group of beautiful allied species, among the most ornamental in the whole genus; it, like them, has bright scarlet or crimson blossoms, and when well cultivated is extremely handsome.

103. **Schomburgk's Epidendrum.** [Plate XV.]—*E. SCHOMBURGKII*, *Lindley in Bot. Reg.* 1838, *misc.* 16, t. 53. *E. FULGENS*, *Focke Tijdschr. Nederl.* iv. 66.—Native of Demerara, Brazil, and Peru.

This has rich scarlet or vermilion coloured flowers of great beauty, much like those of *E. cinnabarinum*, from which it is distinguished by peculiarities in the form of the lip.

104. **Rooting Epidendrum.**—*E. RADICANS*, *Pavon*. *E. RHIZOPHORUM*, *Bateman in Bot. Reg.* 1838, *misc.* 10.—Native of Guatemala and Mexico.

The flowers of this are orange-red, in the way of the two preceding species, the present, like them, ranking among the most desirable and beautiful of Epidendrums.

105. **Thong-leaved Epidendrum.**—*E. IMATOPHYLLUM*, *Lindley Gen. et Sp. Orchid.* no. 52. ? *E. FLEXUOSUM*, *Meyer Fl. Esseq.* p. 260.—Native of Demerara, Surinam, and Brazil.

In this species the flowers are pale rose-coloured, sometimes mixed with green.

e. FLOWERS RACEMOSE, RARELY PANICULATE WHEN LUXURIANT. LIP LOBED, THE SEGMENTS LACERATE, THE MIDDLE ONE NAKED, BICALLOUS AT THE BASE.

106. **Elliptic Epidendrum.**—*E. ELLIPTICUM*, *Graham in Exot. Bot.* t. 207; *Bot. Cab.* t. 1216. *E. CRASSIFOLIUM*, *Lindley, Gen. and Sp. Orch.* no. 55; *Bot. Mag.* t. 3543.—Native of Brazil.

[EPIDENDRUM—27.]

This is a showy and useful species. The flowers are light rose colour, and freely produced in racemes at the top of a long leafless scape.

107. **Elongate Epidendrum.**—*E. ELONGATUM*, *Jacquin Ic. Rar.* iii. t. 604; *Bot. Mag.* t. 611. *E. SECUNDUM*, *Linnaeus, Sp. Pl.* 1349. *AMPHIGLOTTIS SECUNDA*, *Salisbury Trans. Hort. Soc.*—Native of the West Indies and Caraccas.

Much in the way of the last, with bright rose-coloured flowers.

108. **Torn-lipped Epidendrum.**—*E. LACERUM*, *Lindley in Bot. Reg.* 1838, *misc.* 18.—Native of Cuba.

Flowers pale rose colour in racemes.

109. **Spreading Epidendrum.**—*E. PATENS*, *Swartz, Fl. Ind. Occ.* i. 1495; *Bot. Cab.* t. 1537; *Bot. Mag.* t. 3800; *Paxton's Flow. Gard.* ii, no. 394.—Native of Jamaica and Guatemala.

Flowers pale rusty yellow in long pendulous racemes.

§ 11. **EUEPIDENDRUM**, *Lindley*—*Lip adnate. Stem erect leafy. Inflorescence terminal. Spathes wanting.*

a. LEAVES EQUITANT.

110. **Blistered Epidendrum.**—*E. VESICATUM*, *Lindley in Bot. Reg.* 1838, *misc.* 89.—Native of Brazil.

The flowers are greenish white.

111. **Equitant Epidendrum.**—*E. EQUITANS*, *Lindley in Bot. Reg.* 1838, *misc.* 76.—Native of Mexico.

Flower solitary, terminal, pendulous, dull chocolate brown.

b. LEAVES PLANE; BRACTS SPATHACEOUS, OFTEN ANCIPITAL.

112. **Leather-leaved Epidendrum.**—*E. CORIIFOLIUM*, *Lindley in Journ. Hort. Soc.* vi, 218.—Native of Central America.

Flowers greenish inconspicuous, in a dense spike.

c. LEAVES PLANE; BRACTS DEPAUPERATED; FLOWERS UMBELLATE.

113. **Narrow-petalled Epidendrum.**—*E. STENOPETALUM*, *Hooker in Bot. Mag.* t. 3410. *E. LAMELLATUM*, *Lindley in Bot. Reg.* 1843, *misc.* 60.—Native of Honduras, Venezuela, Jamaica.

The flowers are bright rose colour.

[EPIDENDRUM.—28.]

114. **Umbellate Epidendrum.**—*E. UMBELLATUM*, *Swartz Nov. Act. Ups.* vi, 68; *Bot. Mag.* t. 2030. *E. DIFFORME*, *Jacquin Amer.* 223, t. 136; ? *E. SUBUMBELLATUM* and *E. RADIATUM*, *Hoffmanseg.*—Native of the West Indies, Brazil, Guatemala.

Flowers green in a sessile umbel.

115. **Broad-lipped Epidendrum.**—*E. LATILABRE*, *Lindley in Bot. Reg.* 1841, *misc.* 163. ? *E. VIRENS*, *Hoffmanseg, Linnæa*, xvi, 233.—Native of the West Indies, Peru and Brazil.

Flowers green, in 2-4 flowered sessile umbels.

116. **Lizard Epidendrum.**—*E. LACERTINUM*, *Lindley in Bot. Reg.* 1841, *misc.* 109.—Native of Guatemala.

Flowers bright green, the column yellow, the lip a little stained with purple.

117. **Nocturnal Epidendrum.**—*E. NOCTURNUM*, *Linnæus, Sp. Pl.* 1349; *Bot. Reg.* t. 1961; *Bot. Mag.* t. 3298. *E. DISCOLOR*, *Richard and Galleoti, Orch. Mex.* 56. *E. TRIDENS*, *Pöppig and Endlicher.*—Native of the West Indies, Surinam, Demerara, Peru, &c.

Flowers white tinged with green or crimson, extremely sweet-scented, and rather handsome.

118. **Long-necked Epidendrum.**—*E. LONGICOLLE*, *Lindley in Bot. Reg.* 1838, *misc.* 49; *Bot. Mag.* t. 4165.—Native of Demerara.

Flowers pale yellow, the lip white, with yellow at the base.

d. LEAVES PLANE; BRACTS DEPAUPERATED, FLOWERS RACEMOSE.

119. **Florida Epidendrum.**—*E. CONOPSEUM*, *R. Brown in Hort. Kew.* v, 219; *Bot. Mag.* t. 3457. *E. MAGNOLIÆ*, *Muhlenberg, Cat.* 81.—Native of the Southern States of North America.

“The most northern epiphyte yet known.” Flowers small green or pale yellow, in a lax many-flowered raceme.

120. **Acuminate Epidendrum.**—*E. ACUMINATUM*, *Fl. Peruv. Syst.* 248.—Native of Peru.

The flowers are greenish-yellow, in racemes.

c. LEAVES PLANE; BRACTS DEPAUPERATED; FLOWERS PANICULATE.

121. **Diffuse Epidendrum.**—*E. DIFFUSUM*, *Swartz, Fl. Ind. Occ.* iii. 1503; *Bot. Mag.* t. 3565. *E. TENUIFLORUM*, *of gardens.* SERAPHYTA MULTIFLORA, *Fischer, Ann. Nat. Hist.* viii, 471.—Native of Jamaica.

Flowers small crimson, in filiform much branched panicles.

[EPIDENDRUM.—29.]

122. **Pure Epidendrum.**—*E. PURUM*, *Lindley, Bot. Reg.* 1844, *misc.* 75.
—Native of Caraccas and New Grenada.

Flowers pale green in thin paniced racemes.

123. **Three-footed Epidendrum.**—*E. TRIDACTYLUM*, *Lindley in Bot. Reg.* 1838, *misc.* 81.—Native of Brazil.

Flowers small brownish yellow, the column green, the panicle 3-5 parted.

124. **Many-flowered Epidendrum.** — *E. FLORIBUNDUM*, *Humboldt et Kunth Nov. Gen. et Sp.* i. 353, t. 86; *Bot. Mag.* t. 3637. *E. DENSIFLORUM*, *Hooker Bot. Mag.* t. 3791. *E. ORNATUM*, *Lemaire.*—Native of Peru, Venezuela, New Grenada.

A great branching green-flowered species; of which however there is a variety, with the flowers purple larger than usual, and having a white lip; this Dr. Lindley calls *LILACINUM*.

125. **Warted Epidendrum.**—*E. VERRUCOSUM*, *Swartz, Fl. Ind. Occ.* iii, 1497; *not of gardens.*—Native of Jamaica, and New Grenada.

Flowers in large panicles, sometimes racemose, pale green, the lip yellow.

§ *PLEURANTHIUM*, *H. G. Reichenbach.*—*Lip adnate.*
Stem leafy erect. Inflorescence lateral.

126. **Stem-flowered Epidendrum.**—*E. CAULIFLORUM*, *Lindley in Bot. Reg.* 1838, *misc.* 82.—Native of Brazil.

Flowers pale straw colour, in short corymbs from the side of a stout cylindrical stem. The lateral inflorescence is remarkable.

REFERENCE TO THE PLATES OF THE
GENUS EPIDENDRUM.

- Plate I.—EPIDENDRUM VITELLINUM, *Lindley*.
Fig. 1. The column; fig. 2. the lip, separated.
- Plate II.—EPIDENDRUM OCHRACEUM, *Lindley*.
Fig. 1. Part of the column with the lip cut away,
magnified; fig. 2. upper part of the lip; fig. 3.
transverse section of ovary; fig. 4. pollen masses.
- Plate III.—EPIDENDRUM PTEROCARPUM, *Lindley*.
Fig. 1. Column and lip.
- Plate IV.—EPIDENDRUM PLICATUM, *Lindley*.
Fig. 1. Inside of the lip, somewhat magnified.
- Plate V.—EPIDENDRUM AMBIGUUM, *Lindley*.
Fig. 1. The lip.
- Plate VI.—EPIDENDRUM NEMORALE, *Lindley*.
Fig. 1. Front of column; fig. 2 the lip spread open.
- Plate VII.—EPIDENDRUM PYRIFORME, *Lindley*.
Fig. 1. The lip spread open.
- Plate VIII.—EPIDENDRUM VARIEGATUM, *Hooker*.
Fig. 1. Side view of column and lip.
- Plate IX.—EPIDENDRUM GLUMACEUM, *Lindley*.
Fig. 1. The lip and column.

REFERENCE TO THE PLATES OF THE
GENUS EPIDENDRUM.

Plate X.—EPIDENDRUM LANCIFOLIUM, *Pavon.*

Fig. 1.—The column and base of lip.

Plate XI.—EPIDENDRUM RADIATUM, *Lindley.*

Plate XII.—EPIDENDRUM BANIFFERUM, *Lindley.*

Fig. 1.—The lip and front of column.

Plate XIII.—EPIDENDRUM NUTANS, *var. DIPUS, Lindley.*

Plate XIV.—EPIDENDRUM CINNABARINUM, *Salzmann.*

Fig. 1.—The column and lip.

Plate XV.—EPIDENDRUM SCHOMBURGKII, *Lindley.*

Fig. 1.—The column and lip.

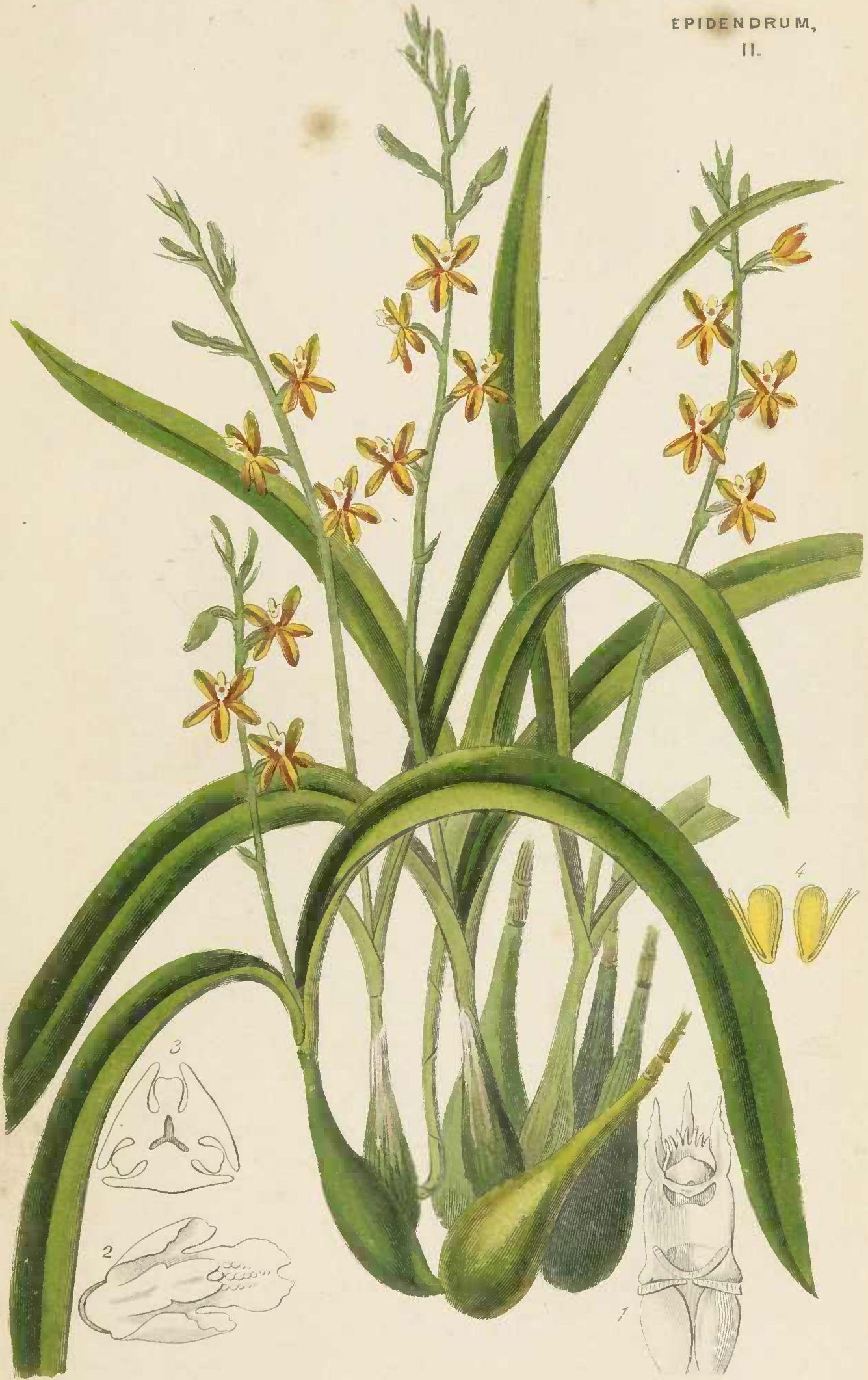
EPIDENDRUM
I.



Mrs Drake del.

S. Barclay sc.

EPIDENDRUM,
II.



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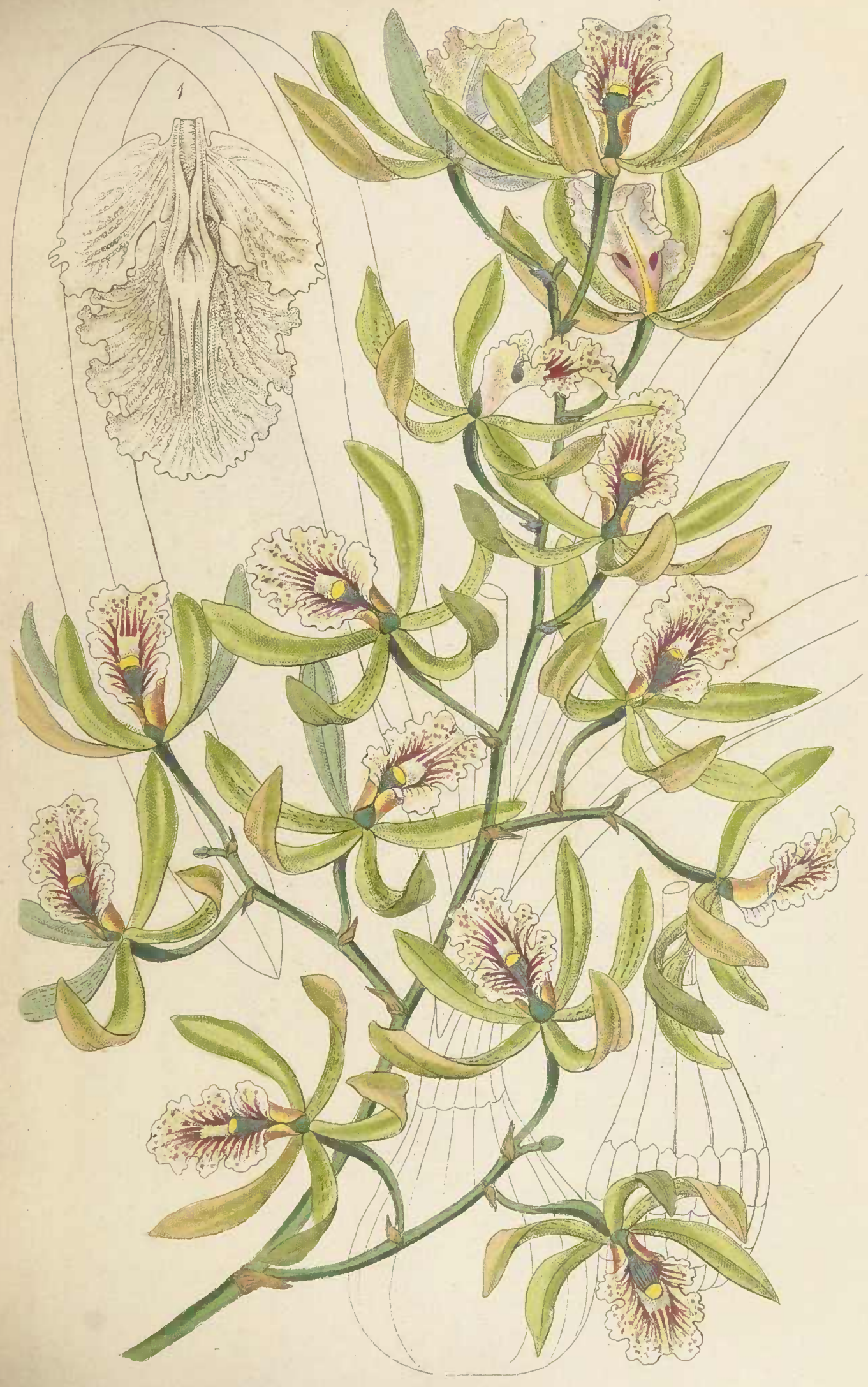
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III.



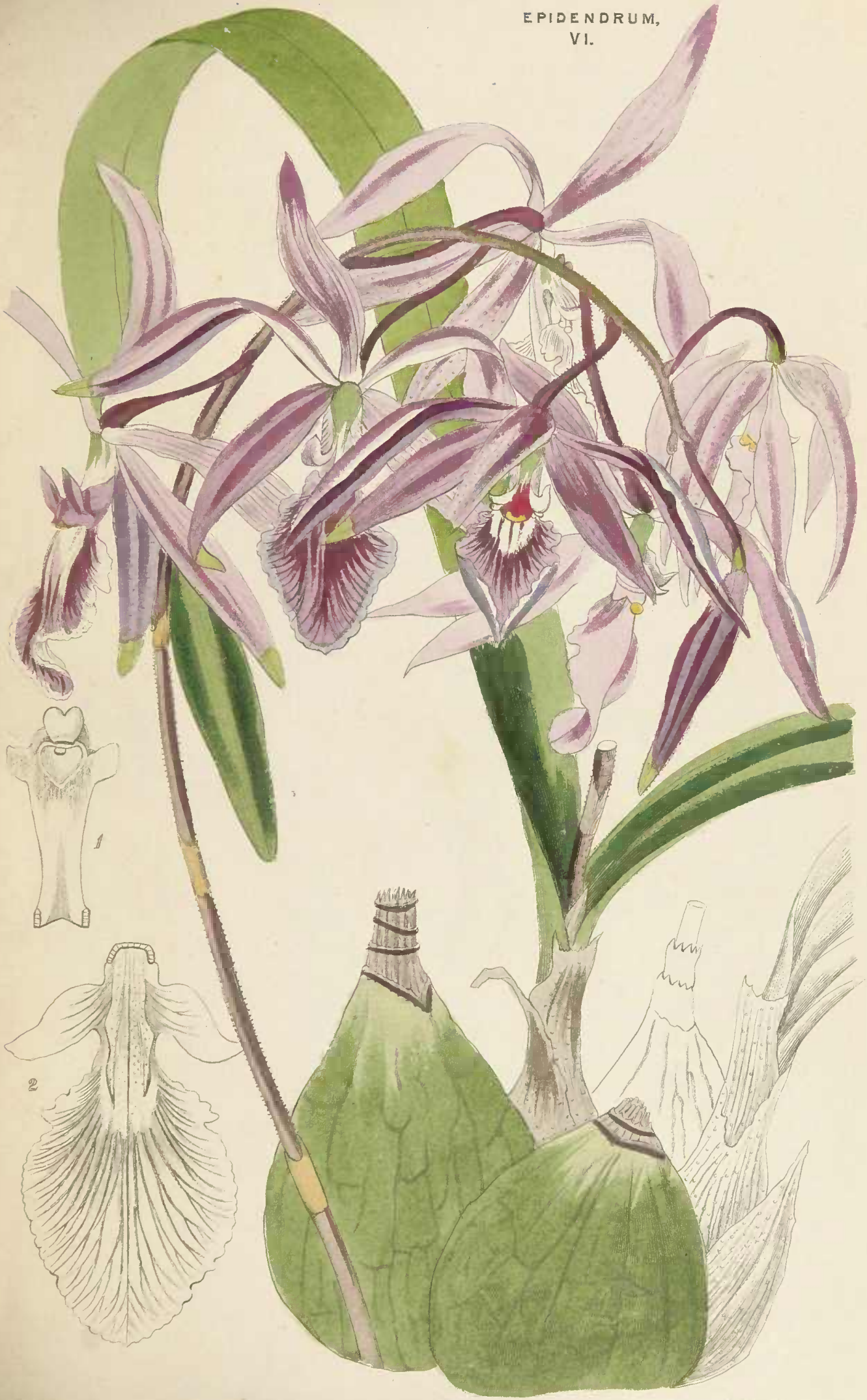
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J. D. Smith sculp





EPIDENDRUM,
VI.



Wm. D. Donnell

9/2/1894



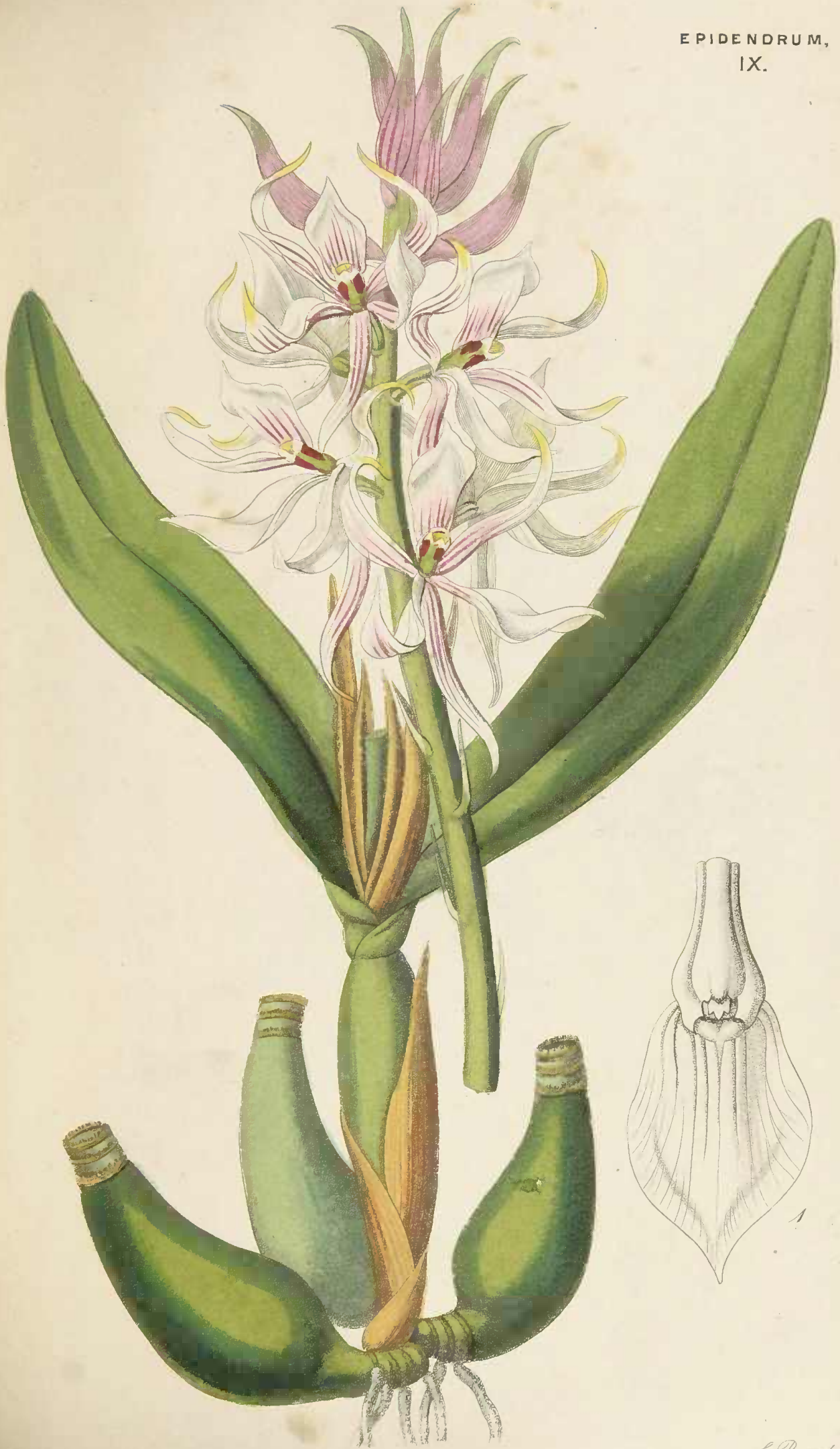
EPIDENDRUM,
VIII.



M. Drake Del.

B. S. P. Sc.

EPIDENDRUM,
IX.



Missa Draake del.

L. Bonpland sc.

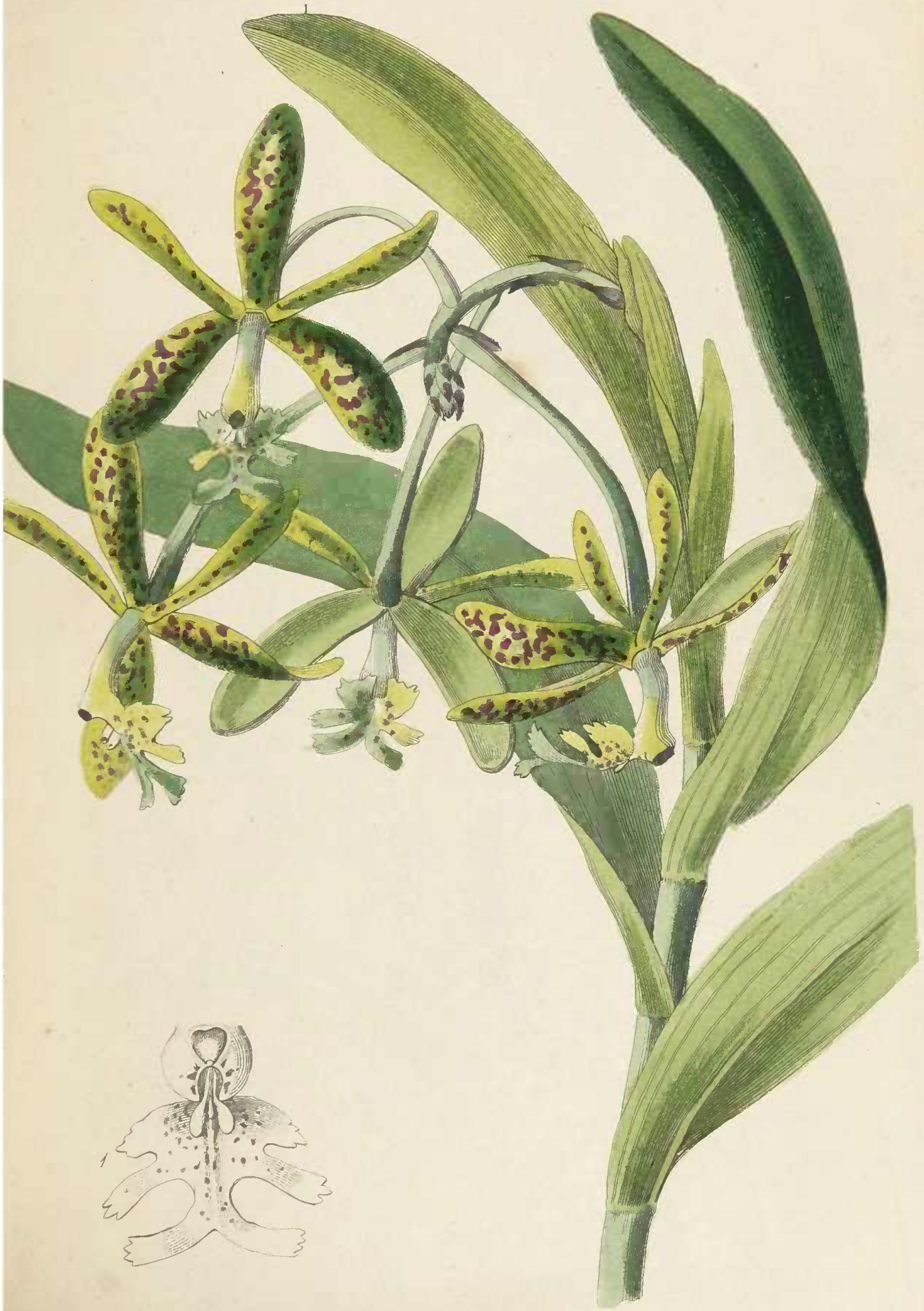
EPIDENDRUM,
X.



EPIDENDRUM,
XI.



EPIDENDRUM
XII



S. Rowley & Co.

Blanca del

EPIDENDRUM,
XIII.



EPIDENDRUM
XIV.



EPIDENDRUM.
XV.



J. W. ...

THE GENUS SOPHRONITIS.

“The SOPHRONITES,” writes Dr. Lindley, “form a very distinct little genus, all the species of which are gems, nestling in moss upon the branches of old trees, in Brazil.” The name first proposed for them was *Sophronia* (*Bot. Reg.* under t. 1129), but this was shortly afterwards changed to SOPHRONITIS (*Bot. Reg.* under t. 1147). All the few species which are known, are in cultivation.

They are small epiphytes, usually pseudo-bulbous, with one-leaf to each stem; from the axil of the leaf proceeds a short few-flowered-spreading raceme, bearing scarlet or violaceous flowers. The sepals and petals are flat, nearly equal, imbricated, free. The lip is entire, cucullate, tongue-shaped, connate with the column at the base, and often crested. The column is free, winged at the apex, the wing entire and connivent above with the crest of the lip; the stigma concave with an obtuse beak; the anther terminal, opercular, eight-celled, with eight pollen-masses, and a double pulverous caudicle. They are all small plants, worth growing as curiosities. *S. grandiflora* is many degrees the best in an ornamental point of view.

The name comes from *sophrona*, modest; alluding to the neat and chaste appearance of the original species.

There are only four species belonging to the genus *Sophronitis*. They are all of a dwarf habit; one of them is without pseudo-bulbs, and has its leaves close to the rhizome; the others have pseudo-bulbs, but they are small, the whole plant scarcely attaining more than three or four inches in height. A couple of them have long been great favourites

[SOPHRONITIS.—2.]

with cultivators, on account of their neat dwarf habit, and the extreme beauty of their flowers, which are not surpassed, if equalled by anything of so small a size among cultivated orchids. The other two though rather pretty, are chiefly interesting as botanical subjects.

Being small growing plants they can only be cultivated with good success upon wood, for which they are best adapted; or on small pieces of cork, suspended to the roof of the house, near the glass—over a tank of water if there is one, or else in some situation where they can be easily kept moist; this may be done by dipping the pieces of wood in water, once or twice a day as occasion may require, observing to let the water be of the same temperature as the house or nearly so. When they are first placed on cork or wood, a very little sphagnum moss should be used to keep moisture about them until the roots take hold. A piece of elder wood is best, if at hand, in the absence of which any thing with a rough or soft bark, will answer the purpose. It is indispensable that they get as much light as possible, but they should always be shaded from the direct rays of the sun. Keep them in a temperature similar to that given to *Cattleyas* and other Brazilian kinds, and in this they all thrive well, except *S. pterocarpa*, which should be placed at the coolest part of the house.

One most essential point in the cultivation of these small growing species is attention. They should be looked to carefully twice a day during their growing season, to see that they do not suffer for want of water; for being on small pieces of wood they soon become dry during hot weather in the summer months; syringing is then but of little use: it is far better to dip them when they are dry, and give them a thorough soaking, and then let them remain until they get dry before another watering. Never wet their flowers, or their beauty will be destroyed. During winter, keep them moderately dry, and at a temperature of from 55° to 60°.—J. H.

[SOPHRONITES.—3.]

1. **Drooping Sophronite.**—*S. CERNUA*, *Lindley in Bot. Reg.* t. 1129 ; *Paxton's Fl. Gard.* iii. 10, fig. 236. *S. ISOPETALA*, *Hoffmannsegg, Bot. Zeit.* i. 834. *S. NUTANS*, *Hoffmannsegg, l. c.* *S. HOFFMANNSEGGII*, *Reichenbach, Linnæa*, xvi. 236.—Native of Brazil.

A pretty and rather plentiful species, with ovate oblong leaves, and a few flowered racemose corymb of blossoms, of which the sepals and petals are ovate acute and equal, and the lip repand and acute. They are of a brilliant scarlet, with a dash of yellow on the lip.

2. **Large-flowered Sophronite.** [Plate I.]—*S. GRANDIFLORA*, *Lindley, Sertum Orchidaceum*, t. 5, f. 2 ; *Paxton's Fl. Gard.* iii. 10, fig. 237. *CATTLEYA COCCINEA*, *Lindley, Bot. Reg.* t. 1919.—Native of the Organ and other mountain heights of Brazil, in situations where rime frost occurs.

This is much the finest of the genus. It has oblong acute leaves, and solitary flowers three inches across of a bright scarlet or cinnabar colour, with a yellow lip ; the sepals are linear-oblong, the petals three times broader ; the lip ovate, cucullate at the base. The flowers are very large in proportion to the size of the plant, and are of the most striking beauty.

3. **Violaceous Sophronite.**—*S. VIOLACEA*, *Lindley in Bot. Reg.* 1840, *misc.* 15 ; *Paxton's Fl. Gard.* iii. 11. fig. 238.—Native of the Organ Mountains of Brazil.

Pretty, and at once distinguished by its long narrow leaves. The flowers are solitary, violet-coloured ; and the scape has several dry scaly bracts at its base ; the lip is obovate, acute naked and gibbous at the base ; the column wings large fleshy obtuse and falcate.

4. **Wing-fruited Sophronite.**—*S. PTEROCARPA*, *Lindley in Herb. Martius ; Paxton's Fl. Gard.* iii. 11. fig. 239.—Native of the mountains of Brazil.

A very rare plant, pretty and desirable in a collection. It bears comparatively large roundish oblong leaves ; and a short corymbose raceme of few small palish rosy-purple flowers, the lip having a dash of white. The sepals and petals are ovate acute, nearly equal, and the ovary has six broad wings and a remarkably long neck.

REFERENCE TO THE PLATE OF THE
GENUS SOPHRONITIS.

Plate I.—SOPHRONITIS GRANDIFLORA, *Lindley*.

SOPHRONITIS
I



A. Ugelin de Koning.

Miss C. Lowrey del.

THE GENUS BLETIA.

THE BLETIAS form a genus of terrestrial Orchids having sword-shaped plaited leaves, and upright flower spikes, bearing the flowers in racemes. The flowers are generally pretty, and in some cases really beautiful, from their size, and the richness of their colouring. The *Bletias* are related to *Phajus*, which genus now includes some species, formerly referred to *Bletia*: as *P. grandifolius*, which is the old *Bletia Tankervilleæ* of gardens; and *P. maculatus*, the *B. Woodfordii* of Hooker. *Phajus*, however, has a spur to its lip, and differs in some other respects. The *B. capitata* is now referred to *Evelyna*.

The flowers of the *Bletias* have the divisions of the perianth all distinct; the sepals being spreading and equal; and the petals sometimes spreading, sometimes connivent, and nearly like the sepals in size and form. The lip is cucullate or hooded, articulated with the column, sometimes saccate but not spurred at the base, three-lobed, the disk often lamellate or tuberculate. The column is elongated and semiterete; the anther fleshy, eight-celled; the pollen-masses eight, equal and coherent with four powdery caudicles.

Dr. Reichenbach has proposed to separate two species, *B. florida* and *B. Gebina*, as a new genus, which he calls *Bletilla*. In these species he describes the anthers as two-celled, each cell being again obscurely divided into two; and the pollen-masses as being four in number, farinaceous, collateral, oblong, and inflexed behind. This description of the latter seems to accord with that of the four powdery caudicles attributed to the *Bletias* by Dr. Lindley.

The species, of which there are a considerable number known, and of which several are or have been in cultivation,

[BLETIA.—2.]

are widely dispersed, in both the eastern and western hemispheres.

The genus was dedicated to Luis Blet, a Spanish apothecary, distinguished as a student of Botany.

Considering the beauty of many of the species of this genus, and the facility with which they may be brought to perfection, it is a matter of surprise and regret that they are not more generally and extensively cultivated. About a dozen of them are known as cultivated plants; and though not all possessing equally the recommendation of good foliage with showy flowers, there are at least some half dozen very beautiful and useful things for decorating the stove, or hothouse conservatory. Indeed, several of them, while in flower, will bear the temperature of a greenhouse, in which they will remain uninjured for a long time; and a few of them even succeed best when treated entirely as warm greenhouse plants.

They are all terrestrial, deciduous tuberous plants, and like others of a similar habit, require the season of growth to alternate with a season of repose. They should be repotted annually, as their roots are only annual. If allowed to remain in the same soil to complete more than one growth, they become exhausted; it is, therefore, necessary to repot them every spring. The best time to do this, is just when the bulbs are beginning to grow anew; then clear away all the decayed old roots, and at the same time separate the tubers a little if they have become crowded, so that each may have space to produce a new shoot. Some of them have bulbs naturally rather small; in others they are of a moderate size. Three or four of the larger tubers are quite sufficient to plant in a six-inch pot, but more of the smaller-sized ones may be planted in the same space. Shallow pans, from six inches to a foot in diameter,

[BLETIA.—3.]

and about four inches deep, are much preferable to pots for growing the *Bletias*, as they afford space for a larger number of tubers to be planted, without being so inconvenient to move about as pots of the same diameter would be; besides which, at the flowering season, the increased number of plants of course produce a more brilliant display.

A proper compost for them may be formed by mixing the following ingredients:—one-half good mellow turfy loam; one-third fibry peat; the rest leaf-mould, with a moderate quantity of coarse or gritty sand, enough of the latter being used to make the whole mixture porous. The tubers should be planted just beneath the surface of the soil in the pots. They can be grown in an ordinary moist stove, or in the Mexican orchid house, and will thrive in either. The back or side shelves, near the glass, is the most suitable position for them, and there air can easily be admitted to them. A slight degree of shading should be used during hot sunshine in summer.

After they are potted they should be subjected to a very moderate temperature at first; and after they have commenced their growth, but little water must be given them for some time; but both heat and moisture are to be increased as they progress. If they are kept too hot and dry, they are very subject to the attacks of thrips; it is, therefore, desirable to afford them good ventilation when the air is mild, and to use the syringe over head every day, when they are sufficiently advanced to bear it.

By these means they can be kept clear of insects, and a healthy vigorous growth will be the result. On this latter chiefly depends success in flowering them.

During their season of rest, and as soon as the tops die down, they can be stowed away in any corner, or under the stage, where they must be kept quite dry and cool, until they make an effort to grow, when they are to be taken out, repotted, and treated as above described.

[BLETIA.—4.]

Mr. Lyons gives the following instructions for growing these plants; "This genus will succeed well in a mixture of very turfy loam, and sandy peat, with broken sandstone or potsherds; or in a compost of leaf mould not too fine, sandy peat, and coarse sand. They will grow more luxuriant, and flower finer, in rich loam, but there is danger in the use of this material alone, from its liability to become bound and retain too much moisture. Whatever material they are grown in, must be well drained, or success cannot be attained, and the bulbs will probably rot. After the plants have flowered, they require a brisk bottom-heat for some time to perfect the pseudo-bulbs well, otherwise they will not flower the succeeding year. As soon as the leaves die down, remove the plants to a cooler house; keep them dry for three or four months; then replot them, and place them in a brisk bottom-heat in a moist stove, or what is still better, in a tan-pit. When they are growing freely, they must have a good supply of water. They may be increased by dividing the roots at the time of potting. These remarks apply to all terrestrial Orchideæ."

The hardier kinds may be grown with the same routine of treatment carried out in a cold pit kept free from frost, or in a greenhouse. These latter are very desirable plants for cultivation, where there is not the convenience of a stove.—J. H.

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1. **Japense Bletia** [Plate I.].—*B. GEBINA*, *Lindley, Journ. Hort. Soc.* ii. 307; *Bot. Reg.* 1847, t. 60. *CALANTHE GEBINA*, *Loddiges Cat.*, No. 1846. *BLETILLA GEBINA*, *Reichenbach fil., Flore d. Serres*, viii. 246. —Native of Japan.

A pretty species growing about a foot high. The leaves are oblong-lanceolate, rising up the stem, from six to eight inches long, or more, the uppermost acuminate, the lowest obtuse. The flowers are about as large as in *B. hyacinthina*, from six to eight in an erect simple spike; they are two inches and a half in diameter, nearly white, with a faint tinge of blush. The sepals are spreading linear-oblong, the petals somewhat wavy and narrower. The lip is pale delicate violet, obtusely three-lobed,

[BLETIA.—5.]

with seven plates upon its surface, of which two at the side are confined to the middle lobe, and the five others are extended to the base, which is a little stained with yellow. It is nearly related to *B. hyacinthina*.

2. **Florid Bletia.**—*B. FLORIDA*, *R. Brown, Hort. Kew.* v. 206; *Lindley, Bot. Reg.* t. 1401. *B. PALLIDA*, *Loddiges, Bot. Cab.* t. 629. *CYMBIDIUM FLORIDUM*, *Salisbury, Prod.* 9. *GYAS FLORIDA*, *Salisbury, Trans. Hort. Soc.* i. 261. *BLETILLA FLORIDA*, *Reichenbach fil., Flore d. Serres*, viii. 246.—Native of West Indies.

This species grows about two feet high. The leaves are ensiform. The flowers are pale pink or flesh-colour on a simple scape. The sepals are oval-lanceolate, the petals broader and obtuse; the lip has five simple ribs on the disk, the lateral lobes are short obtuse-angled in front, the middle lobe elongated dilated in front, retuse and crisped. The sepals and petals are pale rose-colour, the lip white with yellow bars.

3. **Hyacinth Bletia.**—*B. HYACINTHINA*, *R. Brown, Hort. Kew.* v. 206; *Lindley, Gen. et Sp. Orch.* 122. *CYMBIDIUM HYACINTHINUM*, *Smith, Exot. Bot.* i. t. 60; *Bot. Mag.* t. 1492. *C. STRIATUM*, *Swartz, Nova Acta*, vi. 77. *LIMODORUM STRIATUM*, *Thunberg, Fl. Jap.* 28; *Id. Jap.* t. 9. *EPIDENDRUM STRIATUM*, *Thunb. Trans. Lin. Soc.* ii. 327. *GYAS HUMILIS*, *Salisbury, Trans. Hort. Soc.* i. 261.—Native of China and Japan.

This is a pretty plant, having ensiform leaves, about a foot long, and a leafy unbranched scape of about the same height as the leaves. The flowers are rose-colour, the lip a brighter rose blotched with dark crimson. The sepals and petals are linear-oblong, and the lip is lamellate in the middle, the lobes crisped, the middle one being emarginate. The bracts are partially petaloid being rosy with green margins.

4. **Modest Bletia.**—*B. VERECUNDA*, *R. Brown, Hort. Kew.* v. 206; *Lindley, Gen. et Sp. Orch.* 121. *LIMODORUM ALTUM*, *Linnaeus, Syst. Veg.* 680; *Bot. Mag.* t. 930. *L. VERECUNDUM*, *Salisbury, Prod.* 9. *L. TUBEROSUM*, *Jacquin, Coll.* iv. 108. *L. TRIFIDUM*, *Michaux, Fl. Bor. Am.* 159. *L. PURPUREUM*, *Redouté, Lil.* 83, according to Lindley. *CYMBIDIUM VERECUNDUM*, *Swartz, Nov. Act.* vi. 75. *C. ALTUM*, *Willdenow, Sp. Pl.* iv. 105. *GYAS VERECUNDA*, *Salisbury, Trans. Hort. Soc.* i. 261.—Native of West Indies.

This is a pretty plant growing about three feet high, and having ensiform leaves, and a branched flower-bearing scape. The sepals are ovate acute, purple paler behind, the petals oblong-obtuse purple, the lip also purple, paler at the margin, and having on the disk several crispy yellow ribs which are simple or branched; the middle lobe is broader than long, and undulated.

A richer coloured, and larger flowered variety, *SHEPHERDII*, the *B. Shepherdii*, Hooker (*Bot. Mag.* t. 3319), has the flowers dark purple, the lip marked down the centre with longitudinal pale yellow plaits. The leaves are lanceolate. The scape

[BLETIA.—6.]

is branched, two to three feet high; the sepals and petals are much as in *B. verecunda*, the middle lobe of the lip much undulated.

There is also a variety *PALLIDA*, of Loddiges, having paler coloured flowers.

5. **Sharp-petalled Bletia.**—*B. ACUTIPETALA*, *Hooker, Bot. Mag.* t. 3217.
LIMODORUM ALTUM, *Jacquin, Ic. Rar.* iii. t. 602, according to Hooker.
 —Native of South Carolina.

A tall growing handsome species. The leaves are long ensiform, the scape four to five feet high, branched. The sepals and petals are pale rose-colour, the lip purplish rose, yellow at the base. The sepals are ovate acute, the two lower ones bearing a central ridge nearly their whole length; the petals are of the same form, and connivent with the sepals, the lip is three lobed, the disk with five yellow wavy plates, the lateral lobes curved up, large, purplish-rose yellow at the base streaked with purple lines, the middle lobe dilated crisped deep-purple.

6. **Guinea Bletia.**—*B. GUINEENSIS*, *G. Don. Loud. Hort. Brit.* 372.—
 Native of Sierra Leone.

A pretty species described as growing a couple of feet high, and bearing purple flowers. It was introduced long since, but is probably not now in cultivation.

7. **Spreading Bletia.**—*B. PATULA*, *Hooker, Bot. Mag.* t. 3518; *Lindley, Paxton's Fl. Gard.* ii. 69, fig. 169.—Native of West Indies: Cuba, Hayti.

A very handsome species, growing two to three feet high, and having lanceolate leaves, and a long raceme of large spreading flowers, terminating the simple scape. The flowers are rich purple, continuing for some time in perfection. The plant is in its general features somewhat like *B. verecunda*, and still more like *B. Shepherdii*, but its lip is not at all three-lobed although it is folded so as to appear so; it is really an exact oblong notched at the apex; its texture is thin, it is much plaited, and has along its centre from five to seven white parallel crests, here and there interrupted, and terminating before reaching the emarginate apex; the sepals are elliptic-lanceolate spreading, the petals narrower and more oblong.

8. **Havannah Bletia.**—*B. HAVANENSIS*, *Lindley, Bot. Reg.* 1838, *misc.* 35.
 —Native of Havannah.

A pretty species, allied to *B. verecunda*, differing in its paler flowers, its unbranched scape, and in the peculiarities of the lip. The leaves are very thin, ensiform, one and a half to two feet long. The scape is nearly three feet high, unbranched, and bearing near the top in a loose raceme about a dozen peach-coloured flowers. The sepals are spreading oblong-lanceolate, the upper one paler and somewhat longer and narrower than the others; the petals oblong-obtuse, closely covering the column, and having a pink line up the centre; the lip three-lobed, the lateral lobes rounded and erect at the edges, redder than the other parts and finely veined, the middle lobe is

[BLETIA.—7.]

reflexed and pendent, nearly as long as broad with a white undulated margin, otherwise reddish pink, and along its centre are seven ridges which are yellow, except the outer ones on each side which are white.

9. **Secund Bletia.**—*B. SECUNDA*, *Lindley, Bot. Reg.* 1840, *misc.* 120.—Native of Mexico.

An unattractive species, with oblong-lanceolate leaves, and simple racemes of green flowers slightly dotted with crimson, the lip straw-coloured. The sepals and petals are all directed into a plane parallel with the lip and overlying the column.

10. **Slender Bletia.**—*B. GRACILIS*, *Lindley, Bot. Reg.* t. 1681; *Loddiges Bot. Cab.* t. 1681.—Native of Mexico.

A small neat species growing a foot and a half high. The leaves are oblong-lanceolate; and the scape simple and few-flowered. The sepals and petals are nearly equal, lanceolate-acuminate, the lip three-lobed, the middle lobe emarginate, undulated, and with a solitary ridge on the disk. The colour of the sepals and petals is brownish yellow, that of the lip a light rose-colour, veined with dark crimson on the base or upper part, the remainder a greenish yellow.

11. **Reflexed Bletia.**—*B. REFLEXA*, *Lindley, Bot. Reg.* t. 1760.—Native of Mexico.

A curious scarcely attractive species growing about two feet high. The leaves are narrow sword-shaped, and the scape simple and about two to four flowered. The sepals are linear-lanceolate, the lateral ones reflexed; the petals lanceolate; the lip three-lobed, with the middle lobe narrow undulated, and furnished with five lamellæ or ridges on the disk. The colour is greenish yellow tinged round the edges with purple, and marked with purple veins; the lip is purple.

12. **Parkinson's Bletia.**—*B. PARKINSONI*, *Hooker, Bot. Mag.* t. 3736.—Native of Mexico.

A very distinct looking, but not attractive plant. It grows about two feet high, and has a simple scape, on which are disposed the spare rose-coloured flowers, marked with deep rich red and yellow on the lip; the parts are all narrow and acute, and connivent so as almost to form tubulose flowers.

13. **Chain Bletia.**—*B. CATENULATA*, *Ruiz and Pavon, Fl. Peruv. Syst.* 229; *Lindley, Gen. et Sp. Orch.* 120.—Native of Peru.

This species grows a foot and a half high, and is furnished with lanceolate leaves, and purple flowers. The sepals are oblong-lanceolate, the petals are ovate-lanceolate, spreading, the lip three-lobed, with the middle lobe subrotund and emarginate, and the lateral lobes short and rounded.

REFERENCE TO THE PLATE OF THE
GENUS BLETIA.

Plate I.—B. GEBINA, *Lindley*.

Fig. 1. The upper side of the lip shewing
its elevated plates; fig. 2. the column;
fig. 3. a set of pollen-masses.



THE GENUS SPATHOGLOTTIS.

SPATHOGLOTTIS is a small family of Asiatic terrestrial Orchids, which spring from underground corms or tubers, and form a few narrow plaited leaves, which somewhat precede the erect scape of flowers. The flowers themselves, although not symmetrical, have a greater degree of regularity than is common among orchids. There are about half a dozen described species of the genus, but of these we are not aware that more than two have yet been introduced to our gardens.

The principal features of the SPATHOGLOTS, as a genus, are these :—A nearly regular perianth, with free spreading equal sepals ; somewhat broader spreading or connivent petals ; and a three-parted sometimes saccate lip, of which the intermediate segment is clawed and tuberculate or crested at its base. The lip is articulated with the column ; the latter is winged or petaloid ; the anthers are two-celled ; and the pollen-masses are eight in number. The genus differs from *Bletia* principally in having the middle lobe of the lip stalked, with some deep plates at its base, and in its anther having but two cells whilst those of *Bletia* have eight. The flowers are yellow or violet.

The name *Spathoglottis* was contrived by Blume from two Greek words signifying a spathe and a tongue.

Like the *Bletias*, these *Spathoglots* produce fleshy tubers or corms, which lie dormant for some months after the foliage has disappeared. This therefore supplies the key to their cultivation.

The corms require a lengthened season of rest, during which they should be kept dry and cool. This period of repose should extend from the time the leaves decay towards the end

[SPATHOGLOTTIS.—2.]

of summer, if possible to the February following, or else as long as the plants can be kept dormant. About February, or as soon as they show any sign of growth, they should be repotted, using as a compost a mixture of turfy peat, half decayed leaf-mould, fibrous loam, and silver sand, the three former in about equal proportions. The pots must be well drained, and the plants must have very slight and distant waterings until they have fairly started into growth, when a more abundant supply must be given them.

After flowering, and when the leaves have completed their growth and manifest symptoms of decay, the supply of water must be reduced gradually until the foliage has perished, when the corms are to be kept dry and cool until the following season.

The tropical species should be kept in the 'East India' house during the time of their active vegetation. The other species from China and the mountains of India may be accommodated during the same period in the Mexican house, or in an intermediate stove. Both classes should be kept cooler when at rest. The plants must be propagated by division of the clusters of corms.

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1. **Fortune's Spathoglot.** [Plate I.]—S. FORTUNI, *Lindley, Bot. Reg.* 1845, t. 19.—Native of the granitic mountains of Hong Kong.

A pretty little *Bletia*-like plant, producing a pair of thin lance-shaped plaited leaves about six inches long, and by the side of these a scape taller than the leaves, supporting a one-sided raceme of several moderate sized flowers, which are bright deep yellow, with the lateral lobes of the lip crimson. It first flowered in the Horticultural Society's garden in January, 1845, shortly after its importation.

2. **Plaited Spathoglot.** — S. PLICATA, *Blume, Bijdragen*, 401, t. 76.
BLETIA ANGUSTATA, *Gaudichaud, Voyage*, 421, t. 32.—Native of Java, Penang, and the Philippine Islands.

This very pretty plant has light purple flowers, growing in a many-flowered raceme, with quite the appearance of *Paxtonia*. The leaves are numerous, ensiform, and plaited.

REFERENCE TO THE PLATES OF THE
GENUS SPATHOGLOTTIS.

Plate I.—SPATHOGLOTTIS FORTUNI, *Lindley*.

Fig. 1. The lip spread open, shewing the lamellæ ;
fig. 2, the column ; fig. 3, the pollen-masses.

SPATHOGLOTTIS

1



THE GENUS PAXTONIA.

The genus PAXTONIA is founded on a curious terrestrial Orchidaceous plant, inhabiting the Philippine Islands. The flowers of the *Orchideæ* are in general remarkable for the very great departure from symmetry in the structure of their flowers. In *Paxtonia* however, the flowers are nearly regular and symmetrical. "In this natural order," observes Dr. Lindley, when describing the accompanying figure in the *Botanical Register*, "there are two organs essentially at variance with the usual structure of plants, namely, the column and the lip. The former, consisting of stamens and style consolidated, has never yet been found in a state of disintegration; but the latter, to whose numerous forms, and irregular varieties, the grotesque appearance of Orchidaceous flowers is usually owing, assumes a regular structure in a few cases, of which this is one of the most striking. In this genus the lip is so much like the other petals, that it is only to be recognized by its position. *Thelymitra*, *Hexisea*, *Isochilus* and such others as have been previously discovered with this character, are so extremely unlike *Paxtonia* in other respects that it is not worth instituting any comparison between them."

The flowers of *Paxtonia* consist of six divisions, which are spreading, and very nearly alike in size and form; the lip being similar to the petals. The column is erect round, somewhat club-shaped, and slightly shorter than the divisions of the perianth, having a vertical transverse stigmatic cleft beneath its beak. The anthers are deciduous, perennial, and furnished with a lid; the pollen-masses are eight in number, slender club-shaped, cohering at their apices.

The genus was named by Dr. Lindley, in compliment to

[PAXTONIA.—2.]

Mr. now Sir Joseph Paxton, “ whose claim,” he remarks, “ to be permanently associated with Orchidaceæ will be readily admitted by all who know anything of the admirable cultivation of such plants at Chatsworth,” and whose claims to scientific commemoration, it may be remarked, have now acquired a much more extended basis.

Paxtonia rosea is a terrestrial plant, that is a plant growing on the ground, and not on rocks or trees as is usually the case with orchids. It is for this reason a suitable plant for pot-culture ; and in potting does not require to be elevated on a cone of light fibry compost as is the case with the epiphytal kinds when they are subjected to pot-culture. The following compost is quite suitable for them : turfy peat, half-decomposed tree-leaves, and light fibrous loam in about equal proportions ; it should be used in a rather rough state, but well mixed together, and blended with a smaller proportion of silver sand. The pots used should be of moderate size, and must be thoroughly drained.

The time for potting is about the month of February, the pseudo-bulbs having been kept dry and cool, in a state of rest through the autumn and winter. Care should be taken that the plants are not excited into growth earlier than February, which is quite soon enough to start them. In potting, the dried rested pseudo-bulbs—which though kept dryish should not have been shrivelled—should be removed from the old soil ; and fresh pots having been prepared by draining them and filling them nearly full of the fresh compost in a moderately dried and warmed state, the bulbs should be placed so that they may stand nearly out of the soil, the surface of which should be about level with the pot rim. At first they should have no water, but in a day or two a slight watering may be given and repeated at distant intervals until growth com-

[PAXTONIA.—3.]

mences, when they must have more copious and frequent supplies. The pots should be placed on a shelf near the glass in a cool part of the orchid house.

After the leaves have made some advance, the flower-stems should appear, and while both leaves and flowers are progressing to their full developement, the plants require ample supplies of water, and at the same time full exposure to light. Fresh air should be afforded them, when practicable at all times during their growth. The temperature should be that of the 'East India' house.

After flowering, and when the new pseudo-bulbs are quite matured, the leaves will indicate by a change of colour towards yellowness that their functions are drawing to a close. This indication must be followed up by the gradual reduction of the supply of water, so that by the autumnal months, the pseudo-bulbs should be in a plump and fresh condition, and the soil about them dryish and somewhat loose. The pots containing them should then be removed to a cooler house, and kept in this state of dry rest, if possible until February. The advantage of keeping the plants cool as well as dry, is that they do not get excited into growth at too early a period. The degree of dryness should be so ordered, that the pseudo-bulbs may be kept both dry and plump. A dry shelf in a warm greenhouse would be a very good place for the pots during the resting season.

About the middle of February, if growth has not recommenced, the pseudo-bulbs should be repotted in the manner already described. If however any indications of growth are observed at a somewhat earlier period, that growth must not be arrested, but the repotting should take place at once, and the plants should be removed to a cool part of the orchid house.

The plants may be readily propagated at the time of repotting by carefully dividing the clusters of pseudo-bulbs.

[PAXTONIA.—4.]

1. **Rosy Paxtonia.** [Plate I.]—P. ROSEA, *Lindley, Bot. Reg.* 1838, *misc.* 113 ; *and* t. 60.—Native of Manilla.

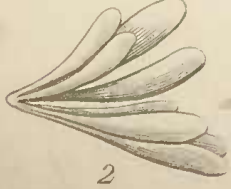
A dwarf terrestrial plant, having clusters of oblong pseudo-bulbs, which bear each on their summit three long narrow plaited leaves about a foot long, and by their side grow the racemes, as long as the leaves, furnished with several rosy-pink flowers rather larger than a shilling, supported by long slender stalks. The column is slightly complanate in front, and the margin of the anther-bed is thick and somewhat lobed. It flowers in the summer months, and is a pretty, though hardly a showy plant.

REFERENCE TO THE PLATES OF THE
GENUS PAXTONIA.

Plate I.—PAXTONIA ROSEA, *Lindley*.

Fig. 1. The column ; fig. 2, the pollen-masses.

PAXTONIA
1



Miss Drueke, del.

J. Walter sc.

THE GENUS LISSOCHILUS.

THE species of LISSOCHILUS are for the most part African, the majority of them being found at the Cape of Good Hope, one or two others in Western Africa, and another in Arabia. The latter, *Lissochilus arabicus*, is according to Forskäl known under the name of *Djissâb* by the Arabs, who assert, that the juice applied to the prick of a thorn, will expel it from the wound. The plants are of terrestrial habit, pseudo-bulbous, with erect many-flowered racemes rising from the root.

In the flowers of these plants the perianth is spreading, the sepals being free and herbaceous, and either small or reflexed, or like the petals broader spreading and wing-shaped. The lip is saccate, concave, entire or three-lobed often connate with the base of the column, which latter organ is erect, short, and semiterete. The anthers are two celled, crested; the two pollen masses divided into two lobes at the back, with a short linear caudicle, and a triangular glandule. The genus is very nearly related to *Eulophia*, and seems to be principally distinguished by an inequality of the sepals and petals which is not always very marked; nevertheless, they are kept separate by our most skilful botanists.

The name is derived from *lissos*, smooth, and *cheilos*, a lip.

The most important species of this genus which have been introduced are natives of Tropical Africa, and require therefore a strong moist heat to grow them successfully. The

[LISSOCHILUS.—2.]

temperature during the growing season should range from 70° to 80° or 90° with sun, by day, and about 65° at night ; and this should be kept up with an abundant supply of atmospheric moisture during the entire period of growth. When the growth is completed both heat and moisture may be slackened, and in winter a temperature of 60° by day, and 55° by night, will suffice. At this period also the roots must be kept drier.

The growing season should be made to commence in spring so that the plants may have the advantage of our longest days and strongest sun heat to aid in perfecting their growth. Hence the potting should take place in early spring. The plants like a strong rich soil, and a compound such as the following will suit them :—rich loam one-half, leaf mould one-fourth, rough turfy peat one-fourth, a proportion of about one-sixth of the whole of clean silver sand being added. Good drainage is necessary. In potting, the pseudo-bulbs should be placed just beneath the surface, and in order to give the young shoots the best position, it is advisable to place the old pseudo-bulbs towards the outside of the pot with the growing bud directed to the centre, where it may have space to acquire the vigour requisite to a successful blooming. After potting, but little water must be given till growth is established, when they will require an abundant supply, the water being of course tepid. In the height of their growth, they may have with advantage an occasional watering of *weak* liquid manure. The scapes bearing the long racemes of flowers arise from the root. The South African species do not require so much heat and moisture.

These plants are increased by separating the pseudo-bulbs when they become numerous and vigorous enough for that purpose.

[LISSOCHILUS.—3.]

1. **Showy Lissochile.**—*L. SPECIOSUS*, *R. Brown, Lindl. Coll. Bot.* t. 31; *Bot. Reg.* t. 573.—Native of the Cape of Good Hope.

A very beautiful plant, having large pseudo-bulbs, and a flowering stem two or three feet high, ornamented with numerous large bright yellow flowers, marked with a few streaks of pink on the lip. The leaves are keeled. It is an extremely showy plant.

2. **Rosy Lissochile.** [Plate I.]—*L. ROSEUS*, *Lindley, Bot. Reg.* 1843, *misc.* 37; 1844, t. 12. *DENDROBIUM ROSEUM*, *Swartz, Pers. Syn.* 523.—Native of Sierra Leone.

Although the terrestrial orchids of hot countries are too often very inferior to the epiphytes, yet there are many exceptions to that rule, among which few are more striking than the present, which will not suffer by comparison with the *Vandas*, *Saccolabiums* and *Dendrobiums* of India. Its leaves are broad, stiff, and plaited like a reed; and the flower-stem is between three and four feet high. The petals are of the brightest rose colour, set off with velvety-brown sepals, and a yellowish stain on the lip. There is another plant in the same part of Africa, adds Dr. Lindley, which would perhaps excel even this in beauty, its petals, when dried, being an inch and a half long; it is named *L. macranthus*. The Rosy Lissochile is a very scarce, but a very beautiful species.

3. **Small-flowered Lissochile.**—*L. PARVIFLORUS*, *Lindley, Gen. et Sp. Orch.* 191; *Botanist*, t. 172.—Native of the Cape of Good Hope and Algoa Bay.

Smaller and less handsome than the foregoing, but having a raceme of gayish flowers as large as shillings terminating a scape of a foot high; the sepals are green streaked with reddish brown; the petals yellow also streaked with reddish brown, and the principal lobe of the lip almost entirely yellow. The divisions of the flower are broad and nearly equal.

4. **Narrow petalled Lissochile.**—*L. STREPTOPETALUS*, *Lindley, Gen. et Sp. Orch.* 191. *EULOPHIA STREPTOPETALA*, *Lindley, Bot. Reg.* t. 1002; *Bot. Mag.* t. 2931.—Native of the Cape of Good Hope?

Another small-flowered kind. The sepals are green with purple dotted lines; and the petals and lip are yellow. It has been said to be a native of Brazil.

REFERENCE TO THE PLATE OF THE
GENUS LISSOCHILUS.

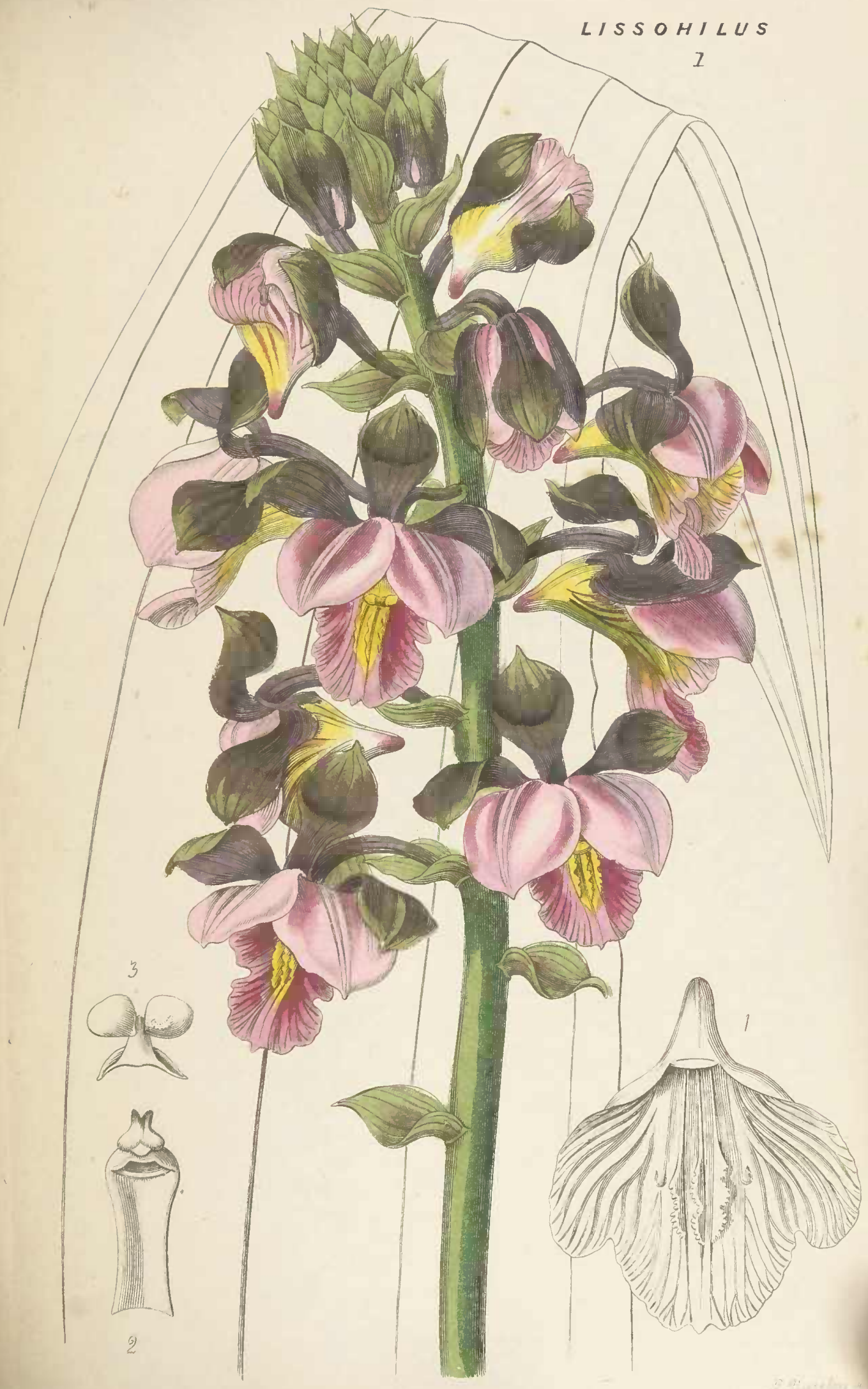
Plate I.—LISSOCHILUS* ROSEUS, *Lindley*.

Fig. 1. The lip ; fig. 2, the column ;
fig. 3, the pollen-masses.

* Misspelled on the plate.

LISSOHILUS

1



Miss. D. ...

J. ...

THE GENUS VANDA.

THE genus VANDA is one of the most important of the whole Orchidaceous race, in an ornamental point of view. It is of sturdy and vigorous habit, with bold evergreen coriaceous foliage, generally arranged in two opposite tiers, and with a singular oblique termination. This foliage is long-enduring. From the side of the stem, whence thick fleshy aërial roots also proceed, come in the proper season the spreading racemes of conspicuous flowers.

The *Vandas* are entirely confined to the tropics of the Eastern hemisphere, where the number of species found is not very numerous. In the most recent enumeration, that of the *Folia Orchidacea*, twenty-five species are mentioned, and of these there are about a dozen introduced to English gardens.

The flowers of the *Vandas* are of considerable size, and in many cases highly coloured. Their sepals are flat and spreading, and equal as well as narrowed at the base; the petals are similar, often twisted at the base; and the lip is saccate or spurred, continuous with the column, fleshy, often much shorter than the sepals, entire or somewhat three-lobed, and generally more or less auricled. The column is thick, short, free, with a vertical anther-bed, a transverse stigma, and an obtuse or retuse beak. The pollen-masses are waxy, plano-convex, two or four in number. "A saccate or calcarate lip continuous with the column, a truncate rostellum, and two or four pollen-masses attached to a broad caudicle having a large circular gland," are, according to Dr. Lindley, the peculiar characteristics of the group.

[VANDA.—2.]

The genus was first proposed by Dr. Brown. Of its twenty-five species, now separated into five sectional groups, those referred to *Fieldia*, namely, *Batemanni*, *gigantea*, and *Lowii*—differing from the rest in the number of their pollen-masses, as well as in other points of structure—might without impropriety be considered as a distinct though closely allied genus. One of the most striking of these, *Fieldia Lowii*, which has large yellow flowers in pendent racemes ten to twelve feet long, though introduced, remains to be bloomed in a state of cultivation.

Vanda is, according to Sir W. Jones, the Hindoo name of the original species, *V Roxburghii*.

The species of VANDA deserve the best attention of the cultivator, on account of the colour and size of their flowers, and the profusion in which they are produced. They are, moreover, provided proper appliances are at hand, among the easiest to manage of this race of plants. Even when not in flower, their noble aspect is particularly desirable in the orchid house.

In a state of nature, these plants are found growing on the branches of trees, in the hot moist forests of the East. They require, therefore, in the state of artificial cultivation, the warmest part of the orchid house—that department which is set apart for the growth of the eastern tropical species, under the name of the 'East India' house. They thrive best when liberally supplied with heat and moisture during the growing season, that is, from April to the end of October, during which period the temperature should range from 75° to 80°, or with sun to 90° by day, and about 70° by night. The plants must be shaded from the direct rays of

[VANDA.—3.]

the sun; and when the temperature is at 80°, a little fresh air may be admitted with advantage, but care must be taken that it does not while cold come directly on the plants. The best method of admitting the external air to orchid houses is by means of ventilators, so placed that the cold air may come in contact with the heated pipes before it circulates in the house.

There are different modes of growing the Vandas. Some prefer to grow them in baskets made of wood, others in baskets of copper wire; but they may also be grown in pots, and the pot system is perhaps the best. Baskets made of wood, harbour insects, and orchids which are thus infested cannot be grown to perfection; and moreover, when the plants are in baskets, and suspended from the roof of the house, the insects cannot be destroyed so readily as when they are grown in pots. The treatment is about the same in either case, only when grown in pots they do not require so much water as when grown in baskets.

The time for potting is February and March, just before rapid growth recommences. When the operation is about to be commenced, it is proper to provide a sufficient quantity of clean sphagnum or white water-moss, which it is desirable should be rubbed through a wire sieve, so that any insects that may be secreted in it may be detected; if the moss is tolerably dry, this operation will break it up, and render it more convenient for use, the very fine dust-like portions being rejected. In addition to the moss, a quantity of potsherds will be required, and these too must be perfectly clean. The perforated pots are the best; and of these a very neat and desirable form may be seen in extensive use at the nursery of Mr. Veitch, at Chelsea. The advantages of these pots is that the perforations admit air to the roots, and this keeps them healthy, besides allowing the water to pass off freely, which is

[VANDA.—4.]

another great advantage ; for if the compost becomes sour the plants will become unhealthy. When this souring does occur, they must be taken out of the pots, and the roots washed in tepid water, the decayed parts being cut away, and then repotted. When large pots are used, a lesser one should be inverted inside over the bottom, and around this broken pieces of crocks or charcoal sufficient to half fill it. Over this must come a good layer of sphagnum, and then the plant, whose roots should be carefully disposed in the pot, and then covered by the addition of sphagnum and potsherds or pieces of charcoal of the size of walnuts, mixed together, with which the pot is to be filled. The plant must be kept three or four inches above the rim of the pot. The operation is completed by finishing off the surface with a layer of sphagnum, without crocks or charcoal, and the surface is then clipped over with a pair of shears, to give it a neat appearance. After potting, they may have a gentle watering.

In a collection there may probably be some plants that do not require fresh potting every year ; these must be top-dressed, using the same materials as for potting. In removing the old moss, take care not to break the roots, and finish off with a neat surface as recommended for potting. This affords an opportunity to get rid of many insects that harbour in the moss ; and it should be borne in mind that insect destruction is one great point in Orchid growing.

Orchids are subject to the attacks of many insect enemies, of which the worst are—cockroaches, a small kind of snail, woodlice, white and brown scale, and sometimes the thrip. The best way to get rid of the thrip is to fumigate the house two or three times. The white and brown scale, which they are very subject to, can easily be kept down by carefully washing the leaves and stems of the plants with a sponge and clean warm water. The cockroaches and woodlice may be kept

[VANDA.—5.]

under by constantly searching for them with a candle by night; they may also be got rid of by a little arsenic mixed with grease or sugar, placed about the house.

The best mode of propagating Vandas, is to take off with a sharp knife, the young shoots from the bottom of the plant, always, however, with a root attached. If they are small, they may be started on a block of wood—of which the best is the acacia, elm, or oak—with a little moss attached, fastened on with some copper wire. These young plants should be hung up in a warm and moist part of the house, and should not have much water applied until they begin to form new roots, which they will soon do, after which they may have plenty of water given them with the syringe, but, as in all other cases, used warm. As soon as they become too large for the block, they may be potted, inserting them in the pot attached to the block, and otherwise proceeding as before.

Some kinds are very shy to produce young shoots, or to ‘make breaks,’ as the phrase is; and this is the reason why they remain so scarce. *Vanda Batemanni* and *V Lowii* are both very scarce, in consequence of this shyness to produce young shoots.

V suavis is one of the finest of the whole family; it is a strong growing species, and flowers very freely, at different periods of the year, good sized plants producing as many as five spikes of bloom at one time, and remaining two months in perfection, if placed in a cool house. The flowers are very sweet scented. It makes one of the finest plants for exhibitions. This species was introduced from Java, by Messrs. Veitch of Exeter; there are many varieties of it, but the true one is very scarce, and Messrs. Veitch have recently received another importation of it. *V. cœrulea* is another handsome and new species, and will prove to be one of the finest orchids for winter blooming; it requires the coolest end of the ‘East

[VANDA.—6.]

India' house, for if grown in the warmest part, the foliage becomes spotted with the moisture, and it will then lose its under leaves. This is another of Messrs. Veitch's introductions, received from their collector in India. *V. Batemanni* is a noble plant, and ought to be in every collection; it is an upright growing species, with large fleshy leaves, producing flower spikes three or four feet long, and continuing in flower for three months, but not producing many flowers at a time.

V. teres is a curious and very distinct species, differing from all the rest in its habit, and requiring different treatment. It is a very shy plant to bloom. The best way to grow it is to get a large block of wood and some moss, and bind the moss on the block with wire; place the block in the pot intended for the plant, allowing it to stand nine inches above the pot rim; fix it firmly by placing broken crocks around it, until the pot is about half full; then take the plant or plants, and fasten them to the block, and fill the pot with moss and crocks. The best way to manage it to induce it to flower is to grow it in a very strong heat, through the growing season, in the warmest part of the 'East India' house, syringing it two or three times a day, until the season of growth is over, which will be at the end of October; then place it at the warmest end of the cooler house, with the Dendrobiums and Cattleyas, as much in the sun as possible, and let it remain there until February, when it is to be returned to the 'East India' house, and kept quite dry for six weeks. After this give it a gentle syringing over head two or three times a week, and the flower spikes will soon be perceived. When these are about an inch long, but not before, give it more water; for sometimes if it gets too much water they will die away, and the plant will begin to grow. When in flower it may be taken to a cool and dry house, and will remain a long time in bloom, fully repaying all the attention it has required.

[VANDA.—7.]

The following general directions apply to the remainder of the family. The growing season commences in March. At that time raise the temperature to 75° by day and 70° by night, always keeping the atmosphere moist, which may be accomplished by pouring water on the tables and paths of the house every morning and evening. This is of great importance in Orchid growing. Vandas derive most of their nourishment from the atmosphere; therefore it must be well supplied with moisture in order to keep them in a healthy condition.

In June, July and August the temperature of the house may range to 80° by day and 75° by night; if the temperature at this season rises to 90° with sun heat it will do no injury provided the air is moist. When the plants are in full growth, which will happen by this time, they may have gentle daily syringings over head with a very fine syringe, throwing the water over them like a gentle shower of rain; the evening is the best time for doing this, just before the shadings are removed. The water should be of the same temperature as the atmosphere of the house; and rain water is the best for the purpose. Always allow the plants to become dry once a day; that will prevent the leaves from damping—a casualty which Vandas are very subject to. This drying of the foliage may easily be accomplished by giving a little air at the top of the house in the middle of the day. When in full growth the plants require a large supply of water at the roots, but it must be applied with great care. Never water at the collar of the plant. It is best to use a pot without the rose, and let the water be warm as recommended for syringing. If the plants are grown in baskets it is a good plan to take them down once a week to examine them, and if they are found to be dry they may be dipped in a tank of tepid water for a few minutes, until they are soaked through, and then hung up again. If

[VANDA.—8.]

on blocks of wood they should be syringed twice a day, and dipped twice a week during the growing season, allowing the block to become well soaked. This also affords an opportunity to get rid of many insects that harbour in them.

The season of rest will commence in November, and last until the end of February. Proper treatment at this period is of great importance in Orchid growing. If the plants do not have proper rest they will not long keep in a healthy condition; in fact, they are like all other plants, *they must have rest*. The Vandas do not require so much rest as some other kinds of Orchids. Rest is secured to them by lowering the temperature of the house, and also by withholding water from the plants, but they must receive sufficient water to keep them from shrivelling; in fact, they must have sufficient to keep the sphagnum damp, for they will continue to grow a little through the winter months, and on that account they must never be allowed to become quite dry. If this happens they will lose their lower leaves. Some water should be thrown on the paths of the house if the weather is fine, to produce a sweet and genial moisture in the atmosphere. Never allow any water or drip from the roof to lodge in the hearts of the young shoots, or on the leaves of the plants; for in this case the young shoots will rot and the leaves will become spotted. The temperature of the house should be lowered by degrees—not all at once; it should be kept at 70° by day and 65° by night, and if the sun raises it a few degrees higher it will not hurt; then a little air may be given, and that will dry up all superfluous damp, but the fresh air must be admitted at the ventilators. When the weather is very cold the temperature of the house must be kept a little lower. Light is very beneficial in the cultivation of plants; on this account it is a good plan to wash all the glass and wood work of the house every autumn, and this will not only secure more light, but will prevent a great deal of drip in the house during the winter.

[VANDA.—9.]

If the plants are growing in baskets they may be hung within two feet of the glass; not closer, for if they are they will not be safe. If grown in pots they may be raised on other pots, to bring them nearer the glass; for if the growth is not well ripened they will not flower. When they begin to show their flower spikes, never allow any water to lodge in the axils of the leaves, or the spike will die off.

There are many different ways of treating newly imported Orchids; but the Vandas do best when treated as follows:— In the first place examine them, cut off all parts that are decayed, and sponge them thoroughly; pot them in pots as small as convenient, placing around them some clean potsherds, so that they are made firm in the pots; place them in a house where the temperature is 60° or 65°, and do not give them any water for some time. In a few weeks their roots should begin to move. When this happens take some sphagnum and place a little over the crocks, then give them a little water, increasing it from time to time until the plants are established, after which they may receive the same treatment as recommended for the others.—R. B.

[VANDA.—10.]

§ FIELDIA.—*Lip obscurely auricled, incurved, entire, concave at the base, with a strong tooth at or above its middle. Pollen-masses four.* (Lindley.)

1. Bateman's Vanda.—[Plate I.]—V. BATEMANNI, *Lindley, Bot. Reg.* 1846, t. 59. V. LISSOCHILOIDES, *Lindley, Gen. and Sp. Orch.* 216. FIELDIA LISSOCHILOIDES, *Gaudichaud Voyage*, 421, t. 36. ANGRÆCUM QUINTUM, *Rumphius*.—ANGREK KRINGSING KITSJIL of the Malays.—Native of the Moluccas, and Philippine Islands.

This noble and splendid species grows upright with a stout and sturdy habit, the stem closely furnished with curved hard coriaceous sword-shaped two-ranked leaves, averaging two feet in length, and producing the flowers from their axils, in racemes of from eight to twelve blossoms, supported on very long stiff scapes. The flowers, which are more than two inches across, of leathery texture and very durable, in front bright golden yellow spotted with crimson, behind entirely of a rosy purple tinged with violet, are remarkably gay. The change in its specific name, indicated by the synonyms quoted above, Dr. Lindley has explained by the following deserved compliment to Mr. Bateman:—"What could possibly have led M. Gaudichaud to compare this epiphyte with the terrestrial *Lissochilus* we are unable to imagine, for there is only the slenderest resemblance between the two. His name is, however, on record, and the strict rules of botanical nomenclature forbid its change. But, as has often been observed, *summum jus summa injuria*; and it is so manifestly absurd to retain for a plant a name that has originated in some misconception, that we venture, for once, to disregard rules for the sake of common sense. In doing so, we cannot but associate with this noble plant a gentleman whose knowledge of the order, and whose skill in the cultivation of it, have gained him a deathless name." *Vanda Batemanni* blossoms in the months of June and July.

2. Low's Vanda.—V. LOWII, *Lindley in Gard. Chron.* 1847, 239; and *Folia Orchidacea* (as *V. Lowei*).—Native of Borneo, in damp places.

This fine species is cultivated by some of the leading orchid growers, but we believe has not yet been flowered. The leaves are coriaceous, rigid, and two ranked; and the flowers are described by Dr. Lindley as being "lemon-yellow, barred and blotched with bands and spots of the richest cinnamon, three inches in diameter, disposed in pendulous racemes ten to twelve feet long." It was first discovered by Mr. Low.

§ EUVANDA.—*Lip auriculate, straight, variously lobed, spurred, even or furrowed, usually with a tooth, or callus in front of the spur.* (Lindley.)

[VANDA.—II.]

3. **Roxburgh's Vanda.**—*V. ROXBURGHII*, *R. Brown, Bot. Reg. t. 506 ; Bot. Mag. t. 2245 ; Paxton's Fl. Gard. t. 42, fig. 2.* *CYMBIDIUM TESSELOIDES*, *Roxburgh, Fl. Ind. iii. 463.*—Native of India, in Bengal.

This beautiful species has the distichous leaves obliquely three-toothed at the points, and seated closely about the short stocky stem. The flowers are large, tessellated with brownish or yellowish blotches on a dull greenish yellow or coppery ground, the lip being of a lively blue or purple towards the point. It is a short stout-growing plant. A reputed variety of this plant with a rose-coloured lip, sometimes met with in gardens, is perhaps *V. furva*.

4. **One-coloured Vanda.**—*V. CONCOLOR*, *Blume, Rumphia iv. 49.* *V. FURVA*, *Bot. Reg. 1844, misc. 42.* *V. ROXBURGHII UNICOLOR*, *Hooker, Bot. Mag. t. 3416.*—Native of China.

A lax-growing species, with long membranous leaves obliquely three-toothed at the points. The flowers are similar in size and form to *V. Roxburghii*, but are of an uniform chesnut-brown instead of being tessellated, and the lip, at the base pale yellow clothed with red inside, is above the middle of the same brown tinge as the sepals; the back of the flower is dingy white.

5. **Showy Vanda.**—*V. INSIGNIS*, *Blume, Rumphia, iv. 49, t. 192, fig. 2, and t. 197 b ; Paxton's Flow. Garden, under t. 42.*—Native of Java, on the mountains of Timor.

This showy and agreeably-scented species, has rigid leaves unequally dentate at the ends, and erect loose racemes of five to seven flowers, which are dull yellow blotched with brown, or, according to Blume, green outside, brownish within; the lip is white with a tinge of violet in the middle, and deep crimson streaks at the base. The fragrance is slight, but agreeable.

6. **Sweet Vanda.**—*V. SUAVIS*, *Lindley, Gard. Chron. 1848, 351 ; Paxton's Fl. Gard. t. 42, fig. 3.* *V. TRICOLOR*, *Hooker, Bot. Mag. t. 4432.*—Native of Java.

A beautiful plant, with numerous large deliciously-scented flowers in long drooping racemes, and with leaves like those of *V. Roxburghii*, linear-lorate with an oblique dentate point. The sepals and petals are lobed, twisted and recurved, white with blood-red spots, or (var. *flava*) yellow with rich brown spots; the lip is purple with elevated lines and streaks near the base. The yellow variety is that figured in the *Botanical Magazine* above quoted. This and the following are among the very finest species of this remarkably showy family.

7. **Three-coloured Vanda.**—*V. TRICOLOR*, *Lindley, Bot. Reg. 1847, under t. 59 ; Paxton's Flow. Gard. t. 42.* *V. SUAVEOLENS*, *Blume, Rumphia, iv. 92.*—Native of Java.

This very handsome plant is allied to the preceding, with which it is sometimes confounded. It differs in the broader and more entire sepals and petals, and in the

[VANDA.—12]

short ascending raceme, as well as in the form of the convex lip. Dr. Lindley mentions the following variations:—*a.* sepals and petals cinnamon blotched with brown, lip rose-colour; *b. flava*, flowers wholly yellow except a faint violet stain in the middle of the lip; *c. pallens*, flowers cream coloured with scattered brown spots; *d. cinnamomea*, flowers yellower with lines of close cinnamon-coloured spots; *e. planilabris*, clear citron, with broad brown spots, and a flat purple lip. *V. tricolor* and *V. suavis* are among the many importations of the Messrs. Veitch.

8. **Brown-green Vanda.**—*V. FUSCOVIRIDIS*, *Lindley, Gard. Chron.* 1848, 351; *Paxton's Flower Garden*, under *t.* 42, with a figure.—Supposed to be a native of Java.

The flowers of this species are dull brown with a little greenish-yellow at the edge, and a pure greenish-yellow lip. They have a slightly fishy smell.

9. **Taper Vanda.**—*V. TERES*, *Lindley in Wall. Cat. no.* 7324; *Bot. Reg.* *t.* 1809; *Bot. Mag. t.* 4114.—Native of India—Sylhet, Burmah, Martaban, &c.

A very beautiful plant, with a different aspect from the foregoing, being of scandent habit, the distant taper leaves scarcely distinguishable from the stems, which bear ascendent few-flowered racemes. The blossoms are, however, large and very richly coloured; the sepals white tinged with rose, the petals rosy red with a pale border, the lip deep rose-red at the point, yellow with dotted lines of crimson towards the base.

§ LAMELLARIA.—*Lip auriculate, straight, variously lobed or entire, spurred, bearing from one to three perpendicular plates.* (Lindley.)

10. **Cœrulean Vanda** [Plate II.]—*V. CÆRULEA*, *Griffith MSS.*; *Lindley, Bot. Reg.* 1847, under *t.* 30; *Paxton's Flow. Gard.* *t.* 36.—Native of Khasiya, at an elevation of 3-4000 ft.

The flowers of this very beautiful plant are nearly four inches in diameter, and have something of the appearance of those of *Clematis cœrulea*, in consequence of the three sepals and two petals, which are of nearly equal size, spreading almost equally. The leaves are distichous, five inches long, with two acute lobes at the points. The inflorescence is an erect many-flowered spike at the top of a long stout scape. The sepals and petals are flat oblong blunt, pale lilac blue, the lip small, deep violet. It is one of the noblest of the species, and was introduced by Messrs. Veitch. Our figure was made in the nursery of Messrs. Rollisson in October, 1853.

11. **Lammellate Vanda.**—*V. LAMELLATA*, *Lindley, Bot. Reg.* 1838, *misc.* 125.—Native of the Philippine Islands.

This has the leathery distichous leaves obliquely and acutely bidentate, and the

[VANDA.—13.]

flowers in long loose upright racemes, of a pale yellow colour, streaked with dull pale red ; they are as large as those of *V. Roxburghii*. The lip is furnished with two red elevated plates (whence the name), and a pair of red tubercles.

§ CRISTATÆ.—*Lip auriculate, straight or recurved, quite naked, saccate or excavated at the base.* (Lindley.)

12. **Crested Vanda** [Plate III.]—*V. CRISTATA*, Lindley in Wall, *Cat.* 7328 ; *Gen. and Sp. Orch.* 216 ; *Sertum Orchidaceum*, fig. 3 in front ; *Bot. Reg.* 1842, t. 48.—Native of India—Nepal, Bootan, Sikkim.

This plant has short rigid distichous leaves, obliquely three-toothed at the point. The flowers are pale green, the lip buff-coloured striped with rich purple. The rich marking and velvety surface of the lip render the individual blossoms pretty—‘*exquisitæ pulchritudinis*,’ according to Dr. Wallich,—but the blossoms are too few, small and dull-coloured to confer an ornamental character on this otherwise good-looking species. The lip in the usual state of the plant bears three unequal horn-like processes at the point, but a variety with paler blossoms, in which these horns are wanting, is mentioned by Dr. Lindley in the *Folia Orchidacea*.

13. **Alpine Vanda**.—*V. ALPINA*, Lindley in *Folia Orchidacea*, No. 25. *LUISIA ALPINA*, Lindley, *Bot. Reg.* 1838, *misc.* 101.—Native of Khasiya.

A small-flowered plant with the habit of *V. cristata*, but of no horticultural importance. It has distichous coriaceous obliquely two-lobed leaves. The minute blossoms are pale green with a yellowish lip streaked internally with deep purple.

REFERENCE TO THE PLATES OF THE

GENUS VANDA.

Plate I.—VANDA BATEMANNI, *Lindley*.

Fig. 1. The lip, with diminished figure of the entire plant; fig. 2. the pollen-masses and their apparatus.

Plate II.—VANDA CÆRULEA, *Griffith*.

Plate III.—VANDA CRISTATA, *Lindley*.

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J. Swainson del.

THE GENUS PHALÆNOPSIS.

THE PHALÆNOPSIS, or Indian Butterfly plant, is one of the most beautiful of the many beautiful plants belonging to its order ; invaluable whether for the decoration of the orchid-house, or for exhibition purposes ; and hence held in the highest estimation by cultivators of this race of plants. Its chaste loveliness has procured for it the position of the Orchid Queen.

The plants are strictly epiphytal herbs, with a few short broad thick spreading dark green leaves, and a paniced flower-scape, which is more or less branched, and branches in succession after the removal of the earlier flowers. The perianth is spreading, with free sepals and larger dilated petals. The lip is connate with the column as well as callous at the base, three lobed, the side lobes ascendent petaloid, the middle one narrowed bicirrhose, that is, having a pair of cirrhi or tendrils. The column is recumbent on the ovary, with a gladiate beak ; the anther is two-celled, with a pair of nearly globose pollen-masses, a flat spathulate caudicle, and a large heart-shaped gland.

The Horticultural Society of London possess a remarkably fine plant of this species, obtained by their collector, Mr. Fortune, who undertook a voyage from Shanghae to Manilla, for the purpose of procuring plants. This remarkable specimen has frequently from twenty to thirty spikes of flowers in perfection at one time. Mr. Fortune gives the following account of the means he employed to procure it :—“ I sailed for Manilla in the beginning of January 1845. * * After

[PHALÆNOPSIS.—2.]

some trouble I discovered the locality of the beautiful *Phalænopsis amabilis*, and procured a large supply of plants for the society. As my visit here was a secondary object, I had very little time to spare, and therefore took every means in my power to make the most of my time. I was in the habit of making an Indian's hut in the wood my head quarters for a certain time, where I held a sort of market for the purchase of orchidaceous plants. The ground in front of the hut was generally strewn with these plants in the state in which they had been cut from the trees, and often covered with flowers. The *Phalænopsis* in particular was very beautiful at this time. I was most anxious to get larger specimens of this plant, and offered a dollar, which was a high sum in an Indian forest for the largest specimen which should be brought to me. Lovers of this beautiful tribe of plants will easily imagine the delight I felt when I saw two Indians approaching with a plant of extraordinary size, having ten or twelve branchy flower-stems upon it, and upwards of a hundred flowers in bloom. 'There,' said they, in evident triumph, 'is not that worth a dollar?' 'You have gained the dollar,' said I, as I paid them the money, and took possession of my prize." The same plant, now in possession of the Horticultural Society, although a little reduced in order to get it into the plant case at Manilla, is still by far the largest specimen in Europe.

The flower stems of the *Phalænopsis* are at first ascending, but the weight of the massive flowers causes them to droop gracefully; and the large blossoms all facing one way, are ranged alternately into two rows, from six to eight, sometimes a dozen, or even a score on each stem. The flowers too are of long endurance, for the same plants have been produced in fine condition at the whole of the summer metropolitan exhibitions. The plants produce a succession of flowers, for if the flower-stem is cut off above the point where the first flower appeared, it will branch out and flower again in the course of a few weeks.

[PHALÆNOPSIS.—3.]

The few species are all eastern tropical plants. The name is compounded from the Greek *phalaina*, a moth, and *opsis*, resemblance.

Phalænopsis is one of the finest among the genera of orchids, and an universal favourite. The species are all compact growing plants, with rich evergreen foliage, producing their flowers very freely on long drooping spikes from the axils of their leaves; the individual flowers often measuring three inches across; and as many as from 30 to 40 of these large white flowers being sometimes borne on one spike. As the plants increase in strength they will produce additional flower-spikes, but the old ones must not be cut off, as they will bear flowers year after year. In consequence of this habit, the plants may be obtained with several panicles of blossom, whilst, by having two plants under culture, the blossoms may be had all the year round. They are rather slow growing plants, seldom producing more than one or two leaves in a season; and they are not easily increased, as they seldom make young shoots until they are very strong, and even then the young growths must not be taken off until they have formed roots. When, however, roots are formed, they may be separated, and should then be fastened on a block of wood with a little moss: it is necessary to be careful to fix them firmly on the block with copper-wire, and to suspend the blocks in the hottest part of the 'East India' house, and they require frequent gentle syringings: indeed they must not be allowed to get dry.

There are but three or four species in cultivation. *P. amabilis* was the first introduced to this country: it comes from Manilla, and is very scarce, and not so free in growth as *P. grandiflora*, but it is a most beautiful plant, and very valuable for exhibitions; this may be easily distinguished from the

[PHALÆNOPSIS.—4.]

others, as the under part of the leaf has a red appearance, and the inside of the flowers is striped with rosy pink. *P. grandiflora* is a very fine species from Java, and is a much freer grower than *P. amabilis*; the leaves are longer, and of a lighter green; it flowers in the same way only much more freely, sometimes producing two hundred flowers in one season, in fact the flowers are frequently so freely produced, as to weaken the plants, and it is hence advisable in some cases to pick off the flowers after the plants have been some time in bloom, in order to allow the plants to grow. *P. rosea* is very pretty, but not so handsome as the two former; it flowers at different times of the year, and lasts a long time in perfection: it is very scarce.

The species of *Phalænopsis* are like all other orchids in this respect: they may be grown in several ways. Some prefer to grow them on blocks of wood; some in baskets suspended from the roof of the house; others grow them in pots. When grown in pots they are more conveniently managed than when in baskets or on blocks, as they require a frequent supply of water. The time for potting is in March, just before rapid growth or flowering commences. If they are potted or basketed when in flower, they are very liable to lose their flower-buds, and then they will not bloom again for some time. When grown in pots, they must have plenty of drainage to allow the water to pass off freely. The perforated pots are the best to use. The advantage derived from the use of these pots is, that the perforations admit air to the roots, which keeps them healthy, besides allowing the water to pass off freely; for if the compost becomes soured, as by stagnant water, the plants will become unhealthy. When this does occur, the plants must be taken out and repotted. Large plants require large pots, as the more surface room they have the better, as they produce most of their roots on the surface. In draining the pot, place a small inverted one in the bottom, and fill up three

[PHALÆNOPSIS.—5.]

parts full with crocks; then put a layer of sphagnum moss over the crocks. The best compost is chopped sphagnum and charcoal, mixed with a few pieces of fibry peat. The charcoal should be used of a size proportionate to the size of the pots; thus if the pots are large, the lumps of charcoal should be large also. It is important to keep the plant two or three inches above the pot-rim, and to fasten it firmly with a stick; fill the pot to within an inch of the rim with the compost, and then take some clean sphagnum, and lay over to finish the surface; after this, it will require a gentle watering.

The plants must be grown in the hottest part of the 'East India' house, as they are found in situations where they receive abundance of heat and moisture.

If grown in baskets, the best are those made of rough maple or copper-wire. Place a layer of sphagnum moss over the bottom, and around the sides, to prevent the compost falling through. The compost should be the same as that recommended for potting. Oak and elm make the best blocks, as these woods last a long time. In fixing a plant on the block, first spread a layer of moss on the surface, then on this the plant, and then a little more moss just sufficient to cover the roots: copper-wire should be used to fasten with, as it does not corrode.

The plant will require to be fresh surfaced twice a year; the material above their roots must not be allowed to get sour, and they thrive so much better in clean moss. In watering, tepid water should always be used. While they are growing, which will be from April to September, the plants will require to be syringed two or three times a day over the leaves; in fact they are like the *Aerides* and *Vandas*, they will grow all the year round, and therefore must never be allowed to become dry at the roots. They will not require to be syringed overhead in the resting season. While growing they require to be in a moist temperature of from 80° to

90°; but from 65° to 70° is sufficient for them when at rest. The plant must not be allowed to hang too near the glass in winter, as they are very liable to get chilled.

One great means towards ensuring success is to keep them clean, and free from insects. The small snails infest them very much, on account of their being kept so moist, but these may be kept under by laying some lettuce leaves or pieces of potato about the plants to facilitate their being caught. Sponging the leaves every few days will keep them free from an attack of thrip; these pests will spoil a leaf in a few days and as the plants only make a few leaves in a year, one cannot afford to have them spoiled with the thrip. Sometimes the grey thrip will attack the flowers, in which case the remedy is to fumigate the house with tobacco, or they will surely be spoiled.

The plants should be shaded from the rays of the sun. In syringing, it is necessary to be careful not to allow the water to touch the flowers, or they will become spotted. Imported plants must be started on small blocks of wood without any moss, and put in the coldest end of the house until they begin to root, they may then be treated as recommended for established plants.—R. B.

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1. Common Indian Butterfly plant. [Plate I.]—P. AMABILIS, *Blume Bijdragen* 294, t. 44; *Bot. Reg.* 1838, t. 34. EPIDENDRUM AMABILE, *Linnaeus, Sp. Pl.* 1351.—Native of Manilla.

This rare and beautiful epiphyte sent from Manilla, by H. Cuming, Esq. was first bloomed in Europe, by Messrs. Rollisson of Tooting in 1838. It has oblong leaves, and a panicle of large pure white blossoms, whose large size, and curious form, and the graceful way in which they hang, together with the brilliant whiteness of their broad leathery petals, produce a striking and very beautiful appearance. The sepals are ovate, nearly equal; the petals broad, mucronate, overlapping the upper sepal; the

[PHALÆNOPSIS.—7.]

lip is longer than the lateral sepals, incurved at the sides, its middle lobe trowel-shaped with projecting angles near the base, and the lateral lobes between lozenge-shaped and oblong; the cirrhi at the apex of the lip are white, and the lateral lobes are slightly streaked with red.

2. Large Indian Butterfly plant.—*P. GRANDIFLORA*, *Lindley in Gard. Chron.* 1848, 39, with a woodcut.—Native of Java.

This gorgeous plant, introduced from Java by Messrs. Veitch, in 1847, has the general characteristics of the common Indian Butterfly plant, but the flowers are much larger and the leaves are longer. Compared with *P. amabilis*, "its flowers are four-times as large, the petals do not overlap the back sepal, nor have they the small point invariably present in *P. amabilis*. The lip is very narrow, much shorter than the lanceolate sepals, and its chief lateral lobes are somewhat wedge-shaped with the angles rounded off. The distribution of colours, too, is different; there is a large stain of deep yellow on the front edge of the chief lateral lobes of the lip, and the cirrhi are yellow, not white," (*Gard. Chron. l. c.*). The flowers are pure milk white, except the slight markings on the lip.

3. Intermediate Butterfly plant.—*P. INTERMEDIA*, *Lindley in Paxt. Fl. Gard.* iii. 162, with a woodcut. *P. LOBBII*, *Veitch, Catalogue.*—Native of Manilla.

This is a very beautiful plant, intermediate, as its name implies between *P. amabilis* and *P. rosea*, and Dr. Lindley suggests that it may be a natural mule between them. It has short oblong leaves, and a deep brownish purple flower scape, bearing flowers half-way between *P. amabilis* and *P. rosea* in size. The sepals are pure white concave, oblong, acute; the petals larger lozenge-shaped acute, white with a few minute speckles at the base. The lip is three-lobed; the lateral divisions erect wedge-shaped with rounded angles, violet with a few minute crimson dots; the middle lobe deep crimson ovate, bearing two tendrils at the point; the crest is nearly square, deep yellow with crimson dots.

4. Pink Butterfly plant.—*P. ROSEA*, *Lindley Gard. Chron.* 1848, 671, with a woodcut; *Paxt. Fl. Gard.* ii. t. 72. *P. EQUESTRIS*, *Reichenbach, Linnæa*, 1849, 865. *STAUROGLOTTIS EQUESTRIS*, *Schauer Act. Acad. Nat. Cur.* xix. *supp.* 432.—Native of Manilla.

This is a curious and when well grown really a handsome plant, with the habit of the larger-flowered species but otherwise quite unlike them, and certainly inferior in point of beauty. The leaves are narrow-oblong, leathery, eight to twelve inches long, sharp-pointed. The flowers are small, about a dozen are arranged in a branching purple spike, at the end of a stiff ascending drooping purple lateral peduncle; they are about an inch in diameter with spreading oblong-lanceolate acutish nearly equal sepals and petals, of a pale pink or rose-colour; the lip has the lateral lobes linear-spathulate oblique incurved, the middle one ovate-acuminate somewhat lozenge-shaped, with

[PHALÆNOPSIS.—8.]

a thin concave lunate rounded crest ; it is of a rich deep rosy colour, with the lower part bright yellow minutely spotted with red, and marked with intense violet at the upper part. This part has nearly the shape of a trowel, and entirely wants the tendrils so remarkable in the other species.

Dr. Lindley suggests (*Gard. Chron.* 1848, 39), that other species probably remain to be introduced ; since that figured in Horsfield's *Plantæ Javanicæ* (t. 8) is absolutely colourless ; according to Roxburgh and others there is a very fragrant sort ; and Rumphius speaks of one whose flowers are white inside and rich purple outside, and of another with longer petals wholly white.

REFERENCE TO THE PLATE OF THE
GENUS PHALÆNOPSIS.

Plate I.—PHALÆNOPSIS AMABILIS, *Blume*.

PHALÆNOPSIS

1.



Wm. Drake.

J. H. M. & Co.

THE GENUS ACANTHOPHIPPIUM.

THE ACANTHOPHIPPIUMS form a small group of eastern tropical Orchidaceous plants, remarkable rather for a certain grotesqueness of appearance in the flowers than for any striking beauty, although they do also possess in some degree the latter quality. The foliage too, is bold and effective, and the plants may be cultivated with facility.

They are terrestrial short stemmed plants, the stems somewhat bulbous below, and having large plaited leaves, while the shorter peduncle is sheathed with bracts, and terminated by a cluster of several oddly shaped, fleshy-looking flowers with bright coloured markings. The perianth is ventricose or swollen out, and the outer segments or sepals are coalescent, the lateral ones being adnate to the claw of the column, and the dorsal one, along with the spatulate petals, arched. The lip is jointed with the much prolonged base of the column, its limb three-lobed, folded, lamellate. The anthers are fleshy, two-celled; and there are eight unequal sessile pollen-masses. The genus belongs to the Epidendrous division of this extensive natural family.

The meaning of the name is unexplained. It has been suggested that it is derived from *acanthos*, a spine, and *ephippion*, a saddle, but the application of this, unless it be to the limb of the lip, is not evident.

The plants, being terrestrial, require to be grown in pots, and should have a moderate supply of turfy peat soil. A

[ACANTHOPHIPPIUM.—2.]

great part of the space within the pot should however be filled with largish lumps of brick or potsherds laid so as to secure open interstices, among which, clinging to the harder material, the roots delight to insinuate themselves. The use of a considerable proportion of this material too, obviates the necessity for very frequent repotting which is of the more consequence as the roots tenaciously adhere to the material of the pot, and are consequently not removed without risk of injury.

The habit of growth in these plants is to produce new stems from the base of the old ones, and this renders it necessary that in potting, the base of the plants should be somewhat elevated so that the young stems may have space to develop themselves without being forced down into the soil, which is often the case when this is not attended to, or occurs by the natural process of settlement when too great a depth of porous soil is used. The natural downward tendency of the plant, is also a reason for taking care that it is at the first kept well up, for after it has worked down, or becomes settled down in the soil, the new growths are crowded and consequently weakly.

The warmer Orchidaceous or 'Indian' house is the most congenial during the growing period to those plants which inhabit the tropical climates of the Eastern Archipelago, and of the continent of India. A temperature of about 65° in winter, and from 70° to 80° in summer, with fire heat, is however quite sufficient for them. The house should be well shaded during bright sunshine.

The plant must be liberally supplied with water during the season of active growth; but water should be more sparingly supplied when they are in a state of rest, or in very dull, damp weather.

Propagation is easily effected by taking the plants to pieces, but this should be done when they are resting, just before the season of growth recommences.

[ACANTHOPHIPPIUM.—3.]

1. **Two-coloured Acanthophippium.**—*A. BICOLOR*, *Lindley, Bot. Reg.* t. 1730; *Botanist*, t. 200.—Native of Ceylon.

This species which was the first introduced to our gardens, was obtained in 1833, from the garden at Peradenia, and is rather pretty, the large flowers several together in a close mass, being ovate or subconical, pale yellowish, the spreading tips of the perianth deep purplish crimson, paler outside; the lip is deep clear yellow. The peduncle, which is clothed with large imbricating bracts, springs from the base of the pseudo-bulbs, and is considerably overtopped by the large spreading leaves. The flowers of many of this race of plants have been fancifully supposed to bear resemblance to certain forms of animal life; and it has been suggested that the flowers of these *Acanthophippiums* resemble a number of gaudy-plumaged young birds crowded in their nest, the unexpanded flowers being like those which have the beak closed, the others seeming like nestlings gaping for food. This species has the lateral lobes of the lip roundish-cuneate, the intermediate lobe ovate scabrous, with two concave plates or lamellæ at the base.

2. **Javanese Acanthophippium.** [Plate 1.] — *A. JAVANICUM*, *Blume, Bijdr.* 353, t. 47; *Bot. Reg.* 1846, t. 47; *Bot. Mag.* t. 4492.—Native of the woods of the higher parts of mount Salak in Java, where it flowers from February to April.

This is the most showy of the species, having the same general habit as the last. As a species it is readily known by its three-lobed lip having the centre division contracted in the middle, uneven and ovate at the point, and fleshy at the base, with thick fleshy irregularly-toothed sides. The exterior of the flowers is a pale clear nankin yellow streaked and tinged with purplish-red. The streaks are also apparent on the spreading face of the sepals and petals, which are more deeply stained with a delicate rosy lilac. It is altogether a rather striking plant, and worth a place in large collections.

3. **Streaked Acanthophippium.**—*A. STRIATUM*, *Lindley, Bot. Reg.* 1838, *misc.* 68.—Native of India—Nepal.

This plant is very much inferior to the foregoing. It has smaller pale blush white flowers, with dull longitudinal stripes, and the lip is spotted with purple. The stems are larger and narrower, and the scape is three-flowered.

4. **Sylhet Acanthophippium.**—*A. SYLHETENSE*, *Lindley, Gen. et Sp. Orch.* 177.—Native of India—Sylhet.

This species also has a three-flowered scape; the obovate flowers, which are two inches long, are white or cream-coloured, and scentless.

REFERENCE TO THE PLATE OF THE
GENUS ACANTHOPHIPPIUM.

Plate I.—ACANTHOPHIPPIUM* JAVANICUM, *Blume*.
Fig. 1. The lip, laid open.

* Misspelled on the plate.



THE GENUS BRASSIA.

The genus *BRASSIA* consists of pseudo-bulbous epiphytal plants, inhabiting tropical America. They are for the most part ornamental plants, remarkable in particular for the condition of their sepals which are very narrow and lengthened, often exceedingly so, so as to form long slender tails. The genus exhibits in a remarkable degree the unsymmetrical development which is all but universal in the flowers of these plants.

Brassias technically rank very near to *Oncidium*, from which, according to Dr. Lindley, they are distinguishable only by the "short earless column, and entire bilamellate lip, combined with elongated lateral sepals." They are at the same time nearly related to *Miltonia*, from which they are known by their wingless column. The species described in the *Folia Orchidacea* are seventeen in number, including however several varieties which have previously been recognised as species. Of these there are ten species and several varieties known in the cultivated state.

The flowers of *Brassia* are composed of three sepals which are flat, and equal at the base, the side ones being elongate acuminate, or often lengthened into a tail; two petals which are like the dorsal sepal, sometimes equalling it in size, sometimes smaller; and a plain undivided lip, which is continuous with the column, having a pair of lamellæ at the base, and often warted on the anterior part. In addition to these features the column is short, without wings, and bearing an excavated stigma; the pollen-masses are two in number, waxy, furrowed behind, and furnished with linear arcuate caudicles, and thick oval glandules. The flowers grow in simple racemes which issue from the rhizomes at the base of the pseudo-bulbs.

[BRASSIA.—2.]

The genus was named by Dr. R. Brown in commemoration of Mr. Brass, who was a skilful botanical traveller and draughtsman. Its species are arranged by Dr. Lindley in two groups: *Eubrassia*, containing those in which the bracts are short and inconspicuous; and *Glumaceæ*, those in which the bracts are long and herbaceous.

The beautiful evergreen foliage, and graceful spikes of singular and delightfully fragrant flowers which they possess, render the *Brassias* desirable for the Orchid house. The plants flower very freely, and remain a long time in perfection: some of the species are moreover fine plants for exhibition. The flower scapes are produced by the side of pseudo-bulbs. They are of easy culture; and this together with their beauty and fragrance should secure admission for some at least of them, to every collection.

They are like most other Orchids in requiring distinct seasons of growth and of rest; and should be grown in pots. The proper time for potting them is about March, before they begin to grow, for if potted whilst they are in a growing state, the young roots are liable to get bruised, and that is of course very injurious to the plants. They should have plenty of pot room, as they are very free growing plants; but the pots must be well drained to allow the water to pass off freely; this is the more necessary as they require a great quantity of water when in a growing state. The best compost for them consists of chopped sphagnum, fibrous peat, and potsherds or charcoal, all well mixed together. When large pots are used, it is a good plan to place an inverted smaller pot in the bottom of the larger one, and to fill in around and over this some broken crocks, until the large pot is nearly half full; then place a layer of sphagnum over the crocks, and sufficient soil to raise the plant three inches above the pot rim. If the plants have become rooted to the sides of the old pot, it is better to break

[BRASSIA.—3.]

the pot than attempt to separate them, and the pot thus broken, may be set into the new pot, the fresh soil being carefully placed about the roots until the pot is filled. In no case should the soil be pressed very firm; indeed the lighter it can be placed so that it serves to steady the roots the better, and whenever a top-heavy plant is potted, it must be supported by a stake and not by consolidating the soil. It is necessary to be very careful not to bruise the pseudo-bulbs, for if bruised they will decay. The plants must not have any water given them for a few days before potting; in fact they must never be potted when the roots or soil are wet. Some plants will not require to be repotted every year; but in that case they should be top-dressed, using the same kind of compost as for potting. This top-dressing will encourage the young roots, and will also help to get rid of many insects; but in removing the old soil great care must be taken not to bruise or break the points of the young roots.

The growing season will commence in April and continue until October. The species require a varied treatment as to temperature. Some, such as come from Guatemala and Central America may be grown in the 'Mexican' or cool house, where the temperature ranges from 65° to 70° by day and from 60° to 65° by night; these must be shaded with great care from the mid-day sun, and fresh air may be admitted very freely. The temperature should never be allowed to rise higher than 75° with sun heat, for there is often much injury done to South American Orchids by giving them too much heat. When they first begin to grow they must have but little water, and this must be increased in quantity as they progress in growth, so that by the time the bulbs are about half grown they may have a liberal supply, which is to be continued until they have finished their growth. Tepid water must always be used. They may receive a gentle syringing over head once a day, when they are in full growth, but the foliage should always be

[BRASSIA.—4.]

allowed to become dry once a day ; that will prevent the young shoots from damping off. Sometimes the bulbs will be inclined to decay, but this may be easily arrested by placing some pounded charcoal to the diseased part, continuing it for a few days ; that will dry up the damp. Dry lime will also answer the same purpose. When the plants have finished their growth, remove them to the coldest part of the house, and take care that they receive but little water.

Those species that come from the warmer climates, as Jamaica and Demerara, should be grown in the coldest part of the 'East India' house. They also will require a great supply of water at the roots, whilst growing ; and when they have finished their growth, which will be in October, they must be removed to the warmest part of the 'Mexican' house. These plants require a long season of rest to ripen their bulbs ; in order that they may flower freely. During this time they must receive only sufficient water to keep the bulbs plump and healthy : by no means should they be allowed to shrivel ; and they should be kept in the light as much as possible. The temperature of the house at this period, must be kept at about 60° by day and 55° by night, and the atmosphere must be kept dry until March, when they may have a little more water given them, and the temperature should be raised to 65° by day and 60° by night. The plants will then soon begin to shew flower.

When in blossom the plants may be removed to a warm conservatory for a short time, with safety, and during the time they remain there, they must be kept dry.

These plants are very subject to the attacks of a small snail and of wood lice, which destroy the points of the young roots. They must be kept under, by placing on the top of the pot some pieces of potato, scooped out so as to form a hollow ; and these must be examined every morning and evening, and the vermin destroyed. In this way a great quantity may

[BRASSIA.—5.]

be destroyed, if the plan is perseveringly followed up. The scale may be kept down by carefully washing the leaves and bulbs of the plants with a sponge and tepid water.

The *Brassias* are easily increased by dividing the plant, or by taking off the back bulbs before they begin to grow. The divisions must be potted into small pots, the tops being fastened firmly with a stick; they must have but little water until they begin to root.—R. B.

§ EUBRASSIA.—*Bracts short and inconspicuous.* (Lindley.)

A.—LIP QUITE EVEN.

1. **Spotted Brassia.**—*B. MACULATA*, R. Brown, *Hortus Kewensis*, v. 215; *Bot. Mag.* t. 1691.—Native of Jamaica.

A fine species, blooming in May and June, and continuing for several weeks in perfection. The sepals and petals are pale greenish yellow blotched with red-brown; the lip creamy white, spotted below the middle with purple. This species is rare.

The variety *GUTTATA*—*B. guttata*, Lindley (*Pl. Hartw.* 94) and the *B. Wrayæ*, Skinner, (*Bot. Mag.* t. 4003)—has the flowers smaller; they are greenish yellow, all the parts spotted with purple, and tinged with green, the spots being nearly equally distributed over the whole flower, but of much smaller size on the lip. It appears that the flowers vary much in size. This variety is a native of Guatemala.

2. **Lance's Brassia.**—*B. LANCEANA*, Lindley, *Bot. Reg.* t. 1754; *Bot. Mag.* t. 3577, and t. 3794.—Native of the West Indies and South America.

A beautiful species, having the flowers bright yellow, spotted with purple, chiefly on the sepals and petals, the lip being sometimes quite unspotted; they are very sweet-scented. The scapes are about two feet long, and produced at various seasons of the year; and the flowers last for two or three weeks if kept cool and dry. It was found by Mr. Lance in Surinam.

There is a variety of this species called *MACROSTACHYA*—the *B. macrostachya*, Lindley, (*Sert. Orch.* t. 6)—which has the flowers bright yellow slightly spotted with brown, and the lip of a much paler colour. In this the lateral sepals are very much acuminate and lengthened. It is a native of Demerara. Of this, we find it remarked in the *Botanical Register*, that “no species can be compared with this most graceful and brilliant plant, whose long nodding racemes of flowers bend gracefully over the rich and verdant foliage, while the slender sepals are so long, so light, and so delicate, as to be agitated by every impulse given them by the air.”

[BRASSIA.—6.]

Another variety called PUMILA—the *B. pumila*, Lindley (*Bot. Reg.* 1845, *misc.* 62)—is remarkable for its dwarfness and the difference of its aspect; its flowers are pale yellow, stained with dull purple at the base of the petals, the sepals clear yellow, and the lip tinted with dull yellowish brown at the base. This plant comes from the Caraccas.

There appears to be still another variety of this species: VIRIDIFLORA—the *B. Lanceana*, var. *viridiflora*, Hooker (*Bot. Mag.* t. 3794)—which has lively green and very fragrant flowers, spotted with large brown blotches on the sepals and petals, and with numerous smaller dots on the lip.

3. Mrs. Lawrence's Brassia. [Plate I.]—*B. LAWRENCEANA*, Lindley, *Bot. Reg.* 1841, *misc.* 6; t. 18.—Native of Brazil.

This is a handsome and very fragrant species. The flowers are bright yellow spotted with cinnamon. "The truncate double lamella with no additional teeth in front, affords an easy mode of identifying the species, and separates it especially from *B. Lanceana*." (*Lindley*.)

The variety ANGUSTA—*B. angusta*, Lindley, (*Bot. Reg.* 1844, *misc.* 18, no. 3)—has the sepals and petals and the somewhat concave lip, of a pale dull yellow, with a few brown spots, variable in size and number, towards their base. All the parts of the flower are much more narrowed than in *B. Lawrenceana*, with which it is equally fragrant. This plant is supposed by Dr. Lindley to be the same as the *B. cochleata*, Knowles and Westcott (*Floral Cab.* t. 53), and if so comes from Demerara. *B. Henchmanni*, Loddiges, and *B. cuspidata*, Loddiges, have been formerly referred doubtfully by the same authority to this latter plant; but they are not included in the more recent enumeration in the *Folia Orchidaceæ*.

4. Two-toothed Brassia.—*B. BIDENS*, Lindley, *Bot. Reg.* 1844, *misc.* 13, no. 6.—Native of Brazil.

A species nearly allied to *B. caudata*. The flowers are yellow, the lip only spotted with brown. It is distinguished by two large teeth near the base of the lip.

5. Tailed Brassia.—*B. CAUDATA*, Lindley, *Bot. Reg.* t. 832; *Bot. Mag.* t. 3451. *EPIDENDRUM CAUDATUM*, Linnæus, *Sp. Pl.* 1349. *MALAXIS CAUDATA*, Willdenow, *Sp. Pl.* iv. 93.—Native of the West Indies and Brazil.

A handsome species, remarkable for the very great length of the lateral tail-like sepals. The flowers are pale greenish yellow, mottled with broad deep brownish-purple blotches; and the lip is more decidedly yellow, marked near the base with a few red-brown blotches.

6. Villose Brassia.—*B. VILLOSA*, Lindley, *Folia Orchidaceæ*, no. 7.—Native of South America, at the sources of the Maranon.

This species, found by M. Warzewitz, has not yet flowered in gardens, as far as we know. The flowers are described as being sweet-scented, and smaller and more fleshy than any others in the genus. The sepals and petals are nearly equal, and they appear to be unspotted.

[BRASSIA.—7.]

B.—LIP WARTED.

7. **Long-armed Brassia.** [Plate II.]—*B. BRACHIATA*, *Lindley, Pl. Hartw.* p. 94; *Bot. Reg.* 1847, t. 29.—Native of Guatemala.

This beautiful plant is the finest species of the genus. It has flowers of a pale green ground colour, the sepals and petals marked with rich brown oblong blotches, and the lip studded with deep green warts. It is sometimes called *B. Wrayæ*, in gardens.

8. **Warty Brassia.**—*B. VERRUCOSA*, *Lindley, Bot. Reg.* 1840, *misc.* 66; *Bateman, Orch. Mex. and Guat.* t. 22. *B. CORYANDRA* *Morren, Ann. Gand*, iv. 295. *B. COWANI*, *of gardens.* ? *B. ODONTOGLOSSOIDES*, *Klotzsch, Bot. Zeit.* 1847, p. 942.—Native of Guatemala.

A handsome species, bearing its flowers on long slender graceful scapes; they are pale greenish yellow, except the lip, which is white, studded with green warts. It blooms about May and June.

9. **Awned Brassia.**—*B. ARISTATA*, *Lindley, Bot. Reg.* 1844, *misc.* 13, *no.*
11. *B. LONGILOBA*, *Alph. De Candolle, Pl. Rar. Gener.* t. 1, A.—Native of Guatemala.

This has small flowers, with green sepals and petals slightly spotted with purple, and a white lip.

§ GLUMACEÆ.—*Bracts long herbaceous.* (Lindley.)

10. **Cinnamon Brassia.**—*B. CINNAMOMEA*, *Linden, and the French gardens.*
B. HAVANENSIS, *of the French gardens.*—Native of New Grenada.

This species has dull brown or cinnamon-coloured sepals and petals, and a whitish lip speckled with purple. The flowers are of moderate size.

REFERENCE TO THE PLATES OF THE
GENUS BRASSIA.

Plate I.—BRASSIA LAWRENCEANA, *Lindley*.

Fig. 1. The hairy tumour at the base of the lip.

Plate II.—BRASSIA BRACHIATA, *Lindley*.

BRASSIA

1



Miss Drake

S. B. ...



THE GENUS ODONTOGLOSSUM.

THE ODONTOGLOTS, or TOOTH-TONGUES, consist of epiphytal herbs, having the pseudo-bulbous form of stem. Their blossoms are for the most part of very great beauty, and in the majority of the species last for a long time—three to six weeks—in a fresh and healthy state, if kept in a dryish atmosphere. Their inflorescence, which is produced from the base of the pseudo-bulbs, often forms a raceme either with few or many blossoms, sometimes a panicle more or less branched; in others the peduncles produce only solitary flowers.

The genus may be considered one of the most ornamental of those in cultivation. Its name is derived from the Greek *odontos*, a tooth, and *glossa*, a tongue, whence has arisen the English name of Tooth-tongue formerly proposed for these plants. The species are all inhabitants of the New World, where they occupy the central temperate parts, many of them occurring in Mexico and Guatemala, others in New Granada, Venezuela, and Peru.

The genus ODONTOGLOSSUM is very nearly related to *Oncidium*, as the details of its structure will shew. The sepals or exterior series of the divisions of the flower are usually entirely separate from each other down to their base; sometimes the lateral ones unite somewhat at their base, and they are occasionally lengthened out into a claw or footstalk. The petals or inner series nearly equal the sepals in size, and simulate them in form, but they are generally of a thinner or more membranous texture. The limb of the lip is deflexed; its base is always parallel with the face of the column, and it is, moreover, there usually crested with raised

[ODONTOGLOSSUM.—2.]

tubercular ridges or plates arranged in a variety of ways. The crests are sometimes, though in very few instances obsolete or wanting. The column, or consolidated stamens and style, is in the form of a lengthened club, and bears a couple of pear-shaped pollen masses, with a linear caudicle, and an oval glandule.

The elongated column, usually narrowed, never tumid at the base, and the parallelism of the base of the lip with the face of the column, are the peculiarities pointed out by Dr. Lindley as mainly distinguishing *Odontoglossum* from *Oncidium*. The more minute differences are stated at length in Dr. Lindley's *Folia Orchidaceæ*, which should be consulted by every one desirous of obtaining a correct knowledge of this remarkable race of plants; and in which 68 species of this genus known to botanists will be found to be described.

The *Odontoglots* belong to the group of Orchids which require but a moderate degree of artificial heat. It is now well known that numerous plants of this race, especially those from Mexico and Guatemala, require less heat than is generally kept up in our moist stoves, and to many of them it is particularly injurious if applied at those seasons when the plants are in a resting state. The *Odontoglots* belong to this class, and therefore there is nothing worse for them than over-excitement caused by the application of a high temperature and moisture at those seasons when they ought to be kept cool, dry, and airy.

The general treatment required by the species of this genus, is very similar to that required by the species of *Oncidium*, with which, as already stated, they have a very close affinity. Some of them, such as those which are of the most vigorous habit of growth, with largish foliage and

[ODONTOGLOSSUM.—3.]

pseudo-bulbs, and numerous stout roots are, perhaps, best cultivated in pots, but in all cases the base of the plant should be considerably elevated above the level of the pot, in order to prevent the possibility of the lodgement of moisture in any quantity about the roots. The smaller growers, those with more diminutive pseudo-bulbs, shorter leaves, and altogether a more pigmy mode of growth are better placed on blocks of wood, to which they should be firmly attached by copper or zinc wire, a very small quantity of sphagnum moss being placed under and about their roots. There is no precise limit between these two groups, and provided the conditions of growth are otherwise fulfilled, it would matter little whether those of moderate size and vigour were planted in pots or on blocks of wood, or in suspended baskets. The species to which the block-culture is most suitable are the following:—*O. Ehrenbergii*, *Rossii*, *maxillare*, *Cervantesii*, and *rubescens*. All the remainder may be successfully grown in pots.

A high temperature, as already stated, is not required. In the winter season 55° is a sufficient maximum, and in spring and summer, while they are growing, from 65° to 70° by day in sunny weather, and from 50° to 65° by night. The increase of temperature, which should take place after the resting period is over, and when growth has re-commenced, or is about to take place, should be very gradual. A cool temperature, if dry, will tend to preserve the flowers of all the species for a much longer period in a state of freshness, than would happen if they were long retained in a hot damp atmosphere after becoming expanded.

As to moisture, the plants should be supplied rather freely with water both at the roots, and likewise by syringing overhead once or twice daily during the period they are making their growth; and this is also the exact time at which the highest temperature should be afforded them. Whenever

[ODONTOGLOSSUM.—4.]

water is applied to the soil, the whole mass of soil should be thoroughly wetted, and a further supply should be withheld while the soil remains at all in a moist condition, but should be given as soon as it becomes dryish, and before it becomes quite dry in the interior. In bright sunny weather, during this stage of growth, watering may be required twice a week, in dull weather only once, or even at longer intervals. As the growth approaches maturity, the moisture should be gradually reduced in amount, the temperature being kept up for a short time, but as soon as the perfect maturation of the young pseudo-bulbs is secured, the cooler and less excited they are kept the better. At this resting period they should have just sufficient water to prevent them from shrivelling, but they will hardly require any for two or three months in winter.

Those which are cultivated in pots should have a supply of light turfy peat, mixed with sphagnum moss and potsherds for their roots, and this soil should be warmed before being used. The pots must be well drained, and the soil elevated above the rim of the pot, that the water may drain away perfectly, leaving the base of the plant secure against any permanent lodgment of moisture which would destroy the roots. The soil may be renewed annually, at the close of the resting period, and just as the plants are about to recommence their growth; for although many plants in this order succeed well on blocks of wood, without any soil whatever, still those under pot culture are benefited by having it renewed every season. The smaller species, which are grown on wood, only require to be fixed to suitable sized blocks from which the bark has been removed. When the plants commence growth at the root, they adhere firmly to the block, and will derive all the nourishment they require from the moisture of the atmosphere in which they are kept, and from the occasional or daily syringings to which they should

[ODONTOGLOSSUM.—5.]

be subjected at the different stages of their development. The blocks should be suspended in a sloping direction, so that water may not lodge on them, and in the growing period, a gentle syringing should be given night and morning; and this must be continued until the pseudo-bulbs are fully formed, except during the time they are in blossom, when it should be discontinued to avoid injury to the flowers. The requisite moisture must then be applied by dipping the block in tepid water, so as to wet the roots without wetting the flowers. In winter very little syringing is needed, only just enough to prevent much shrivelling of the pseudo-bulbs.

Cleanliness is of the highest importance to the health of these, as of most other plants. Whatever dirt or impurity may, therefore, become deposited on the leaves and pseudo-bulbs should, from time to time, be removed with a sponge and clean warm water. At potting time especially this attention should be thoroughly given, so as to cleanse them of the dust and other extraneous matter which may have accumulated during the winter.

O. grande, which is one of the finest of the species, is probably also one of the most easily grown of all orchids under proper treatment, and also one of the most accommodating, as it may be grown equally well in a basket, or in a pot, or suspended as a block. The most vigorous plants, however, and perhaps the finest flowers, are the results of judicious pot culture, which, on the whole, is preferable for this fine plant. It is also one of the hardiest of the race.

[ODONTOGLOSSUM.—6.]

§ EUODONTOGLOSSUM.—*Anther-bed naked. Column with an erect much acuminate wing at the apex, or sometimes cirrhose.* (Lindley.)

1. **Constricted-lipped Odontoglot.**—O. CONSTRUCTUM, *Lindley in Bot. Reg.* 1843, *misc.* 25.—Native of La Guayra.

A slender plant, the habit of *Oncidium sphacelatum*, bearing a long racemose panicle of flowers, of which the sepals and petals are yellow spotted with brown, and the lip white stained with violet.

2. **Speckled Odontoglot.**—O. NÆVIUM, *Lindley in Paxt. Flower Garden*, i. t. 18.—Native of Demarara, Venezuela, and New Granada.

A beautiful species, with quite the aspect of *Oncidium phymatochilum*, bearing a diffuse panicle of white flowers, speckled everywhere with rich rose crimson. All the parts of the flower are narrow and undulated. This scarce species blooms in the summer months.

3. **Sweet Odontoglot.**—O. ODOBATUM, *Lindley in Orchid. Linden*, no. 86.—Native of Venezuela.

A handsome plant, with sweet-scented flowers in large panicles. They are yellow spotted with red; the lip, which is hastate, being white, purple at the base.

4. **Insleay's Odontoglot.**—O. INSLEAYI, *Lindley in Fol. Orchid.*—ONCIDIUM INSLEAYI, *Barker in Bot. Reg.* 1840, *misc.* 21; *Bateman Orchid. Mex. et Guat. t.* 21.—Native of Mexico.

A fine species, with the habit of *O. grande*, and flowers from two to three inches in diameter. The nearly equal oblong wavy sepals and petals are palish yellow blotched with rich brown; and the narrow obovate retuse lip auricled at the base, is brighter yellow, spotted chiefly around the margin with reddish brown.

A variety called MACRANTHUM has the flowers as large again as the species, paler-coloured, and without the red spotting of the lip.

§ XANTHOGLOSSUM.—*Anther-bed naked. Column auriculate or wingless. Lip always yellow, and having a long linear claw-like base.* (Lindley.)

5. **Grand Odontoglot.**—O. GRANDE, *Lindley in Bot. Reg.* 1840, *misc.* 94; *Bateman Orchid. Mex. et Guat. t.* 24; *Bot. Mag. t.* 3955.—Native of Guatemala, in the cooler parts.

One of the noblest of the race, the flowers measuring upwards of six inches across. The inflorescence is a short raceme bearing from two to five flowers, which are pale yellow almost covered with broad transverse bars and blotches of reddish-brown, the latter

[ODONTOGLOSSUM.—7.]

colour varying much in density in different varieties, and under different modes of treatment. The lip is roundish, auriculated at the base, much shorter than the lanceolate sepals, and oblong broader petals. This species flowers in autumn.

6. **Spotted Odontoglot.**—[Plate I.]—*O. MACULATUM*, *Llave Orch. Mex.* ii. 35.; *Bot. Reg.* 1840 *t.* 30.—Native of Mexico.

A rather handsome species, with pendulous racemes, consisting of several flowers, of which the chesnut-brown sepals are linear-lanceolate; the broader taper-pointed petals yellow spotted in the lower half with reddish-brown; and the heart-shaped lip, also yellow spotted with reddish-brown.

7. **Heart-lipped Odontoglot.**—*O. CORDATUM*, *Lindley in Bot. Reg.* 1838, *misc.* 90; *Floral Cabinet*, *t.* 100.—Native of Mexico.

This handsome species, allied to *O. maculatum*, has an erect, not pendulous, inflorescence. The sepals and petals are linear-lanceolate, very much narrowed at the point, yellowish-green freely marked with brown blotches; and the lip is cordate entire with a long point, white, purplish at the base, and the upper part spotted and blotched with rich brown.

8. **Whiskered Odontoglot.**—[Plate II.]—*O. MYSTACINUM*, *Lindley in Fol. Orchid.*; *CYRTOCHILUM MYSTACINUM*, *Lindley in Bot. Reg.* 1838, *misc.* 38; and 1839, *t.* 62.—Native of Peru.

A small-flowered species, with a slender scape branched below, bearing distinct whole-coloured yellow flowers, with linear acuminate sepals, broader petals, and a cordate obovate lip with its apex reflexed. It is a genuine Odontoglot, having the lip united to the face of the column, a circumstance overlooked in the separate figure of the column in our plate.

9. **Keel-bearing Odontoglot.**—*O. CABINIFERUM*, *Reichenbach, fil. in Bot. Zeit.* 1852, 638.—Native of Central America.

This species, which is cultivated in the German gardens, has a paniculate inflorescence with zigzag branches, bearing yellowish-green flowers stained with olive-brown, the lip being whitish-yellow with purple crests.

§ **LEUCOGLOSSUM.**—*Anther-bed naked. Column auriculate or wingless. Lip white or purple, and having a linear claw-like base.* (Lindley.)

10. **Starry Odontoglot.**—*O. STELLATUM*, *Lindley in Bot. Reg.* 1841, *misc.* 25.—Native of Mexico, and Guatemala.

A very pretty dwarf species, with a one or two-flowered scape. The narrow herbaceous sepals and petals are dull olive-green faintly clouded with purple, and the roundish rhomboid deeply toothed lip is pure white.

[ODONTOGLOSSUM.—8.]

1. Ehrenberg's Odontoglot.—O. EHRENBURGII, *Link Klotzsch and Otto, Ic. t. 16*; *Paxt. Flow. Gard. iii. gleanings, fig. 247*.—Native of Mexico.

One of the prettiest of this pretty group of Odontoglots, and closely allied to *O. Rossii*, but having smaller flowers. The scape bears one flower, of which the lanceolate acuminate dorsally-keeled spreading sepals and broader acute recurved petals are white banded with brown, and the white lip subcordate and undulated.

12. Ross's Odontoglot.—[Plate III.]—O. ROSSII, *Lindley in Sertum Orchid. under t. 25*; *Bot. Reg. 1839, t. 48*.—Native of Mexico.

A beautiful little plant, with a one or two-flowered scape. The linear-lanceolate keeled, spreading sepals are yellowish-green blotched with brown; the oblong obtuse revolute petals white spotted with purple at the base; the lip roundish ovate emarginate clear white, wavy, and slightly downy.

13. Jaw-lipped Odontoglot.—O. MAXILLARE, *Lindley in Bot. Reg. 1847, under t. 62*.—Supposed to be a native of Mexico.

A beautiful species, having the lanceolate acute sepals and broader petals spotted with crimson at the base, as is also the ovate acute entire lip; the flowers are otherwise pure white.

14. Cervantes' Odontoglot. — [Plate IV.] — O. CERVANTESII, *Llave Orchid. Mex. ii. 34*; *Bot. Reg. 1845, t. 36*; *Paxt. Flow. Gard. i, t. 15*.—Native of Mexico.

A lovely species, sweet-scented too, emitting an odour something like bitter almonds. The few-flowered scape has membranaceous sheathing bracts. The oblong-lanceolate acute sepals, and broader somewhat clawed petals, are suffused with very pale pink, and marked at the base with broken concentric crimson bars, and the cordate ovate acute lip, which has a saucer-shaped claw, is of the same tint, but without any markings. It blossoms in winter, and continues three or four weeks in a blooming state.

O. MEMBRANACEUM, of Lindley [Plate V.] described in the *Sertum Orchidaceum*, and figured in the *Botanical Register* (1846, t. 34), is now considered by that botanist as a variety of this species. It has the flowers larger, white, the limb of the lip deeply heart-shaped at the base, retuse at the point, and with similar concentric crimson markings to those which occur at the base of the sepals and petals.

15. Blushing Odontoglot.—O. RUBESCENS, *Lindley, in Journ. of Hort. Soc. v. 35*.—Native of Nicaragua.

A charming species. The flowers are in a few-flowered raceme; their sepals straight, linear-lanceolate, very acute, and spotted all over with crimson on a blush

[ODONTOGLOSSUM.—9.]

ground colour; the petals are twice as broad oblong wavy, and spotted only near their base; the limb of the lip is bluntly heart-shaped, crisped and spotless.

16. **Bicton Odontoglot.**—[Plate VI.]—O. BICTONIENSE, *Lindley in Ser-tum Orchid. under t. 25; Bot. Reg. 1840, t. 66.* CYRTOCHILUM BICTONIENSE, *Bateman Orch. Mex. et Guat. t. 6.* ZYGOPETALUM AFRICANUM, *Hooker in Bot. Mag. t. 3812.*—Native of Guatemala: by error stated to be African.

A fine and free-flowering species, with long erect racemes of flowers, of which the sepals and petals are linear-lanceolate, spotted with brown on a yellowish green ground, and the limb of the lip is cordate acuminate and wavy, and in some varieties coloured lilac, in others almost white.

§ MYANTHIUM.—*Anther-bed naked. Column auriculate, or wingless. Lip sessile; the lateral sepals parallel, elongate, and clawed.* (Lindley.)

17. **Twiggy Odontoglot.**—O. RAMULOSUM, *Lindley in Folia Orchid.*—Native of New Granada.

A small-flowered species, with a narrow panicle of yellow flowers, having a deep brown stain at the base of each sepal and petal; the lip has a stain of brown on each side of the principal crests, and the column is purple-brown.

§ ISANTHIUM.—*Anther-bed naked. Column auriculate, or wingless. Lip sessile. Sepals diverging nearly equally, the lateral ones sessile, or but shortly clawed.* (Lindley.)

18. **Halberd-lipped Odontoglot.**—O. HASTILABIUM, *Lindley in Orchid. Linden. 16; Bot. Mag. t. 4272.*—Native of New Granada.

A very handsome species, with a long spiked panicle of flowers, which are three inches in diameter, and sweet-scented. The sepals and petals are linear-lanceolate pointed, pale yellowish green, copiously marked with broken transverse purple lines; the lip roundish ovate acute in the upper part where it is white, the narrow crested base purple, and the two acute lateral lobes purple tipped with white. The flowers, which come towards the end of summer, continue for a long time perfect.

19. **Smooth-lipped Odontoglot.**—[Plate VII.]—O. LEVE, *Lindley in Bot. Reg. 1844, t. 39.*—Native of Guatemala.

This species has pendulous racemose panicles of fragrant flowers, of which the sepals and petals are oblong-linear, pale yellow blotched with dull chocolate brown, and the lip, which is white, barred with violet across the middle, has a fiddle-shaped limb, and a narrowed nearly smooth base.

[ODONTOGLOSSUM.—10.]

20. **Pescatore's Odontoglot.**—*O. PESCATOREI*, *Linden in Paxt. Flow. Gard.* iii. t. 90. *O. NOBILE*, *Reichenbach fil. in Linnæa*, xxii. 850.—Native of New Granada.

This noble species produces a tall erect many-flowered panicle of large delicate semi-transparent flowers, which are white with a faint blush bar down the centre of the ovate-oblong wavy sepals; the petals of a much broader form are pure white; the lip is wavy heart-shaped with a slender point, contracted in the middle, slightly toothed at the base, where there is a stain of yellow, and where also occur a pair of broad deep crimson fringed appendages of the crest.

§ **TRYMENIUM.**—*Anther-bed hooded, the margin membranaceous.* (Lindley.)

21. **Lemon-scented Odontoglot.**—[Plate VIII.]—*O. CITROSMUM*, *Lindley in Bot. Reg.* 1842, *misc.* 68; 1843, t. 3.—Native of Mexico.

A very fragrant and beautiful species, with large flowers in long pendulous racemes, produced during the summer months, and remaining long in perfection. The sepals and petals are oblong, obtuse and nearly equal, white, slightly and beautifully tinted with rosy lilac: the crestless lip has a reniform emarginate limb which is rosy lilac or pale violet coloured, and a claw which is orange yellow. There is at the back of the anther a toothed wing or membrane, forming a hood, and this together with the lateral wings of the column, are roundish truncate, and finely toothed on the margin.

22. **Pretty Odontoglot.**—[Plate IX.]—*O. PULCHELLUM*, *Bateman in Bot. Reg.* 1841, t. 48.—Native of Guatemala.

A neat-looking plant, producing on a slender two-edged scape a raceme of six or eight flowers. The sepals are ovate acute, the petals obovate acute and somewhat undulated, the lip three-lobed, the lateral lobes small and triangular, the intermediate one oblong squarish, recurved at the apex. The flowers are entirely white, except a singular firm fleshy protuberance at the base of the lip, which has somewhat the form of the letter W, and is bright yellow spotted with crimson. It blooms in winter.

23. **Egerton's Odontoglot.**—*O. EGERTONI*, *Lindley in Bot. Reg.* 1845, *misc.* 50.—Supposed to be a native of Guatemala.

This is known in gardens as a variety of *O. pulchellum*, than which it is smaller in all its parts, and from which it differs in the lip being quite acute, by no means hastate nor almost truncate, and with an excavation at its base in lieu of the triple fleshy tubercle of *O. pulchellum*. (*Lindley*.) The flowers are pure white, in a one-sided raceme borne by a two-edged scape.

REFERENCE TO THE PLATES OF THE
GENUS ODONTOGLOSSUM.

- Plate I.—ODONTOGLOSSUM MACULATUM, *Llave*.
Fig. 1.—Column and base of lip.
- Plate II.—ODONTOGLOSSUM MYSTACINUM, *Lindley*.
With fig. of column.
- Plate III.—ODONTOGLOSSUM ROSSII, *Lindley*.
- Plate IV.—ODONTOGLOSSUM CERVANTESII, *Llave*.
Fig. 1.—The lip ; fig. 2, the column and wings.
- Plate V.—ODONTOGLOSSUM MEMBRANACEUM, *Lindley*.
Fig. 1.—The lip ; fig. 2, the column and wings.
- Plate VI.—ODONTOGLOSSUM BICTONIENSE, *Lindley*.
Fig. 1.—Pollen masses, with caudicle and gland.
- Plate VII.—ODONTOGLOSSUM LÆVE, *Lindley*.
Fig. 1.—Front view of the column with its wings.
- Plate VIII.—ODONTOGLOSSUM CITROSMUM, *Lindley*.
Fig. 1.—The column with its three wings, and base of
the lip ; fig. 2, the pollen masses with caudicle and
gland.
- Plate IX.—ODONTOGLOSSUM PULCHELLUM, *Bateman*.
Fig. 1.—The lip, shewing the protuberance at its base ;
fig. 2, the pollen masses, with a part of one
removed.

ODONTOGLOSSUM.
1.



Miss Drake del.

J. Bonney sc.

ODONTOGLOSSUM.
II.



Miss Drake del.

J. B. Wardley. sc.

ODONTOGLOSSUM.
III.



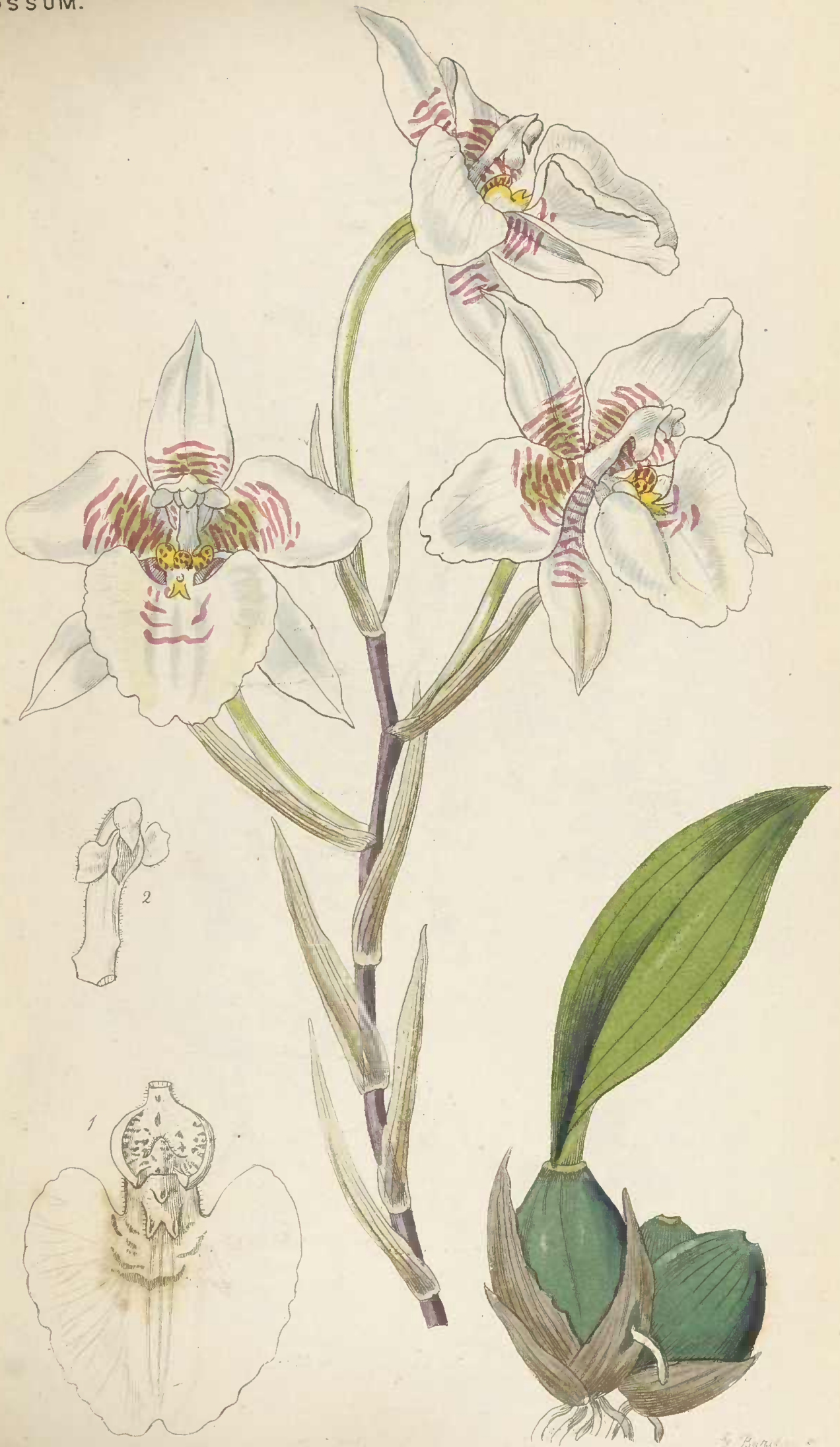
Wm. D. Drake del.

ODONTOGLOSSUM.
IV.



Wm. T. Lusk del.

NTOCLOSSUM.
V.



ODONTOGLOSSUM.
VI.



Miss Weston del

G. B.

ODONTOGLOSSUM.
VII.



ODONTOGLOSSUM.
VIII.



Miss Drake del.

Odontoglossum

ODONTOGLOSSUM.
IX.



Wm. D. Swain del.

J. Barlay sc.

THE GENUS MILTONIA.

THE genus MILTONIA, consists of pseudo-bulbous epiphytes, which bear very showy flowers, and are remarkable moreover on account of the yellowish unhealthy-looking colour which is commonly assumed by their herbage. The species inhabit tropical America, and are not numerous, nine only being known, of which number, the whole, with one exception, are introduced to our gardens.

The flowers of *Miltonia* are constructed on the following plan. They have flat equal-sized sepals, of which the lateral ones are somewhat united at the base. The petals are similar to the sepals and of equal length. The lip is large, undivided, sessile, continuous with the column, which latter is short, and furnished with a hollow stigma, and with a pair of wings which are either distinct or united with the cucullate membranous edge of the anther-bed. The pollen-masses are two in number, waxy, furrowed behind, and have obovate caudicles, and oblong glandules.

The genus appears to be nearly related to *Odontoglossum* and *Oncidium* on the one hand, and to *Brassia* on the other, and several of the species have been referred at different periods to more than one of these groups. The distinctions lie chiefly in the peculiarities of the column. The species are separated into two subordinate groups, in one of which the column is furnished with distinct auricles (*Eumiltonia*); whilst in the other, these bodies are blended with the edge of the anther-bed (*Calymmoclina*).

The name *Miltonia* was given to this genus by Dr. Lindley, in compliment to the Earl Fitzwilliam, whose

[MILTONIA—2.]

patronage of gardening in general, and of Orchid-culture in particular, had earned for him this distinction. A more lovely genus, or a more distinct one, writes Sir W Hooker, the whole family of Orchideæ cannot boast; and it has the advantage of its blossoms remaining a long time in perfection.

Though but a small group, the Miltonias deserve no small degree of attention, for their flowers are among the most beautiful of their race, of considerable size, and of striking colours. Most of them moreover are neat and compact growers, but there is one great drawback: their foliage is of a sickly yellowish green, and in consequence of this, they are not at all attractive when out of flower. This defect is however greatly improved by good cultivation.

In the first place, they must be grown in pots or in baskets. They will not do so well on blocks of wood as when grown in pots, for they require abundance of water while growing, on which account pots are preferable. They must however have plenty of drainage. The pots intended to be used, must each have a smaller one inverted in it, and on this potsherds must be placed until the pot is half full, and again over this some sphagnum, and the pot is then ready for use. The compost they grow in most readily is a mixture of sphagnum moss and fibry peat, well blended together, a small portion of charcoal broken to about the size of walnuts being added. In potting, keep the rhizome well elevated above the rim of the pot, and place the compost beneath and about it, not too firmly, for the lighter they can be potted the better. They must be fastened in the pot with a few pegs; and the moss must be clipped over with the shears for the sake of neatness. After this they may have a gentle watering, in order to settle the soil, using a rose to the watering-pot.

The potting must be done when the plants are showing signs of growth, which will be about April. They are to be

[MILTONIA.—3.]

kept in a cold house, so that they may start slowly ; and they should also be kept rather dry for a week or two. Then they should be put into a growing house, where at that season the temperature would range from 70° to 75°. Where however there is not the convenience of two houses, the Miltonias may be grown at the coolest end of the 'East India' House. If they can be placed all together, so much the better, for they require more moisture than many other Orchids.

When they have fairly started in growth, they must never be allowed to become dry at the roots ; and when the growth is half finished, they must receive abundance of water at the roots, and a gentle syringing over head two or three times a day—using lukewarm water. That will afford them strength to flower freely, and also to perfect a robust and vigorous growth which is a great point ; it will also give them a healthy appearance, whereas if they are allowed to become dry a few times they will soon begin to assume a sickly aspect. The plants must be shaded from the direct rays of the sun, for darkness and shade while they are growing conduce to keep them healthy ; and so does a free circulation of air which should always be afforded them while growing, if the weather will permit.

Their flowers are produced at the side of the young growths when about half matured. Most of them are autumn blooming plants. *M. spectabilis* is one of the earliest, flowering in July and August, and continuing a long time in flower—sometimes remaining as long as six weeks in perfection if kept in a cold house free from damp. There are several varieties of this, some far superior to the others : *Moreliana* is one of the best and most distinct, and is a fine plant for the July exhibitions. *M. candida* is another very fine species, of which J. H. Schröder, Esq. of Stratford cultivates a very fine variety ; but all the varieties in this genus are deserving a place in every collection, for when in flower they are very

[MILTONIA.—4.]

beautiful, and well repay the attention they have required when not in bloom.

The season of rest will commence after blooming is over. Then they must be removed to a colder house where the temperature is from 60° to 65° by day, and about 55° by night; and here they must be kept tolerably dry, but never allowed, even then, to become so dry as to cause the bulbs to shrivel. To prevent this, they may have a gentle syringing over head once or twice a week, if the weather is fine, but this must be done early in the day, so that they have time to get dry before night.

The *Miltonias* are readily increased by dividing the plants, but this must be done by degrees, not all at once. Take a sharp knife, and cut a notch in the rhizome between the bulbs, when the plants are at rest. That will check the sap from flowing so freely into the leading bulbs, and induce the back bulbs to break; and when this result is obtained the knife must be taken once again, and the notch cut through, the young plant being taken away and potted in the manner before recommended, always taking care to fasten them in the pot firmly with a stick. This done, give them a gentle watering, and treat them as recommended for established plants. Under this treatment the cultivator will insure good healthy plants.

When newly imported plants have to be dealt with, first carefully cut away all decayed bulbs and leaves, and sponge them all over; next place a mat on the stand in the house where they are to be placed, then sprinkle the mat slightly with water, lay the plants thinly on the mat, and keep the house cool—at about 50° to 55°, and dry for a week or two. Fresh roots will soon make their appearance, and then a gentle syringing may be given two or three times a week if the weather is fine. As they advance in growth, the heat and moisture may be increased till they are fit for potting.

[MILTONIA.—5.]

They must be kept in the cool house for a short time after potting ; and then should be removed to the growing house and allowed to remain till they have finished their growth. The best time at which to receive them from their native country, is early in the spring : they then get established before the dull days of winter.—R. B.

§ EUMILTONIA.—*Column with a pair of distinct auricles ; anther-bed naked.* (Lindley.)

1. **Showy Miltonia.** — *M. SPECTABILIS*, *Lindley in Bot. Reg. under t. 1976 ; Id. t. 1992 ; Bot. Mag. t. 4204.* *MACROCHILUS FRYANUS*, *Floral Cabinet, t. 45.*—Native of Brazil.

This is indeed, as it is named, a very 'showy' species, having large solitary flowers, of which the sepals and petals are white or cream-coloured, tinged with rose at the base ; the lip is very large, pendent, obovate, trilamellate at the base, of a fine rosy violet ribbed with crimson, and becoming paler towards the margin ; the dwarf column is white with two dark rose-red ears or wings. These flowers—of great beauty and delicacy—terminate a scape, which issues from the base of the pseudo-bulb, and grows about a foot high, each bearing one flower. The pseudo-bulbs are oblong, compressed, and surrounded by a pair of ligulate leaves of a yellowish green colour. The flowers are produced from July to October. There are several varieties differing in size and colour.

The variety *MORELIANA*, [Plate I.]—*Miltonia Moreliana*, of the gardens ; *M. spectabilis, var.* (*Bot. Mag. t. 4425*)—which is the most distinct, differs in having all its parts of a deep violet purple, the sepals and petals being the deepest in colour. It is a very beautiful plant.

2. **Karwinski's Miltonia.**—*M. KARWINSKII*, *Lindley in Journ. Hort. Soc. iv. 83, with a figure.* *ONCIDIUM KARWINSKII*, *Lindley, Sertum Orch. under t. 25.* *CYRTOCHILUM KARWINSKII*, *Lindley, Bot. Reg. under t. 1992.*—Native of Mexico.

This is one of the finest of the species. It bears a paniced scape three feet long, of large richly-coloured flowers, of which the sepals and petals are bright yellow, transversely blotched with brown, and the lip is deep violet-purple on the basal half, the rest pale violet or blush, becoming white at the tip. The flowers have an oblong outline in consequence of the lateral sepals being directed downwards, instead of spreading laterally. It blooms during winter.

[MILTONIA.—6.]

3. **Clowes's Miltonia.**—*M. CLOWESII*, *Lindley, Sertum Orch.* t. 34; *Bot. Mag.* t. 4109. *ODONTOGLOSSUM CLOWESII*, *Lindley, Bot. Reg.* 1839, *misc.* 153. *BRASSIA CLOWESII*, *Lindley, Bot. Reg. misc.* p. 7.—Native of the Organ mountains of Brazil.

A very handsome plant. Its flower stem is terminated by a raceme of four or five large starry flowers, the sepals and petals of which are rich yellow blotched with chocolate-brown, and the lip white with a rich violet base. There appear to be several varieties, or rather variations, of this species known in gardens, of which that called *MAJOR* is the most worthy of cultivation. It flowers in September and October.

4. **Duke of Bedford's Miltonia.**—*Lindley, Sertum Orch.*, under t. 48. *ONCIDIUM RUSSELLIANUM*, *Lindley, Bot. Reg.* t. 1830.—Native of Rio Janeiro, in Brazil.

This is one of the least beautiful of the genus. The sepals and petals are brownish purple, with the margin and rib yellowish-green; the lip is pale violet or lilac, with the crests at its base purple margined with white.

5. **Straw-coloured Miltonia.**—*Lindley, Sertum Orch.*, under t. 48. *MILTONIA STELLATA*, *Lindley, Sertum Orch.*, under t. 48. *CYRTOCHILUM STELLATUM*, *Lindley, Sert. Orch.* t. 7. *CYRTOCHILUM FLAVESCENS*, *Lindley, Bot. Reg.* t. 1627.—Native of Brazil.

It would appear that there are here two states of one species, the one, originally called *Cyrtochilum flavescens*, representing its condition when small and stunted; the other, called *C. stellatum*, being, on the other hand, a large and vigorous development, its stature being four times as great. The first has bright yellow flowers, with the lip slightly speckled and streaked with crimson, the column wings crimson, and the bracts yellowish. The other and larger plant, has pale yellow flowers, with the lip white, streaked with yellow, the wings of the column yellow streaked with crimson, and the bracts rose-coloured.

§ **CALYMMOCLINE.**—*Column wings blended with the cucullate membranous raised edge of the anther-bed.* (Lindley.)

6. **Two-edged Miltonia.**—*M. ANCEPS*, *Lindley, Folia Orchidacea*, No. 7. *ODONTOGLOSSUM ANCEPS*, *Klotzsch, Allgem. Gartenzeit.* Aug. 1851.—Native of Brazil.

The flowers are dull yellow, the lip tinged with brown near the base, and marked with three purple downy veins. It is not a showy plant.

7. **Wedge-lipped Miltonia.** [Plate II.] — *M. CUNEATA*, *Lindley, Bot. Reg.* 1844, *misc.* 28; 1845, t. 8.—Supposed to be a native of Brazil.

A most beautiful plant, allied to *M. candida*, but differing in the form of the lip, and in other particulars. The flowers are large—nearly four inches across, and very

[MILTONIA.—7.]

showy, the sepals and petals being rich purplish-brown in the lower half, the rest yellowish-green; the lip is pure white, with a tinge of pink near the base.

8. **White-lipped Miltonia.**—*M. CANDIDA*, *Lindley, Bot. Reg.* 1838, *misc.* 29; *Sertum Orch.* t. 21; *Bot. Mag.* t. 3793.—Native of Brazil.

This charming species, Dr. Lindley observes, is one of the finest plants of the order, and well it deserves this encomium. The flowers are very large, being nearly three inches in diameter, and grow in long erect racemes. The sepals and petals are yellowish, very heavily blotched with reddish-brown; the lip is much curved, and somewhat convolute, pure white, with some markings of bright pink about the base. The flowers are produced in autumn, and continue some weeks in bloom.

There are, of this plant, some variations both of size and colour. Dr. Lindley mentions two, in one of which the column is purple, and the lip white as described above; and in the other the column and lip are yellowish, as figured in the Botanical Magazine. Another, called *GRANDIFLORA*, is of more vigorous growth, and has larger and brighter coloured flowers, the sepals and petals being marked with deep rich brown, and the lip very pure white.

REFERENCE TO THE PLATES OF THE
GENUS MILTONIA.

Plate I.—MILTONIA SPECTABILIS, *Lindley* : var. MORELIANA.

Plate II.—MILTONIA CUNEATA, *Lindley*.

Fig. 1. The pollen-masses, with their appendages.

MILTONIA
I



L. C. Emery del.

Wm. J. Hooker

MILTONIA
2



THE GENUS STANHOPEA.

THE STANHOPEAS are a very conspicuous family of the race to which they belong: that race, bearing the name of Orchidaceous plants, or more briefly that of Orchids, being one of the most varied and grotesque, and, perhaps, the most beautiful in the vegetable world. The variety, indeed, which these plants exhibit in their mode of growth is almost without a parallel. Some of them are terrestrial, and form fleshy underground perennial tubers, producing annual stems. Others have the more usual habit and character of perennial herbaceous plants. But by far the greater number are epiphytal, growing from the branches of trees in the tropical forests; not parasitical or drawing their nourishment from this source, for they live on the air, but simply fixing themselves by means of their tortuous and adherent roots to the branches, which thus afford them a friendly shelter and support, more than repaid in the profuseness and gorgeousness of ornamentation which they impart to the rugged trunks. Their blossoms again are almost infinitely varied, and assume the most fantastic forms, some of them altogether incomparable, and some bearing a resemblance not altogether fanciful to certain animal forms, as the bee, the butterfly, the spider, the dove, &c. Among them, moreover, are certainly included some of the most fragrant of flowers, and not a few of the most attractively beautiful.

Of this strange but striking group, the STANHOPEAS form a small family known by the following among other peculiarities. Their sepals, the outer series of organs in their flowers, are

[STANHOPEA—2.]

membranaceous, free, that is, separate from each other, and very much spread outwards, or even backwards. The petals which with the lip form the next series, are smaller than the sepals, and of the same general form; while the lip itself, the third petal, is, as is common among orchids, remarkable for its striking difference in form from all the rest. It is, in fact, a fleshy pouch bearing odd-looking horn-like projections, and consists of three parts, the hypochil or lower cavity which is more or less saccate, the mesochil or middle part, which is usually two-horned, and the epichil which is a moveable frontal. Some one or other of these parts of the lip may be deficient, or the whole blended into the form of a slipper. The stamens and style are in this race of plants blended together into an organ called the column, with the base of which in this case, the lip is continuous: the column itself is much lengthened, and has a membranous border near the top, or sometimes it is abbreviated and fleshy. The stigma forms a transverse naked space on the anterior face of the column. The pollen masses, two in number, are elongated and furnished with a wedge-shaped stipitate caudicle, with a small accompanying gland; and the anthers are two-celled.

The genus, which is synonymous with *CERATOCHILUS* of *Lindley* (not of *Blume*), consists of epiphytal pseudo-bulbous herbs, inhabiting tropical America. Their general habit is to produce plaited membranaceous evergreen leaves, from the top of the pseudo-bulbs, and from their base, technically from the root, and therefore called radical—the flower scape or stem, which is often, indeed usually, pendulous. The flowers are individually large, oddly fashioned, mostly very fragrant, and often spotted in a peculiar way. Their general peculiarities will be best understood by referring to the accompanying illustrations.

[STANHOPEA-3.]

There are three modes of cultivating the epiphytal Orchids, namely, by planting them in, or rather on, pots of light open peat earth thoroughly drained, the plants being elevated on a bed of soil, raised above the pot; or, in open-work baskets made of wire or rods of wood, or sometimes of earthenware in an ornamental design; or, by fixing them to logs or billets of wood with a little sphagnum moss at first to shelter the roots. Of these modes, basket culture is most suitable for *Stanhopeas*, because the flower stems in most of the species push downwards and find their way through the soil and the openings of the baskets, and are best seen by having the latter suspended from the roof of the house. In other respects they may be grown as well under the potting system.

The baskets for *Stanhopeas* should be shallow, and they should be broad, so that they are not out of proportion to the size of the plant. The interstices between the bars or rods of which they are composed, both at the bottom and sides, should be wide, so as not to obstruct or damage the development of the flower spikes, which often grow directly downwards.

Besides baskets and pots, other contrivances have been recommended and adopted for the growth of these plants, and they are found to answer well. One of the most useful of these is a kind of rustic stand, eighteen inches or two feet high, made of a piece of rough timber, on the top of which, fashioned like a blunt cone, the plant is fixed, while the lower part is so contrived as to afford a firm basis to support the whole in a steady and erect position. Such a contrivance may be made to assume the appearance of an ornamental rustic basket on a stand, by the judicious addition of a few small rods of wood. A few rustic stands of his kind made

[STANHOPEA—4.]

use of among a collection of orchids, serves to increase their interest, by imparting a pleasing variety.

Another mode in which a collection of orchids may be made to assume a highly picturesque effect, is to fasten them to the trunks and branches of dead trees set up for the purpose in various parts of the house, amidst rocky scenery, whereby, in some degree the natural conditions of their growth may be simulated. This plan would be quite applicable to *Stanhopeas*.

It is an excellent plan to grow small plants on in pots, and transfer them to baskets when they get to a blooming size. This pot culture will be now explained, commencing with the potting of the plant. Choose a pot some four or five inches wider at the top than the diameter of the plant, and prepare it by inverting over the drainage hole one of a smaller size, covering about half the bottom. On this place carefully a quantity of broken potsherds sufficient to fill two-thirds of the pot. Some loose fibrous moderately sandy peat is placed on the potsherds, after being broken into pieces of various sizes, but not less than a walnut; this must be so disposed as to leave a passage for the escape of water, which is the more effectually secured by putting in, as the process of potting goes on, a few pieces of broken pots between every layer of soil, so that there may be, in fact, a continuous series of potsherds all the way up the centre to the bottom of the pseudo-bulbs. When the level of the pot rim is reached, the successive external layers of soil must be made fast by means of small pegs run through the several layers to secure the whole firmly together. The soil above the pot should be built up nearly perpendicular, and when from three to eight inches high, according to the size of the pot, the plant is to be placed on the top, the roots carefully laid out and covered up to the base of the bulbs very carefully with potsherds and smaller pieces of peat, fastened as before, until the whole is

[STANHOPEA—5.]

finished, when it will be a foot or so from the top of the pot—small plants of course not being potted so high. At each shifting the plant is raised a little higher.

In order to shew what progress it is possible to secure, the following account of the early treatment of a young plant detailed by Sir Joseph Paxton, and published in the splendid *Sertum Orchidaceum* of Dr. Lindley, is selected. Sir Joseph Paxton's statement is this:—"On the 20th of May [1837] I received a very small damaged plant of a new *Stanhopea*. I allowed it to get perfectly dry; it was then potted, and placed in a strong bottom heat, with a strong heat above. The plant began to grow in about a fortnight, and at the end of July had perfected a small bulb; it was then kept dry about a fortnight, and was again placed in a strong bottom heat, and in a temperature never lower than 70°, but often amounting in the day to from 90° to 100°. By the end of September it had perfected a second bulb, considerably larger than the first; and the plant was again dried on a hot flue for a fortnight, then removed into a larger pot, elevated a little above the surface of the soil, and again replunged into a strong bottom heat, and, by the end of December, had perfected two more bulbs, making four. The plant had but one bulb when received. The plant was now dried for a month, then repotted, and placed, as before, in a strong heat; about the first week in April it had made two more perfect bulbs, when the process of drying was again gone through, and the plant replaced in strong heat. By the end of August it had nine bulbs, made in a short space of fifteen months. This plant was cultivated in a small house that could be kept very hot."

After the plants have grown to a flowering size they should be transferred to the shallow baskets, which should be openly constructed to allow the flower spikes to push downwards, and are to be suspended from the rafters of the house.

[STANHOPEA—6.]

The same kind of spongy peat and sphagnum is used for the baskets as for pots, and they are planted in a similar way. As the plants grow and increase in size, they require to be removed to larger baskets, which must be done when they are in a resting state. Large plants are, however, apt to become bare in the centre, from the difficulty they have of there perfecting their pseudo-bulbs, to obviate which, the rhizome should be cut through, and one or two of the old central bulbs removed, which will cause fresh shoots to be sent out to supply the deficiency.

Stanhopeas succeed well in a temperature of from 80° to 85° by day, and 70° at night in the growing season, but should be kept considerably cooler, average 65°, in winter when at rest. During the growing season water in abundance—always in a tepid state—should be supplied, but unless the plants are very healthy, little water is to be given at the roots, and in winter very little or none, the great desideratum being *to preserve the roots*, which by over-watering, especially in winter, are almost sure to be destroyed. Consequently, as soon as the pseudo-bulbs are fully grown water must be withheld, and they must be kept perfectly dry when at rest. If thus kept cool and dry during the resting period, they burst as it were more vigorously into growth, when at the proper time they are again submitted to the influences of strong heat and abundant moisture. During the growing season, the house should be shut up early in the afternoon, and the pathways well watered.

When propagation is desired, all that is necessary is to cut through the rhizome which connects the pseudo-bulbs, retaining a portion of the roots to each portion of the pseudo-bulbs, leaving the parts *in situ* until they have started into independent growth, after the completion of which they may be removed and planted separately. The process of division

[STANHOPEA—7.]

should not be carried too far, as very small plants are a long time acquiring sufficient strength to render them objects of ornament.

This general statement cannot be better concluded than by Sir J. Paxton's brief rules for the application of the four great elements of vegetable life, viz. air, light, heat, and water.

“Tropical Orchidaceæ should never have a great volume of external air admitted at once, however fine the weather may be; to prevent the house becoming too hot, a thick canvas shading should be covered over it during sunshine.

“The best aspect for an Orchidaceous-house is due south, and the house should be made to admit as much light as possible. In summer a thick canvas is always put on the house to prevent the bright sun damaging the plants. In winter every ray of light is advantageous to the plants.

“During the growing season, Orchidaceæ require a moderately moist heat, varying from 65° to 85°; in the dormant season from 60° to 75° is quite sufficient; in the season of rest the house should be kept dry.

“With water more damage is done than by all the other elements put together. Orchidaceæ in pots should be sparingly watered in the growing season; in the dormant state little or no water should be given. The secret of growing these plants is to take care *never* to kill the old roots; when too much water is given while the plants are not in a growing state, almost all the old roots invariably perish.”

[STANHOPEA—8.]

§ DENSIFLORA.—*Mesochil horned; epichil entire; bracts about equalling the ovary.*

1. Remarkable Stanhopea.—*S. INSIGNIS*, *Frost. Bot. Mag. tt. 2948-9; Bot. Cab. t. 1985; Bot. Reg. t. 1837.*—Native of Brazil.

A handsome species with the flowers delightfully fragrant. It is remarkable for the globose form of the base of its lip, by which all its varieties are readily distinguished. The winged margin of the column, shaped almost like a battledore, is wider than in any other known species. The colour is pale primrose, spotted and stained with purplish red, the spots on the sepals and petals few and annular, but those on the lip, especially on the hypochil, which is almost as much stained with the same colour, are more numerous and solid, and reach even to the tip.

The colour of the flowers varies considerably in different varieties. In one, the most distinct, named *S. FLAVA*, they are yellowish.

2. Scentless Stanhopea. [Plate I.]—*S. INODORA*, *Loddiges' Catalogue, No. 1147, Bot. Reg. 1845, t. 65.*—Native of Mexico.

A scentless species, with the flowers pale straw-colour, the hypochil only being of a deep orange yellow. It is in many respects like *S. graveolens*, differing in its pale scentless flowers, and in the form of its column, which has the lateral margins or wings gradually narrowed downwards till they disappear. The form of the spike is also different; for while in *S. graveolens* it is very wide after the manner of *S. oculata*, the ovaries being considerably longer than the lateral sepals, in *S. inodora* it is as much constricted as in *S. insignis*, there being in these but little difference in the length of those parts.

The *S. AMÆNA* of *Dr. Klotzsch* is considered by *Dr. Lindley*, as a variety of this species. It has the hypochil deep yellow with brownish red spots, and the epichil rose-coloured and dotted, with much attenuated horns.

3. Bull-horned Stanhopea. [Plate II.]—*S. BUCEPHALUS*, *Lindley, Gen. et Sp. Orch. 2; Bot. Reg. 1845, t. 24.* *EPIDENDRUM GRANDIFLORUM*, *Humboldt et Bonpland. Pl. Æquin. 94, t. 27.* *ANGULOIA GRANDIFLORA*, *Humboldt Bonpland et Kunth, Nov. Gen. et Sp. i. 345.*—Native of Peru.

A rare and showy species. The flowers are sweet-scented, pale rich yellow, with a pair of dark eye-like spots at the base of each petal, and a few crimson dots elsewhere on them and on the sepals; the lip is deep yellow, the hypochil without spots, the epichil and column thickly dotted with crimson. "It resembles *S. oculata* from which it differs in the narrow lengthened boat-shaped hypochil, and in the short ovaries the effect of which is to render the inflorescence very narrow." (*Lindley.*)

A variety named *S. GUTTATA* differs in having the sepals, petals and hypochil deep apricot colour, and is marked with four brown blotches on the hypochil, and four on each petal.

[STANHOPEA—9.]

§ LAXIFLORA.—*Mesochil* horned ; *epichil* entire ; bracts much shorter than the ovary.

4. Eye-spotted Stanhopea.—*S. OCULATA*, *Lindley Gen. et Sp. Orch.* 5; *Bot. Reg. t.* 1800. *CERATOCHILUS OCULATUS*, *Loddiges' Bot. Cat. t.* 1764.—Native of Mexico.

A beautiful and highly fragrant species, remarkable for having the flowers sprinkled over with annular or open eye-like spots. The flowers are usually lemon-coloured, with a large number of these annular purple-lilac spots on the sepals, and fewer on the petals ; they have a deep yellow eye, and two or sometimes four large dark brown circular spots on the side of the hypochil, which is much lengthened out as if clawed, by which circumstance this species is chiefly known from *S. Wardii*. There are several varieties in the gardens, and most of them are deliciously scented. They all have short bracts and long ovaries, which give the flower spikes a peculiar loose appearance.

A very handsome variety of this species sometimes called *S. BARKERIANA*, and probably also the *S. LINDLEYI* of *Zuccarini*, has “the sepals, petals and column covered with numerous purple freckles rather than spots, which as the flowers fade run together as if their colouring matter were dissolved, so that at last the flower becomes of a dull wine-red tint.” (*Lindley*).

5. Speckled Stanhopea.—*S. GUTTULATA*, *Lindley, Bot. Reg.* 1843 *misc.* 116. *S. GRAVEOLENS*, *Morren. Ann. Gand. t.* 54.—Native country not known.

The flowers of this species are pale nankin yellow, spotted throughout with small crowded crimson and brown dots. It is nearly related to *S. oculata*, differing in its smaller and more fleshy flowers which have a narrower hypochil, a strong reflexed tooth at the base of the mesochil, and an abruptly winged column as in *S. insignis*.

6. Ward's Stanhopea.—*S. WARDII*, *Loddiges in Lindl. Sert. Orch. t.* 20.—Native of Central America.

This very fine plant has deliciously sweet scented flowers, the lip is pale yellow, with a few fine specks, the hypochil being deep yellow with the whole lower part a deep chocolate brown. It is quite distinct from any of the varieties of *S. oculata*; differing according to Dr. Lindley, in the furrow of the mesochil being closed up and not open, and in the exactly oblong form of the hypochil. It differs also from *S. Ruckeri* in the absence of a strong tooth turned inwards from the apex of the cavity of the hypochil which occurs in that species; besides which the angular condition of the base of the hypochil indicates an approach to *S. quadricornis*.

The *S. AUREA* of *Loddiges* is a deeper coloured variety, in which the flowers are deep orange-colour, and the hypochil is marked with two dark spots. Another variety, in which the flowers are whole-coloured, is *S. VENUSTA*.

[STANHOPEA—10.]

7. Rucker's Stanhopea.—S. RUCKERI, *Lindley Bot. Reg.* 1143, under t. 44.—Native of Mexico.

This is a noble species, having the habit of *S. Wardii*, but paler-coloured flowers; the epichil is beautifully stained with pink, and the spots on the hypochil are very faint. "It is distinctly separated by the peculiar form of the hypochil, which instead of being oblong is so much narrowed to the base as to acquire an obovate form; by the entire want of lateral teeth on the margin; and by the presence of a very strong inflexed tooth, in which the wide, not closed up, fissure of the apex of the mesochil terminates." (*Lindley.*)

8. Heavy-scented Stanhopea.—S. GRAVEOLENS, *Lindley, Bot. Reg.* 1840, misc. 125; 1845, under t. 65; *Flores des Serres*, t. 18.—Supposed to be a native of Guatemala.

This is a beautiful species with the habit of *S. oculata*. The sepals and petals are pale straw colour, the base of the lip and the central parts of the flower are deep rich apricot yellow, while the horns and upper end of the lip are like ivory turning yellow. The odour of the species is so powerful as to be communicated by touch, and is extremely disagreeable. The very broad column, winged to near the base, so as to have almost the form of a parallelogram, offers the most important distinctive character.

S. AURATA of the gardens, is a variety with the deep apricot colour pervading the whole flower.

9. Four-horned Stanhopea. [Plate III.]—S. QUADRICORNIS, *Lindley, Bot. Reg.* 1838, t. 5.—Native of the Spanish Main.

One of the finest of the species, with something the appearance of *S. oculata*. The sepals are pale yellow, the petals bright yellow, both sparingly dotted with red. The hypochil is richly stained with crimson, and has two prominent horns standing erect on the lower edge of its cavity.

10. Warczewitz's Stanhopea.—S. WARCZEWITZIANA, *Klotzsch, Allgem. Gartenzeit*, 1852, Aug. 28.—Native of Central America.

A little known species, having the sepals and petals dull white, the hypochil yellowish white, and the epichil finely dotted with red. Dr. Klotzsch describes a tooth between the horns of the mesochil, which together with the globose form of the hypochil, seems to indicate that it is really distinct.

§ TRIDENTATA.—*Mesochil horned; epichil three-toothed.*

11. Tiger-flowered Stanhopea. [Plate IV.]—S. TIGRINA, *Bateman, Orch. Mex. et Guat.* t. 7; *Bot. Reg.* 1839, t. 1; *Bot. Mag.* t. 4197. MAXILLARIA LYNCEA, *Lindley, Gen. et Sp. Orch.* 151. ANGULOIA HERNANDEZII, *Kunth, Synop.* i. 332.

This is the finest of all the *Stanhopeas*, and a plant of remarkable beauty, the excessively broad column, and the radiating toothed lamellæ into which the inner surface of the hypochil is broken up, are remarkable peculiarities. The flowers are larger than those of any other known species, being eight inches in diameter, and of a deep

[STANHOPEA—11.]

orange yellow, richly blotched and barred with purplish brown on the sepals, petals, and hypochil; the column and upper part of the lip being paler, and spotted with pale crimson. The fragrance of the flower is peculiar, resembling a mixture of melon and vanilla.

There is a strikingly beautiful variety named *S. NIGROVIOLACEA*, in which the whole of the flower is of a deep brown purple except the edges of the sepals and petals, and the upper half of the lip.

12. **Martius' Stanhopea.** [Plate V.]—*S. MARTIANA*, *Bateman, Bot. Reg.* 1840, *misc.* 109; 1843, *t.* 44; *Orchid. Mex. et Guat. t.* 27. *S. IMPLICATA*, *Westcott.*—Native of Mexico.

One of the most distinct and magnificent species of the genus. The sepals are straw-coloured or almost white, faintly and sparingly marked with clusters of little vinous dots; the petals appear transparent white, with large spots of intense crimson; the lip is also a clear ivory white, except a slight discolouration at the base. The horns which are large, taper into a kind of tendril, and are exactly parallel with the epichil, which is not a great deal broader than the downy wingless column, and has the two edges nearly parallel with each other. The flowers are very sweet scented.

13. **Duke of Devonshire's Stanhopea.**—*S. DEVONIENSIS*, *Lindley, Sert. Orch. t.* 1. *S. MACULOSA?* *Floral. Cabinet, t.* 121.—Native of Peru; perhaps of Guatemala.

A very fine species "much like *S. tigrina*, from which it is distinguished by the undivided middle lobe of the lip, and the almost wingless column." (*Lindley*). The flowers are yellow, with deep crimson-brown blotches; the lip is white with a few spots here and there, and has a deep purple stain over half the hypochil. They are very sweet-scented: the hypochil, it would appear, is sometimes entirely deep blood-red.

14. **Veiled Stanhopea.**—*S. VELATA*, *Morren Ann. Gand. t.* 153.—Native country not known.

This species which was produced before the Horticultural Society of Ghent "seems very near *S. Devoniensis* and *S. Martiana*, with which the flower corresponds in colour." (*Lindley*).

15. **Bag-lipped Stanhopea.**—*S. SACCATA*, *Bateman, Orch. Mex. et Guat. t.* 15.—Native of Guatemala.

In this species occurs the smallest flowers in the genus. The sepals and petals, which are turned completely back on the ovary are greenish-yellow, regularly speckled with brown, deep yellow at their base. The same deep yellow colour extends to the lip, whose hypochil is singularly saccate, being "much deeper and more incurved than in any other species except *S. Martiana*."

16. **Three-horned Stanhopea.**—*S. TRICORNIS*, *Lindley, Journ. Hort. Soc.* iv. 263; *Paxton's Fl. Gard. Glean. 55, ic.* 21.—Native of Peru.

"A very remarkable species. The figure of the lip is unusual, there being a third

[STANHOPEA.—12.]

horn at the base of the epichil, in addition to the two present at the side. In a figure sent by *M. Warcewitz* the petals are represented to be pink, and the rest of the flower white. The petals moreover are very fleshy, firm, and apparently incapable of rolling back as in the rest of the genus." (*Lindley*.)

§ ECORNUTA.—*Mesochil beardless*, i. e. *without horn-like processes*.

17. **Feeler-bearing Stanhopea.**—*S. CIRRHATA*, *Lindley, Journ. Hort. Soc.* v. 37; *Paxton's Fl. Gard. Glean.* 53, ic. 19.—Native of Nicaragua.

"Among *Stanhopeas* unique, the flowers being absolutely solitary, not in spathaceous spikes, and the column being wingless, and extended into a pair of feelers like some *Odontoglots*. The lateral horns of the lip too, are extremely short and fleshy, and proceed from the hypochil instead of belonging to a mesochil." (*Lindley*.) Though introduced, it has not yet bloomed, so that the colours are unknown.

18. **Large-flowered Stanhopea.**—*S. GRANDIFLOEA*, *Lindley, Gen. et Sp. Orch.* 158. *CERATOCHILUS GRANDIFLORUS*, *Loddiges, Bot. Cat. t.* 1414.—Native of Trinidad.

A species, very distinct in habit from the foregoing, having a very short sub-erect scape. The flowers are large, fully six inches across, very fragrant, but last for a short time. They are ivory white, except the hypochil which is crimson, and there are some dots of the same colour on the mesochil. The column is much elongated; the mesochil absolutely three-toothed, and twice as long as the ovate epichil.

19. **Ivory-white Stanhopea.**—*S. EBURNEA*, *Lindley, Bot. Reg. t.* 1529; *Bot. Mag. t.* 3359.—Native of Brazil.

Very like *S. grandiflora*, but the flowers are somewhat smaller. It differs, Dr. Lindley remarks, in the opening of the hypochil being oval, not circular, and furnished with two lateral slender recurved horns instead of two short strong anterior teeth; and in the mesochil being about the length of the epichil. The flowers are fragrant, the sepals and petals pure ivory white, the lip sometimes nearly colourless except in the cavity of the hypochil which is crimson, and occasionally deeply stained with rich purple all over, except on the mesochil.

20. **Hornless Stanhopea.**—*S. ECORNUTA*, *Lemaire, Flore des Serres, t.* 181; *Paxton's Fl. Gard. Glean.* 54, ic. 20.

"This curious plant differs from all other known *Stanhopeas*, in having a lip wholly free from horns, and without any break in its middle; it may be regarded as having the hypochil alone present. * * * "Is it not a monster?" (*Lindley*). The flowers which grow in pairs are white, with a few purple spots near the base of the short concave petals; the lip is fleshy, slipper-shaped, bright orange yellow, passing into pure white at the point, and mottled on its sides with purple blotches.

REFERENCE TO THE PLATES OF THE
GENUS STANHOPEA.

Plate I.—STANHOPEA INODORA, *Loddiges*.

Plate II.—STANHOPEA BUCEPHALUS, *Lindley*.

Plate III.—STANHOPEA QUADRICORNIS, *Lindley*.

Plate IV.—STANHOPEA TIGRINA, *Bateman*.

Fig. 1.—Inner surface of the hypochil.

Plate V.—STANHOPEA MARTIANA, *Bateman*.

With fig. of column and lip.



STANHOPEA.
II



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THE GENUS ACINETA.

ACINETA is a genus consisting of a few fine species of Orchidaceous plants separated by Dr. Lindley, from the older genus *Peristeria*. To this latter, its species bear a general resemblance, except that their flower scapes are, for the most part, pendulous instead of being erect. They are technically separated from *Peristeria* by the presence of a continuous lip, a broadly-winged column, and a crescent-shaped glandule on the caudicle, the latter genus having the lip articulated in the middle, a wingless column, and a linear glandule. The *Acinetas* are pseudo-bulbous plants, of epiphytal habit, with large plaited leaves, and long usually drooping racemes. The species are few in number, and inhabit South America.

The flowers of these *Acinetas* are of a fleshy consistence, the parts spreading outward; the sepals are connate at the base, the upper one a little separated, so as to give the flowers somewhat of a two-lipped appearance; the petals are similar and scarcely smaller. The lip is continuous with the column, very fleshy, with an oblong concave hypochil, and a three-parted ascending epichil, bearing a fleshy appendage at its base. The column is furnished with a pair of very broad marginal wings; the anthers are two-celled, without crests; the two pollen-masses are furrowed behind, and placed at the end of a narrow caudicle, terminating in a crescent-shaped glandule.

The species rank among the more showy plants of this conspicuous race, and should find a place in every select collection. They may also be grown well with ordinary care; and from the pendulous growth of their flower scapes, are very

[ACINETA.—2.]

suitable for being suspended in baskets from the roof of the orchid house.

The name *Acineta*, from *akineta*, immoveable, is given in allusion to the immoveable jointless condition of the lip.

These are plants of an interesting and attractive character, and are remarkable for their flower-stems, being produced beneath the plant in an opposite direction to the leaves, as in the genera *Lacæna* and *Stanhopea*. These flower-stalks spring from the base of the pseudo-bulbs, and are from eight inches to a foot or more long, bearing from six to a dozen large, and in some cases, fragrant flowers. They are robust free-growing plants, having large pseudo-bulbs, with leaves varying from a foot to eighteen inches long, and three to four inches wide. *Acinetas* should form a part of all collections, or rather selections of this magnificent family, not only because they comprise some of the most interesting species, either for decorative purposes or for the exhibition table, having large singular and showy flowers, but also because they are brought to perfection without much difficulty.

From the circumstance that their flower-stems have a natural tendency downwards, it is obvious that they are not suited for cultivation in pots. They can only be cultivated advantageously on billets of wood, or in baskets, the latter being preferable. They may be either suspended to the roof of the house, or if the plants are very large, may be placed on supports two or three feet high, according as may be necessary. While the plants are small, they can be grown on pots as well as in baskets, for they do not produce flowers from small or weak pseudo-bulbs, only from those which are of vigorous growth; but, if thus grown on pots while young, they must when arriving at a flowering condition, be transferred to baskets.

[ACINETA.—3.]

Whether grown in pots or baskets, the materials to be used for potting them are the same; namely, small pieces of brown spongy fibry peat, intermixed with a little leaf-mould, and charcoal or potsherds broken small. If grown in baskets, a thin layer of sphagnum moss should be first placed in the baskets, and then the basket should be filled up with the potting material to about the depth of three or four inches, on which the plants are to be fixed. When the plants become too large for the baskets, and require shifting, it should be done just as they commence to grow. The greater part of the old compost should be taken away, especially where it is at all solid or soured by moisture, fresh soil being added. This new soil however should not exceed four inches in thickness, and should be so placed as to ensure porosity. At the time this is done, cut with a sharp knife through the rhizome, so as to separate one or two of the hinder pseudo-bulbs, this will cause them to push out new roots, and ultimately another plant will thus be obtained. It is necessary, however, to avoid separating them too much, or else the masses will be weakened, and it will then take a considerable time for them to gain sufficient strength, to enable them to produce flowers.

§ The plants should be grown in the 'Mexican house,' within two feet of the glass. The varieties of *A. Humboldtii* are indeed much improved if they are kept a little warmer while growing, either by placing them in the coolest end of the East Indian house, or suspending them in the hottest part of the Mexican one, and as near the glass as possible. In this place they may be kept, until their 'bulbs' are nearly mature, when they may be kept somewhat cooler. By this means the plants are induced to make strong vigorous growth.

They require to be syringed once or twice every day with tepid water while they are growing, but no water should be allowed to stand in the young shoots, or the hearts will perish. It is necessary therefore to water very cautiously, until they

[ACINETA.—4.]

are so far advanced as to be past danger, which is as soon as the pseudo-bulbs are formed ; then a more liberal supply may be administered, both about the roots, and likewise overhead.

Cleanliness is at all times necessary. They should be washed with a sponge and water to prevent the lodgment of insects ; and must be kept in a moist humid atmosphere of about 65° to 80° while growing. During the season of repose, 50° to 55° will be sufficient heat, and only just sufficient water should be given to prevent them from shrivelling. Shade from the direct clear rays of the sun is necessary throughout the summer, and the structure should be ventilated when the air is mild, if the internal temperature is sufficient, admitting more air in proportion as the heat increases. Towards the end of summer the plants should be gradually exposed more freely to air and sunshine, which will enable them to ripen their vigorous pseudo-bulbs, and such healthy robust well ripened bulbs rarely fail to flower. If the flowers are wetted when they become expanded, or, the plants are kept in a strong heat, they quickly pass away. The plants, if they require it, should therefore be well watered at the roots just before the flowers burst open, and afterwards, if they are kept cool, the blossoms will remain for several weeks in perfection.

The mode of increase, namely, by dividing the hinder pseudo-bulbs has already been mentioned.—J. H.

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1. Humboldt's Acinete. [Plate I.] A. HUMBOLDTII, *Lindley, Bot. Reg.* 1843, *misc.* 100. PERISTERIA HUMBOLDTII, *Lindley, Bot. Reg.* 1843, t. 18. ANGULOIA SUPERBA, *Humboldt, Bonpland et Kunth, Nov. Gen. et Sp. Pl.* i. 343, t. 93 ; *Lindl. Gen. et Sp. Orch.* 160.—Native of Central America.

This noble plant, which has a pendulous raceme, a couple of feet long, was imported from Porto Cabullo, in Venezuela, by J. Wilmore, Esq. of Birmingham. It has oblong striately-ribbed pseudo-bulbs, large stalked oblong-lanceolate plaited leaves, and a long

[ACINETA.—5.]

many-flowered pendulous raceme of large flowers of a rich purplish-brown colour, enlivened by deeper spots and blotches of the same colour. The petals are smaller, dull crimson, the column broadly winged, and the lip, enlivened with yellow, has a simple linear fleshy appendage at its base. This magnificent plant is identified by Dr. Lindley with the *Anguloa superba*, of Humboldt. "Upon attentively considering Humboldt's figure no doubt can be entertained, that the long sought *Anguloa superba* is this plant, with the raceme shown to grow erect, instead of pendulous."

A very beautiful variety of this species called *FULVA*, has been figured in *Bot. Mag.* t. 4156. Its flowers are large, fleshy, of a tawny yellow, dashed almost all over with spots of purplish-brown, the lip of a brighter yellow, with larger and deeper spots.

2. **Barker's Acinete.**—A. *BARKERI*, *Lindley, Bot. Reg.* 1843, *misc.* 100.
PERISTERIA BARKERI, *Bateman, Orch. Guat. et Mex.* t. 8; *Bot. Mag.* t. 4203.—Native of Mexico.

A fine and showy plant, with ovate furrowed pseudo-bulbs, plaited leaves two feet long, and a long pendulous lax, many-flowered raceme of whole coloured bright yellow flowers. In this species the sepals and petals are nearly equal, and there are two appendages to the lip, the lower linear and villose, the upper subhastate, three-toothed at the apex. The wing of the column is narrow. It is a very ornamental species.

3. **Warczewitz's Acinete.**—A. *WARCZEWITZII*, *Klotzsch, Allg. Gartenzeit.* 1852, 145; *Lindley, Paxt. Fl. Gard.* iii. 86.—Native of Central America.

This plant, described as a very distinct species by Dr. Klotzsch, has ovate-oblong slightly-furrowed pseudo-bulbs, and a many-flowered pendulous scape of fleshy pale waxy yellow spread-open flowers, of which the sepals are without spots, and the petals and base of the lip dotted with red; the appendage of the lip is dark purple and quadrangular, and the middle lobe golden yellow. It seems to be a showy species. It was collected by M. Warczewitz, through whom it reached the Berlin gardens.

4. **Close-flowered Acinete.**—A. *DENSA*, *Lindley, Paxt. Fl. Gard.* i. 91; *with fig.*—Native of Costa Rica.

This species collected by M. Warczewitz, is described by Dr. Lindley as being very near to *A. Barkeri*, though at first sight dissimilar, owing to its shorter dense racemes. The flowers are pale yellow, slightly spotted externally with crimson; the lip is yellow at the point, spotted with broad blotches on the lateral lobes, deep crimson in the space between the lobes occupied by the ovate, somewhat three-toothed appendage, the posterior angles of which are sinuous.

5. **Golden Acinete.**—A. *CHYRSANTHA*, *Lindley, Paxt. Fl. Gard.* i. 31.
NEIPPERGIA CHYRSANTHA, *Morren, Ann. Soc. Hort. de Gand.* v. 375, t. 282.—Native of Mexico?

A very handsome plant, with golden-yellow flowers of the size of *A. Barkeri*, growing according to Prof. Morren's figure, in erect racemes, but more probably pendulous, as indicated on the same plate. The pseudo-bulbs are ovate, furrowed, the leaves large, and the flowers numerous, rich golden yellow, with a whitish lip, and a

[ACINETA.—6.]

crimson column, and emitting at night a sweet aromatic odour. From the other species, it is distinguished by the presence of a long blunt papillose horn arising from the hypochil; this horn, on which Prof. Morren had, in part, relied in founding his genus *Neippergia*, being according to Dr. Lindley, present, though in another form, in *A. Humboldtii* and *A. Barkeri*. Prof. Morren expresses a suspicion, that this plant is an isophorous form, that is to say, one that may be transformed into another genus; and he further states, that *Anguloa*, *Lycaste*, and *Maxillaria* are simply isophorous forms of the same organisation, or in other words, that they are transformable the one into the other. Similar changes have been known to occur among other genera of this grotesque and masquerading order of vegetation.

REFERENCE TO THE PLATE OF THE
GENUS ACINETA.

Plate I. — A. HUMBOLDTII, *Lindley*.

Fig. 1. The lip and column, side view; fig. 2, the lip, seen from above; fig. 3, the column in half-face, the lip being removed.

ACINETA
I



THE GENUS CORYANTHES.

THE genus CORYANTHES,—which bears some relation to *Stanhopea*, and the species of which, so far as is known, are all natives of tropical America,—consists of epiphytal pseudo-bulbous herbs, whose furrowed pseudo-bulbs produce from their apex, simple plaited leaves, and from their base the pendulous flower racemes, each bearing one or more, but always a limited number of odd looking fantastic flowers. There are no other species known, than those in cultivation.

In the family of *Coryanths* occur perhaps the largest and most remarkable blossoms known among Orchids. The flowers are, indeed, of so extraordinary a form, that descriptions almost fail to give any intelligible idea of their appearance, and we must therefore trust to the aid of our illustration.

The chief of the technical peculiarities by which the *Coryanths* are known among Orchids, consist, as is usual in this race, in the peculiarities of the parts of the flower. Thus the sepals, the central one of which is smaller than the others, are obliquely inserted at the base of the column distinct from each other, and are so thin and membranous in texture, as to be scarcely able to sustain their own weight; for though, at the first expansion of the flowers they are spread out to the full extent, they soon collapse, and lose their form. The petals are still smaller, narrower, erect, twisted, and also obliquely inserted. The lip is continuous with the base of the column, pendulous from the end of a stout horizontal arm or unguis, above which at the base it is developed into a hood-like body (the hypochil), and terminates in a large helmet-shaped pouch-like expansion (the epichil), the hinder part of which (the

[CORYANTHES.—2.]

mesochil) is involute. The column which points downwards is abruptly club-shaped, recurved, winged on both sides at the apex, and furnished near the base with two horn-like honey-bearing processes, which are probably abortive stamens. The stigma is a transverse cleft. There are two pollen-masses, which are compressed, furrowed behind, and furnished with a caudicle and gland. Dr. Lindley, in his *Folia Orchidaceæ* (which see), describes the parts of the lip as having “the form of a bucket, into which a pair of stumps or fingers constantly distil a sweetish colourless fluid, which drop by drop gradually fills the bucket; the fingers are processes (perhaps abortive stamens), springing from the base of the column; the bucket is sustained by a stiff arm, which keeps it perfectly steady, so that the honey may not be spilt; the column itself turns back, as if to keep its head out of the way of the drops. The use of this singular apparatus is unknown.”

The name of the genus, which was applied by Sir W. J. Hooker, is derived from the Greek *korys*, a helmet, and *anthos*, a flower. It should be distinguished from *Corysanthes*, the name of another genus of Orchids of terrestrial habit, which has the same derivation.

As cultivated plants, the *Coryanths* are prized rather on account of the remarkable structure and appearance of their blossoms, than for any popular ornamental properties they possess; for on account of the paucity of their blossoms, they make but little display.

The *Coryanths* require treatment very similar to that of the Stanhopeas. They should have a temperature of about 80° by day, and of 70° or less by night, during the growing season; and an average of 65° when at rest during the winter.

[CORYANTHES.—3.]

The general features of their management are considerably influenced by their habit. They produce from their pseudo-bulbs large and ample foliage, and from their base the pendent flower stems, so that pot-culture is much less applicable to them than the basket or block modes of cultivation ; because the plants should be so placed, that no impediment may be offered to the development of the flower spike. In the spring, which is the period when usually their buds begin to swell, indicating a renewal of their growth, they require the degree of heat to be progressively increased from that which was afforded during the resting period ; and the amount of moisture should be augmented in the same ratio. During the progress of their growth, the heat and moisture should be kept up, the former to the highest point indicated, and the latter almost to the point of saturation ; taking the precautions, however, to lower the temperature at night, and somewhat during dull cold weather ; and in respect to moisture, while on the whole a proper supply is kept up—chiefly in the form of vapour, but also directly applied to the roots in a tepid condition—yet it must be so far withheld that once at least, daily, the foliage and surface of the plants may become dried ; and on the other hand, anything like an arid condition of the atmosphere must not be permitted, at least during the period of growth. What these plants, and all other tropical Orchids revel in, is a *sweet moist mild steady heat* : not too high a temperature, nor a temperature fluctuating by violent alternations, but a mild steady heat, varying in the manner specified between day and night, and between bright and overcast weather : the atmosphere constantly moist from the abundant and frequent use of water, or the operation of arrangements equivalent thereto, so that there may be no parching effect to arrest the growth ; and this heat and moisture should be pure and sweet, which conditions are to be secured by cleanliness in every particular, by the use of sweet pure water, and especially by attention to an efficient

[CORYANTHES.—4.]

and well-appointed heating apparatus, so that there may be no violent forcing, but a steady and gentle use of it.

The routine management of these plants may be thus stated:—

“The Coryanths require to be grown either on billets of wood, or in shallow baskets. One of the woods which are best adapted for the purpose is peeled oak, on account of its being more durable than most British woods. When intended to be grown on billets, the plant must be made fast by being secured with small wire; at the same time a little moss should be placed around the base of the pseudo-bulbs, for the purpose of keeping moisture to the roots, until they get fast hold, which they will do in a short time, especially if they are fixed at the commencement of the growing season. If baskets are used, a few large potsherds may be placed over the openings at the bottom, and over these should be put a few smaller ones, and on this the plant must be placed, a little green moss being here also used, for the double purpose of keeping moisture to the roots, and giving the basket a neat and finished appearance. But when it is required to make use of pots, they should be filled up with potsherds a few inches above the rim, and on this the plant should be placed, moss being used in the same manner as recommended for the baskets.

They may be shifted at any season of the year, but the best time is at the commencement of their growth, which is generally in spring, or early in autumn. They should however be potted, or basketed, as seldom as possible, never unless it is absolutely necessary, by the former becoming too full of roots, or the latter decayed.

The heat and moisture does not require to be so great for these South American species, as for the East Indian ones, but still they must be kept moderately warm and moist. In their season of growth the temperature should range from 75° to 80°, with a free admission of air in fine weather. In their

[CORYANTHES.—5.]

season of rest from 60° to 70° will be quite sufficient for their wants.

These plants, as well as other Orchids, should, in their season of growth, be frequently syringed over head; this adds greatly to their health and vigour. The best time for doing this is early in the evening—say about 6 P. M. As soon as their growing season is past, and their stems or pseudo-bulbs are fully swelled, the plants should be kept moderately warm, and very dry. It is no matter if the pseudo-bulbs become slightly shriveled in the course of their resting; for when the proper time comes, they will recover, with the aid of a little water, their usual plump and healthy appearance.”—*P. N. D.*

There is another mode of disposing of those Orchids, which like the present, throw down their flower stems from the base of the plant, and that is, to fix them to a stand formed of the tortuous and forked stump or branch of a tree, which is set in a permanent position in the Orchid house. The plants are simply fastened, by the aid of a little wire and moss, to any part of the stump, so as to clothe it moderately; and thus, while the habits of the pendulous flowering kinds may be accommodated, by the selection of the position most likely to facilitate the protrusion of their flower stems, the entire group may be made to picture in some degree the appearances of this race of plants in their natural habitats.

Owing to the comparatively thin and delicate texture of the leaves, they are very liable to suffer injury from damp, and this is especially the case while they are quite young and immature. It is this peculiarity which renders it so essential that the moisture which may be applied by the syringe over the leaves and young shoots, should be allowed to dry up by evaporation once every day. This prevents the injury which would result from the presence of stagnant moisture on any part of the plant. For the same reason, it is very important to prevent drippings of cold water from the roof falling on the young foliage.

[CORYANTHES.—6.]

It is quite desirable that the young growth should be made in the spring months, and it should therefore be the object of the cultivator, so to regulate the period of rest and of active growth, that this may occur. The resting period ought to commence shortly after the pseudo-bulbs are fully formed. At first, without much lowering the temperature, the amount of moisture supplied, either directly or indirectly, should be gradually, and in the end considerably diminished; and in the depth of winter, no water should be given, but the plants should be kept perfectly dry. Then, when the new buds begin to push, and the plants thus indicate symptoms of activity, both moisture and heat are to be increased, cautiously at first, but gradually with more freedom. They bloom under this treatment, during the summer months.

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1. **Showy Coryanth.**—*C. SPECIOSA*, Hooker. *Paxton's Flower Garden*, iii. 581, fig. 284. *Morren Ann. Gand.* ii. 15, t. 50. *GONGOBA SPECIOSA*, Hooker in *Bot. Mag.* t. 2755.—Native of Brazil.

This beautiful epiphyte has the flowers pale yellow, almost without spotting, in which respect, as well as in the form of its lip, it differs from *C. maculata*. The flowers, which come in short racemes, last three or four days, and have an odour which can hardly be called agreeable. The technical botanical characters of this and the other species will be found in the *Folia Orchidaceæ*.

There exists in cultivation a whitish-flowered variety; and another, which has the flowers of a deeper yellow, has been called *vitellina* by Prof. Morren.

2. **Spotted Coryanth.**—*C. MACULATA*, Hooker in *Bot. Mag.* t. 3102.—Native of Demerara and of Venezuela.

Of this beautiful plant Dr. Lindley notices four varieties, differing chiefly in the colour of their flowers. The typical form of the species has the sepals and petals of a dull pale yellow colour, the hood yellow, and the pouch blotched on the inner side with dull red.

[CORYANTHES.—7.]

C. PARKERI, one of the varieties, figured in the *Bot. Reg. t. 3747* under the name here quoted, differs in having the sepals and petals pale yellow throughout, the hood dull purple, the pouch spotted inside with purple, and having a purple neck.

C. PUNCTATA, which is another variety, is figured in the *Bot. Reg. t. 1763*. It has the sepals and petals bright yellow speckled with red, the hood yellow tinted with reddish orange, the pouch pale speckled and spotted with red.

C. ALBERTINÆ of *Dr. Karsten* [Plate I.], is, on the authority of Dr. Lindley, to be referred here as a variety. It is certainly the most beautiful and the largest flowered form. It has been cultivated for several years in the German gardens, and has been figured by M. Karsten in the *Auswahl Gewächse Venezuelas. t. 1*; but as far as we know has not reached this country in the living state. In this beautiful plant the pseudo-bulbs are six inches long and about two inches in diameter at the base, ovate-conical, compressed, and growing in tufts; each bears two lance-shaped leaves a foot and a half long and three inches broad. From their base come the racemes, two feet long, supporting five to eight large flowers, of which the sepals are pale yellow evenly dotted with purple spots, the central one about an inch long, obovate, undulated, acuminate and somewhat three-lobed at the apex, the side ones four inches long, two broad, ear-shaped with a falcate point, and spread out like wings. The petals are small, lanceolate, twisted, blush colour with brilliant crimson spots. The lip is three inches long, fleshy, supported by a reddish claw, its hypochil or hood inverted cup-shaped, an inch in diameter, and covered with silky hairs, its mesochil narrow and grooved,—these parts blush spotted with rich red; its epichil or pouch helmet-shaped, with two large roundish lateral lobes or flaps and three apical teeth, an inch and a half long and as much in width, and of a deep crimson spotted inside. The column is white spotted with red. It comes from the valley of San Esteban, at the foot of the Cumbre de Valenzia in Venezuela.

3. Large-flowered Coryanth.—**C. MACRANTHA**, *Hooker. Bot. Reg. t. 1841*. **GONGORA MACRANTHA**, *Hooker in Bot. Miscell. t. 80*.—Native of the Caraccas.

Though named the “large-flowered,” the flowers of this species are in reality not half the size of those of *C. Fieldingii*, a more recently described plant. They are of a rich yellow ground colour, and are speckled with red, the hood of the lip and a portion of the pouch being a rich brownish red. The flowers last three or four days.

4. Col. Fielding’s Coryanth.—**C. FIELDINGII**, *Lindley in Journ. Hort. Soc. iii. 15, with fig.*—Native country not known.

The flowers of this plant are the largest known among orchids. As usual in this genus, they are pendulous and inverted, so that the apparatus of the column hangs downwards. The colour is pale brownish yellow, slightly and irregularly mottled and stained with cinnamon. The following is somewhat condensed from the description of this remarkable flower by Dr. Lindley, in the *Journal of the Horticultural Society* (iii. 15.) When closed, the flower is about five inches long, and three wide. As it unfolds, the sepals and petals, which are membranous, resemble bats’ wings, turn back, seem to fold

[CORYANTHES.—8.]

up, and finally hang drooping at the back of the lip and column. The lip is borne by a thick horizontal arm an inch and a half long, which proceeds from the top of the flower-stalk, and expands into a convex cap or hood, which is hairy in front, and two inches in diameter. From the cap hangs down a large fleshy pouch or goblet, smooth at the edges, flattened at the end, two inches deep and as many wide, and connected with the cap by a hollowed fleshy stalk, which is strongly marked by various transverse fleshy folds warts and ridges. On the side next the column the pouch is open, and near the bottom of the opening is furnished with three sharp-pointed fleshy lobes, of which the lateral ones curve downward, and the middle one stands erect, rising just high enough to come in contact with the head of the column, which grows downward so far as almost to touch it. The column, which is two and a half inches long, is a fleshy club-shaped body, throwing back its head till its bosom becomes comparable with the breast of a puffer pigeon. A pair of finger-like lobes at the base of the arm which supports the lip, secrete a sweet fluid, which as long as the flower is in vigour continues to drip from them into the pouch or epichil.

REFERENCE TO THE PLATE OF THE
GENUS CORYANTHES.

Plate I.—CORYANTHES ALBERTINÆ, *Karsten*.



THE GENUS ANGULOA.

The ANGULOAS are a race of South American Orchids, having the aspects of *Lycaste*, to which in fact, they are very nearly related. They are of epiphytal habit, and but few species are known.

The plants are pseudo-bulbous herbs. The flowers, produced singly on scapes proceeding from base of the pseudo-bulbs, are subglobose from the convex form and half-closed position of the sepals and petals, which are free and nearly equal. The lip is clawed somewhat convolute, three-lobed. The column is free, clubshaped; the anthers galeate, beaked, with four plane unequal pollen-masses having long linear caudicles, and acute glandules. The relationship and principal peculiarities of these plants are shown in the following remarks, by Dr. Lindley, which accompanied our Plate II. when originally published in the *Botanical Register*:

“The two characters upon which the authors of the *Flora Peruviana* must be considered as having most relied for the distinction of their genus *Anguloa*, were the chrysalis-shaped lip, and the two-horned column. But that rolled up form of the lip, to which the name chrysaloid was applied, is in reality common to the greater part of the Maxillaridous division; and the two-horn like processes which distinguish the column of the original *Anguloa* are altogether of too doubtful a nature to be relied on for generic distinction; for they have no relation to such organs as the wings of *Oncidium*, and it is by no means certain that they are constantly present in the same

[ANGULOLOA.—2.]

species. If, as seems probable, they are analogous to the cirrhi of a *Catasetum*, experience warns us to distrust their importance. This being so, it becomes a question whether the genus is distinct from *Lycaste*, to which it undoubtedly approaches very nearly. The pollen-masses and gland of the two, although dissimilar, if *Anguloa Clowesii* is compared with *Lycaste Deppii*, are nevertheless not so different when *Anguloa uniflora* is the subject of comparison. The funnel-shaped condition of the middle lobe of the lip is at first sight peculiar to *Anguloa*, but it is in reality only an exaggerated condition of that kind of lip which we have in *Lycaste aromatica* and its allies, in which there is a large flat appendage resting on the surface of the lip. The difference consists in that appendage being attached to the lip at the base only in *Lycaste*, while in *Anguloa* it is united by the sides also. This is a difference which may be regarded as available for generic distinction. The main difference, however, between *Anguloa* and *Lycaste* consists in this; that in *Lycaste* the lateral sepals are placed edge to edge in the manner of a true *Maxillaria*, but in *Anguloa* they overlap each other very considerably; this peculiarity causes a striking difference in the appearance of the flowers of the two genera, and, in fact, gives that of *Anguloa* somewhat the look of a *Mormodes*."

The genus, which is entirely confined to South America, was dedicated by Ruiz and Pavon, to Don Francisco de Angulo, who was it appears Director-General of the Spanish-Peruvian mines, and was greatly attached to botanical pursuits.

This genus which consists of but few species, has much the habit and aspect of *Lycaste*, except in the formation of the flowers, these being however larger, and in most cases far more showy. They are all fine plants, and well deserve extensive cultivation; in fact no collection however small

[ANGULOA.—3.]

should be without them, as they rank among the most beautiful orchids of the Western hemisphere. They have a most striking appearance when in flower, and are not difficult to cultivate.

They are usually of a robust habit, having pseudo-bulbs from three to four or five inches long and bearing large leaves; consequently they are much better adapted for cultivating in pots, than on blocks of wood, or in baskets, though they will grow freely in either if kept in a suitable atmosphere. Like most large or strong growing kinds, however, it is preferable to keep them in pots for the convenience of moving them, or for watering, cleaning, &c. which operations are then performed with much greater facility. The best season for potting them is just as they commence growing, which is in spring, unless in the case of importations; then, of course, they must be treated according to circumstances. In potting them, use clean pots not over large, as this destroys the effect of the plants; nor yet too small as that will retard their growth; in each case let them be proportioned to the size of the plant. Use a compost of rough pieces of good fibry brown peat, well intermixed with charcoal or potsherds, broken small; elevate the plant above the rim of the pot, and be careful to ensure porosity in the compost. Water may be given rather freely at the roots when they are making their pseudo-bulbs, but very sparingly when they commence their growth, the supply being increased, as they advance. Syringe them over head once or twice a day during summer if the temperature, which should range from 70° to about 80°, will admit of it; the best time for performing this operation is about 3 or 4 o'clock in the afternoon, when the shading is removed. The house should then be closed, so as to maintain a high humid temperature with solar heat. As they complete their growth, water may be gradually diminished both at the roots, and likewise over head, and the plants should be exposed to

[ANGULOA.—4.]

more air and sunshine, until they are fully matured, which will be about September. After this time keep them in a cool and drier atmosphere, until they are quite at rest. The temperature during their resting season should be between 50° and 60°, with just sufficient water to keep the pseudo-bulbs from shrivelling. Their propagation is effected by division, taking a couple of pseudo-bulbs to form each plant.—J. H.

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1. **One-flowered Anguloa.** [Plate I.]—*A. UNIFLOBA*, *Ruiz and Pavon, Flor. Peruv. Syst.* 228. *Bot. Reg.* 1844, t. 60.—Native of Colombia.

A handsome plant, with broad plaited leaves, and scapes issuing from the base of the ovate pseudo-bulbs, terminated by a single large sweet-scented flower, white slightly tinged with yellow. The scape is covered by several inflated sheathing bracts. The points of the lateral sepals are deflexed, and the lip has a very narrow reflexed middle lobe, the lateral lobes being rounded. It was first bloomed in this country in 1844, about which date the three cultivated species were introduced.

2. **Clowes's Anguloa.** [Plate II.] *A. CLOWESII*, *Lindley, Bot. Reg.* 1844, *misc.* 29, t. 63.—Native of Colombia: "in low bottoms, in the midst of forests, in Venezuela, growing in the ground," according to Mr. Linden.

A very fine and ornamental species. The scape is clothed with loosely sheathing bracts terminated by a single resupinate flower, which is large, straw-coloured, with a white lip. The middle lobe of the lip is hairy, funnelled and two-lipped; the lateral lobes acute and shorter.

3. **Rucker's Anguloa.** [Plate III.]—*A. RUCKERI*, *Lindley, Bot. Reg.* 1846. t. 41.—Native of Colombia.

The handsomest species yet known. The pseudo-bulbs are much elongated and nearly cylindrical. The bracts which clothe the scape, are inflated and somewhat spreading. The flower, which is as in the other species, large and attractive, is externally dull speckled brownish green, internally yellow, spotted with crimson; the lip entirely deep crimson; the middle lobe of the lip is hairy two lipped and funnelled, the lateral lobes obtuse and equalling it in length. It is most like *A. Clowesii* in structure, but the flowers are not resupinate.

REFERENCE TO THE PLATES OF THE

GENUS ANGULO A.

Plate I.—ANGULO A UNIFLORA, *Ruiz and Pavon.*

Fig. 1. Section of the lip, with the plate that lies over the middle cut in two. Fig. 2. The column with the two thin sharp-pointed processes which project forward: it will be remarked, upon comparing this figure with that in the centre of the flower, that there are in the latter two additional plates, looking like lappets, which do not appear to be always present. Fig. 3. The pollen-masses, with their caudicle and glandules.

Plate II.—ANGULO A CLOWESII, *Lindley.*

Fig. 1. The lip, cut through the axis, to show its funnel-shaped structure. Fig. 2. The pollen apparatus, two of the pollen-masses being half cut away.

Plate III.—ANGULO A RUCKERI, *Lindley.*

Fig. 1. The lip, spread open.

ANGULO A

1.



Wm. Drake del

S. Barton sculp

ANGULO A

II.



Miss Drake del

E. Purdie sc.



THE GENUS CATASETUM.

THE genus CATASETUM, founded by Richard, is one of the most extraordinary of the grotesque race of Orchids, from its remarkable metamorphoses or masqueradings. The very same plants of some of the kinds have been observed to bear, at different periods, flowers which are totally dissimilar; and again at another period, as if in mockery, to produce these dissimilar blossoms in association. This masquerading habit has led to the proposal of two or three genera which have since been found untenable.

Catasetum, including the false genera *Myanthus* and *Monachanthus* just alluded to, comprises nearly three dozen species, the greater part of which are known in a cultivated state. They form a small group, which, on account of their uniformity of aspect and habit, are exceedingly characteristic, and easily recognised by their external appearance at any stage of their growth. They have elongated pseudo-bulbs or stems, which vary from a few inches to a foot long, rarely more; the flower-stems spring from their base, and they bear at their apices a tuft of plicate leaves, which are deciduous, and fall away as soon as the stems are mature, the plant then remaining dormant until the return of spring, when being stimulated into active growth, fresh stems are formed, from which the flowers are produced. The species are for the most part botanical curiosities, more singular than beautiful; nevertheless some of them have a striking appearance, and when intermixed with other plants, produce a good effect, independently of the interest attaching to their very singular construction. The flowers are large, and those of several of

[CATASETUM.—2.]

the species are of bright colours, and very fragrant; consequently a few of them merit a place in all collections of Orchids.

They inhabit the West Indian Islands, and South America, and are mostly of terrestrial habit.

The peculiarities of the genus, in a botanical point of view, are, a large conspicuous perianth, sometimes with a tendency to become globose, but at other times with the parts flattened. The sepals and petals are nearly equal; the lip thick, fleshy, naked and ventricose, or plane and fringed, saccate below the apex, and obtusely three-lobed. The column is erect, wingless, free, and bears on each side of its apex a long feeler or cirrhus directed downwards. The anthers are sub-two-celled; the pollen-masses two, bilobed or furrowed behind, with a large naked caudicle at length contracted, and a cartilaginous sub-quadrate glandule.

The two long feelers or cirrhi, directed downwards from the column into the cavity of the lip, and the large fleshy helmet-shaped lip itself, were the chief peculiarities of the flowers of the original *Catasetum*. As the species began to make their way into gardens, other peculiarities of structure were observed. Thus, certain species having a flat lip were thought to be distinct; and were called *Myanthus*; others having no feelers on the column were called *Monachanthus*. But, at length, both these structures were ascertained to be monstrosities of genuine *Catasetum*. In connection with these monster developements, a very curious fact was observed by Sir R. H. Schomburgk, who states that *Catasetum* and *Myanthus* are not seed-bearing, but *Monachanthus* bears seed abundantly. "I do not know," observes Dr. Lindley in recording the observation, "what conclusion to draw from this statement, but it would be a most curious fact, if, as this observation would seem to imply, the species of *Catasetum* and *Myanthus* should prove to be sterile states of *Monachan-*

[CATASETUM.—3.]

thus." Supposing the fact to be correctly stated, this seems an inevitable conclusion.

The name *Catasetum* is derived from the Greek *kata* downward, and *seta* bristle; in allusion to the two feelers of the column, which are turned downwards. The plants are hence sometimes called FEELER-BLOOMS or FEELER-WORTS.

The treatment of these plants is exceedingly simple, and attended with little or no difficulty. It is indeed only for a few months during summer, that they require special attention, for during the greater part of the year they are altogether dormant.

They are sometimes successfully grown upon billets of wood, but pot culture is certainly preferable, having many advantages over the other methods of culture. Each stem flowers but once; its roots are annual, and its leaves deciduous; this is the key to their management. In the spring, towards April, or when they are observed to make an effort to grow, the plants should be repotted. For this purpose use clean pots, nearly half filled with broken potsherds, and then filled up with a mixture of fibry peat, charcoal, and half-decayed leaf mould. These ingredients blend into a rough compost, through which the water passes freely. In potting place the stems so that their base may be a little elevated above the pot-rim. Water must be given very sparingly until the growth is far advanced, for if much is given at the roots, or over head, at an early stage, the young stems are certain to damp off.

A sweet and very humid atmosphere is what is required for their growth. The temperature should range from 70° to 80°. Fresh air should be admitted every day when mild,

[CATASETUM.—4.]

if the temperature is sufficient, the house being closed again early in the afternoon, at which time the plants and all exposed surfaces in the house should be syringed, to raise a genial moisture in the atmosphere. Shading is necessary throughout summer, to prevent the scorching rays of the sun from injuring the plants; it may be applied from about 9 or 10 o'clock A.M. until 3—4 P.M., according to the state of the weather.

When the plants are so far advanced as to be forming their pseudo-bulbs, or stems, a more liberal supply of water may be given, both over head, and likewise at the roots, and the plants may also be more fully exposed to air and sunshine. It is always necessary to guard against moisture lodging about them, for this will destroy all hope of forming future plants. When the stems have completed their growth, and have become dormant, they may, if space is required, be placed in smaller sized pots, and set away close together on a shelf or in a corner of the house, where they can be kept dry—not so much so, however, as to be allowed to shrivel. Let them rest in a temperature of from 55° to 60°.

Sometimes the plants are infested with thrips. The best way to clear them of this pest is to syringe them, and wash them with a sponge and clean water. The mode of propagation is very simple, namely, to divide them when in a dormant state, but it is not advisable to separate them to single stems, or bulbs. Such plants would be weakly, and would take some time to acquire sufficient strength to enable them to flower well.—J. H.

As to the amount of shading required under our artificial modes of culture, Mr. Henchman has stated, that in their native localities he found that the plants most exposed to the burning rays of the sun, were invariably in the most thriving condition.

A brief summary of the management of *Catasetums* may be thus stated :—Like other fleshy-stemmed Orchids, they require

[CATASETUM.—5.]

three seasons, namely, that of growth, of flowering, and of rest. In spring, after growth commences, water must be given sparingly until the pseudo-bulbs begin to form, because at this period too much water will certainly damage the young shoots; but while in a vigorous state of growth, plenty of water and a humid atmosphere is requisite, at a temperature not less than 65° at night, nor yet above 80° in day, and shaded during sunny weather. As the flowering season advances, the amount of water should be diminished gradually. In winter, when the plants are in a dormant state, water must be withheld altogether for a few weeks, and the temperature should not be allowed to rise above 60° or to fall below 50°.

If it be desired, these plants may be grown suspended from the roof of the stove instead of being grown in pots. In this case it is necessary to be careful to surround the roots during the period of growth with some substance, such as moss, capable of retaining moisture, as they require to be kept moist during the time in which the flowers are forming; if this is not attended to, the latter will frequently wither without opening. But the better way, certainly, is to cultivate them in pots. Others recommend to grow them on naked blocks, affirming that in this way they live longer, though they do not flower so finely. This may be, owing to the greater facility afforded for keeping them dry in winter.

§ CATASETUM. *Lip ventricose or helmet-shaped.* (Lindley.)

1. **Three-toothed Catasetum.**—C. TRIDENTATUM, *Hooker, Exot. Flora*, t. 90, 91; *Bot. Mag.* t. 2559. C. MACROCARPUM, *Richard, Kunth, Syn.* i. 331; *Humboldt, Bonp. et Kunth, Nov. Gen.* vii. t. 631. C. CLAVERINGII, *Loddiges, Bot. Cab.* t. 1344. — Native of tropical South America, and the West Indies.

A fine and variable plant, sporting into all kinds of monsters. It is a stout growing species, with upright flower scapes, arching at the top, bearing long racemes of large

[CATASETUM.—6.]

flowers, of which the sepals are green or yellowish green, the petals yellowish brown spotted with purple, and the lip yellow often tipped with yolk-colour, and spotted within: they are produced in autumn. The sepals and petals are acuminate, and the lip pouched, three-toothed at the apex.

The variety *FLORIBUNDUM*, the *C. floribundum* Hooker (*Exot. Flor.* t. 151), and *C. Claveringii*, Lindley (*Bot. Reg.* t. 840), has larger flowers, the green sepals suffused at the lips outside with purple, deep purple petals, and a bright yellow lip dotted inside with purple; the sepals and petals acute. It comes from Brazil: The flowers have a faint smell of myrrh.

Another variety, *WAILESII*, the *C. Wailesii* Hooker, (*Bot. Mag.* t. 3937), has the flowers green, the sepals and petals acuminate: the lip deeper coloured. It is from Honduras.

There is another green-flowered variety, *VIRIDIFLORUM* (*Hooker, Bot. Mag.* under t. 3329) from Demerara. In this the lip especially is deep green and strongly toothed.

A handsome variety, *VITELLINUM*, of which a figure is published in the *Botanical Magazine* (t. 3329) has the sepals brownish green, the petals brown, and thickly spotted with purple, and the lip deep orange yellow in the fore half, pale green behind. It is from Brazil.

There are besides in gardens, *ATROPURPUREUM*, a variety with deep purple flowers; and *AUREUM*, with deep yellow flowers; both from Demerara.

This is one of the species which has been seen sporting into monstrous forms. One of these, *VIRIDE*, the *Monachanthus viridis*, Lindley (*Bot. Reg.* t. 1752), from Brazil, has no feelers to the column, and the lip is perfectly undivided, and somewhat cuspidate. The flowers are green, the petals faintly dotted with red, the lip green externally, yellow within.

Another, a much more remarkable deviation from the normal character, called *CRISTATUM*, the *C. cristatum*, Lindley (*Bot. Reg.* t. 966), from Brazil, has flowers of a lively green, the lip white, flat, oblong, fringed and curiously crested with fleshy processes, which are sometimes purple. This has the smell of tarragon. An account, accompanied by a drawing, of a very curious instance of the occurrence of the sporting propensity above referred to, is recorded in the *Botanical Register* (t. 1951*.) In this case a plant of *Myanthus cristatus*, cultivated at Chatsworth, produced in company with a spike of the flowers to which that particular name had been given, another, the flowers of which would have been referred to the genera *Myanthus*, *Monachanthus*, and *Catasetum*, if borne separately, but which were in this instance associated on the same common stalk.

2. **Entire-lipped Catasetum.**—[Plate I.]—*C. INTEGERRIMUM*, *Hooker, Bot. Mag.* t. 3823. *C. MACULATUM*, *Bateman, Orch. Mex. et Guatem.* t. 11; *Lindley, Bot. Reg.* 1840, t. 62: not of Kunth.—Native of Guatemala.

This is nearly the same as *C. tridentatum*, but differs in the helmet-shaped lip having the lower edges brought together, so as to press upon the column instead of being wide apart. The flowers are strongly scented. The sepals are green tipped with red,

[CATASETUM.—7.]

the petals heavily blotched with purplish brown on a yellowish green ground, and the lip entire at the mouth, yellowish or greenish yellow, variously blotched or spotted with deep purple. In some of the plants of this species the flowers have the edges of the base of the lip entire, but they are more frequently serrated. This plant appears to differ from the true *C. maculatum*, under which name, however, it is commonly known in gardens.

3. **Flat-headed Catasetum.**—[Plate II.]—*C. PLANICEPS*, *Lindley, Bot. Reg.* 1843, t. 9.—Native of the Spanish Main.

This species is allied, in habit and aspect, to *C. tridentatum*, *integerrimum*, and *semiapertum*, but it differs from the first in its serrated lip, and from the two last in its lip not having the edges incurved, whilst it differs from all three in the singular truncate form of this helmet-shaped organ, which is flattened from front to back and not laterally. The sepals and petals are green, the lip green, its recurved edge margined with yellow.

4. **Yellow-green Catasetum.**—*C. VIRIDI-FLAVUM*, *Hooker, Bot. Mag.* t. 4017.—Native of Central America.

A large-flowered species, apparently very near to some of the varieties of *C. tridentatum*. The sepals and petals are pale green and spreading, the lip large yellowish green externally, deep yellow and floccose within, the margins ciliated towards the base.

5. **Serrated-lipped Catasetum.**—*C. SERRATUM*, *Lindley, Bot. Reg.* 1847, under t. 24.—Native of Panama.

A free-blooming species, bearing spikes of from ten to twelve powerfully scented flowers, which are unspotted, pale green, with the convexity of the lip yellow. It is nearly allied to *C. maculatum*, differing in the emarginate apex of the lip, the sides of which do not curve inwards, and in the shortness of the feelers on the column.

6. **Sooty Catasetum.**—*C. FULIGINOSUM*, *Lindley, Bot. Reg.* 1841, *misc.* 168.—Said to be native of Mexico.

This curious plant has the habit of *C. tridentatum*, but the flowers grow in a dense erect raceme; they are deep green, spotted with dull blackish purple, looking as if soiled with soot. The sepals and petals are spotted and reflexed, so as to hang downwards; the lip is stained with pale purple, and is either entire or very slightly serrated, and spreads away from the column at almost a right angle. "In this genus," observes Dr. Lindley, "it is impossible to say what is a species. Judging by rules found good in other genera, this is quite distinct; judging from the evidence we possess concerning *C. tridentatum*, *cristatum*, and *viride*, we should suspect it to be a male form of *C. atratum*, or some such species."

7. **Lurid Catasetum.**—*C. LURIDUM*, *Lindley, Genera et Sp. Orch.* 156; *Bot. Reg.* t. 1667; *Bot. Mag.* t. 3590. *C. ABRUPTUM*, *Hooker, Bot.*

[CATASETUM.—8.]

Mag. t. 3929. *ANGULOA LURIDA*, *Link, Verhandl. Ver. Gart. Konig. Preuss.* i. 289, t. 6.—Native of Brazil.

In this species the flowers are borne a few together at the end of a longish scape, nodding at the apex: they are globose pale or dull green, faintly blotched, and having a blunt shovel-shaped lip, which is sometimes richly spotted on the margin with red brown on a yellowish ground, sometimes more faintly spotted. It is not a very attractive species.

8. **Half-open Catasetum.**—*C. SEMI-APERTUM*, *Hooker, Exotic Flora*, t. 213; *Bot. Reg. t.* 1708.—Native of Brazil.

The flowers of this species are small, green, whole-coloured; the lip is incurved at the point, its sides denticulate. The flowers are very fragrant, which is its only recommendation in a cultural point of view.

9. **Miller's Catasetum.**—*C. MILLERI*, *Loddiges' MS: Bot. Reg.* 1838, *misc.* 149.—Native of Brazil.

This plant has a stem two feet high, and bears dull purple-spotted flowers, with a half-green lip; but is otherwise very much like *C. semi-apertum*, of which it is perhaps a variety.

10. **Ochraceous Catasetum.**—*C. OCHRACEUM*, *Lindley, Bot. Reg.* 1844, *misc.* 55.—Native of New Grenada.

This species is in the way of *C. luridum*. It has deep yellow-ochre coloured flowers. The lip is hooded, but contracted at the point into a short beak.

11. **Pure-coloured Catasetum.**—*C. PURUM*, *Nees ab Esenbeck, Plant. Bonn. Icon.* 1. t. 1; *Bot. Mag. t.* 3388. *C. INAPERTUM*, *Hooker, Exot. Flora*, iii. 213.—Native of Brazil.

This species has small yellowish green flowers, the inside of the lip purplish green. They are produced in a long raceme, and have the sepals and petals strongly reflexed.

12. **Hooker's Catasetum.**—*C. HOOKERI*, *Lindley, Collect. Bot. t.* 40.—Native of Brazil.

A small-flowered species, the sepals pale brownish green; the petals pale green, the lip deeper green, yellow at the point internally, and spotted with purple. It is nearly allied in habit to *C. luridum*.

13. **Globe-flowered Catasetum.**—*C. GLOBIFLORUM*, *Hooker, Bot. Mag. t.* 3942.—Native of Brazil.

A very singular plant, much like *C. Hookeri*, and according to Lindley, perhaps a variety of it. The flowers, produced in a long spike, are remarkably globose, the dull purplish brown sepals and the pale green petals spotted with brown, being incurved, closely imbricated, and applied to, but not covering, the glaucous green hemispherical

[CATASETUM.—9.]

lip, which is spotted thickly with deep purple and red on the margin and in the inside. The construction of the mouth of the lip leaves but a small aperture through which the internal spotting is visible.

14. **Long-leaved Catasetum.**—*C. LONGIFOLIUM*, *Lindley, Bot. Reg.* 1839, *misc.* 154; *Sertum Orchidaceum*, t. 31. *MONACHANTHUS LONGIFOLIUS*, *Hooker, Bot. Mag.* t. 3819.—Native of Demerara.

An extremely beautiful species, “beyond all comparison the handsomest of its genus.” The leaves are long and grassy, the flowers grow in a cylindrical pendulous raceme, over which they are closely packed for the length of a foot or more. The lip is semi-globose, bright orange slightly bordered with violet, and having a reddish fringe; the sepals and petals are all turned in one direction, and of a pale purplish-green.

15. **Two-coloured Catasetum.**—*C. DISCOLOR*, *Lindley, Bot. Reg.* 1841, under *misc.* 12; 1844, under *misc.* 40. *MONACHANTHUS DISCOLOR*, *Lindley, Bot. Reg.* t. 1735.—Native of Demerara and Brazil.

A variable plant with loose erect racemes of curious but dull flowers. The sepals are greenish, the petals dull pale purple, the lip greenish purple, yellowish inside. The lip is hemispherical, with the margin reflexed and fringed.

The variety *BUSHNANI*, the *Monachanthus Bushnani*, *Hooker (Bot. Mag.* t. 3832), and *M. discolor* γ *Bushnani* *Hooker (Bot. Mag.* t. 3601, fig. A.) a native of Demerara, has the flowers entirely yellow-green, the inside of the lip rich golden brown at the base, and the apex of the lip produced into a sharp entire point, while the sides are strongly fringed. The flowers are also larger, and in some of the states pretty.

The variety *FIMBRIATUM*, the *Monachanthus fimbriatus*, *Gardner MS. (Bot. Mag.* t. 3708), a native of Pernambuco, has smaller pale green flowers, the fringe of the lip strongly developed and uncoloured. It is not showy.

The variety *VIRIDIFLORUM*, the *Monachanthus discolor* β *viridiflorus (Bot. Mag.* t. 3601), is from Demerara. The sepals and petals are pale green, the lip deeper green, yellow interiorly, with a bluntish entire point and lateral fringes, and the column winged and cream-coloured. It is not an ornamental variety.

The variety *ROSEO-ALBUM*, the *C. roseo-album*, *Lindley, (Bot. Reg.* 1840, *misc.* 135), and the *Monachanthus roseo-albus*, *Hooker (Bot. Mag.* t. 3796); from Brazil, is a delicate coloured and rather pretty plant, the flowers being greenish-white tinged with red, and the lip of the same colour, tipped and banded with red; the fringes of the lip are in this variety of unusual length, and entirely red.

16. **Warczewitz's Catasetum.**—*C. WARCZEWITZII*, *Lindley, Paxt. Fl. Gard.* i. 45, fig. 29. *WARCZEWITZIA* SP. *Skinner MS.*—Native of Panama.

A very distinct and interesting species, with short close pendulous racemes of flowers equalling the *Aerides* in fragrance. The flowers are pale green with bright emerald green veins, and though not gaudy are rather pretty; the lip is helmet-shaped, and spreads into a thin three-lobed limb, of which the middle lobe spreads into two diverging fringed parts; the column is without cirrhi.

[CATASETUM.—10.]

17. **Dark-flowered Catasetum.** [Plate III.]—*C. ATRATUM*, *Lindley, Bot. Reg.* 1838, *misc.* 114; t. 63.—Native of Brazil.

A distinct and handsome species, with a decurved gracefully drooping raceme of flowers. They are deep green externally, the sepals rich purple-brown inside, the petals spotted with the same colour, while the lip is dull green fringed, with a recurved yellow flap at the apex. The lip is less prominent in this plant than in those already noticed, and the sides are thin and pectinately fringed. The species, according to Lindley, neither exactly agrees in the structure of the lip, with *Catasetum*, nor *Myanthis*, but serves to unite them into one generic group.

18. **Duke of Bedford's Catasetum.**—*C. RUSSELLIANUM*, *Hooker, Bot. Mag.* t. 3777. *MORMODES RUSSELLIANUM*, *Lindley*, according to Loudon.—Native of Guatemala.

A large species, with broad-lanceolate leaves, and an ample raceme of flowers, which are pale green, enlivened, however, by the contrast of the lip, which is nearly white streaked with green. The lip is almost membranaceous, and the column appears to want the usual feelers or cirrhi. It is said to be very nearly related to *C. laminatum*, a species of the following group.

§ **MYANTHUS.**—*Lip plane, often pitted or saccate.* (Lindley.)

19. **Plate-bearing Catasetum.**—*C. LAMINATUM*, *Lindley, Ann. Nat. Hist.* iv. 384; *Sertum Orchidaceum*, t. 38. *MYANTHUS LAMINATUS*, of *gardens.*—Native of Mexico.

A large-flowered handsome species, with the blossoms spread open, purple or greenish, spotted with brownish purple. The lip, white, speckled with purple, saccate at the base, and having a deep plate or frill running along its middle from end to end, the margin incurved and fimbriated.

In the variety *EBURNEUM* [Plate V. fig. 4] of Lindley, (*Bot. Reg.* 1841, t. 5, fig. 4), the flowers are rich purple, and the lip pure white. Another variety, *MACULATUM*, has the flowers spotted with dark purple.

20. **Table-lipped Catasetum.**—*C. TABULARE*, *Lindley, Bot. Reg.* 1844, under *misc.* 40.—Native of Guatemala.

In size and colour this resembles *C. laminatum*, but it has a broad raised oblong fleshy table of a yellowish brown colour, wrinkled across, and broken up into asperities, extended in front into strong teeth.

21. **Blood-spotted Catasetum.**—*C. SANGUINEUM*, *Lindley, Paxt. Fl. Gard.* ii. 168, fig. 225. *MYANTHUS SANGUINEUS*, *Linden MS.*—Native of Central America.

A strong growing species, with the flowers in close racemes not at all handsome. They are dull green speckled with brown and blood-red, the brighter colour being dimmed by the dull ground on which they are placed. It is allied to *C. saccatum*, but has smaller flowers, with the sepals and petals all turned upwards, the lip more lacerated than fringed, and the opening of the pouch triangular not crescent-shaped.

[CATASETUM.—11.]

22. **Saccate Catasetum.**—*C. SACCATUM*, *Lindley, Bot. Reg.* 1840, *misc.* 179; *Sertum Orchidaceum*, t. 41.—Native of Demerara.

A beautiful as well as remarkable species. The flowers are very large, green, the sepals and petals richly spotted with purple, the lip bright dark yellow inside, outside closely covered with brown and orange, or crimson dots, and with a black velvety marking on the lower edge of its mouth. The lip is saccate in the middle, that is, pierced by a narrow aperture that leads into a conical chamber or bag, which is not observed until the back of the lip is turned up.

23. **Proboscis-lipped Catasetum.**—*C. NASO*, *Lindley, Bot. Reg.* 1843, *misc.* 111.—Native of Caraccas.

A singular and handsome plant, bearing short erect flower-spikes. The sepals and petals are pale green, almost white outside, slightly tinged with pink inside, and there richly spotted in irregular bars with deep crimson purple. "The lip," writes Dr. Lindley, "is a most singular organ, and very difficult to describe; viewed laterally, it has a hemispherical form, and is green, except at the base where it is extended into a black-purple lacerated margin embracing the column, and at the point where it is extended into a long flat horn or snout; seen in front, it is almost wholly of the same rich black-purple, and looks as if it were a solid hemisphere, pierced in the middle with a large heart-shaped hole."

There are some very fine varieties of this handsome plant. One of these, *VIRIDE* (*Bot. Mag.* t. 4792, fig. 1), has the large flowers green, dotted with purple, the sepals and petals entire, the lip more or less enlivened internally with yellow, and also purple spotted, its sides strongly fringed, and its apex divided into several coarse prominent teeth or lobes. Another, *PICTUM* (*Bot. Mag.* t. 4792, fig. 2), has green entire sepals, and large lacerate-serrate petals, stained along the edges with reddish-brown, both sepals and petals being purple-spotted; the lip is strongly fringed especially at the base, and terminates in a prominent apical proboscis-like lobe, and is of a deep red-purple, stained with green, and marked with rich orange around the margin of the concavity near its base. These two, Sir W. J. Hooker observes in the place quoted above, are considered by Dr. Lindley to be varieties of *C. Naso*; but he adds, that they may all be spots of the original *C. tridentatum*; the foliage and pseudo-bulbs seem to be the same in all.

- † 24. **Trowel-lipped Catasetum.** [Plate IV.]—*C. TRULLA*, *Lindley, Bot. Reg.* 1840, *misc.* 176; 1841, t. 34.—Native of Tropical America.

A free blooming species, bearing long pendent racemes of about thirty flowers. The sepals and petals are green, the lip paler near the centre tipped with brown, and there sparingly dotted with purple. The lip has much the form of a trowel, and is not at all hollowed out into a bag, but is merely concave like the bowl of a spoon. It is a singular, but on account of the colours, not a very handsome plant.

25. **Tumour-lipped Catasetum.** [Plate V fig. 1.]—*C. CALLOSUM*, *Lindley, Bot. Reg.* 1840, *misc.* 183; 1841, t. 5, fig. 1. *MYANTHUS CALLOSUS*, of *gardens.*—Native of La Guayra.

[CATASETUM.—12.]

This plant is quite like the many-flowered variety of *C. tridentatum* in habit, but the flowers are different. The sepals and petals and column are unspotted dull reddish brown; the colour has been compared with that of old spoilt port wine. The lip is green, flat, with a yellow tubercle near the base, above the hollow, and a stain of the same colour near the apex.

A fine variety called GRANDIFLORUM (*Hooker, Bot. Mag. t. 4219*), has long pendent spikes of flowers of which the strongly divaricate sepals and petals are greenish purple, and the lip dark green dotted with red, and conspicuously tipped with reddish purple, the tooth or protuberance at the base being of the same red-purple colour. The dorsal sepal and the petals are closely placed, parallel, pointing in one direction; the other sepals and the lip point in the opposite direction.

Dr. Lindley suggests that the *C. LANSBERGII* (*Paxt. Fl. Gard. i. 156*), the *My-anthus Lansbergii* of Reinwardt and De Vriese, and of the Dutch gardens, which is certainly very near *C. callosum*, can scarcely be a distinct species. It probably ranks here as a variety. It is from the Caraccas, and has a long ovate raceme of green flowers spotted with purple.

26. Pore-bearing Catasetum.—*C. PORIFERUM*, *Lindley, Bot. Reg. 1838, misc. 164*.—Native of Demerara.

The flowers of this species have a clear green ground marked with broken bands of deep purple. The lip dull green, nearly flat, deeply cordate, the apex truncated, and the margin somewhat crenated; a yellow-tipped tooth is placed at its base, and at the apex is an ovate fleshy raised lobe, with a pore in the middle secreting honey, hence the name. It is nearly allied and very similar to *C. deltoideum*.

27. Deltoid-lipped Catasetum.—*C. DELTOIDEUM*, *Lindley, Bot. Reg. 1840, misc. 157*. *MYANTHUS DELTOIDEUS*, *Lindley, Bot. Reg. t. 1896*.—Native of Demerara.

In this handsome species which has long cernuous racemes, the flowers are deep purple tinged green, spotted and banded with dark brown-purple; the lip purple, interiorly green along the centre, flat, sagittately-triangular and without fringes or crests, but bearing a greenish wart near the tip, where the edges are reflexed.

This species, like *C. tridentatum*, has been found masquerading, an instance of which, observed by Mr. Dunsford, is recorded in the *Botanical Register* (1840, *misc. 157*). In this case, the scape had become three times as stout as usual, while the length of the raceme was much reduced; the sepals and petals retained their form and colour, but the lip instead of being arrow-headed, flat, deep purple, toothed at the base, and placed in front of the flower, had become exactly like that of *Monachanthus viridis*, hooded, undivided, and of a dull greenish colour, tinged with dull purple. The column had shortened, and had lost its feelers, and its lengthened beak had almost disappeared.

28. Trifid-lipped Catasetum.—*C. TRIFIDUM*, *Hooker, Bot. Mag. t. 3262*. *MYANTHUS CERNUUS*, *Lindley, Gen. et Sp. Orch. 155; Bot. Reg. t. 1721*.—Native of Brazil and Trinidad.

[CATASETUM.—13.]

This plant bears elongated, drooping, many-flowered racemes of large green flowers, which are spotted all over with numerous purple dots. The lip is darker green, three-cleft, the centre lobe smaller.

29. **Fringed Catasetum.**—*C. FIMBRIATUM*, *Lindley, Paxt. Fl. Gard. i. 124, fig. 84.* *MYANTHUS FIMBRIATUS*, *Morren, Ann. de Gand. t. 231.*
—Native of Brazil.

This species, which made its appearance in the Belgian gardens, produces many-flowered drooping racemes. The sepals and petals are pink, speckled with red; the lip is broad heart-shaped, short fringe-toothed, of a creamy white.

A variety, *LEGRELLII*, has been observed, in which the sepals and petals are green, and the lip white.

30. **Horned Catasetum.** [Plate V. fig. 2.]—*C. CORNUTUM*, *Lindley, Bot. Reg. 1840, misc. 182; 1841, t. 5, fig. 2.*—Native of Demerara.

The flowers of this plant are large, dull green, richly spotted with deep blackish purple, and they grow sixteen or more in a raceme. The lip is pale green spotted with dark purple; it is hollowed out above the base, and beyond this furnished with a strong inflexed white horn rising from a rugged base; while the margin is broken up into slender stiff processes, which represent the fringes of some other species.

31. **Lance-bearing Catasetum.** [Plate V. fig. 5.]—*C. LANCIFERUM*, *Lindley, Bot. Reg. 1841, t. 5, fig. 5.*—Native of Brazil.

The flowers are green, spotted with dark purple. The lip is yellowish green, hollowed at the base, and beyond this bearing a tripartite horn; the margin is broken up into long fringes, and a broad lancet-shaped process grows from the surface near the apex. It is, perhaps, a variety of *C. barbatum*.

32. **Bearded Catasetum.**—*C. BARBATUM*, *Lindley, Bot. Reg. 1844, under misc. 40.* *MYANTHUS BARBATUS*, *Lindley, Bot. Reg. t. 1778.*—Native of Demerara.

A variable and pretty species. The flowers of the original bearded *Catasetum*, have narrow sepals, dark green blotched with purple, the petals deep rich brownish red. The lip is pink, with narrow delicate fringes of white slender succulent hairs from its margin, hollowed below the middle, and bearing a strong white tooth-like spine or horn on the face near the base. One of the varieties is without spots.

The variety *ALBUM*, the *Myanthus barbatus*, var. *labello-albus*, Hooker (*Bot. Mag. t. 3514*), from Demerara, is a large-flowered and very handsome variety. The flowers have spreading sepals and petals of a deep green colour, spotted with dark purple somewhat banded blotches within, and with similar paler spots on the outer surface. The lip is altogether greenish-white.

The variety *SPINOSUM*, the *C. spinosum*, Lindley (*Bot. Reg. 1840, misc. 136*), and the *Myanthus spinosus*, Hooker (*Bot. Mag. t. 3802*), is one of the larger-flowered and brighter-coloured varieties. The sepals and petals are bright yellowish green, with clear purple spots. The petals are serrated near the apex, and the lip, which is greenish

[CATASETUM.—14.]

white and strongly fringed, bears a three-toothed porrected spine below the point. It is a native of Brazil.

The variety PROBOSCIDEUM [Plate V. fig. 3], the *C. proboscideum*, Lindley (*Bot. Reg.* 1839, *misc.* 140), and the *C. barbatum* var. *proboscideum* of the same author (*Bot. Reg.* 1841, t. 5, f. 3), has somewhat drooping flower-spikes, the flowers having green sepals and petals spotted with purple, and a yellowish green deeply fringed lip, which has the usual strong antical porrect spine; the proboscis-like apex of the column is longer than in the allied plants. It is a native of Demerara.

— Crested Catasetum.—*C. CRISTATUM*, Lindley.

This, which was long regarded as a distinct species, proves to be one of the monstrous conditions into which *C. tridentatum* sports. (see No. 1.)

CATASETUM CITRINUM *of gardens*, is a whole-coloured variety of *Mormodes pardinum*.

REFERENCE TO THE PLATES OF THE
GENUS CATASETUM.

Plate I.—C. INTEGERRIMUM, *Hooker*.

Fig. 1. the lip and column.

Plate II.—C. PLANICEPS, *Lindley*.

Plate III.—C. ATRATUM, *Lindley*.

Plate IV.—C. TRULLA, *Lindley*.

Plate V.—Fig. 1. C. CALLOSUM, *Lindley*.

Fig. 2. C. CORNUTUM, *Lindley*.

Fig. 3. C. BARBATUM, *var.* PROBOSCIDEUM.

Fig. 4. C. LAMINATUM, *var.* EBURNEUM.

Fig. 5. C. LANCIFERUM, *Lindley*.

CATASETUM
I



Miss Drake del.

CATASETUM
II



Miss Drake del

G. B. Harvey sc

CATASETUM
III



Miss Drake. del.

J. W. Eaton.

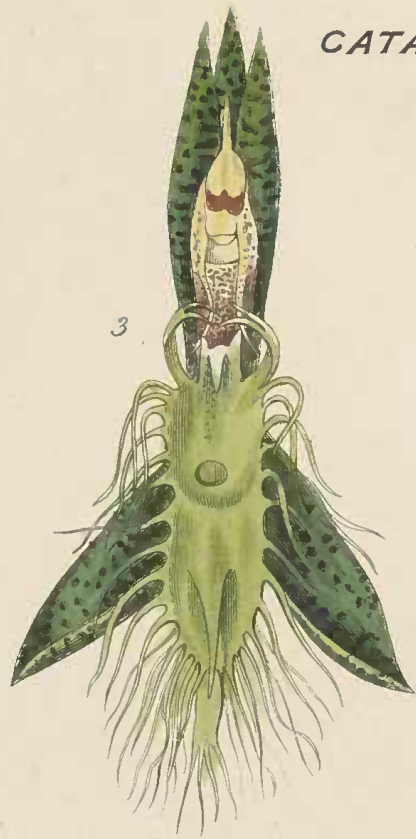
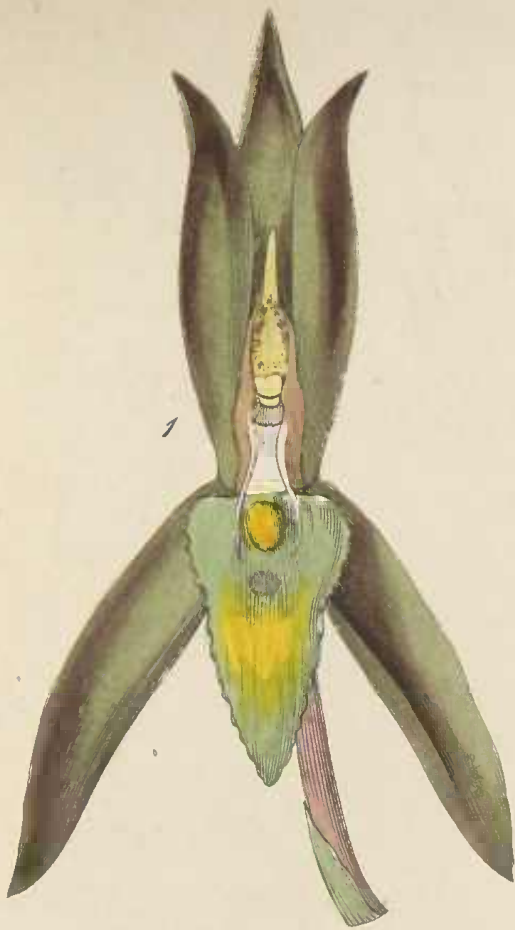
CATASETUM
IV



Catasetum ruber (L.)

J. Burckley 50

CATASETUM
V



THE GENUS MORMODES.

THE name of MORMODES has been given by Dr. Lindley, to a small group of Orchidaceous plants, which, as he remarks, has so entirely the habit of *Catasetum*, that there is no means of distinguishing these genera, except when the plants are in flower. *Mormodes*, he further observes, presents in its structure peculiarities of so strange a nature, that if they were not found constant in several distinct species, one might be tempted to regard them as monstrosities. In particular, the column instead of being straight and standing erect in the centre of the flower, is bent over to one side, just as if it had been subjected to violence. There is also great irregularity of direction and proportion, in the parts that surround the column.

These plants, like *Catasetums*, have elongated pseudo-bulbs or stems, bearing a tuft of plaited deciduous leaves, and producing from their base the flower-stems, which support racemes of greater or lesser length. There are about a dozen species in cultivation.

The flowers consist of three narrowish sepals, of which the upper is often somewhat fornicate, or arching, and the lateral ones frequently reflexed; the petals are similar but broader; the lip is sellæform or saddle-like, ascendant, three-lobed, somewhat wedge-shaped below, and articulate with the column, which latter organ is semiterete, hornless, with a long narrow stigmatic surface, and the anther-bed acuminate behind. The pollen-masses are four in number, connate in pairs, with a thick caudicle, and a stout fleshy glandule.

One of the most striking features in the flowers of this genus consists in an appearance of distortion, which however

[MORMODES.—2.]

is natural to them. In all it exists in the labellum and column, which look as if they had had their joints broken, and then unskilfully set again; in some it appears in the sepals as well; in *M. luxatum* it is found in every part; the whole flower appearing as if all its members had been dislocated.

The name *Mormodes* is from the Greek *mormo*, a frightful-looking object or goblin, and alludes to the unnatural-looking aspect of the flowers.

These plants may, for all cultural purposes, be viewed as forming a portion of *Catasetum*; for having precisely the same habit, and producing the same kind of pseudo-bulbs and inflorescence, they consequently require very similar treatment. In the absence of flowers, by means of which alone they are to be determined with certainty, they may be separated from *Catasetum*, by a practised eye, by their being of a rather finer texture, and less robust, with usually smaller and lighter coloured bulbs, and with leaves a little glaucous. They may be considered generally preferable to *Catasetums* for cultivation, being altogether of neater appearance, while the flowers of some of them are deliciously fragrant. Like *Catasetums*, their leaves are deciduous, their roots annual, and the pseudo-bulbs flower only once.

The plants may be grown either on blocks of wood or in pots, as may be most convenient; and in either case a similar mode of management is required; pot-culture being that in which the evil of too much moisture at certain periods, is most to be guarded against. If they are grown on wood, they must be fastened on with zinc wire, adding some sphagnum moss about the roots, to prevent their becoming too much dried. If treated as pot plants, they must in potting, be elevated above the pot rim; for one most important point in their culture is, always to guard against much water lodging about

[MORMODES.—3.]

them, either at the roots, or on the tops, for if it does, all hopes of success may be given up.

When they require potting, or 'blocking,' let it be performed at the period when they are commencing their season's growth, and before they are far advanced; otherwise, the roots will become injured. They thrive best in light brown fibry peat, thoroughly mixed with charcoal or broken potsherds, and half decayed leaf-mould in about equal proportions. While growing they must be kept in a close humid atmosphere, with a temperature ranging from 65° to 80°. They need shading from clear bright sunshine, a partial or glimmering light only being allowed them, except it be early in the morning and late in the afternoon, or when there is but little sunshine. If they are, as they ought to be, kept in a humid atmosphere, they need but little water at the roots, until the growth is far advanced; then they require a supply two or three times a week; the quantity of water required always depending in a great measure on the state of the surrounding atmosphere. As a rule, however, it is best to let them become moderately dry after once watering before a second supply is administered. They may be syringed over head once or twice a day, except when they are in flower; and this is the most effectual method of keeping a humid atmosphere, and likewise of keeping the plants clear of insects.

When their growth is completed, and the pseudo-bulbs have arrived at maturity, gradually withhold the supplies of water, and lower the temperature, until they are finally at rest. They may then be placed closed together in a cool corner of the house, and kept all but quite dry, until the return of spring, when they are to be again stimulated into active growth. If from drip or any other cause they become wet during the resting season, remove them to a drier place at once, for if they remain long in a wet state they are certain to decay.

Their propagation is extremely simple, the rhizome may

[MORMODES.—4.]

be divided with one or two bulbs to each piece. This operation should be performed at the time of repotting. In the cases of newly or recently imported 'bulbs,' keep them cool and rather dry until they make an effort to grow; then they should be gradually brought under the influence of more moisture and of a higher temperature.—J. H.

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1. **Bearded Mormodes.**—*M. BARBATUM*, *Lindley, Paxt. Fl. Gard.* ii. 57. *M. ATROPURPUREA*, *Hooker, Bot. Mag.* t. 4577.—Native of Panama.

This species produces short oblong pseudo-bulbs, and an upright scape about a foot high, bearing a few largish flowers of a uniform dull dark purple, or between chocolate and blood-colour, the lip nearly entire, broadly obcordate, tapering below, and velvety on the surface; the column is pale purplish brown. The sepals and petals are strongly reflexed, and the lip almost entire.

2. **Dark-purple Mormodes.**—*M. ATROPURPUREUM*, *Lindley, Bot. Reg.* t. 1861; *Id. Paxt. Fl. Gard.* ii. 57.—Native of Central America.

In this plant, the flowers are of a deep purple, approaching to crimson in the lip, and are borne on a close erect raceme. The lateral sepals are reflexed, the petals are erect, and the lip is three-lobed with the middle lobe slightly trifid; it is quite smooth, fleshy, veining at the edge, its divisions rounded, that in the middle being longer and cuspidate.

3. **Streaked Mormodes** [Plate I.].—*M. LINEATUM*, *Bateman, Bot. Reg.* 1841, *misc.* 107; 1842, t. 43; *Lindley, Paxt. Fl. Gard.* ii. 58.—Native of Guatemala.

The flowers here grow in an elongated many-flowered raceme. The sepals and petals are spreading; the lip is linear, incurved, fleshy, bearing scattered hairs, and having a tooth on each side near the base. This curious species which was discovered both by Mr. Skinner and Mr. Hartweg, attracted them to its seat among the almost inaccessible branches of trees overhanging a deep stream, by its delicious fragrance. The flowers, when they first appear are dull olive green, and by no means handsome; they subsequently acquire a bright warm yellow tint, and the streak-like markings upon them increase in intensity till they become orange-red, when it is quite ornamental. The lip which is yellowish white, more or less marked, is variable in form; always indeed covered with long loose straggling hairs, but having its lateral lobes sometimes not more than half a line long, and occasionally as much as two lines. Fig. 1. in our plate, represents the more usual appearance of this part.

[MORMODES.—5.]

4. **Carton's Mormodes.**—*M. CARTONI*, *Hooker, Bot. Mag.* t. 4214; *Lindley, Paxt. Fl. Gard.* ii. 58.—Native of Santa Martha in Central America.

This plant has longish subcylindrical pseudo-bulbs, and the scapes, one or two from a stem, are erect, and bear a raceme of numerous gaily-marked flowers, of which the lateral sepals are reflexed, and the lip is strongly inflexed, singularly obliquely twisted, and with a short blunt tooth on each side. The flowers are bright yellow with red longitudinal lines or streaks, those on the sepals and petals quite continuous, those on the lip somewhat broken or interrupted; the lip is also of rather a paler yellow than the rest of the flower. It is a handsome species, and according to Sir W. Hooker its nearest affinity is with *M. aromaticum*. Dr. Lindley adds, that the flowers are very variable, the sepals sometimes flesh-coloured, the lip fleshy rose-coloured.

Two varieties of this plant have been figured by Dr. Lindley. One with dingy red flowers marked with lines of dots (*Paxton's Fl. Gard.* iii. t. 93, fig. B.); the other with dark lake-coloured flowers speckled irregularly with red, but not dotted (*Ib.* t. 93, fig. C.)

5. **Aromatic Mormodes** [Plate II.].—*M. AROMATICUM*, *Lindley, Bot. Reg.* 1841, *misc.* 162; 1843, t. 56; *Id. Paxt. Fl. Gard.* ii. 54.—Native of Mexico.

This species, although not of much beauty, is valued for the peculiar fragrance, which is like that of aromatic vinegar. The flowers have a pale pinkish yellow ground, thickly marked with dull wine-red specks and blotches; and they grow in a short erect raceme. The lip is narrowly wedge-shaped with its intermediate lobe triangular, and the sepals and petals are all incurved. The plant is most nearly allied to *M. pardina*, but has smaller flowers, its sepals and petals are broader, and have a different direction, and the lip has no acute lateral teeth.

6. **Leopard-spotted Mormodes.**—*M. PARDINA*, *Bateman, Orchid. Mex. et Guat.* t. 14; *Bot. Reg.* 1838, *misc.* 1760; *Hooker, Bot. Mag.* t. 3900; *Lindley, Paxt. Fl. Gard.* ii. 59. *CYCLOSIA MACULATA*, *Klotzsch, Allgem. Gartenz.* 1838.—Native of Mexico.

This very handsome and robust species, bears, from its oblong pseudo-bulbs, elongated many-flowered racemes of rich yellow delightfully fragrant flowers, which are dotted over thickly with rich red-brown specks. The sepals and petals are subsuccund; the lip of the same lanceolate form, acutely three-toothed and clawed. It is related closely to *M. aromaticum*, but is a larger plant with longer leaves. In habit the two are similar. The spike of *M. pardinum*, however, is much longer and bears three times as many flowers; the sepals and petals are narrower, more taper-pointed and not incurved, they are also differently coloured; and the lip has the same form as the sepals, except that it has three sharp-pointed lobes, and a kind of stalk; in all which particulars it differs from *M. aromaticum*.

A variety called UNICOLOR (*Hooker, Bot. Mag.* t. 3879),—the *Catasetum citrinum* of gardens, and *Mormodes citrinum* of Don,—differs in having the flowers

[MORMODES.—6.]

entirely unspotted. It, as well as this species, is a very ornamental plant, the flowers being of a brilliant yellow.

7. **Freckled Mormodes.**—*M. LENTIGINOSUM*, *Hooker, Bot. Mag.* t. 4455; *Lindley, Paxt. Fl. Gard.* ii. 58.—Native of Central America.

The pseudo-bulbs of this species are oblong, and the scape, which grows a foot and a half high, is flexuose, bearing a few drooping dull-coloured flowers, of which the sepals are entirely reflexed. Sir W. Hooker describes the flowers as pale reddish-brown, everywhere sprinkled with dark-coloured dots, but according to the figure it is rather a cream-colour stained with pale washy purple, and dotted with darker purple. The lip is obovate, entire, and apiculate.

8. **Trumpeter Mormodes.**—*M. BUCCINATOR*, *Lindley, Bot. Reg.* 1840, *misc.* 9; *Id. Paxt. Fl. Gard.* ii. 58.—Native of Venezuela.

The habit of this plant and the general appearance of the flowers, except in colour, are similar to those of *M. atropurpureum*; but the flowers are pale green, with an ivory white lip, the sides of which are so rolled back as to give it the appearance of a trumpet. The flowers grow in a straight oblong raceme, and have their lateral sepals reflexed.

9. **Dislocated Mormodes** [Plate III.].—*M. LUXATUM*, *Lindley, Bot. Reg.* 1842, *misc.* 66; 1843, t. 33; *Lindley, Paxt. Fl. Gard.* ii. 59.—Native of Mexico.

A plant of great beauty, worthy a place in the choicest collections, albeit without brilliant colours. It is of large size, and stately habit; and the flowers, which have a very delicious as well as powerful fragrance, are three inches or more in diameter, pale lemon-colour, fleshy, rather globular, but so distorted by the complete dislocation of all the parts, that it would be difficult to ascertain their real nature, if it were not for the token given by the labellum; which organ has a deep brown streak drawn down its middle, and covers over the column like a hood. The leaves of the plant are about three feet long, narrow, deep green with a fine glaucous bloom upon their underside. The irregularity of structure characteristic of the species of *Mormodes*, is no where so strongly marked as in this plant, whose sepals and petals, instead of standing in an obviously alternate position with respect to each other, are so completely broken up and twisted out of their places, that they can hardly be recognised, and the whole floral apparatus is, as it were, dislocated. For example, of the three sepals, the back one is placed almost opposite one of the petals; the other petal is shifted to one side, so as to stand half behind the first; the lip, instead of being stationed exactly between the two petals and two lateral sepals, turns its back to the left-hand sepal, and its face to the right-hand petal; and then, the column is bent to the left as well as the lip, but not in the same degree, so that even these two organs are not, as they usually are, opposite each other.

10. **Yellowish Mormodes.**—*M. FLAVIDUM*, *Klotzsch, Allgem. Gartenz.* 1852; *Lindley, Paxt. Fl. Gard.* iii. 90.—Native of Central America.

[MORMODES.—7.]

This species, which has flowered in the Berlin gardens, produces yellowish flowers, in a short few-flowered raceme. The sepals are reflexed, and of a greenish yellow; the lip yellowish-white, obovate entire, apiculate, with reflexed sides.

11. **Fiery Mormodes.**—*M. IGNEUM*, *Lindley, Paxt. Fl. Gard.* iii. 97, t. 93.—Native of Central America.

A very handsome kind, bearing on a stiff erect stalk a foot high, a longish raceme of about a dozen large rich-coloured fleshy flowers, whose lateral sepals are strongly reflexed. The sepals and petals are of an uniform dark chocolate colour; the lip rich fiery orange-brown, entirely without spots. When spread out the lip has a transversely elliptical outline. Dr. Lindley has suggested that this, together with *M. Cartoni*, *lentiginosum*, and *flavidum* may possibly be merely varieties of one variable species, notwithstanding the strong differences they seem to present. This may indeed be the case with the three kinds just named, but in the structure of *M. igneum* there are distinctive marks of greater importance than any which occur among the before-mentioned plants.

12. **Convolute Mormodes.**—*M. CONVOLUTUM*, *Lindley, Paxt. Fl. Gard.* iii. 98.—Native of Central America.

The flowers of this are dull yellow, spotless, and the smallest of the genus. The lip is rolled up into a pipe, but when flattened has much the form of a sharp trowel.

13. **Large-flowered Mormodes.**—*M. MACRANTHUM*, *Lindley, Paxt. Fl. Gard.* iii. 98.—Native of Central America.

According to drawings made from the native plants, this species, which was imported three or four years since, is the most striking yet known. The flower buds are represented three inches long, so that the flowers must be very large. They are also represented to be of a deep chocolate brown colour; and especially remarkable for the lip being ovate lanceolate, taper-pointed, and perfectly flat. These showy flowers grow in a lax many-flowered raceme.

14. **Showy Mormodes.**—*M. SPECIOSUM*, *Linden Cat.*; *Lindley, Paxt. Fl. Gard.* iii. 174.—Native of New Grenada.

This is a very beautiful and distinct species, having however quite the general habit peculiar to the species of this genus. The flowers are rather large, deep golden yellow, speckled all over with rich cinnamon-red, the points of the lip being deep purple. The lip is three-parted, with the lateral lobes ovate obtuse, and much shorter than the central one, which is acuminate.

REFERENCE TO THE PLATES OF THE
GENUS MORMODES.

Plate I.—MORMODES LINEATUM, *Bateman*.

Fig. 1. The lip, shewing its usual appearance.

Plate II.—MORMODES AROMATICUM, *Lindley*.

Fig. 1. The lip.

Plate III.—MORMODES LUXATUM, *Lindley*.

Fig. 1. The lip ; fig. 2. the column ; fig. 3. the glandule
caudicle, and pollen-masses ; fig. 4. a pollen-mass seen
from behind.

MORMODES
I



P. Hancey

MORMODES
II



Miss Drake del.

S. Barclay sc.



Max Dorey, 11

P. Raven, 11

THE GENUS BURLINGTONIA.

THE few known species of BURLINGTONIA are small plants, but rank among the choicer of Orchids, being remarkable for neatness of habit, and for the beauty of their blossoms, which are in some cases delightfully fragrant. The genus appears to be nearly allied to *Rodriguezia*, but is held by authorities to be abundantly distinct.

The peculiarities of the genus consist, in its having membranous convolute flowers; in the sepals being clawed, shorter than the lip, the lateral ones concave at the base and connate; the petals clawed, parallel with the lip; the lip parallel with the column, and having a channelled lamellate claw; the column terete and club-shaped, its stigma horned on both sides, its anther one-celled, the pollen-masses two in number excavated behind, and adnate to a subulate elastic caudicle.

The genus belongs to tropical America, and consists of a few small growing species, all of which are epiphytal. In some instances the flowers produced are quite large in comparison to the size of the plants.

The name was given by Dr. Lindley in honour of the amiable and accomplished Countess of Burlington.

The *Burlingtonias* are very interesting and attractive little plants when well managed, but they are oftentimes found difficult to establish, and especially while small; all of them, however, are well worthy of the cultivator's especial attention.

They belong to that class of Orchids termed epiphytal,

[BURLINGTONIA.—2.]

and are, therefore, while young or small, best kept upon billets or small pieces of wood. Their roots are very slender and of a delicate nature, and if buried within pots they are almost certain to suffer from excess of moisture. When they become large or well established, they may be grown successfully *upon* pots, but must be elevated high above the pot-rim, on account of their impatience of moisture lodging about their roots. They luxuriate nevertheless in a very humid atmosphere.

When they are first put on the blocks, it is necessary to place a little sphagnum moss about them, for the purpose of preventing the newly-forming roots from becoming dried, which too frequently damages them, and so retards the progress of the plants, unless they are placed in a very shady position, and in an atmosphere that is constantly loaded with moisture. When they become large so as to require more room, it is a good plan to place the wood with the plant attached, on a pot, previously half filled with large potsherds or charcoal; this should be filled up by adding more of these materials, to keep the block in its proper position, and then a thin layer of chopped sphagnum moss, mixed with brown fibry peat, should be laid over the whole, to give a neat appearance.

The temperature required for growing *Burlingtonias* is similar to that required for *Cattleyas*; or they may be placed in the coolest part of the 'East Indian' house for a short time while making their growth, but must be removed to a lower temperature to remain during their resting season. They should be syringed over head once or twice a day during hot weather (except when in flower), but must be watered cautiously at the roots. At all times a humid atmosphere is to be kept up by throwing water on the paths, &c.; and the plants must be protected from the bright rays of the sun, throughout the summer, by a thin shading of canvas. During winter, allow them all the sunlight possible.—J. H.

[BURLINGTONIA.—3.]

The following additional hints on the treatment of *B. rigida*, the substance of which appeared in *Paxton's Magazine of Botany*, may be usefully appended:—Naturally, *B. rigida* grows during the rainy season in the humid forests of Brazil, sheltered from the blaze of the sun by a thick canopy of foliage; and its peculiar character and the position of its roots, place it beyond the means of acquiring other nourishment than that which floats in the atmosphere or falls from the heavens. From these facts we may reasonably conclude that during the same season, in an artificial climate, a large amount of aqueous matter is not only necessary but indispensable. In no place have more healthy specimens of this plant been produced than in the nursery of Messrs. Loddiges, of Hackney, where the plant was grown in a basket formed of shells, fixed together with wire clasps, and filled with decaying moss, concealed from view by a verdant covering of growing Lycopodiums. The looseness of the material and the open nature of the basket, allowed water to pass away with great readiness. A trellis formed of four strong, upright wires, with smaller ones twisted spirally around them, supported the plant, which, it will be recollected, has pseudo-bulbs distantly separated by long wiry ascending rhizomes, and numerous long white roots protruding from the base of each. During the growing season, the plant was placed in a warm house, and near it a pipe, one inch in diameter, from an elevated cistern of tepid water. This pipe was pierced with an extremely small hole, from which a fine jet d'eau rose a little higher than the plant and beat upon a piece of glass placed over it, which precipitated the water upon it in a fine spreading dew-like shower that trickled down the numerous roots, and hung in pellucid pearl-like drops at their extremities, undoubtedly furnishing them with an abundance of nutriment, and that more constantly than when dependent for it alone on the atmosphere and occasional syringings. It

[BURLINGTONIA.—4.]

is hardly necessary to observe that this spray-like stream was only applied during the season of the most active growth and was then accompanied by a proportionately warm temperature. As the bulbs attain perfection it must be gradually withdrawn, and wholly withheld as the season of torpidity approaches. During winter no more moisture is necessary, or indeed useful, than merely sufficient to maintain the pseudo-bulbs in a plump unshrivelled state. Probably some similar contrivance to this may be successful with other Orchidaceous plants of difficult management which grow and flower during the rainy season in their native clime.

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1. **Snowy Burlingtonia.**—*B. CANDIDA*, *Lindley, Bot. Reg. t.* 1927. *RODRIGUEZIA BATEMANNII*, *Lindley MS.* *RODRIGUEZIA CANDIDA*, *Bateman MS.*—Native of British Guiana.

A lovely little plant, with flattened pseudo-bulbs, small thick oblong leaves, and drooping racemes of few but comparatively large flowers. The anterior connate sepal is acutely two-lobed at the apex, while the upper or dorsal sepal and the petals are obtuse. The lip is large, stalked, dilated towards the end and emarginate or bilobed, very slightly hastate near the base, and having on the disk only one ridge on each side, forming a broken row of callosities. The column is smooth. The flowers remain for two or three weeks in perfection, if kept cool and dry, and are pure white, with a dash of yellow on the centre of the lip.

2. **Beautiful Burlingtonia.**—*B. VENUSTA*, *Lindley, Bot. Reg.* under *t.* 1927.—Native of Brazil.

In this charming little plant, the leaves are long, channelled and deep green. The flowers are snow white, or just tinged with pink, and have a dash of yellow down the centre of the lip. They grow in drooping racemes, and are produced at different periods of the year. The column is smooth, and the lip, which is not at all hastate, has several shallow ridges on each side near the base. The anterior sepal is entire, and the upper one acute.

3. **Downy Burlingtonia.**—*B. PUBESCENS*, *Lindley, Paxt. Fl. Gard. i.* 158.—Native of Pernambuco.

This is a beautiful little plant, stemless, having dark green rigid leaves, keeled and mucronate at the apex, and bearing a profusion of drooping dense racemes of smallish white flowers. It is known by having a downy column, and the lip is obovate and two-lobed, hastate at the base, that is, having there a pair of erect side lobes; there are also three yellow ridges on each side near the base.

[BURLINGTONIA.—5.]

4. **Fragrant Burlingtonia.**—*B. FRAGRANS*, *Lindley, Bot. Reg.* under t. 1927.—Native of Brazil.

This species has sweet-scented flowers, which are white tinged with pink, and grow in erect racemes. The anterior sepal is entire, the upper one acute; the lip cucullate behind, and bilamellate, i.e. having two ridges on the disk.

5. **Rosy Burlingtonia.**—*B. RUBESCENS*, *Lindley, Bot. Reg.* under t. 1927.
RODRIGUEZIA BATEMANNI, *Poppig and Endl. Nov. Gen.* i. 41, t. 70.—Native of Peru.

This pretty species has white flowers spotted with rose-colour, and growing in stiff upright racemes. The anterior sepal is entire linear-lanceolate, and as well as the upper one acuminate. The lip is auricled at the base, and bilamellate.

6. **Spotted Burlingtonia** [Plate I.].—*B. MACULATA*, *Lindley, Bot. Reg.* 1839, t. 44.—Native of Brazil.

This neat little species produces oval compressed one-leaved pseudo-bulbs, which are leafless at the base. The leaves are linear-lanceolate. The raceme of flowers, which is longer than the leaves, is pendulous; the flowers sweet-scented, yellow with cinnamon-coloured spots; the lip, which is yellow and spotted on the dilated two-lobed apex, is longer than the other parts, white at the base, and there furnished with three unequally-toothed fleshy parallel plates, abruptly truncated in front. The two horns on the tip of the column are crimson. The flowers are rather small compared with those of some other species of the genus, but they are very pretty.

7. **Rigid Burlingtonia.**—*B. RIGIDA*, *Lindley, Bot. Reg.* under t. 1927; *Sertum Orchidaceum*, t. 34; *Bot. Reg.* 1841, misc. 41; *Paxton's Mag. Bot.* viii. 193.—Native of Brazil.

This plant has a somewhat peculiar habit of growth. The pseudo-bulbs are formed at intervals on an erect terete slender wiry stem, and throw out numerous long white wiry descending roots. These pseudo-bulbs are thin oval and furrowed, with one or two leaves at the top; and they are seated within a tuft of two or three leaves, which have thin folded equitant petioles, articulated with the blade. The leaves are all of an ovate lanceolate outline, and rigid in texture. The slender wiry stem by which the growth is prolonged, issues from the axil of one of the lower leaves, and after growing a few inches bears another tuft of leaves, and a pseudo-bulb, at its apex. The flower-stem, which is drooping, is terminated by a short raceme, and issues from the axil of one of the lower leaves. The flowers are large, white, delicately tinged with pink or lilac, and are very beautiful and fragrant; the lip is large, the middle lobe dilated and emarginate. The column has two erect falcate purple ears at the tip. Dr. Lindley describes the column, seen in front and deprived of the parts which surround it, as having more resemblance to a bat's head and neck, than to any part of a flower.

[BURLINGTONIA.—6.]

8. Neat Burlingtonia.—*B. DECORA*, *Lemaire, Jardin Fleur.* ii. t. 188; *Planchon, Flore des Serres*, t. 716; *Lindley, Paxt. Fl. Gard.* iii. 99, fig. 278. *B. AMENA*, *Planchon MS. in Hort. Van Houtte.*—Native of Brazil.

This is a very beautiful species. It has like *B. rigida*, slender terete wiry stems, bearing pseudo-bulbs at intervals. These pseudo-bulbs are compressed, ovate, one-leaved at top, and rooting from their base. The leaves are linear-lanceolate. The flowers grow in loose spreading few-flowered racemes, which grow from the axils of the scales at the base of the pseudo-bulbs. The sepals and petals are rather small, all connivent, pink, spotted with crimson; the lip is twice their length, its base clawed, channelled, toothed on each side, and ornamented with a red-speckled feathery fringe, its limb pure white, much dilated, bilobed. It belongs to a division of the genus, in which the column bears a pair of long antenniform ears, which in this case are red.

REFERENCE TO THE PLATE OF THE
GENUS BURLINGTONIA.

Plate I.—BURLINGTONIA MACULATA, *Lindley*.

Fig. 1. The two connate anterior sepals ;
fig. 2. the column and the lip, shewing
the lamellæ and lacerated margin of the
latter, together with the horns at the apex
of the column ; fig. 3. the caudicle, glan-
dule, and pollen-masses, one of the latter
being divided across to shew it is composed
of a flat body rolled up.

BURLINGTONIA
I



THE GENUS COMPARETTIA.

THIS is a small genus of very beautiful and graceful little epiphytes, the habit of which is to produce the pendulous racemes of flowers from the apex of the pseudo-bulbs in some species, and from the base in others.

The structure of the flowers is rather peculiar. The perianth is of that character that is called ringent or gaping. The intermediate sepals, with the petals, are quite small, free, converging into a kind of helmet or hood; the lateral sepals are united into a single piece, and lengthened at the base into a longish and conspicuous horn, or spur. The lip itself is free, clawed, much larger than the rest of the flower, its base also produced into a two-horned spur, which is hidden within the spur of the united pair of lateral sepals. The disk is often crested. The column is free, erect, semi-terete, and somewhat marginate; the anthers two-celled, with two pollen-masses, which are in some of the species foveate or pitted behind, and adnate with the cuneate beaked caudicle; and in others are furnished with a pair of filiform elastic caudicles, adherent to an oval glandule.

Nothing, observes Dr. Lindley, is more common for Orchidaceous plants than to produce spurs from their sepals, and lip, but it is very unusual for the same organ to produce two spurs. *Satyrium* and *Diplocentron* were almost the only known cases of this structure. Here, however, the lip not only has two spurs, but they are hidden within the spur of the united pair of lateral sepals, so that they are not discovered till the latter is cut open. In this respect we find

[COMPARETTIA.—2.]

almost the same structure for Orchidaceous plants as we have in *Aconitum* among Ranunculaceous plants.

The genus *Comparettia*, of which very few species are known, was named by Pöppig and Endlicher, after Andreas Comparetti, Professor at Padua, a botanist, they say, who first understood the real nature of spiral vessels, and who wrote with great skill upon Vegetable Physiology.

The little plants forming this genus are extremely rare, and require some nicety in their cultivation. They should be grown on blocks of wood suspended from the roof of the orchid house, and must be carefully fixed to the blocks, along with a little moss, by means of slender copper or zinc wire. The object of applying the moss is to retain a slight amount of moisture about the roots, but too much must not be used, nor must too much moisture be applied, as the plants are very delicate, and are soon damaged by water lodging about their crowns. In the resting season it would be better to remove the moss entirely, applying a little fresh moss again in the growing season, after some progress had been made. The roots are slender and delicate, and must, by all means, be carefully preserved from injury.

The house devoted to the Mexican or cool-stove species, will be most congenial to the *Comparettias*. In this they may be assigned a retired and sheltered nook, where dry or cold currents of air may be avoided, at the same time that excess of moisture is guarded against. Even in the growing season, the delicate little pseudo-bulbs and slender roots are impatient of continuous dampness in contact with them; and in the resting period such contact would be almost certain destruction.

After the new growth each season is somewhat advanced, the plants will derive benefit from a slight increase of warmth

[COMPARETTIA.—3.]

accompanied by a moist atmosphere, and daily syringing of tepid water; but this excitement should be moderated by keeping them but slightly shaded and that only in the brightest portion of the day, at which period fresh warm air should be permitted to play about them for two or three hours, the house being afterwards closed and damped to produce a warm moist atmosphere in the after part of the day, and subsequently ventilated or otherwise kept cool at night. When at rest, the plants must be kept cool and dry, in a temperature not exceeding 55° or 60°. The stimulus to fresh growth must consist of a very slight and gradual increase of warmth, with no direct applications of water, but a damp atmosphere only, until the new bulbs are fairly started.

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1. **Scarlet Comparettia** [Plate I.].—*C. COCCINEA*, *Lindley, Bot. Reg.* 1838, t. 68; *Botanist*, iv. t. 186.—Native of Mexico, perhaps also of Brazil.

A charming plant, of little stature. The pseudo-bulbs are small, and bear oblong leathery leaves which are bright green above, and purplish beneath; from their apex issues a slender nodding terminal scape supporting several (five or six) flowers, of which the upper sepals and the petals are small and converge over the column, while the lip is broad flat and conspicuous, its colour being a brilliant scarlet with a tinge of yellow at the base. The double spur of the lip is downy; and there is an elevated plate near the base of the column. The flowers, which are produced towards the end of the summer, are very gracefully disposed on the nodding stalk. They have also a most curious structure. It is therefore to be regretted that the plant continues extremely rare in gardens.

2. **Falcate Comparettia**.—*C. FALCATA*, *Pöppig & Endlicher, Nov. Gen. et Sp. Pl.* i. 42, t. 73; *Lindley, Bot. Reg.* 1838, under t. 68.—Native of Peru.

This species, according to Pöppig's figure, approaches *C. coccinea* in many respects. It differs in having broader leaves, and larger flowers; in wanting the elevated plate at the base of the stigma; and in the spurs of the lip being smooth. The pseudo-bulbs are small and one-leaved; the scape radical, bearing a raceme of three or four flowers, which are of a rich rosy-purple, the lip thickly veined with a deeper shade. The lip has a narrow claw, and transversely oval limb, emarginate, and unidentate in front, and veiny but not crested on the disk. Like the other species, it is epiphytal. This, together with *C. rosea*, and *coccinea*, was cultivated in the late magnificent collection of the Messrs. Loddiges, of Hackney.

[COMPARETTIA.—4.]

3. **Rosy Comparettia.**—*C. ROSEA*, *Lindley, Bot. Reg.* 1840, *misc.* 186; *Paxton, Mag. Bot.* x. 1, with fig.—Native of the Spanish Main.

A delicate and lovely little plant with small pseudo-bulbs, subsessile leaves of a broadly oblong outline, and a drooping slender scape bearing a lax pendent raceme of four or five flowers, or more, at its apex. The flowers are of a charming bright rich rose-purple colour, and they are of long duration, continuing for several of the summer months. The lip is roundish-oblong, deeply emarginate, and furnished with elevated plates on the disk.

4. **Hidden-spurred Comparettia.**—*C. CRYPTOCEA*, *Morren, La Belgique Horticole*, iv. 310, t. 53, fig. 1.—Native country unknown.

This is a handsome plant, with the leaves considerably larger and broader than in *C. coccinea*, and having much more the general habit and appearance of *C. rosea*. If however the figures and descriptions quoted, may be trusted, it is a distinct species from *C. rosea*, to which alone it nearly approaches. It differs in the larger size of its lanceolate-ovate leaves, in the young pseudo-bulbs being clothed with lanceolate scales, in the shorter spur of the sepals, in the plane surface of the lip without crests or plates, and in the minutely-erose tothing of its margin. It bears a slender drooping raceme of flowers, which are of a beautiful bright rose-colour. The lip is longer than the spur, roundish heart-shaped blunt at the apex, and there so deeply emarginate as to be separated into two blunt-ended lobes, the margins of which are finely toothed; there is no crest or plates on its disk, but a single small tooth at its base. M. Morren states that it had been received in the Belgian gardens from M. Wagner, without any indication of its native country.

REFERENCE TO THE PLATE OF THE
GENUS COMPARETTIA.

Plate I.—COMPARETTIA COCCINEA, *Lindley*.

Fig. 1. The pollen-masses, with their caudicles; fig. 2. the column and spurs, all the sepals and petals being cut off; *a.* is the elevated plate below the stigma; *b.* shews the lamellæ at the base of the lip; *c.* represents the spurs of the lip a little pulled out of the sepaline spur *d.*

COMPARETTIA
I



Miss Drake del.

F. Watt sc.

THE GENUS CALANTHE.

THE CALANTHES form a group of terrestrial Orchidaceous plants, related to *Phaius* and *Limatodes*. They constitute rather an extensive family, thirty-eight species being given in Dr. Lindley's last enumeration of them. Several of these are in cultivation, and form really beautiful objects for the orchid-house, as well as for exhibition purposes.

They are terrestrial herbs, with broad plaited leaves, and erect terminal scapes furnished with numerous blossoms. The sepals and petals of these latter are spreading, nearly equal, and free, or, the lateral sepals are sometimes slightly adnate with the lip. The lip itself is connate with the short column, lobed or entire, spurred or spurless, its disk lamellated or tuberculate. There are eight pollen masses much attenuated at the base, and adherent to inseparable glandule.

The species of *Calanthe* have been arranged in two groups, which some botanists consider to have the value of genera. One of these groups, that which contains the true *Calanthes*, is marked by the flowers having a very long spur at their base. The other group, in which this spur is either very short, or altogether wanting, forms the *Ghiesebreghtia* of Richard. All the species in cultivation belong to the true *Calanthes*.

The name *Calanthe* is derived from *kalos* beautiful, and *anthos* a flower.

Being of terrestrial habit, and deriving a considerable proportion of their nourishment from the soil, these plants should be cultivated in pots. Their treatment generally

[CALANTHE.—2.]

coincides with that of *Bletia*, with these differences, that being in many cases plants of larger growth they require a correspondingly more liberal treatment, and being mostly evergreen they must not be dried so much when at rest.

The kind of compost for plants of this character, is a mixture of light fibrous loam, leaf-mould, peat, and sand, about two parts of the first, and half-a-part of the latter being used along with one part of the others. The pots must be well drained; and a little decayed manure may be used in the case of strong vigorous plants.

These plants require to have a season of rest to prepare them for vigorous growth and bloom, and this should be so managed as to fall in winter, when they may be kept much cooler and drier, than during the remainder of the year. A temperature of from 55° to 60° will be quite warmth enough for them at this season and they will need but very little water. About February they should be repotted and placed in a warmer situation, but after potting care is necessary in the use of water not to give so much as to get the soil soddened; indeed very limited applications of water—which should be tepid—suffice until the growth becomes active. When in full growth with plenty of healthy roots, they may have water in abundance, and will be benefited by a day temperature of 70° to 80°, or even 90° by sun heat, taking all seasonable opportunity to give ventilation. With this amount of heat a moist atmosphere must be kept up, but even this should be slackened for a time daily in order that the growth as it is made, may become firm and sturdy. The species are mostly large growers, and healthy vigorous plants become large masses, and these to be effective, as well as for the purpose of keeping them in a vigorous state must have large sized pots in proportion. Where this is not convenient the plants must be reduced from year to year to a size that can be accommodated. For small collections, strong single stems

[CALANTHE.—3.]

throwing up a fine spike of blossoms are very effective, but larger masses with numerous flower stems supported by a bank of the ample foliage have an exceedingly rich and tropical character.

One of the most beautiful of the species, *C. vestita*, is pseudo-bulbous, and should have rather different treatment. It should when at rest be kept nearly quite dry for a few weeks after the growth is ripened, and should have a somewhat lighter soil, consisting of fibrous peat, leaf mould, and sand with a slight admixture of light fibrous loam. In other respects it may receive the ordinary treatment; that is, it should be excited to grow freely, by abundant heat, copious but judicious watering, and plentiful atmospheric moisture in spring; then, well ripened by ventilation and exposure to light in summer, especially after the full growth has been attained; finally rested in a dry state and in a cooler atmosphere till the flower stems appear. It is a beautiful winter blooming plant.

The other species with the habit of *C. veratrifolia*, are, in brief, to be rested for a short time in a cooler house in winter but not kept dry, the moisture being only reduced in amount; they are then, in spring, to be excited to make a vigorous growth, the foliage being kept in health and vigour through the summer, during which period they will flower; they may then gradually be brought to a resting state by diminishing the amount of water given to them, and at the same time removing them to a somewhat lower temperature.

The Japanese species, which do not require more than a warm greenhouse temperature, should be treated like those just mentioned in all except the amount of heat given to them, the degree of humidity being also modified in the same ratio. They are pretty plants well suited for cultivation where the stove accommodation is limited. Their general management in fact, assimilates closely with that of the greenhouse *Bletias*,

[CALANTHE.—4.]

differing chiefly in their not requiring to be left so dry at the root, while at rest. The Australian variety of *C. veratrifolia* appears to thrive under the same kind of cool treatment as that sketched out above.

The mode of propagating these plants is by division, and it may generally be effected with facility in spring at the time of repotting.

§ EUCALANTHE.—*Spur elongated*, (Lindley).

1. **Yellow-spiked Calanthe.** [Plate I.]—*C. CURCULIGOIDES*, *Wallich, Cat.* 7340; *Lindl. Gen. et Sp. Orch.* 251; *Bot. Reg.* 1847, t. 8. *STYLOGLOSSUM NERVOSUM*, *Kuhl and Hasselt.* ? *AMBLYGLOTTIS PULCHRA*, *Blume Bijdr.* 371. ? *CALANTHE PULCHRA*, *Lindley, Gen. et Sp. Orch.* 250.—Native of Malacca, Penang, Singapore, and Java.

A very striking and beautiful plant, with bright yellow flowers, and certainly one of the handsomest of its race. The flowers have a firm waxy texture, and do not wither so soon as those of some other species; they are much yellower and finer than in *C. densiflora*. Our figure represents one of the first specimens which produced flowers in this country, and is as nothing, compared with vigorous specimens of which the flowering spike often reaches a foot in length. The remarkable hook of the spur, is one of the characteristic marks of the species. The flowers though small are densely placed so that the spike is very effective. The lip is ovate acuminate, and the spur is slender and incurved at the point.

2. **Sylvan Calanthe.**—*C. SYLVATICA*, *Lindley, Gen. et Sp. Orch.* 250. *CENTROSIS SYLVATICA*, *Thouars, Orch. Afr.* t. 35, 36.—Native of the islands of Bourbon and Mauritius.

This is one of the most beautiful of the species of *Calanthe*. It has the foliage and general habit of *C. veratrifolia*, but the flowers are much finer, at first pure white, and then gradually changing to bright yellow—not faded, so that the upper portion of the long spike is pure white, the lowest portion quite yellow, while in the intermediate flowers, the one colour insensibly passes into the other, through a delicate cream-coloured tint. The lip is cordately auricled and the warts which form three series on its surface near the base, are nearly equal in size.

[CALANTHE.—5.]

3. **Various-coloured Calanthe.**—*C. VERSICOLOR*, *Lindley, Sertum Orch.* t. 42; *Bot. Reg.* 1844, under t. 37.—Native of the East Indies.

In this the scape is erect bearing a lax and many-flowered raceme, and the flowers are white changing to yellow, with a purple lip. The middle lobe of the lip is narrow wedge-shaped, and divergently two-lobed.

4. **Lilac Calanthe.** [Plate II.]—*C. MASUCA*, *Lindley, Wall. Cat.* 7337; *Gen. et Sp. Orch.* 249; *Bot. Reg.* 1844, t. 37; *Bot. Mag.* t. 4541. *C. EMARGINATA*, *Wight, Icon.* iii. t. 918. *BLETIA MASUCA*, *Don, Prod. Fl. Nep.* 30.—Native of India—Nepal, Neilgherries.

A gay and charming plant, one of the very best of the species, conspicuous alike for the large size and fine colour of its flowers, which are numerous, and grow on a long erect spike. The sepals are purple or deep lilac, paler outside, the petals also lilac, the lip deep purple, with three long rugged white or orange-coloured callosities at its base, the middle lobe broad, somewhat wedge-shaped at the base, emarginate at the apex. From the other purple species allied to it, this is readily known by the leaves as well as by the flowers. *C. versicolor* has leaves smooth on both sides; *C. purpurea* downy on both sides, especially beneath; while this has down only on the under side. *C. versicolor* has white sepals and petals; *C. purpurea*, and this, have purple ones. While however *C. purpurea* agrees in the colour of its flowers, its lip is altogether different, being very narrow, with the lateral lobes quite round, while in *C. Masuca* the lateral lobes are linear and subfalcate.

5. **Purple Calanthe.**—*C. PURPUREA*, *Lindley, Gen. et Sp. Orch.* 249; *Bot. Reg.* 1844, under t. 37.—Native of Ceylon.

A handsome species with the flowers pale purple, and the lip deep purple. Its differences are pointed out above. It is equally with the foregoing species a desirable plant for cultivation.

6. **Forked Calanthe.**—*C. FURCATA*, *Bateman, Bot. Reg.* 1838, misc. 34.—Native of Java and the Philippines.

A species nearly allied to *C. veratrifolia* and like it a very desirable plant for general cultivation, differing chiefly in the large size of the lateral lobes of the lip. The flowers are white, on an erect scape. The spur in this species is variable being sometimes emarginate, sometimes not, and either longer or shorter than the lip, the middle lobe of which is wedge-shaped and divaricately two-lobed. In small collections this species and *C. veratrifolia* would not both be required. They last several weeks in bloom.

7. **Veratrum-leaved Calanthe.**—*C. VERATRIFOLIA*, *R. Brown, Bot. Reg.* t. 720; *Griffith, Icon.* t. 283, fig. 4.—Native of Tropical India and Ceylon.

This is a well known handsome species, with broad leaves and tall upright spikes of numerous white flowers of which the lip is four-lobed—that is, the middle lobe is

[CALANTHE.—6.]

divided, and is also sulcate and glandulose at the base. It is a bold effective plant, deserving of the general estimation in which it is held. The pure white flowers of this and the allied species must be kept free from damp and injury or they will become spotted and disfigured. They continue for several weeks if kept dry and moderately cool.

There are several varieties, one of which named *discolor*, a native of Ceylon, has the lip brownish with a purple stain. Another called *australis*, a native of Java, Amboyna and Australia, has the flowers white changing to buff. This latter is a plant of smaller and more compact habit, and has the good property of adapting itself to greenhouse treatment.

8. **Discoloured Calanthe.** [Plate III.]—*C. DISCOLOR*, *Lindley, Sert. Orch. under t. 9*; *Bot. Reg.* 1840, t. 55.—Native of Japan.

This is a very pretty greenhouse species, growing a foot or a foot and a half high. The sepals and petals are rich wine-red and form a good back-ground for the white lip, which they so much relieve, that this must be regarded as one of the handsomer species of the genus, and is certainly well worth cultivating. The spike is rather lax, but the flowers are comparatively above the average size. The lip is slightly veined with red at the base.

9. **Striated Calanthe.**—*C. STRIATA*, *R. Brown, Bot. Reg.* 578; *Lindley, Gen. et Sp. Orch.* 251. *C. BICOLOR*, *Lindley, Sert. Orch. under t. 9*. *LIMODORUM STRIATUM*, *Banks, Icon. Kæmpf.* t. 2.—Native of Japan.

A handsome greenhouse species, bearing a lax pubescent raceme of showy good sized flowers, of which the inside is bright yellow and the outer surface a rich cinnamon brown. It blossoms in the early part of summer. The lip has a two-parted downy callosity at the base, and beyond this three principal lamellæ which extend almost to the point.

10. **Dense-flowered Calanthe.**—*C. DENSIFLORA*, *Lindley, Wall. Cat.* 7344; *Gen. et Sp. Orch.* 250; *Bot. Reg.* t. 1646.—Native of India—Sylhet, Assam, Khasiya.

The flowers of this species form a dense globular mass when young; they are of an apricot-yellow colour. The column is remarkable for being extended into a long constricted neck above its junction with the lip.

11. **Hairy-stemmed Calanthe.**—*C. VESTITA*, *Wallich, Cat.* 7345; *Paxton's Fl. Gard.* 147, with a figure; *Bot. Mag.* t. 4671. *CYTHEBIS GRIFFITHII*, *Wight, Icon.* t. 1751. *PREPIANTHE VESTITA*, *Reichenbach fil., Bot. Zeit.* 1853, 493.—Native of Burma and Moulmein.

This is certainly one of the most beautiful species of the genus. It is pseudo-bulbous in habit, and produces flowers before the leaves are developed. The scape issues from the base of the pseudo-bulbs, and is arched or drooping, bearing a lax spike of several large flowers, which are white, the sepals and petals turned back, in an

[CALANTHE.—7.]

opposite direction from the broad four-lobed lip, which has a short ear on each side at the base. The slender spur is abruptly bent forwards so as to meet the under surface of the lip. These flowers are two and a half to three inches across. There are two varieties in cultivation, one having an orange spot at the base of the lip, the other a deep crimson spot; both are very handsome, that with the crimson spot being the most showy, but the orange-spotted variety is also delicately beautiful. They last in bloom a long while if preserved from accidents and injury. A dry cool atmosphere is most favourable to their preservation.

Three other species in cultivation formerly referred to this genus, are now removed, namely:—

Ania latifolia, Lindley (*Calanthe viridi-fusca*, *Hooker*), an Assam plant, with pseudo-bulbs, and long erect radical spikes of greenish-brown flowers, of moderate size. It is figured in *Bot. Mag.* t. 4669.

Bletia Gebina, Lindley (*Calanthe Gebina*, *Loddiges*), a Japan plant, with broad leaves and upright spikes of pretty blush coloured flowers, of which the lip is crested, and prettily marked with purple. It is figured in *Bot. Reg.* 1847, t. 60.

Limatodes gracilis, Lindley (*Calanthe gracilis*, *Lindley*), a terrestrial plant, from the mountains of India, with slender stems bearing lateral erect spikes of small crispy greenish yellow flowers. It is figured in *Bot. Mag.* t. 4714.

REFERENCE TO THE PLATES OF THE
GENUS CALANTHE.

Plate I.—CALANTHE CURCULIGOIDES, *Wallich*.

Fig. 1. The lip, column, and spur.

Plate II.—CALANTHE MASUCA, *Lindley*.

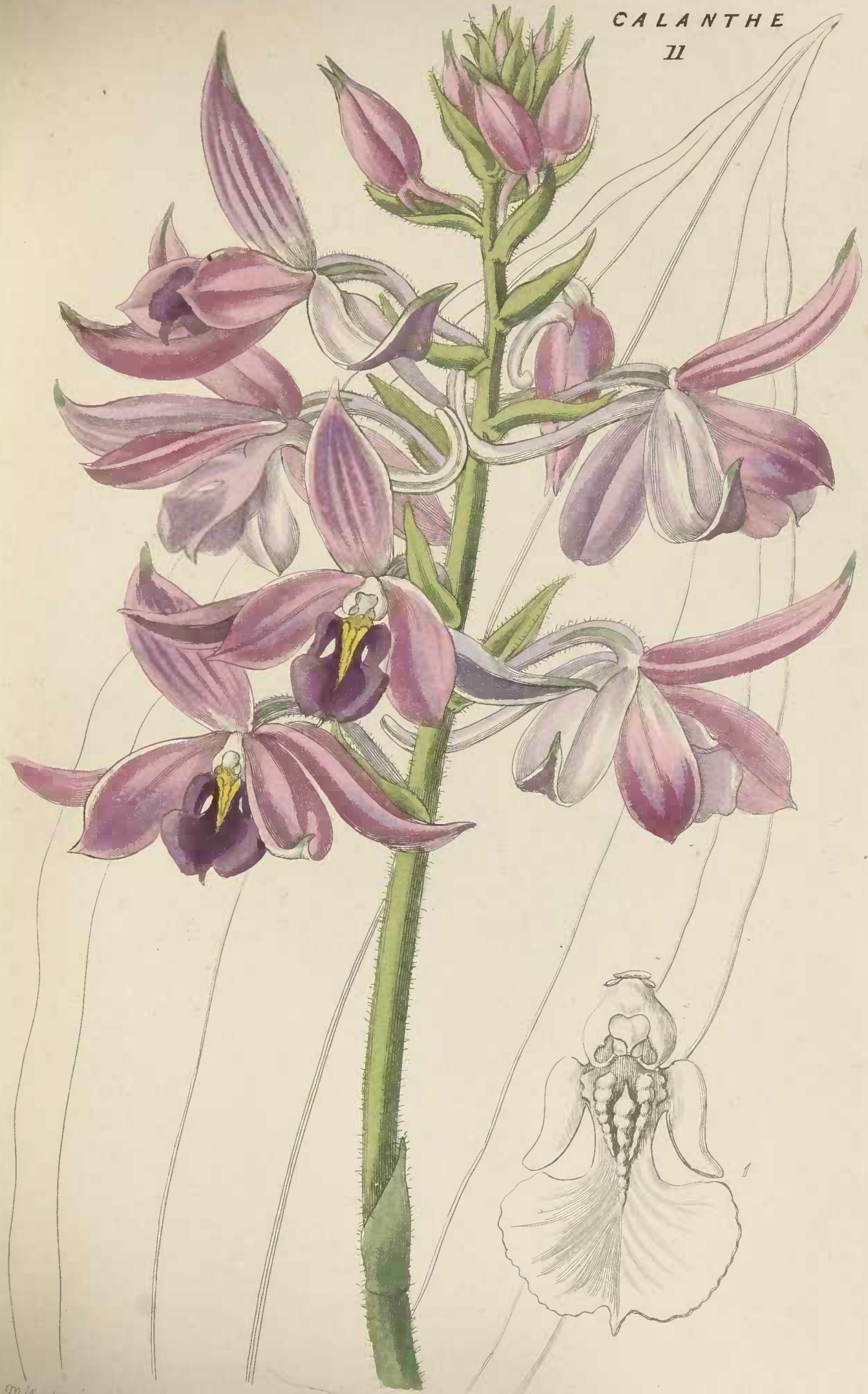
Fig. 1. The lip and column.

Plate III.—CALANTHE DISCOLOR, *Lindley*.

Fig. 1. The lip, column, and spur.



CALANTHE
II



Midi. J. 1870. III

S. B. 1870. II

CALANTHE
III



Ed. Lindley

J. Smith

THE GENUS ORCHIS.

THE genus ORCHIS consists of small herbaceous terrestrial plants, furnished with fleshy underground knobs or tubercles of various form, and having soft somewhat succulent leaves, which are often variegated with dark brown spots. The flowers are arranged around an upright scape, and are often of considerable beauty. The genus is widely dispersed over the Old World, several species being met with in this country; and it also occurs sparingly in North America.

The peculiarities of the group consist in the following features. The flowers are ringent or gaping, with a tendency, more or less strongly developed in a portion of the divisions of the perianth, to converge so as to produce a helmet-like form. The sepals are nearly equal, the upper one always conniving with the petals and arching over the column, while the lateral ones are sometimes connivent with the rest, and sometimes spreading or reflexed. The petals are erect, and nearly of the same length as the sepals though narrower. The lip is spurred at the base behind, connate or coalescing with the base of the column, and either entire or lobed. The anther is erect, its two cells contiguous and parallel, the pollen consisting of numerous small waxy particles cohering with a cobweb-like elastic tissue into two larger masses, one of which occupies each cell, and each of which is borne on a slender stalk, with its base attached to a glandule, which is contained with it within one common hood-like membrane. The character derived from the number and position of the glandules, is obscure, observes Dr. Lindley, yet it seems necessary to employ it, to exclude the *Satyrium hircinum* of Linnæus, the

[ORCHIS.—2.]

Orchis hircina of most British botanists, which is evidently a near ally in nature of *Aceras anthropophora*.

The species are conveniently divided into two groups, namely, EUORCHIS: those in which the lateral sepals are reflexed or spreading; and HERORCHIS: those in which the sepals are all connivent.

The fleshy root-knobs of these plants abound in gummy or farinaceous matter, which render them nutritious, and they are used as a minor article of diet, under the name of Salep, in the countries where they abound. Salep is an unirritant diet, adapted for invalids, convalescents or children, and is prepared by being boiled with water or milk and flavoured in a similar manner to sago and other farinaceous aliments. It is, in the undressed state, hard and horny in appearance, whitish in colour, semi-transparent, with little odour, but a mild mucilaginous taste; and is composed chiefly of bassorin, with some soluble gum, and a little starch.

It would appear that Salep, which is now most valued in the East, was first described by the Greeks, the Arabian writers having derived their statements concerning it from Dioscorides; and if this be so, the commercial article is probably furnished by some or all of the plants to which it is attributed. According to M. Beissinhirtz, the *Orchis Morio*, *mascula*, and *militaris* give the best Salep in Europe; that of *O. maculata* and *latifolia* being of inferior quality; and Dr. Cullen states, that the article prepared in this country from *O. (Habenaria) bifolia* is as pure and perfect as any that comes from Turkey. It is, however, generally admitted that the European Saleps are inferior to that which comes commercially from Turkey, of which the plant and the place yielding it are not certainly known, though it is said to be a produce of the Persian region. Salep is highly valued in India, where it forms an article of commerce from Cabool and Cashmere to the north-western provinces, the finest being produced near Candahar. It is hence possible that the Arabs may have

[ORCHIS.—3.]

become acquainted with it, independent of western intercourse. The Indian Salep is similar in appearance and form to that from Turkey, but the tubers are twice as large as the best samples procurable in London; this would appear to be yielded by species of *Eulophia*, at least in part.

The name given to the genus is an old Greek word, and was applied to these plants by the great Linnæus.

The cultivation of Orchises, may be said to be rather a matter of experiment than certainty, but very partial success in a general sense having been obtained. As hardy border flowers, however, they are extremely well worth cultivating. All the species we enumerate—which are those inhabiting this country, or of which there are records of the introduction—are plants of this class, or the kindred one, which is designated half-hardy. Some of the attempts made to cultivate particular species have been attended with success, and it would therefore appear to be most conducive to further trials, to give a resumé of the records of these successes, rather than a general series of instructions.

The peculiar mode of growth in these plants renders propagation tardy, except by means of seeds, which it would appear often vegetate freely in their natural habitats, though they are hardly resorted to by the cultivator. The mode of growth may be generally explained thus:—Two fleshy underground tubercles are produced, of which one is wrinkled and withered, the other plump; the first is the parent of the actual stem, the second, an offset, which produces the stem of the succeeding year.

Miller states that the reason they are not generally cultivated proceeds from the difficulty of transplanting them, which, however, he remarks, may be easily overcome by marking the plants at the time of flowering, and transplanting

[ORCHIS.—4.]

them when the leaves are decayed. "For," he says, "it is the same with most kinds of bulbous or fleshy-rooted plants, which if transplanted before their leaves decay seldom live, notwithstanding you preserve a large ball of earth about them—so that whoever would cultivate them should search them out in their season of flowering and mark them, and when their leaves are decayed, or just as they are going off, the roots should be taken up and planted in any soil or situation, as nearly resembling that wherein they grow naturally as possible, otherwise they will not thrive."

Among the earlier of more recent statements on this subject is that of Mr. Penny, some years foreman in the Epsom nursery, and subsequently nurseryman at Milford, Surrey. He states that in the month of April he removed with a moderate portion of earth from their native habitation, the following species and planted them on a sloping bank, composed of turfy loam and chalk, and with an eastern exposure:—*Orchis pyramidalis*, *Gymnadenia conopsea*, *Platanthera bifolia*, *Aceras anthropophora*, *Herminium monorchis*, *Ophrys muscifera*, and *O. apifera*, and *Epipactis pallens*. The plants thus treated flowered considerably stronger, and remained a longer time in bloom, than the wild plants; and he has no doubt that the other species which affect cretaceous soils might be thus grown. *O. latifolia*, and *O. Morio* with its varieties were removed in the same way, and planted in turfy loam and peat, in a moist shady situation, with equal success. (*Gard. Mag.* i. 465.) Sweet describes the plants here referred to, as growing and flowering much stronger than in the wild state.

A correspondent of the *Gardener's Chronicle* (1841, 364), alluding to the damp shady neglected borders sometimes seen in gardens, in which it is supposed nothing will grow, explains how they may be rendered gay by the cultivation of hardy orchids. To effect this, the border is to be prepared by digging out the soil nearly two feet deep, (or if the soil is naturally

[ORCHIS.—5.]

wet, a greater depth is recommended,) and the opening half filled with broken flints, and the rest with good maiden loam and a little leaf-mould, a small quantity of chalk being added at one end for such species as require it. The plants are to be taken up with a spade or trowel when coming into bloom, preserving as much soil, and disturbing the roots as little, as possible. Before replanting, each plant is to be held inverted and well watered on the roots from a fine rose-pot, and they will seldom suffer from removal. In a border thus prepared and planted, he had flowered for three years in succession *Orchis bifolia*, *latifolia*, *maculata*, *pyramidalis*, and others, as well as the North American *Cypripediums*, and all were in a thriving condition. The requisites appear to be a shady situation and perfect drainage. The bed, however, requires to be occasionally watered in long-continued droughts. In one part of the bed, reached by the morning sun, those species were placed that naturally grew in open meadows.

In the *Gartenzeitung* have appeared some very judicious observations on the subject, by M. Frederick Otto. "It is well known," he remarks, "that the Orchises of the north of Europe seldom thrive in gardens. The principal cause of this failure is, no doubt, the neglect of the rule that all plants should be transplanted when they have arrived at the greatest perfection, and have completed their gay flowers. The inexperienced eye cannot distinguish a large part of these plants before they are in blossom, nor afterwards, when they wither and are hardly visible above ground; so that it would seem as if it were indispensable that they should be transplanted when in their tenderest state, if they are to be had in gardens at all. Nevertheless, all cultivators agree as to this time being the most unseasonable of any. It is, however, possible to transplant them when in flower, if they are taken up with a ball of earth at their roots, so that neither the roots nor flower-stalks are injured; and this is tolerably easy, because a

[ORCHIS.—4.]

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[ORCHIS.—5.]

wet, a greater depth is recommended,) and the opening half filled with broken flints, and the rest with good maiden loam and a little leaf-mould, a small quantity of chalk being added at one end for such species as require it. The plants are to be taken up with a spade or trowel when coming into bloom, preserving as much soil, and disturbing the roots as little, as possible. Before replanting, each plant is to be held inverted and well watered on the roots from a fine rose-pot, and they will seldom suffer from removal. In a border thus prepared and planted, he had flowered for three years in succession *Orchis bifolia*, *latifolia*, *maculata*, *pyramidalis*, and others, as well as the North American *Cypripediums*, and all were in a thriving condition. The requisites appear to be a shady situation and perfect drainage. The bed, however, requires to be occasionally watered in long-continued droughts. In one part of the bed, reached by the morning sun, those species were placed that naturally grew in open meadows.

In the *Gartenzeitung* have appeared some very judicious observations on the subject, by M. Frederick Otto. "It is well known," he remarks, "that the Orchises of the north of Europe seldom thrive in gardens. The principal cause of this failure is, no doubt, the neglect of the rule that all plants should be transplanted when they have arrived at the greatest perfection, and have completed their gay flowers. The inexperienced eye cannot distinguish a large part of these plants before they are in blossom, nor afterwards, when they wither and are hardly visible above ground; so that it would seem as if it were indispensable that they should be transplanted when in their tenderest state, if they are to be had in gardens at all. Nevertheless, all cultivators agree as to this time being the most unseasonable of any. It is, however, possible to transplant them when in flower, if they are taken up with a ball of earth at their roots, so that neither the roots nor flower-stalks are injured; and this is tolerably easy, because a

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great part of the Orchises grow in damp meadows, where the earth which surrounds the roots does not readily fall off; and in such cases the plant may be removed without the growth being injured. But in the absence of this precaution it is idle to transplant Orchises during their time of growth. Their roots would never recover the injury caused by such disturbance, and we should wait in vain for their re-appearance the next year.

“The best time for transplanting Orchises is really in autumn, when the plants are in a state of rest; and the cultivator must devise the means of finding them, although they are almost withered upon the ground. There can be no doubt that this is the proper time for transplanting; and I find that our species brought from the Tyrol, Switzerland, and Italy, where their tubercles have been properly preserved, will unfold in the following spring and produce strong blossoms although they are cultivated and kept in pots.

“But this is not all that must be attended to. When our native species are transplanted into gardens, great care should be taken as to their situation and soil. I have often remarked that they grow much better if placed between other plants, as they there find themselves in their natural situation. And this is an additional reason for the opinion I have already mentioned, viz., they should be brought into the garden not only with the whole of the ball of earth, but also with all the sorts of plants belonging to it. Experience has taught me that whatever attention we may pay to our Orchises, and however exactly their natural soil is imitated, yet if they are cultivated in neatly-kept beds they never thrive so well as if they stood among the other plants which naturally surround them: a peculiar quality which appears to be well worth attention.

“It would be well to find out whether the species retain this habit in other gardens. Experience has taught that the greater part of the Swiss and Tyrolese Alpine Orchises, as

[ORCHIS.—7.]

well as those from the south of Europe, are best cultivated in pots; but in this situation the plants weaken from year to year, until the tubercles at last disappear. If we would retain them longer in our gardens, particular attention must be paid to the soil in which they grow, and it would probably be best to cultivate them in boxes, which may be covered during the winter months."

The late Mr. Cameron, of Birmingham, was for many years a successful grower of these plants. In his opinion, one season of the year was possibly as good as another for gathering them, but on the whole he preferred the spring, at the time they are just commencing to grow, although it requires considerable knowledge of them to find them at that period. At whatever time, however, they are got up, it is desirable, he says, to get the tubers with as many fibrous roots as possible, and before planting, to clear away all the soil carefully from them. They should be placed entirely in fresh soil, for those planted with balls of earth do not thrive or live long, owing, no doubt, to the native soil becoming sour by being inserted in that of a different texture. Mr. Cameron never found it necessary to use chalk in the soil, even for those which inhabit chalky districts. Charcoal is recommended by him as serviceable by keeping the soil open and porous, thereby preventing sourness and clamminess after heavy rains in winter. He further recommends watering on the principle of little and often, and top-dressing occasionally with fresh soil. The following are his special directions as far as regards the species of *Orchis*, and having reference chiefly to pot-culture:—

O. Morio, is generally distributed over moist clayey soils. It requires to be kept in pots of loam and peat mixed with a little sand, and several roots may be planted in one pot, which should be well drained. They may be preserved for years, if kept tolerably dry in winter, and protected from frost in spring.

[ORCHIS.—8.]

O. mascula grows on clay soils. It does tolerably well in the border; and if kept in pots should have rather large ones, as it makes strong roots; to be potted and managed like the foregoing.

O. fusca, potted in the same way, grew freely; but was destroyed by over-watering, and wetting the heart.

O. ustulata, must be kept in pots at all times in a mixture of peat loam and sand, the pots kept in a cool frame placed so that midday sun does not reach it.

O. maculata may be treated as a common border plant; or may be grown in pots like the rest, preferring a shaded situation. Self-sown seedlings are frequently produced about it, and these come to maturity in the second year.

O. latifolia succeeds well in a shaded rather damp border, or may be potted in peat with a little loam, and kept out of doors all the year. Seedlings of this spring up, and reach maturity the second year.

O. pyramidalis (*Anacamptis*) succeeds best in pots, and may be planted several together; it likes loam with a little peat and plenty of crocks, and should be placed in a cool frame having little water in winter.

O. hircina (*Aceras*) is a late-flowering rare species. It appears to grow freely with the treatment of the last. The roots might be obtained from France where it is more frequent.

Mr. Dale of Manchester, a correspondent of the *Cottage Gardener*, (iii. 48) reports that he now manages these plants without trouble, although he formerly found them difficult. His plan is to obtain them undisturbed in a clod of their native soil, and to plant them in a bed of strong loamy soil. After planting they are not meddled with, the bed not being forked or stirred in any way to loosen the soil; for if meddled with they generally die. One of the most important points in Mr. Dale's opinion is the mode of getting them up from their natural habitat. His plan is always to take them up by means of the

spade with a good clod of soil so as not to touch the roots. In planting, the strong loamy soil is made as firm about them as possible; and after planting, no tool is suffered to loosen the soil, for if this is done the plants become unhealthy. In hot dry weather they are watered. In this way most of the Orchises and other species have been successfully cultivated for years.

There would seem to be a marked difference of opinion as to the season which is best suited for transplanting them. M. Otto, in the remarks already quoted, is decidedly in favour of transplanting while dormant, and both theory and general practice confirm him in this view. On the other hand, however, many cultivators prefer the blooming season, and among these the late Mr. Cameron of Birmingham, who was successful in their management. It would appear also from the remarks of Mr. Swainson in the *Gardener's Magazine* (iii. 377) that he many years ago successfully brought from Sicily a considerable quantity of Orchis roots, which produced their blossoms the succeeding year, although taken up in the flowering period. His plan was this:—the plants were taken up in full flower, at which period, the “tuber” for the following year had not begun to throw out its roots; the earth was carefully removed, and the plants laid in a dry cool shady room for about three weeks when they were lightly packed with hay in a perforated deal box. These plants consisted chiefly of species of *Orchis* and *Ophrys*.

Sweet appears to have succeeded in flowering several of the Swiss species without difficulty. With him the bulbs succeeded well in small pots planted in equal portions of light loam, peat, and sand. *O. sambucina* and its variety *purpurea* appeared to be not difficult of cultivation; and he remarks, “we have no doubt but it would thrive well in the meadows of Kent and Surrey, in the same situations as *O. Morio* or *O. latifolia*, where it would probably soon become naturalized.” It might, he

[ORCHIS.—10.]

suggests, also be cultivated with advantage if planted out in a frame, the lights only to be kept on in very wet or severe frosty weather ; in such a situation no doubt many species would ripen their seeds, and produce young plants in abundance, if the ground was not disturbed too often, which would infallibly destroy them.

Of *O. coriophora*, the same cultivator remarks :—It appears to be a very free growing species, and its flowers are very singular, but they possess a disagreeable scent. It succeeds well in a light sandy loam, and from its appearance we suspect it would prefer a little chalk mixed with it. The ground in which it is planted should have a dry bottom, as nothing is more injurious to it than too much moisture when in a dormant state.

The North American *O. spectabilis*, on being imported was potted in a very sandy red loam, in which the plants flowered strong, and continued to thrive. “We have little doubt,” continues Sweet, “but the whole of the Orchideous plants might be managed as well as any others, by proper attention. Many of them, we think, would succeed well in a frame, or pit, and to be covered occasionally with glass, particularly when the weather was very wet, as moisture is much more injurious to them than cold. The soil should be prepared for them according to the different species. The greater number succeed best in light sandy loam ; and a few species prefer peat, and many are fond of a chalky soil, which could be imitated by pounding or grinding chalk, and mixing it with the other mould. The bed should be made a little sloping, that the wet may pass more readily off. Some of the sorts that prefer chalky hills, might be planted on a little mound made of chalk, and covered with sandy loam mixed with powdered chalk.”

The very beautiful *O. longicornis*, represented in one of our plates, was obtained by Sweet from the Chelsea Botanic Gar-

[ORCHIS.—11.]

den, so long ago as the spring of 1822. It was planted in a border, the bulb being at the time so small that it was not strong enough to flower, but it continued to grow, and the following season was a strong plant producing offsets, and came into flower in the month of February, continuing in bloom till the beginning of April. The soil in which it was grown was of a light sandy nature, in which the greater part of the hardy orchids thrive very well, and continue to increase instead of diminishing in strength.

The most marked instance of successful cultivation with these tuberculiferous Orchids, of which we have any knowledge, was in the case of this same *O. longicornis*, lately reintroduced from Algiers after being many years lost, and managed with admirable success by Mr. W Barnes, of Camberwell. The treatment to which Mr. Barnes's plants were subjected has been described by himself in the *Florist* (iii. 97), whence we quote the following—nearly in his own words:—

“The grand secret is to pay it the greatest attention when in a dormant state: keep it then quite dry and cold, for it is one of the southern species, and subjected to the hot rays of the sun at the time when it is in full growth, and it receives little or no moisture when at rest. My first bulb came from Algiers, and I treated it as follows:—I broke up roughly a quantity of light fibrous peat, adding half the quantity of well-decomposed leaf-mould and a fourth-part of good sharp sand; a few clean and broken potsherds were intermixed with it. With this compost it was potted, using a nice clean dry pot. The size of the pot may depend entirely upon the fancy of the cultivator; but what I generally use are five-inch pots (48's) for single bulbs; or I put three bulbs into six-inch pots (32's), four bulbs into seven-inch pots (24's), or five bulbs into eight-inch pots (16's), always placing the largest bulb in the centre, in consequence of its greater strength enabling it to throw its spike of bloom above the others. Great care must be taken

[ORCHIS.—12.]

to drain the pots well by placing in the bottom about two inches in depth of broken potsherds and rough charcoal. Upon the top of that I place some of the most fibrous peat from the mixture, and then the soil, planting the bulb about an inch deep, and not pressing it down too hard, as it delights in a porous soil. When potted, I place them in a cold frame or pit, never allowing frost to touch them. I keep them quite dry until they begin to show symptoms of growth when they receive a little water; and as vegetation advances, a more liberal supply is given. Abundance of air is admitted, but I never allow the lights to be off in rainy weather, as I have seen the plants severely injured by their hearts becoming filled with water. I always use the greatest caution in giving water, never to allow it, if possible, to touch their foliage.

The proper time for potting is in September; and *O. longicornis* blooms from November until May. There is no plant with which I am acquainted that remains in bloom the length of time which this does. I have had one pot in perfection six months. I find that by having several bulbs, some can be started so as to come into bloom earlier than others, while the rest may be kept in a dormant condition for another month. By thus potting them in succession, blooming plants may be had for a very long time. I have grown them from fifteen to twenty inches in height with flower spikes from six to nine inches in length. The lip of the blossom being striped with lilac, and the upper part jet-black like most beautiful silk velvet, the contrast produced in the flowers is so striking, and the beautiful black is so uncommon, that they form objects of the greatest beauty in the greenhouse or conservatory”

§ 1. EUORCHIS.—*Lateral sepals reflexed or spreading.*
(Lindley.)

A.—LIP UNDIVIDED, LACERATE, OR OBSOLETELY THREE-LOBED.

1. **Marsh Orchis.**—*O. LATIFOLIA*, *Linnæus, Sp. Plant.* 1334; *English Botany*, t. 2308; *Curtis, Flora Lond.* ii. 250.—Native of England, and throughout Europe and northern Asia.

A fine species growing one to two feet high, bearing a dense ovate-oblong spike of flowers, which vary from a pale flesh colour, on the one hand to white, and on the other to a full rose; the lip is elegantly variegated with dark purple and white. It is rather abundant in marshes and moist meadows, from which drainage is in many places destroying it. The flowers appear in May and June. There are numerous foreign varieties. This species has the root-knobs palmate.

2. **Saccate Orchis.**—*O. SACCATA*, *Tenore, Append. prim.* 65. *O. COLLINA*, *Banks MSS. Hb. Sm.*—Native of Barbary, Algeria, and the south of Europe.

This plant has spotted leaves, and a lax spike of flowers, of a purplish colour; the lip is oblong, obtuse and crenated, longer than the thick pendulous pallid spur. It blossoms in May and June.

B.—LIP THREE- OR FOUR- CLEFT OR DISTINCTLY THREE-LOBED.

3. **Elder-scented Orchis.**—[Plate I.] *O. SAMBUCINA*, *Linnæus, Sp. Plant.* 1334; *Sweet's Brit. Fl. Gard.* t. 299.—Native of Europe.

In this plant the root-knobs are flattish and forked, and it produces several broadly lanceolate bluntish leaves, and an erect leafy scape supporting a terminal spike of several flowers of a pale yellow or straw colour; the two lateral sepals are rather narrowest and spreading or slightly reflexed, the others broader and connivent, a little arched over; the lip is broadish, slightly three-lobed, and crenulate, the side lobes rounded, the middle one small and narrow, entire; the spur is conical, a little inflated and about the length of the ovary. It blooms in May, and has the scent of elder flowers.

Of this species there is a variety *PURPUREA* [Plate II.], the *O. Schleicheri*, *Sweet (Brit. Flow. Gard.* t. 199), *O. incarnata*, *Linnæus (Sp. Plant.* 1335), and *O. Traunsteineri*, *Reichenbach*, which has the scape short and the upper part tinged with bluish purple; the spike short, few-flowered; the flowers purple, different in colour on different plants: in some they are altogether purple; in others marked with yellow or orange on the lip, and dotted with small purple spots; the lip is broad, nearly round, very slightly three-lobed near the point, the margins undulate scarcely crenulate, the point entire, not emarginate, and the spur conical, nearly as long as the ovary. This flowers in April and May.

[ORCHIS.—14.]

4. **Pallid Orchis.**—*O. PALLENS*, *Linnæus, Mant.* 292. *O. SULPHUREA*, *Bot. Mag.* t. 2569.—Native of Europe.

In this species the flowers, produced in May and June, are yellow, with the lip deeper yellow and unspotted. It has undivided root-knobs, and a spur nearly twice as long as the lip. It is allied to *O. sambucina* and *O. provincialis*.

5. **False Elder-scented Orchis.**—*O. PSEUDO-SAMBUCINA*, *Tenore, Synop.* 82; *Flor. Neapol.* ii. t. 86. *O. ROMANA*, *Sebast. and Maur. Rom. Pl.* t. 3. *O. BRACTEATA*, *Tenore, Fl. Neap. Prod.* 52.—Native of Italy.

This species, which differs from *O. sambucina* in having a more slender and a horizontal spur, and from *O. pallens* in having long foliaceous bracts, has pale yellow flowers, and varies also with purple flowers. It blooms in June and July. The tubers are palmate.

6. **Provence Orchis.**—*O. PROVINCIALIS*, *Balbis, Misc.* t. 2. *O. CYRILLI*, *Tenore, Fl. Neap.* ii. t. 87.—Native of Switzerland and Italy.

This is allied to *O. pallens* and also resembles *O. sambucina*. It has pale yellow or, in one variety, purple flowers, which appear from May to July. The spur is three times as long as the lip, and the tubercles of the root are undivided. It is fragrant. The only marked distinction between this plant and *O. sambucina*, according to the late Dean of Manchester, is that the latter has the tubers palmate instead of undivided. In colour, fragrance, and the habit of growing on parts of high mountains, where the soil is blackish, and where the clouds frequently rest, they quite agree. *O. fusca*, cultivated in a large pot of strong alluvial soil mixed with a little pulverised chalk, proved on examination to have the largest of the new tubercles with two strong lobes at the base. This circumstance arising in the very first season of cultivation, shows how *O. provincialis* may, in a different locality, have acquired the prominences which have been supposed to distinguish *O. sambucina* from it. The plants called *sambucina*, it appears, are more vigorous, and grow in colder quarters.

7. **Leafy-spiked Orchis.**—*O. FOLIOSA*, *Solander, MSS.*; *Bot. Reg.* t. 1701.—Native of Madeira.

This fine species has some resemblance to *O. latifolia*, but all the parts are larger, and the lip is three-lobed. It grows from one to two feet high, and bears its very ornamental purple spotted flowers in May. The root-tubercles are palmate.

8. **Early purple Orchis.**—*O. MASCULA*, *Linnæus, Sp. Plant.* 1333; *Eng. Bot.* t. 631; *Curtis, Fl. Lond.* i. t. 187.—Native of England, and common throughout the North of Europe.

This is one of the most common of our wild Orchises, and is a very beautiful species. The root-knobs are oval and undivided; the stem a foot or more in height according to the luxuriance of the plant; and the leaves stained with purplish black blotches or sometimes unspotted. The flowers are borne in rather lax many-flowered oblong spikes, and are of a nearly uniform deep purple red, the disk of the lip being whitish

[ORCHIS.—15.]

and spotted, with a fine downy surface. They are sometimes white or nearly so, and have a slight fragrance in the morning and evening. It grows plentifully in pasture and shady groves. The spikes of this plant are the *Long Purples* of the poets. Pr of Morren remarks that “the fresh spike of flowers of the *Orchis mascula*, newly opened, has scarcely any appreciable colour; but when the flowers decay, and especially when they have dried on the stalk, they emit an offensive feline smell. Two plants that I gave to a lady, produced, in drying, a smell of this kind, so strong that during several days, no one suspecting the supposed innocent flowers, a vigorous search was kept up for the feline pest, which, it was believed, had contrived to secrete itself in the room. At last, however, the real culprit was discovered. On another occasion, a child, having returned from the woods with a bouquet of the flowers of this species, left it to wither in a room, which was found uninhabitable so long as the flowers remained.”

9. **Lax-flowered Marsh Orchis.**—*O. LAXIFLORA*, *Lamarck, Encyc.* iv. 553; *Eng. Bot.* t. 2828. *O. ENSIFOLIA*, *Villars, Delph.* ii. 29. *O. PALUSTRIS*, *Jacquin, Ic. Rar.* t. 181.—Native of Guernsey and Jersey, and common over the centre of Europe.

This is a beautiful plant, growing from one to two feet high, with spotless leaves, and a long loose spike of large purplish red flowers. The two lateral sepals are reflexed, and the lateral lobes of the lip rounded and confluent with the emarginate intermediate one. The tubercles are undivided.

10. **Spotted Palmate Orchis.**—*O. MACULATA*, *Linnæus, Sp. Plant*, 1335; *Eng. Bot.* t. 632; *Hooker, Fl. Lond.* iv. t. 110. *O. TETRAGONA*, *Heuffel, Bot. Zeit.* 1833, No. 23.—Native of England, and common over Europe.

In this species the leaves are usually copiously spotted with blackish stains, and the flowers grow in short dense ovato-conical spikes. They are variable in size, pale purple or white, variously sprinkled with dark purple or violet-coloured streaks and dots. The lip is flat, with two large rounded side lobes, and a narrower sharp intermediate one. It grows about a foot high, and blossoms in June. The root-knobs are palmated.

§ 2. **HERORCHIS.**—*Sepals connivent so as to assume a kind of helmet-like appearance.* (Lindley.)

A.—LIP UNDIVIDED.

11. **Red Orchis.**—*O. RUBRA*, *Jacquin, Ic. Rar.* t. 13. *O. PAPILIONACEA*, *Bot. Reg.* t. 1155.—Native of the South of Europe.

This grows from a span to a foot high or more, and produces a spike of large veiny, showy, purple-red flowers, with a pale purple lip, and rose-coloured bracts. There are two slight varieties differing in the outline of the lip, which in one is rhomboid and acute, and in the other rounded, often broader than long. Its root-tubercles are undivided. It flowers in May.

[ORCHIS.—16.]

12. **Showy Orchis.** [Plate III.]—*O. SPECTABILIS*, *Linnæus*, *Sp. Plant.* 1337; *Sweet*, *Brit. Flow. Gard.* t. 65. *O. HUMILIS*, *Michaux*, *Fl. Amer.* ii. 155. *HABENARIA SPECTABILIS*, *Sprengel*, *Syst. Veg.* iii. 689.—Native of North America.

A very showy plant. The root is fasciculate; and from its crown grow two large roundly oval leaves, and a smooth shining leafless few-flowered scape, with long leaf-like bracts and large violet-scented flowers, all facing to one side. The sepals and petals are connivent and adhering, light purple on the outside, darker within; the lip is white, or slightly tinged with blush, broadly ovate, crenulate, and slightly retuse, with a compressed blunt spur, about the length of the ovary. It is a very handsome plant, and appears to be common in the rich woods of North America.

B.—LIP THREE-LOBED.

13. **Bug-scented Orchis.** [Plate IV.]—*O. CORIOPHORA*, *Linnæus*, *Sp. Plant.* 1332; *Sweet*, *Brit. Flow. Gard.* t. 219. *O. CASSIDEA*, *Bieberstein*, *Fl. Taur. Cauc.* iii. 600. *O. POLLINIANA*, *Sprengel*. *O. FRAGRANS*, *Pollini*.—Native of the southern parts of Europe, and of the Caucasus.

In this species the root-tubercles are undivided, and the flowers grow in a terminal, many-flowered spike, and are brown, with a strong scent, resembling that of bugs. The sepals and petals are projected forwards, and are connivent and cohering into an arch; the lip is three-lobed, of a brownish-green, spotted with numerous small purple spots, the middle lobe longest, oblong, obtuse, entire, the side ones obliquely-ovate, acute, more or less toothed with small teeth. The spur is conical, bluntish, more than half as long as the ovary, at first bent, but becoming straight or nearly so. The flowers smell like bugs, and according to Haller stink abominably whilst withering.

14. **Acuminate Orchis.** — *O. ACUMINATA*, *Desfontaines*, *Fl. Atlant.* t. 247; *Bot. Mag.* ? t. 1932. *O. LACTEA*, *Poiret*, *Lam. Dict.* iv. 594. *O. PARVIFLOA*, *Tenore*, *Fl. Neapol. Prod.* 52.—Native of Algeria and of the south of Europe.

This species belongs to the division with the root-tubercles undivided. It has flesh-coloured flowers, varying in intensity, and the lip is spotted and three-parted, with a spur of equal length, pendulous and incurved.

15. **Green-winged Meadow Orchis.**—*O. MORIO*, *Linnæus*, *Mant.* 485; *Eng. Bot.* t. 2059; *Curtis*, *Fl. Lond.* i. t. 188.—Native of England, and common over Europe.

This is a very handsome wild plant, ornamenting moist meadows and pastures, about the months of May and June. It grows from six inches to a foot high, and has dull green unspotted leaves, and a rather lax spike of scentless usually purple flowers, with the lateral sepals marked with green parallel lines; the colour of the flower, however, varies, being sometimes pale or flesh-coloured, sometimes nearly crimson, and sometimes a light violet. The lip is three-lobed, broader than long, the side lobes deflexed;

[ORCHIS.—17.]

it is white in the middle with raised purple spots, and about equals in length the horizontal obtuse spur. The root-knobs are nearly globose.

16. **Long-horned Orchis.** [Plate V.] — *O. LONGICORNIS*, *Desfontaines Fl. Atlant.* ii. 317, t. 246; *Bot. Mag.* t. 1944; *Bot. Reg.* t. 202; *Sweet, Brit. Fl. Gard.* t. 249. *O. PICTA* *Loiseleur, Fl. Gall.* t. 26.—Native of the north of Africa, the south of Europe, and of Tauria.

This is a very handsome plant, allied to *O. Morio*, but distinguished by the greater width of the middle lobe of the lip, which is not well shown in our figure, and by the inflated apex of the very long spur. It appears to vary, too, in colour, the Italian and African specimens being much more deeply coloured than the French and Swiss ones are. The root is composed of two oval fleshy tubers. The leaves are spreading, lanceolate, and of a bright glossy palish green, and from among them rises the stem, a span to nine inches in height, bearing from six to ten flowers, which vary a little in colour, but are very handsome. The bracts are pale purple. The sepals and petals are connivent forming an arch, obtuse, lilac or pale purple; the lip is large and spreading, three-lobed, the side lobes large, rounded, of a rich dark velvety purple, the middle one small short slightly retuse, of a lighter purple, and spotted with small black specks on the upper side. The spur is long, flat, or spatulate, that is, widened towards the end, light purple, ascending.

C.—LIP FOUR-CLEFT OR FOUR-PARTED.

17. **Globose Orchis.**—*O. GLOBOSA*, *Linnæus, Sp. Plant.* 1332. *O. HALLEBI*, *Crantz, Stirp. Austr.* 488. *NIGRITELLA GLOBOSA*, *Reichenbach, Fl. Excurs.* 121.—Native of Germany, Switzerland, and the Caucasus.

This grows to a foot or a foot and a half high, and bears in June and July a sub-globose spike of flowers, of which the sepals and petals are bright purple or flesh-colour, and the lip is dotted with deeper purple. The sepals are long acuminate, the lip is narrow three-lobed, its side lobes linear, the intermediate one broader and emarginate. The root-knobs are undivided.

18. **Variegated Orchis.**—*O. VARIEGATA*, *Jacquin, Ic. Rar.* t. 599; *Bot. Reg.* t. 367. *O. TRIDENTATA*, *Scopoli.*—Native of the south of Europe, Tauria, Caucasia, and Iberia.

This has spotless leaves, and grows about a foot high, bearing a corymbose spike of small flesh-coloured flowers; the sepals and petals are marked inside with purple lines; the lip is plane, equalling the straight pendulous spur, pale flesh colour, elegantly variegated with deep red dots. The flowers are produced in April and May. The root-tubercles are undivided.

19. **Soldier Orchis.** [Plate VI.]—*O. MILITARIS*, *Linnæus, Sp. Plant.* 1334; *Eng. Bot.* t. 2675. *O. RIVINI*, *Gouan. Illustr.* 74; *Sweet, Brit. Fl. Gard.* t. 162.—Native of England (rare), and throughout the greater part of Europe.

[ORCHIS.—18.]

This is a variable plant. The root-knobs are undivided. The leaves are broadly lanceolate, and from among them rises the leafy angular scape, having the flowers in a compact oval spike. The sepals and petals are connivent and adhering, arched over, pale ash-colour or rose-colour, the inside elegantly striped with purple lines; the lip is light purple, spotted, the upper side with little tufts of short dark purple hairs; the three-parted side-segments linear, widened near the point, the middle one lengthened out, two-lobed, with a purple mucro betwixt the lobes; the spur is nearly straight or slightly curved inwards, narrowest at the base, the point blunt and inflated.

There is a variety named GALEATA, [Plate VII.] which is the *O. galeata*, Lamarck, (*Dict.* iv. 593), *O. mimusops*, Thuillier, (*Fl. Par.* i. 458), and the *O. militaris*, Sweet, (*Brit. Fl. Gard.* t. 163). In this, which otherwise resembles *O. militaris*, the sepals and petals are pale ash-colour, marked with elegant dark purple stripes, the former oblong lanceolate, taper-pointed, the middle one shortest and broadest; the inner ones linear, dark purple; the lip is three-parted, narrower, bright rosy purple, elegantly spotted on the upper side with tufts of dark purple hairs, its lateral segments linear, the middle one lengthened out, two-lobed, with a purple mucro betwixt the lobes, which are bluntly rounded; the spur is straight, short and blunt.

20. **Brown-winged Orchis.**—*O. FUSCA*, *Jacquin. Aust.* t. 176; *Curtis, Flor. Lond.* ii. t. 185. *O. PURPUREA*, *Hudson, Fl. Ang.* 334. *O. MORAVICA*, *Jacquin, Ic. Rar.* t. 182. *O. MILITARIS*, *Eng. Bot.* t. 16.—Native of England (rare), and of other parts of Europe and of Tauria.

The largest and most showy of our native Orchises. It grows from one to two feet high, with large elliptic bright green leaves, and a dense cylindrical spike of flowers, which is produced in May. The sepals are ovate-concave, converging, somewhat connected in the lower part, marked externally with dark brown lines, and confluent spots, green internally; the petals are linear-oblong covered by the sepals, pink or purplish and spotted; the lip is pink, or sometimes purple or flesh-coloured, with prominent dark coloured points, its margin deeply four-lobed, with a small intermediate point. In drying, the whole plant gives out a strong odour resembling that of woodroof. The root-tubercles are oval.

21. **Long-bracted Orchis.**—*O. LONGIBRACTEATA*, *Bivona, Cent.* t. 4.; *Bot. Reg.* t. 357.—Native of Italy and France.

A very fine species allied to *O. fusca*, but with flowers twice as large, having purplish green sepals and petals, the lip pale purple, tipped with deeper purple, and marked with red dots. It blooms in March.

22. **Wavy-leaved Orchis.**—*O. UNDULATIFOLIA*, *Bivona, Cent.* t. 6; *Fl. Græc.* t. 927. *O. TEPHROSANTHOS*, *Desfontaines, Fl. Atlant.* ii. 318. *O. TEPHROSANTHOS*, β . *Bot. Reg.* t. 375.—Native of the warmer parts of Europe, and of Barbary.

In this species the flowers are white or flesh-coloured, produced in a close conical spike, and the lip is three times longer than the pendulous incurved spur. The root-knobs are undivided. It has a good deal of resemblance to *O. tephrosanthos*.

23. **Monkey-Orchis.** — *O. TEPHROSANTHOS*, *Villars, Delph.* ii. 32; *Bot. Mag.* t. 3426. *O. SIMIA*, *Lamarck, Dict.* iv. 593. *O. ZOOPHORA*, *Thuill. Fl. Par.* i. 459. *O. CERCOPIITHECA*, *Lamarck, Dict.* iv. 593. —Native of several parts of Europe; and of the Caucasus, and Iberia.

A handsome plant, related to *O. militaris*, but smaller, and with the side lobes of the lip very narrow and one-veined. The flowers grow in a thick cylindrical spike, and are of a lively pale purplish colour, the lip cut into four long narrow lobes, which simulate the arms and legs of a monkey-like animal, and variegated in the centre with purple spots. The root-knobs are oval.

The English plant which usually receives this name is referred to *O. macra*.

24. **English Monkey Orchis.** — *O. MACRA*, *Lindley, Synopsis, Brit. Fl.* ed. 2. 260. *O. TEPHROSANTHOS*, *Bicheno, Trans. Lin. Soc. Lond.* xii. 33; *Hooker, Fl. Lond.* iv. t. 80. ? *O. SMITHII*, *Sweet, Brit. Fl. Gard.* under t. 163; *Eng. Bot.* t. 1873. —Native of England, very rare.

This is sometimes united with the last named, but Dr. Lindley, whose acquaintance with the order, gives weight to his opinions, considers them quite distinct, in a technical sense. The flowers are whitish, scattered over with pale-rosy purple dots; the lip is whitish spotted in the centre, the linear segments deep purple. The root-knobs are oval. "I have no doubt," writes Dr. Lindley, "of this plant, which is the *O. tephrosanthos* of Bicheno, being altogether distinct from the species so called by Continental writers. It is very true that *O. militaris* and *tephrosanthos* are so variable in the form of their lip, that it is a matter of some doubt whether they are distinct from each other; but the characteristic marks of *O. macra* are quite of another kind. Independently of its far more slender habit narrow few-flowered spikes and bluntish leaves, it is quite remarkable for the exceedingly large cells of the tissue of its lip, which project and have a watery appearance, as if the whole surface were covered with crystalline warts; the lip is, moreover, destitute of the hispid line, which invariably runs through its centre in all the varieties of either *O. militaris* or *tephrosanthos* I have had an opportunity of examining."

25. **Dwarf dark-winged Orchis.** — *O. USTULATA*, *Linnæus, Sp. Plant.* 1333; *Eng. Bot.* t. 18; *Hooker, Fl. Lond.* iv. t. 35. *O. PARVIFLORA*, *Willdenow, Sp. Plant.* iv. 27. *O. AMÆNA*, *Crantz, Austr.* 490. *O. COLUMNÆ*, *Schmidt, Bohem.* 58. *HIMANTOGLOSSUM PARVIFLORUM*, *Sprengel, Syst.* iii. 694. —Native of England, and of various parts of Europe.

A span high, and though small-flowered yet a very neat and pretty plant. The flower-spike is dense, oblong; the converging sepals brownish-purple, the lip white, marked on the disk with red-purple dots, and divided into four lobes; the spur is deflexed incurved blunt, shorter than the germen. It flowers in June, and is met with on dry open chalky downs, often in great profusion in the localities where it occurs.

REFERENCE TO THE PLATES OF THE
GENUS ORCHIS.

Plate I.—ORCHIS SAMBUCINA, *Linnæus*.

Fig. 1. The ovary, and sepals; fig. 2, the petals; fig. 3, the spur; fig. 4, the lip; fig. 5, the two stalked pollen masses, which were each seated on a glandule and enclosed in the hood from which they have escaped.

Plate II.—ORCHIS SAMBUCINA, *Linnæus*; β . PURPUREA.

Fig. 1. The ovary; fig. 2, the sepals and petals; fig. 3, the lip with its spur; fig. 4, the two stalked pollen masses.

Plate III.—ORCHIS SPECTABILIS, *Willdenow*.

Fig. 1. Portion of the angular flower stems; fig. 2, the ovary; fig. 3, the sepals; fig. 4, the petals; fig. 5, the lip; fig. 6, its spur; fig. 7, the anther showing its diverging lobes covered with a hood; fig. 8, the same without the hood, with pollen masses, and glandules.

Plate IV.—ORCHIS CORIOPHORA, *Linnæus*.

Fig. 1. The ovary and perianth; fig. 2, the lip; fig. 3, the pollen masses.

Plate V.—ORCHIS LONGICORNIS, *Desfontaines*.

Fig. 1. The ovary, one of the sepals, and the two petals; fig. 2, the two lateral sepals; fig. 3, the lip with its spur; fig. 4, the column, showing the lobes of the anther, the pollen masses and glandules.

Plate VI.—ORCHIS MILITARIS, *Linnæus*.

Fig. 1. The three sepals; fig. 2, the petals; fig. 3, the lip, showing the tufts of purple hairs on the surface; fig. 4, the anther attached to the stigma, below which is the spur; fig. 5, the bracts.

Plate VII.—ORCHIS MILITARIS, *Linnæus*; β . GALEATA.

Fig. 1. The bracts; fig. 2, the sepals; fig. 3, the petals; fig. 4, the lip; fig. 5, the ovary.

ORCHIS
1



D. Smith. Del.

W. Wall. Sc.

ORCHIS
II



E.D. Smith, Del.

Wodden

ORCHIS
111.



E. Dalton. Amun. 22

A. Barclay sculp.

ORCHIS
IV.



J. D. Smith del.

Widdell sc.

ORCHIS
V.



ORCHIS
VI.



ORCHIS
VII.



THE GENUS OPHRYS.

The genus OPHRYS is one of that terrestrial race of Orchids which are most familiar to Europeans. In habit the species are quite like the common Orchises of our woods and pastures, and some indeed of them are native plants, equally familiar with these, and bearing popularly the same general name of *Orchis*. The species chiefly inhabit the middle and south of Europe, and the north of Africa, some few of them occurring in the Levant, and in Asia Minor.

In the flowers of *Ophrys*, the sepals are nearly equal and spreading. The two petals are smaller than the sepals. The lip, in which the external peculiarities of these plants reside, is without a spur, and is convex on the face; it is entire or three-lobed, in some instances downy, in other cases bearing near its base a pair of horns or short fleshy projections from its surface. This part of the perianth hangs downwards, and is usually, if not always, longer than the sepals. The column is erect and free, with the anther in front; the pollen-masses two in number, and the glands of their stalks enclosed in two separate pouches or hood-like cells; each mass is deeply divided into numerous angular lobes. The stigma is a cavity in front of the column beneath the anther. The plants are furnished underground with a pair of fleshy knobs or tubercles, one of which is renewed during each season of growth. The flowers are remarkable for their resemblance, not altogether fanciful, to various kinds of insects.

[OPHRYS.—2.]

The name adopted comes from the Greek *ophrys*, the eyebrow; which, according to Pliny, some of the species were used to blacken.

Like the *Orchis* family, the Ophrydes have not been very generally cultivated with success, although from their similarity of habit and constitution, there can be no doubt that the same conditions would be congenial to both; and since many of them are very beautiful, there is every inducement to make the attempt to overcome the difficulties which have rendered so many previous trials nugatory. To aid such efforts we shall offer a few suggestions on the selection of the plants, on the preparation of borders for their reception, and on their culture in pots.

As to the selection of the plants and more especially the season at which they are procured, our experience tends to establish the rule that all such plants should be transplanted after they have passed the meridian of their growth, and have completed their flowers. But since the inexperienced eye cannot distinguish many of these plants before they are in blossom, nor afterwards when they wither, it would seem to be indispensable that they should be transplanted when in their flowering state, if they are to be had in gardens at all. Nevertheless, all cultivators agree as to this time being the most unseasonable of any. It is, however, *possible* to transplant them when in flower, if they are taken up with a mass of earth about their roots, so that neither roots nor flower-stalks are injured; a feat generally not difficult to accomplish. But in the absence of such a precaution it is idle to transplant Orchises during their time of growth; for their roots would never recover the injury caused by such disturbance.

The best time for transplanting them is really in autumn, when the plants are in a state of rest; and those who desire

[OPHRYS.—3.]

success must devise the means to find them, although they may be almost withered upon the ground. There can be no doubt that this is the proper time for transplanting. Besides this, great care should be taken as to their situation and soil. It has been often remarked that they grow much better if placed between other plants, as they then find themselves in their natural situation. They should consequently be brought to the garden, not only with the whole of the earth about their roots, but also with all the sorts of plants naturally belonging to it; for it has been ascertained that however exactly the natural soil is imitated, yet if they are cultivated in neatly-kept beds, they never thrive so well as when they stand among the other plants which naturally surround them.

The hardier species from the northern or central part of Europe, when of vigorous habit, will no doubt be best cultivated in properly prepared beds in the open air. The soil, if not naturally loamy, should be removed two feet deep, and, care being taken to secure ample drainage, strong loamy soil should be filled in, a small quantity of chalk being added in any convenient part for such species as require it. Here the plants are to be planted, and left as much as possible undisturbed, except by the removal of coarse weeds. Indeed, after planting they should not be meddled with, the bed not being forked or stirred in any way to loosen the soil; for if disturbed they generally die. No doubt the mode of getting them up from their natural habitat is most important. It is best to take them up by means of the spade with a good clod of soil, so as not to touch the roots. In planting, the strong loamy soil should be made as firm about them as possible; and after planting, no tool should be suffered to loosen the soil, for if this is done the plants become unhealthy. In hot dry weather they should be watered. In the shady parts of such a border, thus prepared, the beautiful North American *Cypripediums* and other orchidaceous plants would thrive; while the more

[OPHRYS.—4.]

exposed parts would suit the species which do not require so much shade; for instance, those parts reached by the morning sun, would be suitable for the species that naturally grow in open meadows. The bed, however, requires to be occasionally watered in long-continued droughts. The requisites to success appear to be a compact soil, such as loam, perfect drainage, and a moderate degree of shade.

As an encouragement to those who may desire to introduce the bulbs of any of the beautiful species to be met with in various parts of Europe, it may be useful to mention that Mr. Swainson, many years ago, successfully brought from Sicily a considerable quantity of *Orchis* roots, which produced their blossoms the succeeding year, although taken up in the flowering period. His plan was to take up the plants when in full flower, at which period, the "tuber" for the following year had not begun to throw out its roots; the earth was carefully removed, and the plants laid in a dry cool shady room for about three weeks when they were lightly packed with hay in a perforated deal box. These plants consisted chiefly of species of *Orchis* and *Ophrys*.

No doubt the more tender species, which are found in the warmer parts of Europe and on the African coast, would succeed better in beds so prepared than in pots, provided a very sheltered situation could be found them. Very perfect drainage would in this case be still more essential. The best conditions for them however would be afforded by a cold frame, prepared with soil in a similar manner to the bed, but affording protection from severe cold, and what is equally if not still more essential, a means of securing perfect dryness of the soil during the season of rest.

For the tenderer species, however, it is probable that pot culture in cold frames may be most convenient; and the plants themselves would, under such conditions, be more available for examination or for decoration, because removeable. No

[OPHRYS.—5.]

doubt in the case of all these plants, the grand secret is to pay them proper attention when dormant, at which time they should be kept quite dry and cold, whilst they should be subjected to the hot rays of the sun when in full growth. We should recommend to pot the tubers in good unctuous peat earth, mixed with sand, the pots being well drained, and from one to three tubers being planted in a five or six-inch pot. After potting they are to be put in a cold frame or pit. Great care must be taken to prevent frost from reaching them; and they must be kept quite dry until they begin to show symptoms of growth; they are then to receive a little water, and as vegetation advances, a more liberal supply may be given. At all times they should have abundance of air, but the lights should be removed from over them in rainy weather, as plants are often severely injured by water lodging in their hearts. Hence the greatest caution is advisable in giving water, never to allow it, if possible, to touch their foliage. The proper time for potting is in September or October.

§ MUTICÆ.—*Lip mutic, i.e. without horns or projections at the base.* (Lindley.)

1. **Wasp Ophrys.**—*O. VESPIFERA*, Willdenow, *Sp. Plant.* iv. 65; *Jour. Hort. Soc.* iv. 225, with a figure. *O. GLABRA*, Persoon *Syn.* ii. 510. *O. INSECTIFERA*, *d. GLABERRIMA*, Desf. *Fl. Atlan.* ii. 321.—Native of Barbary, and Corfu.

This very beautiful species is exceedingly rare. It has an erect scape terminated by a few very curious and handsome blossoms. The lip is smooth and three-lobed, with the middle lobe emarginate. This lip is yellow, perfectly free from hairiness, but marked with brown streaks and spots, so as to resemble the body of the insect after which it is named, especially when the sepals and petals are curved down upon its base, as is naturally the case. This plant was introduced from Corfu, by the late Dean of Manchester but a few years since, and blossomed since his death, in July 1848, in the possession of the Horticultural Society.

[OPHRYS.—6.]

2. **Yellow Ophrys.** [Plate I.] *O. LUTEA*, *Cavanilles Icones*, ii. 46, t. 160¹; *Hooker, Exotic Fl.* t. 10; *Sweet's Brit. Fl. Gard.* t. 206; *Reichenbach, Ic. Eur.* t. 857.—Native of the South of France, of Italy, Sicily, Portugal, Spain, and Gibraltar.

A very handsome plant, resembling *O. vespifera*, but the disc of the lip is velvety, and its middle lobe rounded. It flowers about May; and is a not uncommon plant in the South of Europe. Its habit resembles *O. vespifera*. The leaves are sessile, ovate, acute, slightly hooked inward at the point, a bright glossy green. The scape is leafy, smooth, cylindrical, with a terminal spike of flowers, the latter seated in the axils of broadly lanceolate, bluntish, concave bracts, about the length of the germen. The three sepaline divisions of the flower are ovately oblong, blunt, concave, with the margins slightly revolute, the back one rounded and arched over, all of a yellowish green colour; the two petaline divisions are ligulate, erect, yellow. The lip is large, hollow at the mouth, trifold, the margins smooth, entire, but slightly uneven, of a bright yellow, the disk or centre dark purplish red, with a lighter oblong mark on each side, clothed with a short thick velvety down; the side lobes are broad, rounded, the middle one obcordate.

3. **Brown Ophrys.**—*O. FUSCA*, *Link, Schrad. Journ. Bot.* 1799, ii. 324; *Tenore, Fl. Nap.* ii. 303, t. 92; *Reichenbach Ic. Eur.* t. 855. *O. LUTEA*, *Bivona Bernard. Cent.* ii. 41, t. 5.—Native of the South of Europe.

This species, which is not very showy, grows about a foot high, the erect scape being terminated by a lax spike of flowers, which are borne in March and April. The sepals and petals are green. The lip is oblong, velvety, and three-lobed, the lateral lobes short, the central one emarginate; it is dull yellow, blotched and bordered with brown.

There is a variety IRICOLOR, the *O. iricolor*, Desf. and *O. fusca*, Bot. Reg. (t. 1071) in which the lip is dark purple, with a wavy transverse blotch of light blue on the disk.

4. **Fly Ophrys.**—*O. MYODES*, *Jacquin Ic. Rar.* i. t. 184; *Reichenbach Ic. Eur.* t. 854. *O. INSECTIFERA*, *a. MYODES*, *Linnaeus, Sp. Pl.* 1343. *O. MUSCIFERA*, *Smith. Fl. Brit.* iii. 937; *English Botany*, t. 64; *Hooker Flor. Lond.* t. 31.—Native of England, in chalky pastures; and throughout the middle of Europe.

This is a slender and curious plant. Its stem grows about a foot high, and bears at the top about half a dozen sessile distant flowers, which have a striking resemblance to some sort of fly, though as Sir J. E. Smith observes, not to any one in particular. The sepals are green; the petals narrow and chocolate-coloured; the lip twice as long, dependent, its disk convex, smooth, marked in the middle with a pale blueish shining partly cloven spot, otherwise chocolate-coloured downy, three-lobed, emarginate, and having two shining prominent spots at the base of the lip. It blossoms in June.

[OPHRYS.—7.]

5. **Mirror Ophrys.**—*O. SPECULUM*, *Link. Schrad. Jour.* 1799, ii. 324; *Bot. Reg.* t. 370; *Reichenbach, Ic. Eur.* t. 859. *O. CILIATA*, *Biv. Bernard. Cent.* i. 60. *O. VERNIXIA*, *Brotero, Fl. Lusit.* i. 24. *O. SCOLOPAX*, *Brotero, Phy. Lusit.* 8, t. 3. f. 2.—Native of the warmer parts of Europe; and of Algeria.

This species, which blooms in April and May, is one of the prettiest of the genus. It grows about six inches high, and bears an upright scape on which the few flowers are loosely arranged. The sepals are green with a reddish brown streak; the petals small deep purple. The lip is oblong three-lobed, the disk convex, glabrous, lively blue, bordered with yellow, and the margin with a dark purple bearded border; the intermediate lobe is emarginate.

6. **Spider Ophrys.**—*O. ARANIFERA*, *Hudson, Flora Ang.* 392; *English Bot.* t. 65; *Bot. Reg.* t. 1197; *Reichenbach, Ic. Eur.* t. 862-4. *O. FUCIFERA*, *Curtis, Flor. Lond.* t. 67.—Native of England, in dry chalky pastures; and of the middle and South of Europe.

This curious plant, of which the *O. fucifera* Smith, seems only a variety, blossoms in the months of April and May. It varies, according to Lindley, in the form and marking of its lip, but is known by having that part velvety, oblong emarginate, panduriform, with a pair of projections above the base, and the petals linear-oblong, smoothish, larger than the columns. The most usual native form in which the lip is lobed, has the sepals and petals green; the latter glabrous; the lip rounded but scarcely inflated, uniform dark brown and hairy, except two parallel livid shining lines on the disk connected by a cross-bar resembling the Greek letter π .

The variety *FUCIFERA*, *O. fucifera*, Smith (*Eng. Bot. Supp.* t. 2649), is found in Kent, and blossoms somewhat later, namely in May and June. It has an undivided lip with a spreading wavy margin, and scabrous petals; and the flowers are of a somewhat lighter brown, seldom more than three in a spike.

§ CORNUTÆ—*Lip bearing a pair of horns at the base.*
(Lindley.)

7. **Woodcock Ophrys.**—*O. SCOLOPAX*, *Cavanilles, Ic.* ii. t. 161. *O. BOMBYLIFLORA*, *Link, Schrad. Jour.* 1799, ii. 325; *Reichenbach, Ic. Europ.* t. 867.—Native of Portugal, and of Algiers.

A slender upright plant growing about a foot high, with a few distant purple flowers, which are produced in April and May. The lip is obovate velvety, bigibbous at the base; three-lobed, the lateral lobes deflexed hairy, the middle one inflexed, at the apex emarginate.

8. **Bee Ophrys.**—*O. APIFERA*, *Hudson, Flora Angl.* 391; *Eng. Bot.* t. 383; *Reichenbach, Ic. Eur.* t. 866.—Native of England, in chalky meadows and pastures, and throughout the middle of Europe.

[OPHRYS.—8.]

This is a stout plant, a foot to a foot and a half high, bearing several large conspicuous flowers, which are remarkable for the resemblance of their lip to a bee. The sepals are deeper or paler pink, and the petals smaller greenish, hairy on the inner surface. The lip is large and tumid, three-lobed, bigibbous at the base, the two lateral lobes deflexed and villous, the intermediate one smoothish apiculate, the apiculus reflexed, dark brown, variously marked with yellowish angular or curved lines and spots. It blossoms in July.

9. **Horned Ophrys.** [Plate II.] *O. CORNUTA*, *Steven, Mem. Mosq.* ii. 174, t. 10; *Reichenbach Ic. Europ.* t. 1870; *Bot. Reg.* 1846, t. 52. *O. BICORNIS*, *Sadler.*—Native of Tauria, Dalmatia, Hungary, Roumelia, and Corfu.

This very pretty species, was introduced from Corfu, by the late Dean of Manchester; and the specimens from which the accompanying plate was prepared, were, it appears, bloomed in Dr. Herbert's drawing room in London in the summer of 1846. The plant grows a foot high. It has pale rosy lilac green-ribbed sepals and short hairy rose-coloured petals, and the lip is villose, obovate-triangular and three-lobed, the lateral lobes short purple, bearing two long reddish-green horns, the intermediate one obtuse, with an inflexed appendage; the colour of this part is purple with white irregular markings, and more or less variegated with green blue and red; these markings of the lip are very singular, but variable, as will be seen from the figures in our plate; and it would seem that this variation goes further, for Grisebach describes the Roumelian form as having a greenish calyx, yellow spots in the middle of the lip, and blue horns. The species is certainly a very curious as well as ornamental one.

10. **Dun-fly Ophrys.** [Plate IV. fig. 1.] *O. TABANIFERA*, *Willdenow, Sp. Pl.* iv. 68; *Reichenbach Ic. Eur.* t. 873; *Bot. Reg.* 1847, t. 46. *O. PICTA*, *Salzmann, Exsic.* *O. PULLA*, *Tenore, Fl. Nap.* ii. 311, t. 97. *O. HIULCA*, *Sebast. et Maur. Rom. Pl. Cent.* 13, 43, t. 2, f. 2. *O. ŒSTRIFERA*, *Steven, Mem. Mosq.* ii. 176. t. 11, f. 4, 5. *O. DISTOMA*, *Biv. Bernard. Cent.* i. 59. *O. BOMBYLIFLORA*, *Mutel, Ann. Sc. Nat.* iii. 243, t. 8, B. f. 3.—Native of the South of Europe, and the North of Africa.

This handsome species was obtained from Clarentia, by the late Dean of Manchester. The stems bear two or three flowers, of which the petals are ciliated and acute, and the lip bigibbous at the base, villous, ovate, acute, three-parted, the lateral lobes being deflexed and acute, and the middle one ovate. The sepals are pinkish, the petals pale greenish chocolate and the lip dark chocolate, with an arched blueish line on the disk. It blooms in July. Tenore's figure represents the sepals yellow.

11. **Painted-lipped Ophrys.** [Plate III.] *O. FUCIFLORA*, *Haller, Ic. Helv.* t. 24, f. 2, 3; *Reichenbach Ic. Eur.* t. 868-9; *Bot. Reg.* 1847, t. 25. *O. ARACHNITES*, *English Bot. Supp.* t. 2596. *O. CRABONIFERA*, *Sebast. et Mauri, Rom. Pl. Cent.* 13, t. 2, f. 1. *O. ŒSTRIFERA*, *Reichenbach,*

[OPHRYS.—9.]

Fl. Excurs. i. 128. *O. APICULATA*, *Richard, Orch. Eur.* 33; according to *Lindley*. *O. EXALTATA*, *Tenore, Append. Alt.* 83; according to *Reichenbach*.—Native of the northern acclivity of the chalky downs of Kent; and of the central parts of Europe.

This handsome plant is one of the rarities of our native Flora; and is, according to *Lindley* and others, not the species called *O. arachnites* to which it is very generally referred. It grows from six inches to nearly a foot in height, the scape terminated by a few rather distant large showy blossoms, of which the sepals are pinkish, the petals deeper pink, the lip dark velvety brownish purple, variegated with yellow, and having a green point. The figures in our plate were drawn from specimens collected on the Continent by the late Dean of Manchester. Fig. 1. and 2. were found in the meadows of Zaule, near Trieste; 3. was from the neighbourhood of the Lake of Thun. Dr. *Lindley* remarks that all three of these plants are the same as *O. fuciflora*, which has been miscalled *O. arachnites* by English botanists. "The true *O. arachnites*," he continues, "which is awkwardly, but not inexactly, figured in the *Botanical Magazine*, t. 2516, has no hair on its lip. Our English Spider Orchis appears to be in reality much nearer *O. fuciflora* than was suspected, for instead of wanting the elevated processes which rise from the lip of that species, it equally produces them, as has been pointed out to us by the Dean of Manchester, and as is shewn in our figure [Plate III. fig. 4], taken from a plant gathered near Dover. But the processes are in a different place; and among the many specimens of these plants now before us we find no variation from what we take to be the essential distinction between them—namely, the form of the lip, and the appendage at its point. In *O. aranifera* the lip is always oval and emarginate, while in *O. fuciflora* it is constantly wedge-shaped and furnished with a fleshy lobe at its point, which circumstance gave rise to *Richard's* name of *apiculata*."

12. **Dark-lipped Ophrys.**—*O. ATRATA*, *Lindley, Bot. Reg.* 1087.—Native of Italy, and Istria.

In this species, which grows about a foot high, the flowers are green and purple. The lip is emarginate, entire, convex, villose, two-horned near the base; the petals are ovate and pubescent. It flowers in March. The sepals and petals are pale, fuscous green, the lip deep purple, marked with a pair of vertical lines of bright blue on the disk.

13. **Cobweb Ophrys.**—*O. ARACHNITES*, *Host. Syn.* 492; *Reichenbach, Ic. Eur.* t. 872; *Bot. Mag.* t. 2516.—Native of the central parts of Europe.

This grows a foot or more high, and blooms in May and June. The flowers are pale pink, or rose tinged with green, the broad velvety lip dark purple, variegated with yellow marks about the base, and with an incurved yellowish appendage at the point, and a pair of prominences at the base. It is a curious and pretty species.

14. **Saw-fly Ophrys.**—*O. TENTHREDINIFERA*, *Willdenow, Sp. Pl.* iv. 67; *Reichenbach, Ic. Eur.* t. 874; *Bot. Mag.* t. 1930; *Bot. Reg.* t. 205;

[OPHRYS.—10.]

Flora Græc. t. 929. *O. VILLOSA*, Desfontaines, *Ann. Mus.* x. 225, t. 14; *Reichenbach Ic. Eur.* t. 875. *O. GRANDIFLORA*, Tenore, *Fl. Nap.* t. 94.—Native of the South of Europe, Asia Minor, and Barbary.

This is a very handsome species, its scape terminated by a lax spike of from three to eight rather large flowers. The broadish sepals and the much smaller petals are of a pale rose colour, the sepals however being sometimes white sometimes deep rose. The lip is entire, subquadrato-wedged-shaped, appendiculate, bearded below the apex, glabrous on the disk. The colours of the lip are green at the upper half, becoming yellowish towards the base, the disk marked with a broad red or chestnut-coloured blotch, below which is a transverse blotch of pale blue. It blooms in April and May and is a very beautiful plant.

There is a variety *MINOR*, (*Bot. Reg.* t. 1093), which differs in having smaller flowers, and is of dwarfer stature and a more hardy constitution. It also is a very pretty plant.

15. **Horse-shoe Ophrys.** [Plate IV. fig. 2.] *O. FERRUM-EQUINUM*, Desfontaines, *Ann. Mus.* x. t. 15; *Bot. Reg.* 1847, t. 46.—Native of the East.

This is a handsome plant, nearly related to *O. tenthredinifera*. The sepals and petals are pale rosy purple, the latter the deeper of the two; the lip oblong subquadrately, lozenge-shaped and irregularly wavy on its edge, apiculate, dark chocolate brown with a horse-shoe shaped blueish mark in the centre of the disk. This species was introduced by the late Dean of Manchester, and together with *O. tabanifera*, blossomed with him just before his death. It is from these specimens that the accompanying figure was made for the *Botanical Register*. The plant was gathered by Dr. Herbert himself, in Corfu, on the summit of the Garouna Pass.

16. **Teat-bearing Ophrys.**—*O. MAMMOSA*, Desfontaines, *Ann. Mus.* x. t. 12; *Journ. Hort. Soc.* iv. 225, with a figure.—Native of the East.

This species, which is a native of Corfu, was introduced by the late Dean of Manchester, and bloomed, after his death, in July 1848, in the possession of the Horticultural Society. It is called *mammosa* from its having two prominent spaces on the side of its lip. The flowers are rather large; the sepals green, the petals rosy; the lip downy, nearly square in outline, deep chocolate brown with a pair of parallel blueish lines passing down the middle. It is a very curious and hitherto obscure plant, nearly allied to *O. ferrum-equinum*.

REFERENCE TO THE PLATES OF THE
GENUS OPHRYS.

Plate I.—OPHRYS LUTEA, *Cavanilles*.

Fig. 1. The ovary, with the sepals; fig. 2. the petals; fig. 3, the lip, showing the column, with the two-lobed anther, and the two pollen-masses detached from the hood, each seated on a slender pedicel.

Plate II.—OPHRYS CORNUTA, *Steven*.

Fig. 1. Half of the lip, showing the horn on its lateral lobe.

Plate III.—OPHRYS FUCIFLORA, *Haller*.

Figs. 1 & 2. *O. fuciflora*, from near Trieste; fig. 1 *a*, half the lip, with its horn; fig. 3, from near the Lake of Thun; fig. 4, from Dover.

Plate IV.—OPHRYS TABANIFERA, *Willdenow*. Fig. 1.

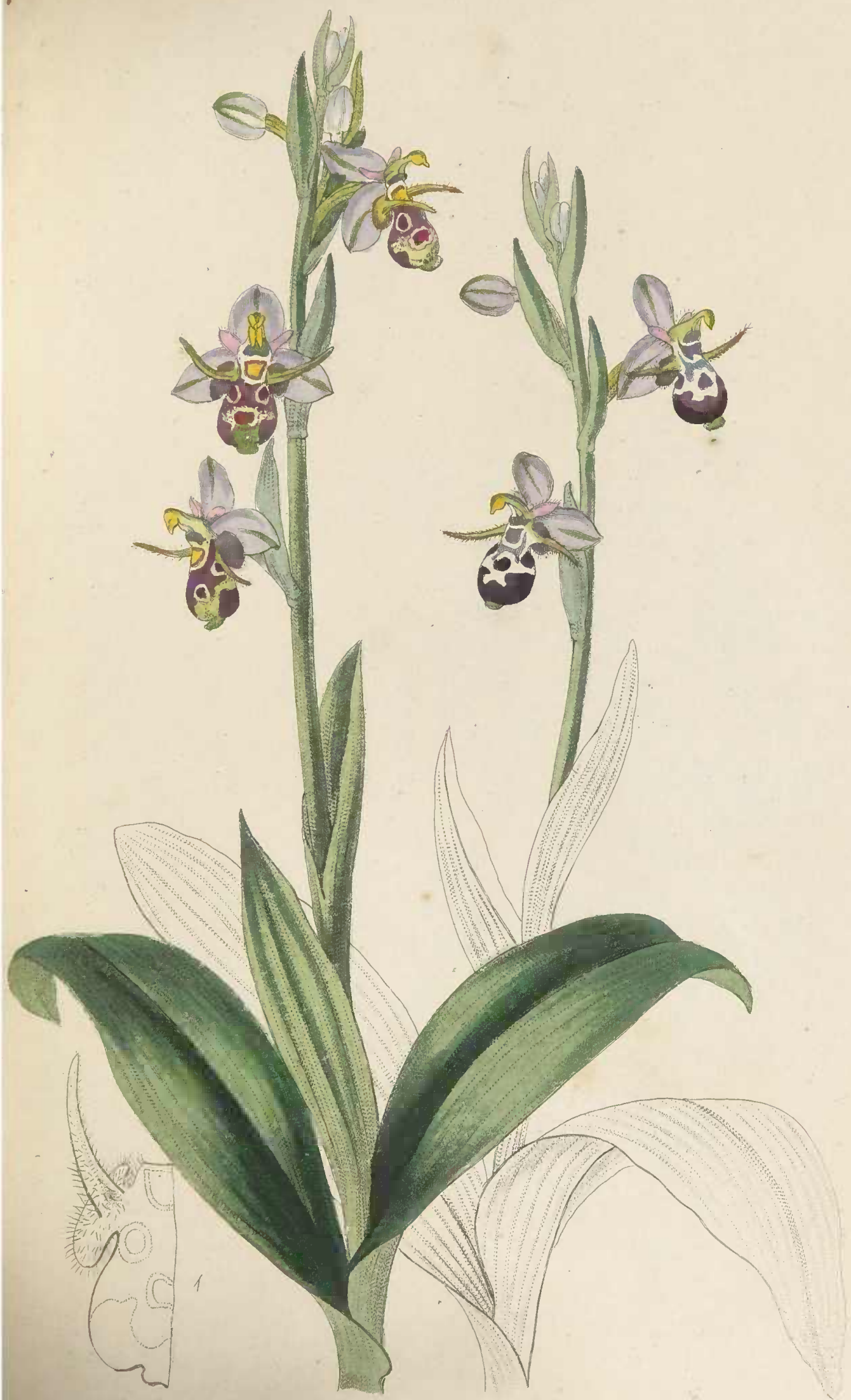
OPHRYS FERRUM-EQUINUM, *Desfontaines*. Fig. 2.

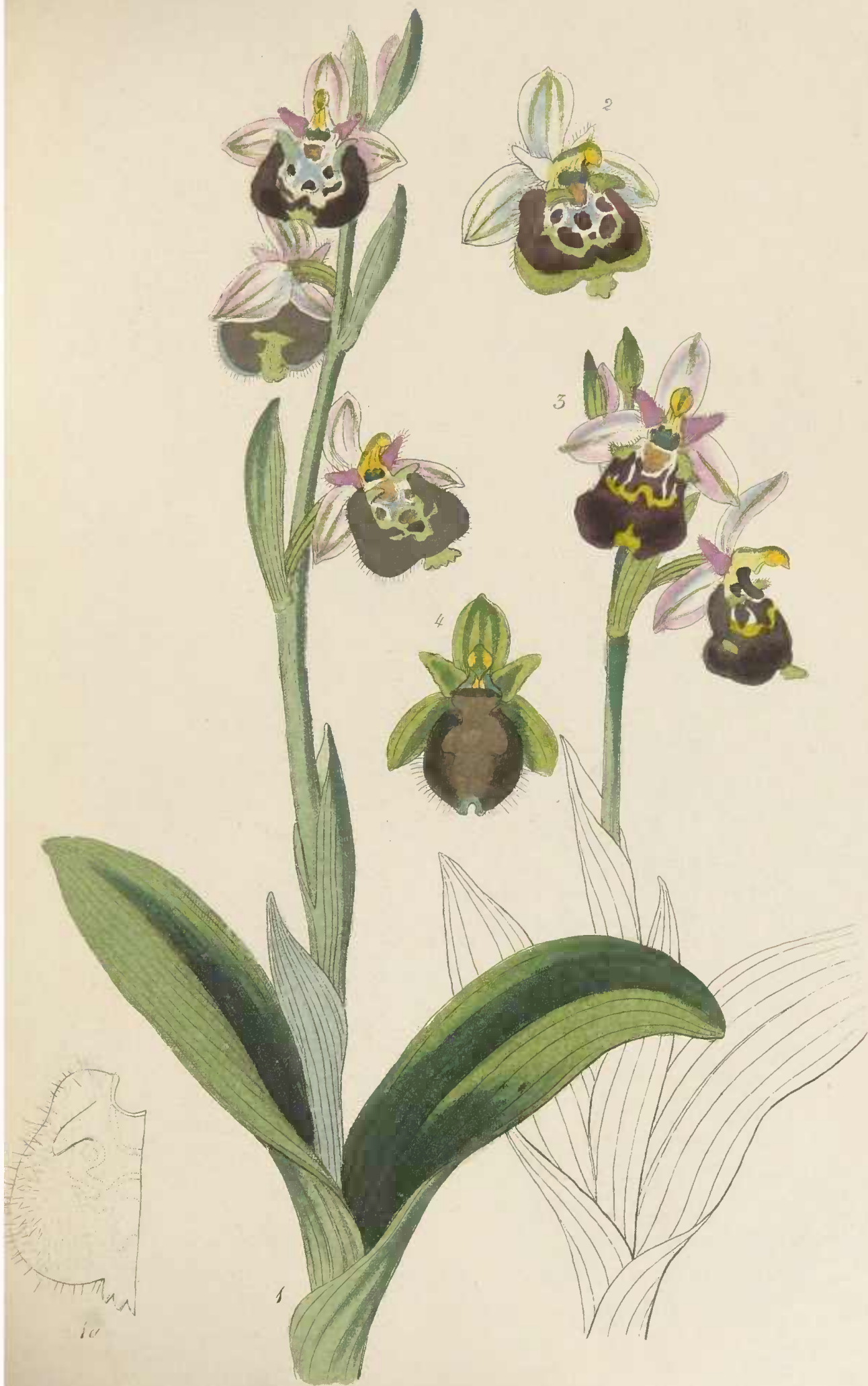
OPHRYS
1.



ED Smith Del.

Weddell Sc.





214

OPHRYS
IV.

2



THE GENUS SATYRIUM.

THE genus SATYRIUM is one of those terrestrial families of Orchids, which are related in habit to our common wild Orchises, growing like them in the earth, having tubercular root-knobs, and an erect leafy stem or scape, supporting a spike of flowers. They are principally found at the Cape of Good Hope, but a few of them are natives of Bourbon, Madagascar, and the East Indies. It is the Cape species, which have been brought to our gardens, where it is to be feared but few of them have long survived.

In this genus, the perianth is ringent, or gaping, the lower lip consisting of the united sepals and petals, the upper of the helmet-shaped, bicalcarate or bisaccate lip. The anther is resupinate, divided into two parallel or divergent cells or lobes; the glands of the pollen-masses are naked, and separate; the stigma two-lipped with a large upper lip.

The name is adopted from the ancients—the *Satyrium* of Dioscorides, *Satyrium* of Pliny.

Practically the cultivation of the Cape terrestrial Orchideæ, has always been found extremely difficult in this country, which is the more vexatious, as numbers of them are plants of the gayest colours, and most curious forms. This is no doubt owing to the little knowledge, or want of knowledge, which existed among cultivators as to the habits and constitutional peculiarities of the plants, at the time when they were introduced.

The most valuable hints which have been given in aid of the cultivator, are by Sir John Herschel, who had an opportunity of observing them in their native localities, and successfully brought home several species. Sir John Herschel's remarks* on this subject are consequently well worthy of consultation by those who may have opportunities afforded them of renewing the trials to overcome the difficulties which have been hitherto found to attend the culture of the terrestrial Orchids of the Cape.

Among the species introduced by Sir J. Herschel was the *S. pustulatum* which was brought over in a box of Cape soil in a growing state. This, during the summer, was generally exposed to the climate of London, though occasionally placed in-door on cold nights, until the flower-stems were developed, when it was removed in-door to blossom. Our Plate I was prepared from one of these specimens. This species Sir J. Herschel never found in the sandy-flats of the Cape, although Drège is stated to have found it on the sand-hills near Saldanha Bay, and elsewhere; "but the roots," he adds, "were all taken from *clay*, baked by the sun nearly to the consistence of a brick, at 'De Koch's,' a place about forty miles east of Cape Town, in the district of 'Hottentot's Holland.' They were then in flower, rather past their maximum. Nevertheless they grew well enough in the peaty-sand of which my garden consisted, and to admiration in a fine black sand enriched with vegetable matter, from the shrubby hills in the neighbourhood. Plenty of water and moderate temperature while leafing; diminished supply of wet, and increased heat as the flower rises; and total dryness *with heat*, when all is withered, seem to be the conditions."

Quite agreeing with this is the experience of Mr. Tate, formerly of Chelsea, who flowered the fine specimen of *S. coriifolium*, represented in Plate II. This plant first flowered

* Proceedings of the Horticultural Society, i. 56.

[SATYRIUM.—3.]

in 1828, but much weaker, than was the case the following year. Mr. Tate had planted them in large pots, in a stiff loamy soil, which, he observed, was very similar to that which was about their roots when they arrived from the Cape, and in which they thrive remarkably well. Others, that he planted in lighter soil, did not succeed so well. *S. cucullatum* was imported and flowered at the same time, under similar conditions.

Doubtless, therefore, the best method of cultivating these Cape terrestrial Orchids, is to plant them out in a pit, with a south aspect fully exposed to the sun's rays at all seasons of the year. The pit must be well drained, and the soil should consist of strong peat and good holding loam mixed with sand and leaf mould. A great deal of harm may be done, no doubt, by injudicious watering. When the plants are not growing, they should be kept perfectly dry; and as soon as they begin to push through the soil, a little water may be given, not amongst the leaves, for this will probably injure them, but around the tubers; this may be gradually increased in quantity as the plant grows, until the flower-stem makes its appearance, when water must be discontinued. Heat and light are now the agents which will perfect the flower, and ripen the tubers for the following year. When propagation is attempted it should be done when the tubers are ripe, and the plant in a state of inaction; but the success will probably be very limited, unless seeds can be procured and sown while fresh.

Those who have not the convenience of pits may probably be equally successful by cultivating the plants in large pots, attending to the above suggestions.

[SATYRIUM.—4.]

1. **Membranaceous Satyrium.**—*S. MEMBRANACEUM*, *Swartz, Act. Holm.* 1800, 216—Native of the Cape of Good Hope and Algoa Bay.

This species grows two feet high, and has large orbicular cordate radical leaves, and a dense spike of green and yellow flowers. The helmet-like lip is serrated at the apex, and has a very long spur. It was introduced many years since, and is said to bloom in May and June,

2. **Flesh-coloured Satyrium.**—*S. CARNEUM*, *R. Brown, Hort. Kew*, ed. 2, v. 196; *Bot. Mag.* t. 1512; *Bot. Reg.* 1838, *misc.* 155. *ORCHIS CARNEA*, *Hort. Kew*, ed. 1.—Native of the Cape of Good Hope.

A beautiful and noble species, producing a pair of fleshy orbicular radical leaves, and a dense ovate-oblong spike of flowers, large for the genus, terminates the scape. These flowers are whitish, beautifully tinged with pink. The helmet-like lip has an obtuse reflexed apiculus, and a long deflexed spur. It blooms about July.

3. **Small-flowered Satyrium.**—*S. PARVIFLOBUM*, *Swartz, Act. Holm.* 1800, 216. *ORCHIS BICORNIS*, *Jacquin, Hort. Schönb.* ii. 26, t. 179. *DIPLECTHRUM PARVIFLOBUM*, *Persoon, Syn.* ii. 509.—Native of the Cape of Good Hope.

This, which blooms about May or June, has green flowers slightly tinged with pink in a cylindrical spike. The lip has an acuminate reflexed point, and a long awl-shaped spur. The lower leaves are ovate-lanceolate.

4. **Leafy Satyrium.**—*S. FOLIOSUM*, *Swartz, Act. Holm.* 1800, 216.—Native of the Cape of Good Hope.

This species grows from a foot to a foot and a half high, and bears a dense obtuse spike of flowers. The leaves are oblong-lanceolate erect and cucullate; the flowers small numerous pale purple, the lip hemispherical apiculate, with a long pendulous filiform spur. It blossoms about July.

5. **Cucullate Satyrium.**—*S. CUCULLATUM*, *Thunberg, Fl. Cap.* 17; *Bot. Reg.* t. 416. *ORCHIS BICORNIS*, *Linnæus, Sp. Pl.* 1330; *Bot. Repos.* t. 315. *SATYRIUM BICORNE*, *Thunberg, Prod.* 6.—Native of the Cape of Good Hope, in wet places.

This plant grows a foot and a half high, and bears a spike of small green flowers, having an ungrateful odour. The lip is acute fleshy, with a long pendulous spur. The leaves are orbicular, ciliate-scabrous, those of the stem with an inflated sheath.

6. **White Satyrium.**—*S. CANDIDUM*, *Lindley, Bot. Reg.* 1838, *misc.* 153.—Native of the Cape of Good Hope.

A very fine plant, in some respects like *S. cucullatum*, growing a foot and a half high, and having smooth roundish-ovate leaves, and a spike of flowers which are pure white, and emit a most delightful aromatic fragrance. It was brought from the Cape by Sir J. Herschel, and flowered with him in October, 1838. The sheaths of the stem-

[SATYRIUM.—5.]

leaves are inflated, and so grown together at the edges as to form a kind of cup capable of holding water.

7. Erect Satyrium.—*S. ERECTUM*, *Thunberg, Fl. Cap.* 16.—Native of the Cape of Good Hope.

An erect robust plant, one and a half to two feet high, with oblong obtuse coriaceous leaves sheathing the stem, the latter terminated by a many-flowered spike, of which the blossoms are described as being golden or orange-coloured, and produced about March or April.

8. Pustular Satyrium. [Plate I.]—*S. PUSTULATUM*, *Lindley, Ill. Orch. Pl.* t. 12—14; *Bot. Reg.* 1840, 18. *S. PAPILLOSUM*, *Lindl. Gen. et Sp. Orch.* 341, by a typographical error; *Bot. Reg.* 1838, *misc.* 154.—Native of the Cape of Good Hope.

A beautiful plant, growing from a span to a foot and a half high, with cordato-orbiculate leaves appearing as if covered with watery pustules, whence the name. The flowers form a dense oblong spike at the top of the scape, and are of a deep clear rose colour, melting into white and richly spotted with purple in the throat. They have the delicious fragrance of the sweet vernal grass of our meadows. It was first introduced to the Royal Botanic Garden, Kew, in 1800, and subsequently re-introduced, and flowered in 1838 by Sir John Herschel, who found it growing in the Cape Colony in clayey places, baked hard by the sun; while Drège found it growing on sand-hills. It is certainly a lovely plant.

9. Leathery-leaved Satyrium. [Plate II.]—*S. CORIIFOLIUM*, *Swartz, Act. Holm.* 1800, 216; *Bot. Mag.* t. 2172; *Bot. Reg.* t. 703; *Sweet, Brit. Fl. Gard.* 2. s., t. 30. *SATYRIUM CUCULLATUM*, *Loddiges, Bot. Cab.* t. 104. *DIPLECTHRUM CORIIFOLIUM*, *Persoon, Syn.* ii. 509.—Native of the Cape of Good Hope.

A very beautiful species, having a stout erect stem from one and a half to two feet high, leafy, smooth, and spotted throughout with brownish purple spots. The leaves sheath the stem at the base, and are smooth, acute, of a stiff leather-like substance, the point tipped with a small horny gland or blunt mucro, and the margin rough and crenulate with innumerable small cartilaginous teeth; the lower leaves are ovate, a little reflexed at the points, those higher up the stem narrower, and surrounding it a good part of their length. The flowers are very handsome, in a close spike, in the axils of sessile, oblong, acute, concave bracts, which are reflexed and hang down when the flowers are expanded. The sepals and petals are all joined together at the base, bright yellow tinged with red, the two lateral sepals largest, lanceolately linear, bluntish, spreading, the others narrower, linear. The lip is large, inflated, sharply keeled at the back, the point reflexed, bright yellow at the sides, more or less red at the back; at the base are two subulate spurs. The stigma is two-lipped; the upper lip two-lobed, the lobes spreading, and fringed towards the base; the lower lip three-lobed, the lobes pointed. The anther is resupinate, two-lobed, with two pollen-masses in each lobe, pedicelled and inclosed in a hood: the pedicels each seated on a flat two-lobed scale or gland, fixed on the point of the lower lip of the stigma.

REFERENCE TO THE PLATES OF THE

GENUS SATYRIUM.

Plate I.—SATYRIUM PUSTULATUM, *Lindley*.

Plate II.—SATYRIUM CORIIFOLIUM, *Swartz*.

- Fig. 1. The sepals and petals all connected at the base.
Fig. 2. The lip with the two spurs at its base.
Fig. 3. The ovary, terminated by the column, front view. Fig. 4. The same side view. Fig. 5. The pollen-masses with their glandules.

SATYRIUM
I



J. Presley sc.

SATYRIUM
II



E. D. Smith. Del.

Weddell. Sc.

THE GENUS CHLORÆA.

THE genus CHLORÆA consists of showy terrestrial plants, having fleshy fasciculate roots, the habit of growth of our native Orchises, but the stout spikes of flowers are for the most part yellowish or whitish. Nearly all the species are natives of Chili, where they form most charming ornaments of the subalpine pastures of the Cordilleras, and some of the species being there known under the name of wild tulips and lilies. Some, like a portion of our British Orchises, embellish the grassy meadows of the valleys; others grow on the dry rocky wastes peculiar to the mountain districts of Chili. A considerable number of species are known to botanists, but we believe only two, namely, *C. virescens*, and *C. longibracteata*, have been introduced in a living state, and of these the latter is now referred to the genus *Asarca*.

The peculiarities of structure exhibited by the Chloræas, are a membranaceous gaping perianth, of which the sepals are nearly equal, the lateral ones placed under the lip, thickened at top and deflected, the upper one of the same form as the petals, and brought together with them into the form of a hood. The lip is hood-shaped, cordate, entire or three-lobed, often crested on the disk. The column is erect, bordered, club-shaped, with an oblong prominent stigma, and terminal anthers, with the cells incompletely divided. The pollen-masses are two in number, each divided into two parts but cohering at the base.

The name *Chloræa*, comes from *chloros*, green, and was adopted on account of the greenish colour of the flowers of several of the species.

[CHLORÆA.—2.]

The *Chloræas* being of terrestrial habit, require the general treatment of herbaceous perennials, with the modifications of temperature and moisture, indicated by their native homes. Thus, as to temperature, they should be cultivated in a warm greenhouse, and should also be freely exposed to light during the growing period. As to soil, light turfy sandy peat has been found best for them, and to this may be added a small proportion of loam. Free drainage must be provided. Like most terrestrial Orchids, they require an ample supply of water during the growing season. After flowering the stems and leaves naturally die off; and as this indicates the season of rest, little or no water will be required, until they begin to put forth new leaves, when they should be re-potted and encouraged to renew their growth.

The possibility of cultivating these fleshy-rooted plants having been shewn in the case of *C. virescens*, which was bloomed by the late Mr. Cameron of Birmingham, and was found to be not more difficult of management than a *Spiranthes*, it may be hoped that some attempt will be made to procure their roots. They are as common, observes Dr. Lindley, over all the subalpine country between Conception and Valparaiso, as the Meadow Orchises here. To procure them, however, it would be necessary to mark their stations when in flower, and to take them up only when the stem and leaves were withered.

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1. Green-veined Chloræa. [Plate I.]—*C. VIRESCENS*, Lindley, *Brandé's Journ.* 1827; *Bot. Reg.* 1845, t. 49. *C. CHRYSANTHA*, Pöppig and Endlicher, *Nov. Gen. et Sp.* i. 31?—Native of Chili.

A handsome stout growing herb, with an erect spike of large yellow blossoms marked with green veins. The lip is three-lobed, ovate-obtuse, the intermediate lobe twice as large as the lateral ones, and the surface beautifully crested down the centre.

CHLORÆA LONGIBRACTEATA, formerly grown by W. J. Myers, Esq. of Aighburgh near Liverpool, is now called *Asarca sinuata*.

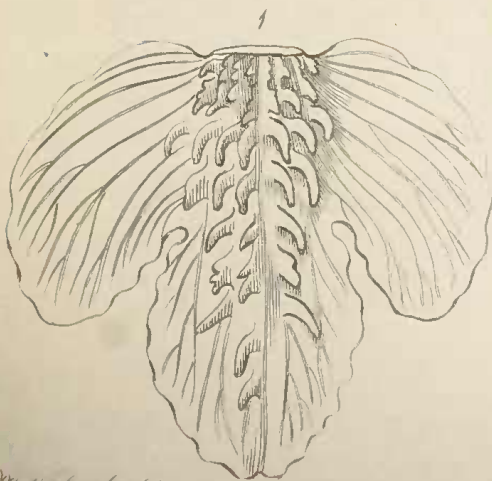
REFERENCE TO THE PLATE OF THE

GENUS CHLORÆA.

Plate I.—C. VIRESCENS, *Lindley*.

Fig. 1. The inner surface of the lip ; fig. 2, the column, at the foot of which are two honey pores ; fig. 3. the pollen-masses.

CHLOREÆ
I



Mull. Land. del.

Scorlay. sc.

THE GENUS CALOPOGON.

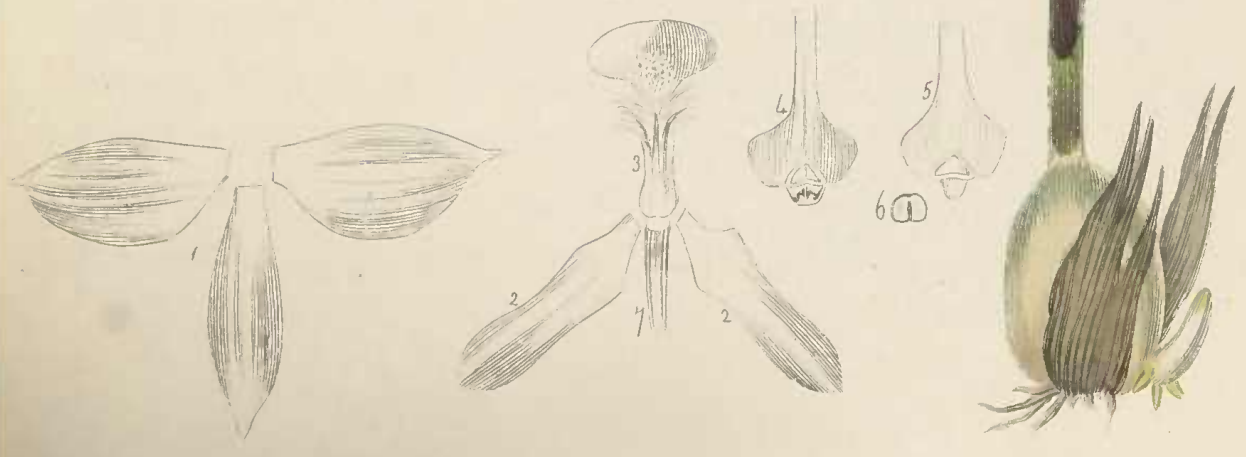
THE genus CALOPOGON consists of a few tuberous-rooted North-American herbs, some of which bear rather pretty flowers, and are deserving of cultivation.

The flowers consist of a spreading perianth, of which the divisions—the sepals and petals, are nearly equal. The lip is free, bearded on the disk, dilated at the apex, and narrowed at the base. The column is distinct, winged at top, elongated, with a transverse stigmatic cleft; the anthers sessile, subrotund, two-celled; the caudicle obsolete; the pollen angular. The flowers grow in terminal secund racemes, on a leafless scape, which is sheathed with bracts at the base; and the leaves are solitary and grass-like. There is but one species in cultivation, and that is but rarely seen.

The genus, established by Dr. Brown, is called *Calopogon*, from the Greek *kalos*, beautiful, and *pogon*, a beard, in allusion to the beautiful fringes of the lip.

This plant, notwithstanding its prettiness, and the facility with which it can be imported, is now seldom seen in gardens. Mr. Curtis states that it was originally introduced by accident, the tubers having been discovered among the boggy earth in which some *Dionæas* (Venus' Fly-trap) had been imported. These were planted, and placed in heat; and it is stated, that with this treatment it thrived exceedingly. It does not however require a stove temperature.

CALOPOGON
I



C. L. Johnson

J. E. Smith

THE GENUS SOBRALIA.

THE SOBRALIAS form a race of the Orchidaceous order, very distinct in habit and general appearance from the majority of those familiar to cultivators. They are remarkable especially for their erect reed-like stems, and their broad grassy plaited leaves, and in many of the species, also for the large size and extreme beauty of their blossoms. There are about two dozen species referred to the genus by botanists, and of these, not more than half a dozen are as yet introduced to our gardens. All the known species inhabit tropical America, and several of extreme beauty remain to be introduced, especially *S. dichotoma*, which Dr. Lindley states to be the finest of the genus; *S. Klotzschiana*, which has very large white flowers; *S. rosea*, which has most beautiful rosy or crimson flowers; and *S. chrysantha*, whose flowers are of a beautiful yellow.

SOBRALIA is a name given to this genus by Ruiz and Pavon, the authors of the *Flora Peruviana*. According to Lindley and Reichenbach, it is synonymous with *Cyathoglottis*. The genus belongs to that class of orchids which are called terrestrial, from the circumstance of their growing in the earth as most plants do, and not on the trunks of trees or on rocks, which is the more common habit of orchids. This habit and their erect leafy stems terminated by the showy blossoms, give them quite a peculiar character, which contrasts well with that of other favourite members of the order.

In the structure of their flowers, they have the following peculiarities. The sepals are nearly equal in size, and are

[SOBRALIA.—2.]

joined together at the base. The petals are of delicate texture, in form and size either like the sepals, or but slightly differing from them. The lip is cucullate, narrowed in appearance at the base by being convolute around the column, undivided or three-lobed, its limb membranaceous and somewhat plaited and two-lobed, furnished with naked or crested elevated veins, sometimes with a pair of lamellæ, or callosities, at the base, sometimes without these appendages. The column is elongate, marginate, club-shaped; the anther-bed three-cleft, the middle lobe antheriferous; the stigma roundish, excavated; the pollen masses four in number, pulpy-waxy, conduplicate, without caudicles; the anthers, terminal, and stalked.

M. Reichenbach divides the genus into two groups, of which 1. *Eusobralia*, has the inflorescence terminal, and 2. *Brasolia*, has the inflorescence lateral. Dr. Lindley divides it into three groups:—1. the *Brasolia* of Reichenbach, of which there are no species in cultivation, characterized by having the flowers in a naked flexuose raceme, with very short bracts; 2. which may be called *Lobrasia*, the species referred to which have the flowers in a flexuose raceme with distant boat-shaped leafy bracts; and 3. *Sobralia* proper, in which the flowers are produced in a naked or cone-like head. After all, it would seem that the original *Sobralia*—*S. dichotoma*—represents what Reichenbach calls *Brasolia*.

The name *Sobralia*, of which *Brasolia* and *Lobrasia* are anagrams, was given by Ruiz and Pavon, in honour of a Spanish botanist named Don Francisco Martin Sobral.

Most of the *Sobralias* are strong growing plants, and some of them are very beautiful. *S. macrantha*, one of the best, is a splendid plant, deserving a place in every collection; it is

[SOBRALIA.—3.]

a very strong growing species, with evergreen foliage, and the flowers are very large, measuring five to six inches across; the colour is of the richest purple crimson, the throat shaded off to white. The flowers are produced on tall reedy stems, out of drooping spathes one at a time; as many as five or six being produced on each stem, and each flower continuing three days in perfection if kept in a cool house. As soon as each flower begins to decay, it should be removed to make room for the succeeding bud to expand.

There are three or four species of dwarfer habit, but their flowers are much smaller and of shorter duration, seldom lasting more than a day, but still where there is room they should be grown, for they are handsome plants, and flower freely.

Sobralias may be grown in the 'Mexican' house, or in any plant stove. They require a great supply of water while growing, and a free circulation of air; also plenty of pot-room, as they are very strong rooting plants. The best compost is turfy peat, half-decayed leaves, and river sand, all well mixed together at the time of potting. March will be the best time for potting them; that is before they begin to form new roots. They require liberal shifts as they soon fill their pots with roots, and sometimes will require repotting twice in one season. If therefore large specimens are required, they may be shifted a second time, but not later in the season than July.

The growing season is from April till the end of August, during which time they must receive frequent and liberal supplies of water, for their native habitat in some instances occurs in marshy ground where the supply of moisture is unlimited. Whilst the plants are in vigorous growth, a *little* manure water is very beneficial to them, but it must be well diluted, and only given once a week. In the months of June

[SOBRALIA.—4.]

and July they must be watered every day, syringing them over head every morning and evening ; and this treatment must be continued until August, after which water must be given in smaller quantities. In November, when the season of rest commences, they should be removed to a cool and dry house where the temperature ranges from 45° to 50°, and here they must not receive any water until the spring returns. That will induce them to flower freely. When they begin to show flower remove them to a warmer house, for an increased temperature will bring out the flowers much better than would be the case if they were kept in the cooler house ; but they must have as much light as possible, in order to give colour to the flowers.

They are readily increased by dividing the plants. The best time for doing this is early in the spring, before they begin to make fresh roots, and young shoots. If a large number of plants is required, the best plan is to take a large old plant, and turning it out of the pot, carefully shake away all the soil from the roots ; then placing the plant on the bench, separate the rhizome with a sharp knife into as many pieces as the plant will allow, so that each piece may have three or four stems with corresponding roots. Smaller divisions are not safe. Pot these divided portions in clean pots as small as can be conveniently used, for they will root much better in small pots than in large ones. The pots must be well drained, using the same kind of compost as recommended for established plants. After potting fasten them firmly in the pots with a few sticks. If a little bottom heat can be afforded them it will be very beneficial. They must be shaded from the direct rays of the sun, and only receive sufficient water to keep them from flagging, until they begin to root ; a slight syringing over head at mid-day will keep them from shrivelling.

[SOBRALIA.—5.]

When they begin to root and make young shoots, they may receive more water and less shading; and a little air may be given them, but this must be done by degrees. When they are well established they may have a moderate shift, and be treated as recommended for established plants. If these rules are strictly carried out, they will by the end of the season have become good blooming plants.

The plants are very subject to the attacks of black and yellow thrip; but these pests may be easily destroyed by fumigating the house two or three times, or syringing them a few times with weak tobacco water.—R. B.

§ LOBRASIA.—*Flowers in a flexuose raceme with distant cymbiform foliaceous bracts.* (Lindley.)

1. **Lily-like Sobralia.**—S. LILIASTRUM, *Lindley, Gen. et Sp. Orch.* 177, 432; *Sertum Orchid.* t. 29.—Native of Demerara and Brazil.

Of this very handsome species there are two varieties. The one, ALBA, has flowers of a pure white with yellow veins in the throat. The other, ROSEA, has flowers of a rich rose-colour, the lip having white veins. The former of these is said to be in cultivation.

§ SOBRALIA.—*Flowers arranged in a cone-like head, or naked.* (Lindley.)

A.—LIP WITH CRESTED VEINS.

a. *Leafsheaths or bracts naked.*

2. **Fragrant Sobralia.**—S. FRAGRANS, *Lindley, Gard. Chron.* 1853, 598. —Native of New Grenada, in the province of Ocaña.

A dwarf species, scarcely growing a foot high; the stem two-edged; the leaves smooth and rather fleshy; the flowers small, scarcely opening, growing in pairs, very fragrant, the sepals pale dull purplish green, the petals pale yellow, and the lip brighter yellow, its middle lobe bearing nine lacerated crests.

[SOBRALIA.—6.]

B.-LIP WITH NAKED VEINS.

a. Leafsheaths and bracts hispid.

3. **Sessile-flowered Sobralia.**—*S. SESSILIS*, *Lindley, Bot. Reg.* 1841, *misc.* 11; t. 17.—Native of British Guiana.

A small growing and not very showy species. The stem, which is covered with small black hairs, bears stiff-ribbed taper-pointed leaves, and from its summit a solitary rose-coloured flower which is very fugacious; the lower half of the lip is white tinged with yellow, the rest a deeper rose-colour. It flowers in December.

b. Leafsheaths and bracts naked.

4. **Neat Sobralia.**—*S. DECORA*, *Bateman, Orchid. Guatem. et Mex.* t. 26. *S. SESSILIS*, *Hooker, Bot. Mag.* t. 4570.—Native of Guatemala.

This is a small plant without hairiness. The flowers are solitary at the top of the stem, which grows nearly two feet high; and they are whitish, slightly tinged with rose, the lip yellowish and deeply stained with rose-purple. It is neat, but much less showy than some other kinds, and blossoms in October.

5. **Violet Sobralia.**—*S. VIOLACEA*, *Linden; Lindley, Orchid. Lind.* 133.—Native of New Grenada, at 5-8000 feet elevation.

There are two varieties of this species, which has some resemblance to *S. decora*, but is larger. One of these has pale violet flowers. The other which appears to be the only one introduced to our gardens, has the flower white with a yellow disk to the lip. It flowers in July.

6. **Large-flowered Sobralia.**—*S. MACRANTHA*, *Lindley, Sert. Orch. under* t. 29; *Bot. Mag.* t. 4446.—Native of Mexico and Guatemala.

This is the finest species yet in our gardens, growing four to six feet high, with erect leafy stems, the leaves broad lanceolate, plaited, their bases forming sheaths around the stem. The flowers are very large, one only opening at a time, but four or five are produced in succession on each stem; they vary from five inches to eight in diameter; and are also variable in colour, in the finer varieties of a delicate but rich purplish rose, sometimes paler, or even occasionally so pale a rose as to be nearly white.

7. **Yellow Sobralia.**—*S. CHLORANTHA*, *Hooker, Bot. Mag.* t. 4632.—Native of Brazil.

The flowers of this species are pale yellow, the sepals somewhat deeper, and as well as the petals conniving; the lip is longer than they, broadly obovate-retuse, the apex curved back, and much waved, the disc faintly striated. The flowers, solitary and sessile, are produced in June.

REFERENCE TO THE PLATES OF THE
GENUS SOBHALIA.

Plate I.—SOBHALIA SESSILIS, *Lindley*.

Fig. 1. The column and anther; fig. 2, the inside
of the lip.

Plate II.—SOBHALIA MACRANTHA, *Lindley*.

S O B R A L I A
I.





THE GENUS STENORHYNCHUS.

STENORHYNCHUS is a name given by Richard, to a group of terrestrial Orchidaceous plants, having some affinity with our native Ladies-Tresses, but having more showy flowers. Several species, natives of Mexico, Brazil, and the West Indies, are known to botanists, and three or four of them are cultivated in gardens.

The flowers of these plants have a ringent character, with a cylindraceous base. The sepals are coloured, and gibbous at the base, the dorsal one consolidated with the petals, and the lateral ones placed over the lip, and connate into a sac or pouch, more or less developed at the base. The lip is directed forwards, so as to become parallel with the column, narrowed at the apex, dilated towards the base, and there embracing or united with the column. In certain of the species it is furnished at the base with a pair of convexities, but is without calli or warts. The column is terete, elongated, bearing a prominent ovate stigma, the beak horny subulate and persistent; the anthers are two-celled, acuminate, the anther-bed marginate or winged; and there are two powdery biparted pollen-masses.

The plants form terrestrial herbs, with the roots in bundles; and the broad leaves spring mostly from the root, and in some cases appear after the blossoms. The latter are showy, and grow in dense imbricated spikes, among large often coloured bracts, from the axils of which they issue.

The name *Stenorhynchus* is derived from the Greek *stenos*,

STENORHYNCHUS.—2.]

narrow, and *rhynchos* a beak, and alludes to the pointed beak of the stigma.

There are but few species of this genus in cultivation ; and these are dwarf herbs, attaining about a foot in height, and of compact habit. Among them are one or two which have showy red flowers, and are well worthy of assiduous cultivation. *S. speciosus*, an old inhabitant of our hothouses, is a handsome plant, with which most cultivators are familiar. *S. cinabarinus* is rare, but very handsome. *S. orchioides* is not now very frequently met with, and is of a rather delicate constitution, as well as less vigorous in habit than *S. speciosus* ; its flowers are of a light red colour. The latter has been introduced occasionally from the West Indian islands, but appears a shy grower, soon dwindling away after flowering, unless kept moderately cool and dry, especially during its dormant season. It is said to grow wild in the most arid places amongst grass.

The species of *Stenorhynchus* are fleshy-rooted terrestrial plants, and may be grown in an ordinary plant stove, or in the Mexican orchid house, either situation suiting them equally well. To manage them successfully, they should be stimulated into growth in the spring ; and this is the proper season for repotting them, if they require it. They should be grown in a compost of good mellow turfy loam, with about a third part of leaf mould, a little gritty sand, and a few potsherds broken small enough to ensure porosity and good drainage. They should be potted in the ordinary way, that is, within the pots, and the soil should be made tolerably firm about the roots. It is desirable to start them into growth in a moderate heat, giving them but little water until they are somewhat advanced ; then they may receive a more liberal supply, but they should never be kept at all saturated with moisture, or they will become sickly, and die away.

[STENORHYNCHUS.—3.]

The plants should be syringed occasionally over head during hot weather, while they are making their growth, but the syringing must be discontinued, as soon as the flowers make their appearance, or they will damp off. The atmosphere of the house may, at that time, be kept moist, by watering the pathways, shelves, &c. Fresh air, whenever it is mild, may be admitted daily, if the thermometer indicates 65° or upwards, but the house should be closed early in the afternoon, so that it may become warmed again by the solar heat; at the same time syringe the plants if they require it, or produce a humid atmosphere by watering the floors, &c. as already mentioned.

Being dwarf-growing plants, it is most desirable to keep them as near the glass as possible, to prevent them from being drawn up weakly. A shelf, within a couple of feet of the glass, or a front table, would afford the best situation in which to place them, during the growing season; and when dormant they may be removed to any convenient part of the stove, where they can be kept as cool as possible and somewhat drier. They are propagated by division of the plant, which is best effected at the potting season.—J. H.

§ EUSTENORHYNCHUS.—*Lateral sepals much produced at the base.* (Lindley.)

1. **Showy Stenorhynchus.**—*S. SPECIOSUS*, *Richard, Orch. Eur.* 37. *NEOTTIA SPECIOSA*, *Jacquin, Icon. Rar.* iii. t. 600; *Bot. Mag.* t. 1374; *Hooker, Exotic Flora*, tt. 3, 4.—Native of the West Indies, and Tropical America.

A handsome species, producing broad oblong-lanceolate leaves, which are undulated towards the point, and an erect scape of about a foot in height terminated by a close spike of pinkish-red flowers from the axils of long conspicuous red bracts, the whole inflorescence in well grown plants being very showy. The lip is oblong, subulate and channelled at the point.

[STENORHYNCHUS.—4.]

2. **Orchis-like Stenorhynchus.**—*S. ORCHIOIDES*, *Richard, Orch. Eur.* 37. *SATYBIUM ORCHIOIDES*, *Swartz, Prod.* 118. *NEOTTIA ORCHIOIDES*, *Swartz, Fl. Ind. Occ.* iii. 1411, t. 28, fig. *a, b*; *Bot. Mag.* t. 1036. *NEOTTIA LANCEOLATA*, *Willdenow, Sp. Plant.* iv. 75. *NEOTTIA SQUAMULOSA*, *Humboldt, Bonpland, et Kunth, Nov. Gen. et Sp.* i. 332, t. 71.—Native of the West Indies and Tropical America.

This is a very beautiful plant, erect-growing, a foot or more in height, with broadly lanceolate leaves, and a scape terminated by an oblong many-flowered spike of rich salmon-coloured flowers. The sepals are glandularly pubescent; the lip obovate, somewhat crenulated, lanceolate and channelled at the apex. It appears that in their natural habitats the plants afford some variety in colour, some being bright rose and others dull yellow. The plants flower before the leaves appear.

There is a variety called *PLANTAGINEA*, the *Neottia plantaginea*, Hooker (*Exot. Flor.* t. 226), a native of Trinidad. This has longer leaves, and green and rose-coloured flowers, of which the dorsal sepal is less gibbous, and the spur or pouch longer.

3. **Leafless Stenorhynchus.**—*S. APHYLLA*, *Lindley, Gen. et Sp. Orchid.* 478. *NEOTTIA APHYLLA*, *Hooker, Bot. Mag.* t. 2797.—Native of the West Indies.

This plant is said to be entirely leafless. It grows about a foot high, and bears a spike of flowers of a singularly lurid reddish-green colour. The lip is linear oblong broadish and obtuse; in other respects it resembles *S. orchioides*.

§ *BIVESICA.*—*Lateral sepals scarcely produced at the base; lip with two convexities at the base.* (Lindley.)

4. **Cinnabar Stenorhynchus** [Plate I.].—*S. CINNABARINUS*, *Lindley, Gen. et Sp. Orchid.* 479; *Bot. Reg.* 1847, t. 65. *NEOTTIA CINNABARINA*, *Llave, Nov. Veg.* 3.—Native of Mexico.

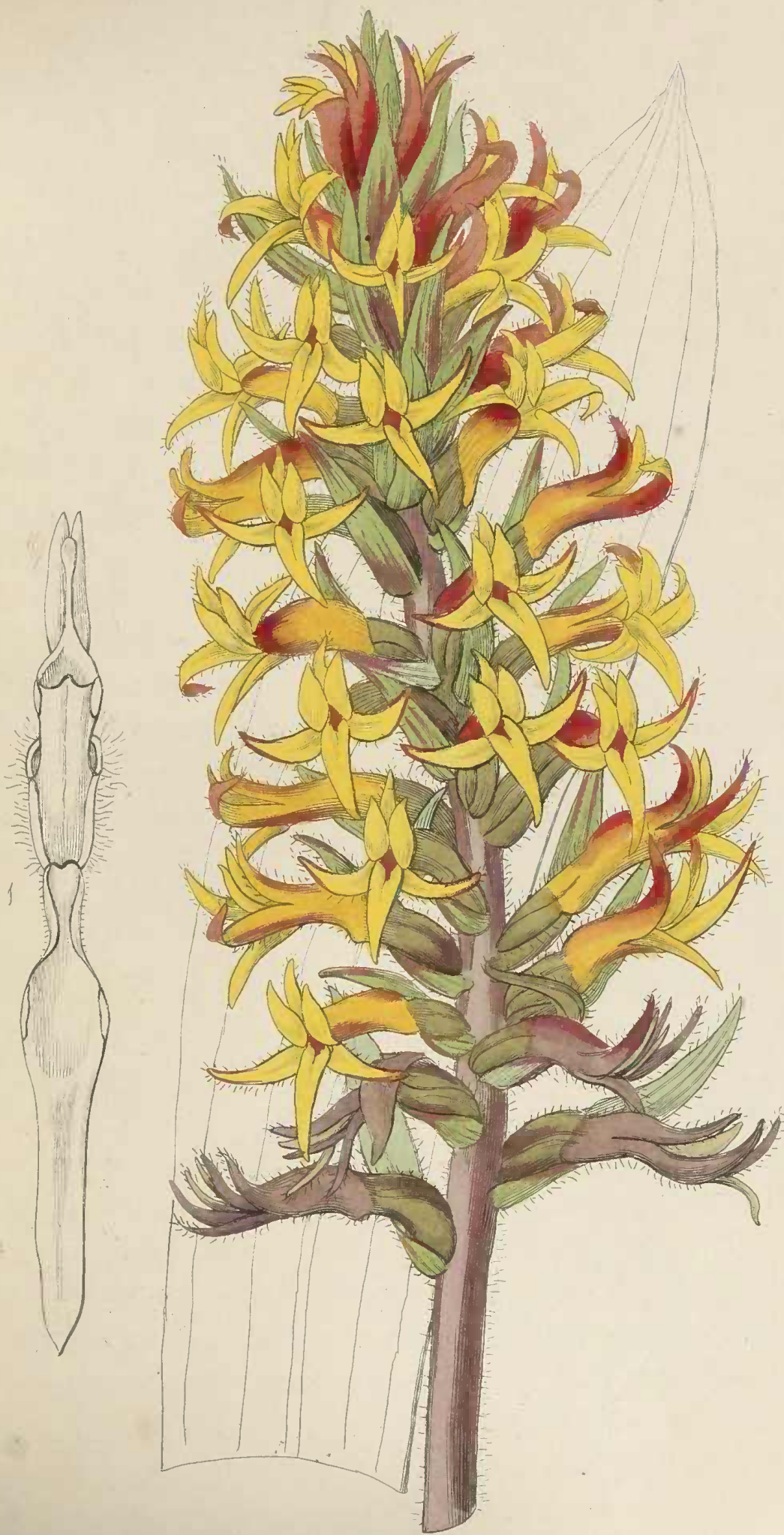
A handsome species, with oblong-lanceolate acute leaves, and a hairy scape, bearing a conical spike of bright-coloured flowers. The dull olive green of the bracts, belonging to its large compact spike, the vermilion red of the flowers externally, and the bright yellow of the inner face of their narrow spreading points, give them an appearance unusually gay among the terrestrial Orchids. The sepals and petals are pubescent, linear-lanceolate acuminate, spreading at the tips; the lip of the same form, glabrous, narrowed and channelled at the base. The Mexicans call it *Cutsis*.

REFERENCE TO THE PLATE OF THE
GENUS STENORHYNCHUS.

Plate I.—STENORHYNCHUS CINNABARINUS, *Lindley*.

Fig. 1. The column, with the lip forced downwards so as to shew its inner face; the two marginal scars, right and left, shew where the lip grows to the column.

STENORHYNCHUS
1



THE GENUS GOODYERA.

THE GOODYERAS are a small group of dwarf terrestrial herbs, having fleshy stems, more or less conspicuously-veined leaves, and upright spikes of small usually white flowers. They represent, though in a slight degree, the group of beautiful dwarf variegated-leaved Orchids, the species of *Anæctochilus* and *Physurus*, now so highly prized among cultivators.

The flowers of these plants are of less importance than their foliage, in an ornamental point of view; for they are generally small and inconspicuous. The sepals are herbaceous, the lateral ones placed under the lip, and the dorsal one united with the petals into a helmet. The lip is free and undivided; the column short straight; the two pollen-masses sectile.

The genus was named in memory of Mr. John Goodyer, a British botanist.

The species of this genus, existing in gardens, are more interesting as botanical curiosities, than as ornamental objects, with the exception of *G. discolor*—formerly referred here, but now called *Hæmaria discolor*—which when well grown is one of the prettiest of dwarf-growing Orchids, usually flowering during winter or early spring, its deep red velvety leaves forming an admirable contrast with its white flowers.

The North American species of *Goodyera* may be grown with success, planted out in a cool frame in a mixture consisting of three-fourths good peat and one-fourth leaf mould, some silver sand being added. The frame should be filled in with a layer of six or eight inches in thickness of this compost,

[GOODYERA.—2.]

sufficient drainage being placed beneath, that water may not lodge in the soil to injure the roots. During hot sunny weather a slight shading is advantageous, as it prevents the powerful rays of the sun from drying up the juices of the plants, and likewise tends to keep the soil and atmosphere more evenly moist. If, however, the frame faces the east or west, it will scarcely be necessary to use shading. Water the plants over head every day during hot weather, giving ventilation by raising the sashes at the back.

They may likewise be grown as pot-plants, if kept on a cool surface in a frame; syringed over head every day during hot weather, and slightly shaded when necessary. During winter they must be kept rather dry, and must have all the light possible. They must also be protected from severe frost.

G. discolor, or more correctly *Hæmaria discolor*, is a tropical species, and can only be successfully grown in a plant stove, or an Orchid house. It grows best in the Mexican house, kept within a foot or eighteen inches of the glass, and in a situation where a little fresh air can be easily admitted. It is most effective when grown in a shallow pan of four or five inches deep, and ten or twelve inches in diameter, that affording sufficient space in which to form a good compact specimen. It must be borne in mind, that to produce anything like a good effect with a plant of this description, a tolerable sized mass is required. A mixture of turfy peat, with about a fourth part of silver sand, and potsherds broken to the size of small nuts, is the best compost for it, and this should be made somewhat firm in the pan. The soil must be watered very sparingly until the plants are well established; and then a more liberal supply may be given. It should be repotted every season, and this should be done when it is a little advanced in growth, removing all the old soil and cleaning or cutting out any decayed parts of the stem. When the plants are past flowering, and at rest, remove them to a cooler and

[G OODYERA.—3.]

drier atmosphere, in which they should be kept until growth recommences. This species is frequently cultivated for decorating the stove-conservatory during early spring, for which purpose it is very useful, being a showy plant, and usually a profuse bloomer. The bloom spikes are also valuable at that season for bouquets."—J. H.

The other tropical species of *Goodyera* require treatment similar to that of this *Hæmaria discolor*.

They are all increased with facility by cutting off and planting the rooted suckers, which are freely produced.

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1. **Repent Goodyera.**—*G. REPENS*, *R. Brown, Hort. Kew.* v. 198; *Loddiges, Bot. Cab.* t. 1987. *SATYRIUM REPENS*, *Linnaeus Sp. Pl.* 1339; *Engl. Bot.* v. t. 289. *TUSSACA SECUNDA*, *Rafinesque, Jour. Bot.* iv. 271. *PERAMIUM REPENS*, *Salisbury, Trans. Hort. Soc.* i. 261.—Native of Europe, Siberia, and North America.

A small herbaceous plant with prostrate stems, bearing ovate acutish whole-coloured green leaves, and long erect secund spikes of small white flowers.

2. **Downy Goodyera** [Plate I.].—*G. PUBESCENS*, *R. Brown, Hort. Kew.* v. 198; *Lindley, Coll. Bot.* t. 25; *Sweet, Brit. Fl. Gard.* 2, s. t. 47; *Loddiges, Bot. Cab.* t. 1.—*SATYRIUM REPENS*, *Michaux, Fl. Bor. Amer.* ii. 137.—*NEOTTIA PUBESCENS*, *Willdenow, Sp. Pl.* iv. 76.—*TUSSACA RETICULATA*, *Rafinesque, Jour. Bot.* iv. 271.—Native of North America.

A small plant, with short prostrate stems, bearing ovate-oblong acutish leaves, of a dark green, reticulately variegated, the veins being grayish or almost white. The flowers are small, white, inconspicuous, growing in upright spikes.

3. **Tessellated Goodyera.**—*G. TESSELLATA*, *Loddiges, Bot. Cat.* t. 952. *G. PUBESCENS*, β . *MINOR*, *Sims, Bot. Mag.* t. 2540.—Native of North America.

This, which Mr. Loddiges first published as a distinct species, and which has by later writers been regarded as a variety of *G. pubescens*, is, as appears to us, different from both the preceding species, though allied to and perhaps intermediate between them. It differs not only in size, and in the form and markings of its leaves, but also in having linear cauline leaves; and according to the figures, the dorsal sepal is more recurved, as also is the point of the lip. It has the same kind of short prostrate leafy stems, and the leaves are ovate acute, less oblong than in *G. pubescens*, of different shades of green somewhat clouded with brown and blotched in an obscurely reticulated

[GOODYERA.—4.]

manner, with pallid markings, not simply white-veined as in *G. pubescens*. The flowers are small, white. In all these species the leaves remain through the winter; and both the present, and *G. pubescens*, having prettily marked foliage, are really ornamental plants suited for a cool situation. The flowers are in all of them quite small and inconspicuous, and the foliage becomes the most attractive part of the plant.

4. **Tall Goodyera.**—*G. PROCERA*, *Hooker, Exotic Flora*, t. 39. *NEOTTIA PROCERA*, *Ker, Bot. Reg.* t. 639. ? *NEOTTIA BIFIDA*, *Blume, Bijdr.* 408.—Native of India, Ceylon, China, and probably of Java.

A caulescent species, with lanceolate leaves, and elongated cylindrical spikes of numerous small white flowers. It is not very attractive.

5. **Ruddy Goodyera.**—*G. RUBICUNDA*, *Lindley, Bot. Reg.* 1839, *misc.* 92. *NEOTTIA RUBICUNDA*, *Blume, Bijdr.* 408.—Native of the Philippine Islands, and Java.

This has the habit of *G. procera* but is smaller. The leaves are oblong acute. The scape and lax many-flowered spike, which are rather more than a foot high, are downy and of a dull cinnamon brown; the flowers are also downy, and of the same colour, except the lip, which is white, and densely fringed inside with glandular hairs.

- Two-coloured Hæmaria.**—*H. DISCOLOR*, *Lindley, Gen. et Sp. Orch.* 490. *GOODYERA DISCOLOR*, *Ker, Bot. Reg.* t. 271; *Sims, Bot. Mag.* t. 2055.—Native of China, not Brazil, according to Lindley.

We append this species on account of its being generally known as a *Goodyera*. It is a caulescent herbaceous plant, with stout fleshy deep purple stems, and thick dark velvety green leaves, which are rich purplish brown beneath; the scales and bracts are purplish. The flowers, which come in an erect many-flowered spike, are showy, white with a large deep yellow anther. This plant differs from *Goodyera*, in the distinct spreading perianth, of petaloid texture; in the reflexing of the lateral sepals, in the bicallose and saccate base of the lip, and in the sulcate not sectile pollen-masses. It is a handsomer plant than any of the true *Goodyeras*, and seems to be properly separated from them in a botanical point of view.

REFERENCE TO THE PLATE OF THE
GENUS GOODYERA.

Plate I.—GOODYERA PUBESCENS, *R. Brown.*

Fig. 1. The perianth spread open, shewing the three downy sepals, two alternating petals, and the twisted ovary at the base ; fig. 2. the lip ; fig. 3. the column, shewing the two-lobed anther in front, and the pollen-masses, liberated from the hood, and divaricated.

GOODYERA
I



F.D. Smith del.

Waddell sc.

THE GENUS CYPRIPEDIUM.

THE genus CYPRIPEDIUM or LADY'S SLIPPER, is a remarkable group of the Orchidaceous family, interesting not only on account of the beauty of the majority of the species, and the curious forms assumed by their blossoms, but also on account of their structural peculiarities. The flowers of the Orchidaceous race are formed on a trimerous plan, that is to say, their organs are developed in series, each of which is composed of three parts, and notwithstanding the apparent disturbance of this arrangement owing to the grotesque forms assumed by some of the parts, the trimerous plan is generally more or less easily to be recognized. Theoretically therefore these plants should have three stamens; but it is found that in almost the whole order, one perfect stamen only, the intermediate one, is developed, the two lateral ones being abortive. In *Cypripedium* however, the two lateral stamens are perfect, while the intermediate one is abortive. These two types of development, throw much light on the structure of the flowers in this order, which it would be otherwise difficult to comprehend, on account of the irregular nature of their development.

The flowers of the Lady's Slippers, consist of a spreading perianth, the lateral sepals of which are sometimes coalescent, the petals free, often narrower than the other parts, and the lip inflated, with the margins auriculately inflexed. The column is short, bearing three stamens, the central of which is barren dilated and inflexed, the two lateral fertile, with two-celled anthers, filled with granular pollen which becomes softened. The stigma and style separate from the filaments nearly to the base.

[CYPRIPIEDIUM.—2.]

The plants are terrestrial herbs, found in various parts of the world. They produce leathery or plaited leaves, in some instances from the crown of the root only, sometimes scattered on the stems. The flowers are solitary or in few-flowered panicles, and are almost always remarkable for their beauty.

The name is a compound from the Greek, and is formed from *kypris* one of the names of Venus, and *podion* a slipper; hence the name Lady's Slipper.

The Lady's Slippers may be separated into two groups as regards their cultivation; namely, the evergreen or stove kinds of which *C. caudatum*, *C. Lowii*, and *C. barbatum* are examples; and the deciduous or hardy kinds, represented by *C. humile*, and *C. spectabile*. The former should be treated thus:—

The species are all plants of terrestrial habit, and therefore they thrive best when grown in pots. They are not numerous, but all the kinds are worth growing, their flowers being very beautiful and grotesque; and their foliage is in many cases curiously mottled, so that some of them are really worth growing on account of their foliage alone, now that the taste for plants with variegated leaves has become so general. This peculiarity is conspicuous in *C. barbatum*, *javanicum*, and *venustum*, which are also among the best in respect to their flowers. Most of the species are free growing plants, and they flower freely at different seasons of the year. *C. barbatum* is one of the finest of them for exhibition, as it will continue to blossom from May to July, and even longer, if kept in a cool house and shaded from the sun. *C. insigne* may be grown in a much cooler situation than many of the others; in fact it may be grown to perfection in a cool stove or a warm greenhouse, and will flower very freely throughout the dull winter months, the blossoms continuing fresh for six weeks or two months. *C. villosum* is another very fine species,

[CYPRIPIEDIUM.—3.]

its flowers resembling those of *insigne* but much larger, and the foliage of a light green colour ; it produces its flowers on stalks a foot long, sometimes two on a stalk ; it flowers from April to June, and will therefore be a fine plant for exhibition.

These and all the other tender species should be grown in pots, which are not required to be large, as they are not robust growing plants. The pots must be well drained, for the plants require a large supply of water while growing ; and they should consequently be three parts filled with crocks, to allow the water to pass off freely. The best time for potting is March, before they begin to grow. They will not require to be fresh potted every year, but they must be top dressed, and when this is done it is necessary to be very careful in removing the surface soil so that the roots are not injured, many of their roots being produced on the surface. This must be done in the spring before rapid growth commences.

They thrive best in fibry peat mixed with sphagnum moss, to which the addition of a little decayed leaf mould will be beneficial. In potting the crown of the plant must be kept above the rim of the pot ; and a thin layer of moss should be placed over the drainage to prevent its becoming choked. If this occurs, and the soil in consequence gets soddened, the plant will become unhealthy and its roots will perish. In such cases, the plant must be quite removed from the soil and the remnant of the roots washed, and then it must be repotted in a small well drained pot, water being applied very carefully until it gets established.

In potting healthy plants the soil should be pressed rather firmly in the pots and close about the crown of the plant, the surface should then be clipped over with a pair of shears, to give it a neat appearance.

The growing season continues from May to September, during which period they will require a temperature of from 75° to 85°. They need a moist atmosphere, and should be

[CYPRIPIEDIUM.—4.]

syringed over their foliage twice a day, but it is necessary to let them become dry in the course of the day, to prevent any of their parts from rotting. They require also a moderate supply of air, which should be given at the bottom of the house by means of ventilators placed opposite the pipes, so that the air when admitted, coming in contact with the heated pipes may become warmed before circulating in the house; then by opening the top of the house the foul air will find egress. The house must be closed before the sun goes off it, and at the same time water should be thrown about on the tables and paths to produce a humid atmosphere, from which the plants will derive much benefit through the night.

In the resting season they require to be kept in a dry house, where the temperature is about 55° to 60°. At this time they should not receive so much water at the roots, and the syringing must be quite withheld till the growing season again commences. They must not however be suffered to become quite dry at the roots while at rest, as they have no fleshy bulbs to supply them with nourishment, and if they are allowed to shrivel they will turn yellow, and perish. They must, too, be watered with caution when they begin to grow, or the shoots will be apt to damp off. They do not require so much shade as some orchids, and may be grown in a pine pit or in an ordinary stove, where they can get plenty of light, but when they begin to show their flower buds they will require to be shaded in the middle of the day, and the supply of water should be increased. A little manure water is beneficial to them when flowering. Always use the water warm.

C. caudatum and *C. Lowii* require somewhat different treatment from the others. They should be kept in more heat all the year, and when at rest should be in a temperature of 65° to 70°. They must be potted when at rest, if they require repotting, and must be well drained, but they do not need fresh potting for several years, unless the plant gets too large

for its pot. The best compost for these two species is fibry peat and turfy loam, with some half decayed leaves, a little well decomposed cow dung, and some coarse river sand to keep the compost open; the ingredients must be well mixed together. After potting give a gentle watering to settle the soil. *C. caudatum* is a very handsome and remarkable species, with light green foliage, producing upright flower-stems, bearing one two or sometimes three flowers, these being remarkable for having two tails a foot to eighteen inches long, and they last a long time in perfection. *C. Lowii*, a very rare species, flowers freely through the summer.

They are all readily increased by dividing the plant, but the separated portions should always have some roots attached to them. These are to be potted in small pots in the same compost as recommended for established plants, and they succeed better, or at least are sooner established, if they can have the benefit of a pit with bottom heat. Keep them shaded from the sun, until they produce fresh roots, and then treat them as recommended for established plants.—R. B.

We have been favoured with the following account of the treatment of the hardy section, by Mr. Barnes of the Camden Nursery, Camberwell, who has been successful with them in a remarkable degree:—

“The hardy or deciduous race of Lady’s Slippers, are rarely cultivated with much success; sometimes indeed they are to be seen nicely grown, and tolerably well bloomed for a year or two, but after that time the plants become sickly and weak, and they ultimately die. This want of success has in many instances led to the discontinuance of their cultivation.

“A different result would however attend the adoption of the following mode of treatment:—When the plants are first imported they should be cleaned thoroughly from the soil, and all the decayed roots that are about them. For compost,

[CYPRIPIEDUM.—6.]

some light fibrous peat should be prepared, by breaking it into pieces of moderate size, not *too* small, and to this should be added one-fourth part of well decomposed leaf mould, and the same quantity of sharp gritty sand, and some broken potsherds; these ingredients are to be mixed thoroughly. Then select pots, according to the size of the roots to be planted, and let them be well drained with potsherds at the bottom. In potting, cover the crown of the plant about an inch with the soil; which must not be made too solid. When they are potted, place them in a cold pit or frame, upon the cold bottom, where they are to remain without water, until they begin to grow of their own accord. As soon as the shoots begin to shew above the soil commence watering, but this element must be given sparingly at first, and as they advance in growth it must be more liberally applied, when the shoots have grown to the length of eight or nine inches, let some clean moss chopped rather short, be placed an inch thick over the top of the soil, care being taken in doing this, not to injure or bruise the stems in any way. This dressing of moss will be found of very great benefit to the plants. It will be found that when thus covered, they root freely at the top of soil and also among the moss; and the latter will prevent the drying action of the atmosphere from injuring the roots. At this stage, water must be given to them liberally; and as soon as the bloom buds are perceived in the tops of the shoots, the pots should be removed to a shady place, and set in pans of water, for at this season of their growth, they require an almost unlimited supply of water to cause them to throw out their blooms to perfection. When they are in this state, which will be about the latter end of May or the beginning of June, they may be placed in the open air, but they should be placed in the shade and the sun never allowed to reach them, for the influences of sunshine on the plants, together with an insufficiency of water, will cause the blooming to be a failure.

[CYPRIPEDIUM.—7.]

“After the plants have done blooming the supply of water should be gradually lessened, so that the plants may ripen their crowns; and when they begin to shew symptoms of decay in their stems they should be removed to the cold pit or frame, where they may be protected from heavy rains. The consequence as I have often observed, of allowing them to become wet before the proper time for potting them, is that they are excited into premature growth, and this causes the plant to become sickly and weak. I may also remark that although *Cypripediums* are considered quite hardy, I never allow them to be reached by frost at any season of the year.

“By following the above treatment I have grown this race of plants to great perfection, especially *C. spectabile*, which under this treatment has had thirty-two shoots three feet high, covered with beautiful rosy purple and white blossoms. Few plants are admired, more than this showy Lady’s Slipper, when in the state I have described.”—W B.

Sweet writes of these hardy *Cypripediums*:—“We have seen plants thriving very well when planted out in a pit, in a rich sandy soil, and occasionally covered with the lights, in wet weather, at the time that the plants were dormant; we have no doubt but the greater part of the family to which they belong would succeed well, managed in that way, as they generally suffer from moisture when in a dormant state.”

In soil and potting, *C. irapeanum* requires the same treatment as the common English and American species, but it is more tender than they are, and must be kept in a warm greenhouse. During the summer months, when it makes its growth and flowers, it requires a liberal supply of water. When the growth is perfected, and the stems have died down, the plant must have its season of rest, and at this period it should be kept rather dry. In the summer months, when growing, it should always be shaded from bright sunshine.

[CYPRIPIEDIUM.—8.]

1. **Small-flowered Lady's Slipper.**—[Plate I.] *C. PARVIFLORUM*, Swartz, *Act. Holm.* 1800, 251; *Bot. Mag.* t. 3024. *Salisbury, Transactions of Linnæan Society*, i. 77, t. 2, f. 2; *Sweet, Brit. Fl. Gard.* t. 80.—Native of North America.

This plant has a flexuous pubescent stem, bearing five or six thin plaited downy leaves, and terminated by one or two flowers, of a dull chocolate brown, the lip yellow with crimson spots at the orifice. The flowers are very fragrant. Sepals and petals yellowish green, marked with numerous brown spots and lines; the former ovately lanceolate, taper-pointed, the upper erect, twisted, the lower straight, dependent, shorter than the lip; the latter longer, linear-attenuated, spreading, slightly deflexed, much twisted, bluntish at the point, densely bearded inside with long white hairs from the base upwards, outside pubescent. Lip yellow, smooth outside and marked with a few purplish stripes, the mouth edged with purple; inside beautifully spotted in circular lines, bearded at the base. Sterile stamen broadly sagittate, entire, bluntish.

2. **Downy Lady's Slipper.** [Plate II.]—*C. PUBESCENS*, Willdenow, *Hort. Ber.* i. 13, t. 13; *Bot. Mag.* 3024, A.; *Sweet, Brit. Flow. Gard.* t. 71. *C. PARVIFLORUM*, *Bot. Mag.* t. 911. *C. FLAVESCENS*, Redoutè *Lil.* t. 90. *C. CALCEOLUS*, Michaux, *Fl. Bor. Amer.* ii. 161.—Native of North America.

Similar to *C. parviflorum*, but with larger and paler scentless flowers, of which from one to three are borne on the stem. Sepals and petals greenish yellow, more or less spotted with brown; the sepals ovate, acuminate, the upper erect, a little twisted, the lower dependent, straight, longer than the lip; the petals longer, broadly linear, spreading, a little deflexed, twisted, acute at the points, bearded inside at the base with a tuft of white hairs, but much less so than *C. parviflorum*; outside densely pubescent. Lip yellow; ribbed, its mouth edged with brown, elegantly spotted inside in purple circular lines, bearded at the bottom. Sterile stamen triangularly oblong, obtuse.

3. **White-lipped Lady's Slipper.**—*C. CANDIDUM*, Willdenow, *Sp. Pl.* iv. 142: *Flore des Serres*, t. 962.—Native of North America.

This species is of the size and habit of *C. parviflorum*, but differs in having a white lip. The sepals and petals are pale greenish blotched with brown; the lip is white; and the sterile stamen, which is described as of a lanceolate form, is yellow.

4. **Showy Lady's Slipper.** [Plate III.]—*C. SPECTABILE*, Swartz, *Act. Holm.* 1800, 251; *Salisbury, Trans. Lin. Soc.* i. 78, t. 3, f. 3; *Bot. Reg.* t. 1666; *Bot. Cab.* t. 697; *Sweet, Brit. Flow. Gard.* t. 240; *Flore des Serres*, v. t. 430. *C. ALBUM*, Aiton; *Bot. Mag.* t. 216. *C. CANADENSE*, Michaux, *Fl. Bor. Amer.* ii. 161. *C. REGINÆ*, Walter, *Carol.* 222.—Native of North America.

This is one of the finest of the North American species, and is most commonly met with in gardens. When well cultivated, it is a plant of remarkable beauty, especially

[CYPRIPIEDUM.—9.]

the variety *incarnata*, in which the lip is rose-coloured, while the sepals and petals are white. The stem slightly flexuose, from eighteen inches to three feet in height, clothed with spreading hairs, clasped by ovate, acute, plaited leaves, and terminated by from one to three large and handsome flowers. The perianth is white, pubescent on both sides, the sepals broadly ovate, obtuse, veined, spreading; the petals broadly lanceolate, more acute, and spreading horizontally; the lip very large inflated, white, the fore-part purple or flesh-coloured, rarely altogether white, the upper part split in front, and bent inwards at the mouth; inside more or less elegantly spotted with purple, and striped near the mouth, clothed with long spreading white hairs. The sterile stamen is large, cordately elliptic, obtuse, and more or less spotted.

5. **Common Lady's Slipper.**—*C. CALCEOLUS*, *Linnaeus, Sp. Pl.* 1346; *Fl. Dan.* t. 999; *Eng. Bot.* t. 1.—Native of Europe, including Great Britain, and of Northern Asia.

This species resembles *C. parviflorum* and *C. pubescens*, but is distinguished by its straight petals. It has the sepals and petals pale brown, and the lip yellow. The sterile stamen is ovate-obtuse, and the lower sepal is bidentate.

6. **Japan Lady's Slipper.**—*C. ATSMORI*, *Morren, La Belgique Horticole*, i. 171, t. 21, fig. 1.—*C. CALCEOLUS*, *Thunberg, Flor. Jap.* 30.—Native of Japan.

An elegant and slender plant, allied to *C. Calceolus*, but differing in having the leaves more lanceolate and glabrous, in the less ventricose pouch, cleft rather than toothed in front, in the extreme narrowness of the sepals, in the hairy base of the petals, in the lengthened trowel-like form of the sterile stamen; and generally, in the narrowed meagre character of the flowers. The sepals and petals are rich purplish brown, the latter furnished with purplish hairs at their greenish-yellow base. The lip is yellow, and the sterile stamen white. The leaves are acutely lance-shaped, plaited, smooth. It was introduced by Dr. Siebold to the Belgian Gardens.

7. **Irapean Lady's Slipper, or Pelican flower.** [Plate IV.]—*C. IRAPEANUM*, *Llave and Lexarza, Orch. Mex.* ii. 10; *Bot. Reg.* 1846, t. 58.—Native of Mexico.

The figure (Plate IV.), taken from a cultivated plant, does scanty justice to this noble species, of which wild specimens collected in Mexico near the town of Irapeo, bear two flowers more than twice the size, open at the same time, and two more ready to expand. It looks like a gigantic form of the downy yellow Lady's Slipper of the United States. Lexarza says that the Mexicans call it *Flor del Pelicano*.

The sepals and petals are nearly equal, two and a half inches long, and more than an inch wide, pale yellow; the lip is longer, of the same colour; but with some scarlet spots upon the inflexed border. The sterile stamen is ovate-acuminate, and somewhat three-lobed. This species requires greenhouse treatment.

[CYPRIPIEDIUM.—10.]

8. **Large-flowered Lady's Slipper.**—*C. MACRANTHON*, *Swartz, Act. Holm.* 1800, 251; *Bot. Mag.* t. 2938; *Bot. Reg.* t. 1534.—Native of Northern Asia.

A fine and rare species. The flowers are large deep purple, not at all spotted. The sterile stamen is cordate acuminate.

9. **Inflated Lady's Slipper.** [Plate V.]—*C. VENTRICOSUM*, *Swartz, Act. Holm.* 1800, 251; *Sweet, Brit. Flow. Gard.* 2, s., t. 1.—Native of Siberia.

This plant, which has very large deep purple flowers, has the lip richly spotted. The stem is erect, thickly clothed with soft pubescence, bearing two or three broadly ovate, acute, strongly nerved, clasping leaves, and terminated by about two flowers, which are large, and of a reddish purple colour. The perianth is a little longer than the lip; the sepals ovate, tapering to a slender point, five-nerved, veined between the nerves, pubescent outside; the petals narrow lanceolate or linearly lanceolate, taper-pointed, bearded inside near the base, smooth on the outside; the lip very large, and inflated, of a brilliant purple, much veined, slightly cloven at the mouth, and there crenulate, and edged with pure white, bearded in the throat with a large tuft of white hairs; the mouth inside is of an elegant mottled purple, lower down white, spotted with numerous purple spots, that are clothed with purple hairs. The sterile stamen is arrow-shaped, concave.

10. **Ram's-head Lady's Slipper.** [Plate VI.]—*C. ARIETINUM*, *R. Brown, Hort. Kew*, v. 222; *Bot. Mag.* t. 1569; *Bot. Cab.* t. 1240; *Sweet, Brit. Flow. Gard.* t. 213. *ARIETINUM AMERICANUM*, *Beck, Bot. of North. States*, 352.—Native of North America.

Curious, but less showy than most of the species. The stems grow six to eight inches high, slender hairy, bearing four or five lanceolate, acute, sessile clasping leaves, attenuated towards the base, smooth on both sides, fringed with short hairs. The flowers solitary, terminal, leaning forward, slightly fragrant, green tinged with purple, and clothed with small glandular hairs; the upper sepal ovately lanceolate, acute; the side petals very narrow, linear, acute; the two lower sepals spreading, falcately lanceolate; the lip is inflated at the mouth, tapering to the base, clothed with woolly hairs, particularly near the mouth, where they form a dense white patch, white, elegantly veined and netted with purple; inside densely hairy. The sterile stamen is nearly round, spoon-shaped.

11. **Spotted Lady's Slipper.**—*C. GUTTATUM*, *Swartz, Act. Holm.* 1800, 251; *Flores des Serres*, vi. t. 573.—Native of Siberia and North America.

A very elegant dwarf small-flowered species. The stems bear two ovate-elliptic plaited leaves, and are each terminated by a white flower, all the parts of which are ornamented with numerous blotches of crimson. The lip is roundish oblong with a spreading mouth, the dorsal sepal is twice the width of the lanceolate obtuse petals. The sterile stamen is ovate emarginate.

[CYPRIPEDIUM.—11.]

12. **Dwarf Lady's Slipper.** [Plate VII.]—*C. HUMILE*, Swartz, *Act. Holm.* 1800, 251; *Bot. Mag.* t. 192; *Sweet, Brit. Flow. Gard.* 2. s., t. 161. *C. ACAULE*, Aiton, *Hort. Kew*, iii. 161.—Native of North America.

A dwarf showy plant, with pale brown sepals and petals, and a large purple veiny lip. The leaves spring from the crown of the root, rarely more than two, oblong, ovate, obtuse, glossy, but clothed on both sides with soft hairs. The scape is erect, from a span to nine inches high, one flowered, hairy; the sepals are ovate-lanceolate, clothed with short glandular hairs, strongly nerved; the petals narrower, taper-pointed, unequal sided, and bearded near the base; the lip is large, purplish, longer than the petals, split longitudinally on the upper side, strongly and numerously nerved, rugose, densely bearded inside, the hairs near the base purple. The sterile stamen is rhomboidal, acuminate.

13. **Handsome Lady's Slipper.**—*C. VENUSTUM*, Wallich MS.; Hooker, *Exot. Fl.* t. 36; *Bot. Mag.* t. 2129; *Bot. Reg.* t. 788.—Native of India; Sylhet, &c.

A very beautiful species, the leaves ligulate, dull blueish green, and clouded with a deeper green, as well as with pallid blotches, externally spotted with purple. The flower-stem is pubescent; the sepals white with green parallel lines; the petals linear oblong marked with parallel lines and a few scattered deep brown spots, the upper half purple, the lower greenish, the margin ciliated with purple hairs; the lip is large, inflated, the upper margin deep yellow, the rest purple within, and externally dingy greenish yellow. The sterile stamen is wedge-shaped.

14. **Purple-stained Lady's Slipper.**—*C. PURPURATUM*, Lindley, *Bot. Reg.* t. 1991.—Native of Malacca.

A handsome species, something like *C. venustum*, but the leaves are paler, shorter, more oblong and less rigid; the petals have not the long bearded fringe; and the sterile stamen is lunate. The dorsal sepal is convex, white with purple veins; the petals are deeply stained with purple, as also is the lip.

15. **Bannered Lady's Slipper.**—*C. INSIGNE*, Wallich MS.; Lindley, *Coll. Bot.* t. 32; Hooker *Exotic Flora*, t. 34; *Bot. Mag.* t. 3412; *Bot. Cab.* t. 1321.—Native of India; Sylhet, &c.

The habit of this plant is that of *C. venustum* and *barbatum*; but its leaves, linear-ligulate in form, are green. The flowers are large and handsome; the sepals pale green, the dorsal one ribbed, and thickly spotted with dull purple, the lower ones united, and slightly spotted near the base; the petals are pale-green tinged with brown; the lip is large inflated, the margins deep yellow smooth and shining, otherwise greenish; the column yellow beset with minute red hairs. In this species the sterile stamen is obcordate and downy.

16. **Bearded Lady's Slipper.** [Plate VIII.]—*C. BARBATUM*, Lindley, *Bot. Reg.* 1841, misc. 110; 1842, t. 17; *Bot. Mag.* t. 4234.—Native of Malacca and Java.

[CYPRIPIEDIUM.—12.]

“There is something in the habit of the Indian Lady’s Slippers,” writes Dr. Lindley, “so peculiar, that it was for a long time expected that they would be found to possess characters sufficient to separate them altogether from their associates. The fullest examination however shews this expectation to be fallacious, and that no peculiarity of organization exists among them. In fact, the genus has been found to vary so much in the aspect of its species, that the common European and North American kinds convey no idea of its nature. In addition to the Indian forms, of which this may be regarded as a type, the hotter parts of America have furnished, on the one hand, the singular *C. Lindleyanum*, a hairy rufous plant with paniced flowers, and the scarcely less curious *C. palmifolium*, which bears the aspect of a *Sobralia*, and has its flowers in long racemes;” as well as the very remarkable *C. caudatum*. *C. barbatum* is one of those kinds with oblong deep green leaves blotched and banded with deeper green. The scape bears an erect flower, of which the dorsal sepal is roundish cuspidate ciliate, white lined with purple and green; the lateral ones are united and obtuse; the petals are oblong, deep purple at the tips, green at the base, ciliated, and blotched with purple warts along the upper margin. The lip is brownish purple, smooth, as long as the petals. The sterile stamen is lunate. The purple hairy shining warts which border the upper edge of its petals distinguish it immediately from *C. venustum* and *purpuratum*, which are most like it.

17. **Java Lady’s Slipper.**—*C. JAVANICUM*, *Reinwardt MS.*; *Lindley, Paxt. Fl. Gard.* i. 39; *Flore des Serres*, vii. t. 703. *C. BARBATUM*, *var. PAL-LIDUM*, *of gardens.*—Native of Java.

The leaves of this plant, which has much resemblance to *C. venustum* and *C. barbatum*, are green with deeper green blotches, on the upper surface, unspotted beneath. The flowers are greenish; the sepals green whitish towards the tip, and marked with deeper green parallel veins; the petals green at the base, pale purplish towards the tip, and spotted with pale purple; the lip also green with a brownish tinge in front. According to Dr. Planchon, the absence of the row of shiny warts on the upper edge of the petals distinguishes it from *C. barbatum*; and the green unspotted under surface of the leaves from *C. venustum*. The sterile stamen appears from M. Van Houttes’ figure, to be transversely oblong forming two rounded spreading lobes.

18. **Villose Lady’s Slipper.**—*C. VILLOSUM*, *Lindley Gard. Chron.* 1854, 135.—Native of India; Moulmein.

This species most nearly resembles *C. insigne*. It has unspotted leaves, longer than the shaggy scape. The dorsal sepal is greenish, with deeply discoloured veins along the middle; the petals, which are spatulate, undulate, fringed, and very unequal-sided, are notched at the point, shine as if varnished, and are green in the lower half, rich warm brown in the upper. The lip is similar to that of *C. insigne*. The sterile stamen is wedge-shaped mucronulate, warted and pubescent on the back.

19. **Low’s Lady’s Slipper.**—*C. LOWII*, *Lindley Gard. Chron.* 1847, 765; *Gard. Mag. Bot.* i. 297, with figure.—Native of Borneo.

[CYPRIPEDIUM.—13.]

This handsome species produces a tuft of distichous bright green strap-shaped obtuse leaves, from among which issues the flower scape bearing two or three (eight or ten in the wild plant) flowers, which are large and showy. The sepals are short broad pale greenish with a purple tinge at the base; the petals very much longer, spathulate, that is, narrow below, and there pale yellowish green with purplish brown spots, broader upwards, and there purplish rose with pale yellow margins. The lip or pouch is broad inflated, open above, and of a purplish-green colour, and shining.

20. **Long-tailed Lady's Slipper.**—*C. CAUDATUM*, *Lindley, Gen. et Sp. Orchid.* 531; *Paxton's Flow. Gard.* i. t. 9; *Flore des Serres*, vi. t. 566.—Native of Peru.

This is a very remarkable plant; the peculiarity consisting in the excessive elongation of the petals, forming long tails a foot and a half long. The leaves are two-ranked, green, leathery, smooth, a foot long. The scape is erect, longer than the leaves, and bears several flowers which issue from spathe-like bracts. The sepals are ovate lanceolate, wavy, yellowish green, about twice as long as the lip; the petals are dull brownish purple, greenish and prettily marked with red about the base; the lip is dull purplish with a green-yellow tinge, and marked with dull purple veins and blotches. These stains on the lip are in the wild plants much more marked, and of a rich warm brown colour. The native specimens bear half a dozen of these curious flowers on the stem. The sterile stamen is broader than long, with a pair of bristly lobes. It is a singular fact in the development of the flowers of this plant, that the tail-like petals are short when the flower first opens and gradually elongate. This curious property was observed by the late Mrs. Lawrence in the plant, which bloomed at Ealing, for the first time in this country. When the flower first opened, the petals were three-fourths of an inch long; in four days they lengthened seventeen and three-quarter inches, shewing an average daily growth of upwards of four inches.

There is another curious plant of this order, the *UROPEDIUM LINDENII*, which is remarkable for a similar tail-like development of the parts of its flowers. It was found in Caraccas by Mr. Linden, and has been introduced to our gardens. This extraordinary species, has flowers from fifteen to twenty inches long; that is to say, the petals and lip are drawn out into narrow straps or tails of such a length. The habit of *Uropedium* is that of *Cypripedium venustum*. It grows in the little woods of the savannah 3,500 feet above the sea, which occurs on the high part of the Cordillera, looking down upon the vast forests of Maracaybo.

REFERENCE TO THE PLATES OF THE
GENUS CYPRIPIEDIUM.

Plate I.—CYPRIPIEDIUM PARVIFLORUM, *Swartz*.

Fig. 1. The lip opened : fig. 2, front view ; fig. 3, back view of the sterile stamen : fig. 4, 5, the stigma : fig. 6, the fertile stamens.

Plate II.—CYPRIPIEDIUM PUBESCENS, *Willdenow*.

Fig. 1. the lip opened : fig. 2, front view ; fig. 3, back view of the sterile stamen : fig. 4, 5, the stigma : fig. 6, the fertile stamens.

Plate III.—CYPRIPIEDIUM SPECTABILE, *Swartz*.

A. *variety* ALBUM.

B. *variety* INCARNATUM.

Fig. 1, the lip spread open : fig. 2, the sterile stamen : fig. 3, the fertile stamens : fig. 4, 5, the stigma.

Plate IV.—CYPRIPIEDIUM IRAPEANUM, *Llava and Lexarza*.

Fig. 1. the column.

Plate V.—CYPRIPIEDIUM VENTRICOSUM, *Swartz*.

Fig. 1, the pedicel : fig. 2, the ovary : fig. 3, the lip spread open : fig. 4, the sterile stamen : fig. 5, 6, the style : fig. 7, the fertile stamens.

Plate VI.—CYPRIPIEDIUM ARIETINUM, *R. Brown*.

Fig. 1, the perianth, spread open, and divested of the lip : fig. 2, the lip spread open : fig. 3, 4, the column with the anthers and stigma : fig. 5, the sterile stamen.

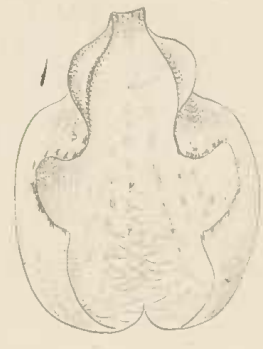
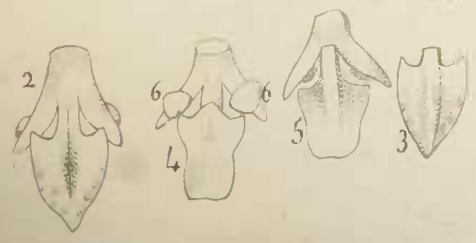
Plate VII.—CYPRIPIEDIUM HUMILE, *Swartz*.

Plate VIII.—CYPRIPIEDIUM BARBATUM, *Lindley*.

Fig. 1, the head of the sterile stamen.

CYPRIPEDIUM

1



W. Bolton Smith del.

S. Bailey sculp.

CYPRIPEDIUM
II.



E. Diller South del.

H. Bailey sculp.

CYPRIPEDIUM
III.



E.D. Smith. Del.

W. H. & C. Co. Sc.



CYPRIPEDIUM
V.



W. Marshall Del.

Weddell Sc.

CYPRIPEDIUM
VI.



E.D. Smith Del.

Weddell Sc.

CYPRIPEDIUM
VII.



1847

* *W. A. Miller*

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* * * Each genus is paged separately.

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<i>catenulata, R. & P.</i>	" 7	<i>pumila, Lindl.</i>	" 6
<i>florida, R. Br.</i>	" 1, 5	<i>verrucosa, Lindl.</i>	" 7
<i>Gebina, Lindl.</i>	" 1, 4	<i>villosa, Lindl.</i>	" 6
" "	Calanthe 7	<i>Wrayæ, Skinner</i>	" 5
<i>gracilis, Lindl.</i>	Bletia 7	BROUGHTONIA.	
<i>guineensis, G. Don.</i>	" 6	<i>aurea, Lindl.</i>	Epidendrum 12
<i>havanensis, Lindl.</i>	" 6	BURLINGTONIA.	
<i>hyacinthinum, R. Br.</i>	" 5	<i>amœna, Planch.</i>	Burlingtonia 6
<i>Masuca, Don.</i>	Calanthe 5	<i>candida, Lindl.</i>	" 4
		<i>decora, Lemaire</i>	" 6
		<i>fragrans, Lindl.</i>	" 5

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pubescens, <i>Lindl.</i>	" 4	rosco-album, <i>Lindl.</i>	" 9
rigida, <i>Lindl.</i>	" 3, 5	Russellianum, <i>Hook.</i>	" 10
rubescens, <i>Lindl.</i>	" 5	saccatum, <i>Lindl.</i>	" 11
venusta, <i>Lindl.</i>	" 4	sanguineum, <i>Lindl.</i>	" 10
CALANTHE.		semiapertum, <i>Hook.</i>	" 8
bicolor, <i>Lindl.</i>	Calanthe 6	serratum, <i>Lindl.</i>	" 7
curculigoides, <i>Wall.</i>	" 4	spinosum, <i>Lindl.</i>	" 13
densi ora, <i>Lindl.</i>	" 6	tabulare, <i>Lindl.</i>	" 10
discolor, <i>Lindl.</i>	" 6	tridentatum, <i>Hook.</i>	" 5
emarginata, <i>Wight.</i>	" 5	tridentatum v. atropurpureum	" 6
furcata, <i>Batem.</i>	" 5	tridentatum v. viridiflorum, <i>Hk.</i>	" 6
Gebina, <i>Lodd.</i>	" 7	tridentatum v. vitellinum, <i>Hk.</i>	" 6
"	Bletia 4	trifidum, <i>Hook.</i>	" 12
gracilis, <i>Lindl.</i>	Calanthe 7	Trulla, <i>Lindl.</i>	" 11
Masuca, <i>Lindl.</i>	" 5	viridiflavum, <i>Hook.</i>	" 7
pulchra, <i>Lindl.</i>	" 4	Wailiesii, <i>Hook.</i>	" 6
purpurea, <i>Lindl.</i>	" 5	Warczewiczii, <i>Lindl.</i>	" 9
striata, <i>R. Br.</i>	" 6	CATHEA.	
sylvatica, <i>Lindl.</i>	" 4	pulehella, <i>Salisb.</i>	Calopogon 2
veratrifolia, <i>R. Br.</i>	" 3, 5	CATTLEYA.	
versicolor, <i>Lindl.</i>	" 5	coccinea, <i>Lindl.</i>	Sophronitis 3
vestita, <i>Wall.</i>	" 3, 6	CENTROSIS.	
viridifusca, <i>Hook.</i>	" 7	sylvatica, <i>Thouars</i>	Calanthe 4
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pulehellus, <i>R. Br.</i>	Calopogon 2	grandiflorus, <i>Lodd.</i>	Stanhopea 12
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abruptum, <i>Hook.</i>	Catasetum 7	CHELONANTHERA.	
atratum, <i>Lindl.</i>	" 10	speciosa, <i>Bl.</i>	Cœlogyne 11
barbatum, <i>Lindl.</i>	" 13	CHLORÆA.	
callosum, <i>Lindl.</i>	" 11	chrysantha, <i>Pöpp. & Endl.</i>	Chloræa 2
cirinum, <i>Hort.</i>	" 14	longibracteata, <i>Pöpp. & Endl.</i>	" 2
"	Mormodes 5	virescens, <i>Lindl.</i>	" 2
Claveringii, <i>Lindl.</i>	Catasetum 6	CIRRHOPETALUM.	
Claveringii, <i>Lodd.</i>	" 5	auratum, <i>Lindl.</i>	Cirrhopetalum 5
cornutum, <i>Lindl.</i>	" 13	cæspitosum, <i>Wall.</i>	" 3
cristatum, <i>Lindl.</i>	" 6, 14	candelabrum, <i>Lindl.</i>	" 6
deltoidcum, <i>Lindl.</i>	" 12	chinense, <i>Lindl.</i>	" 4
discolor, <i>Lindl.</i>	" 9	cornutum, <i>Lindl.</i>	" 3
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discolor v. fimbriatum	" 9	fimbriatum, <i>Lindl.</i>	" 5
discolor v. viridiflorum	" 9	Macraei, <i>Lindl.</i>	" 4
discolor v. roseo-album	" 9	maculosum, <i>Lindl.</i>	" 4
fimbriatum, <i>Lindl.</i>	" 13	Medusæ, <i>Lindl.</i>	" 3
floribundum, <i>Hook.</i>	" 6	nutans, <i>Lindl.</i>	" 5
fuliginosum, <i>Lindl.</i>	" 7	pieturatum, <i>Lodd.</i>	" 4
globiflorum, <i>Hook.</i>	" 8	Thouarsii, <i>Lindl.</i>	" 4
Hookeri, <i>Lindl.</i>	" 8	vaginatum, <i>Lindl.</i>	" 3
inapertum, <i>Hook.</i>	" 8	Wallichii, <i>Lindl.</i>	" 4
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Naso, <i>Lindl.</i>	" 11	fuliginosa, <i>Lindl.</i>	" 11
ochraceum, <i>Lindl.</i>	" 8	fuscescens, <i>Lindl.</i>	" 10
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<i>Lowii, Paert.</i>	" 5, 9	<i>purpuratum, Lindl.</i>	" 11
<i>maculata, Lindl.</i>	" 12	<i>reginæ, Walt.</i>	" 8
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<i>præcox, Lindl.</i>	" 12		
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<i>Wallichiana, Griff.</i>	" 12	<i>mystacinum, Lindl.</i>	Odontoglossum 7
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		<i>roseum, Sw.</i>	Lissochilus 3
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Cartoni, <i>Hook.</i>	" 5	Pescatorci, <i>Linden.</i>	" 10
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convolutum, <i>Lindl.</i>	" 7	ramulosum, <i>Lindl.</i>	" 9
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Rivini, <i>Gouan</i>	" 17	foliosum, <i>Sw.</i>	" 4
romana, <i>Sebast. & Maur.</i>	" 14	hircinum, <i>Lin.</i>	Orchis 1
rubra, <i>Jacq.</i>	" 15	membranaceum, <i>Sw.</i>	Satyrium 4
saccata, <i>Tenore</i>	" 13	orchioides, <i>Sw.</i>	Stenorhynchus 4
sambucina, <i>Lin.</i>	" 13	papillosum, <i>Lindl.</i>	Satyrium 5
Schleicheri, <i>Sweet</i>	" 13	parviflorum, <i>Sm.</i>	" 4
simia, <i>Lam.</i>	" 19	pustulatum, <i>Lindl.</i>	" 2, 5
Smithii, <i>Sweet.</i>	" 19	repens, <i>Lin.</i>	Goodyera 3
spectabilis, <i>Lin.</i>	" 10, 16	repens, <i>Mchx.</i>	" 3
sulphurea, <i>B. M.</i>	" 14	SERAPHYTA.	
tephrosanthos, <i>Desf.</i>	" 18	multiflora, <i>Fisch.</i>	Epidendrum 28
tephrosanthos, <i>Vill.</i>	" 19	SESTOCHILUS	Sarcopodium 3
tephrosanthos, <i>Bich.</i>	" 19	SOBRALIA.	
tetragona, <i>Heuff.</i>	" 15	chlorantha, <i>Hook.</i>	Sobralia 6
Traunsteineri, <i>Rchb.</i>	" 13	decora, <i>Batem.</i>	" 6
tridentata, <i>Scopoli.</i>	" 17		
undulatifolia, <i>Bivona</i>	" 18		
ustulata, <i>Lin.</i>	" 19		
variegata, <i>Jacq.</i>	" 17		

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<i>fragrans, Lindl.</i>	Sobralia 5	<i>tigrina, Batem.</i>	Stanhopea 10
<i>Liliastrum, Lindl.</i>	" 5	<i>tricornis, Lindl.</i>	" 11
<i>macrantha, Lindl.</i>	" 6	<i>velata, Morren.</i>	" 11
<i>sessilis, Hook.</i>	" 6	<i>Warczewicziana, Kl.</i>	" 10
<i>sessilis, Lindl.</i>	" 6	<i>Wardii, Lodd.</i>	" 9
<i>violacea, Lindl.</i>	" 6	STAUROGLOTTIS.	
SOPHRONITIS.		<i>equestris, Schauer</i>	Phalænopsis 7
<i>cernua, Lindl.</i>	Sophronitis 3	STENORHYNCHUS.	
<i>grandiflora, Lindl.</i>	" 1	<i>aphylla, Lindl.</i>	Stenorhynchus 4
<i>Hoffmannseggii, Rehb.</i>	" 3	<i>cinnabarinus, Lindl.</i>	" 2, 4
<i>isopetala, Hoffmanns.</i>	" 3	<i>orchioides, Rich.</i>	" 2, 4
<i>nutans, Hoffmanns.</i>	" 3	<i>speciosus, Rich.</i>	" 2, 3
<i>pterocarpa, Lindl.</i>	" 2	STYLOGLOSSUM.	
<i>violacea, Lindl.</i>	" 3	<i>nervosum, Kuhl & Hassk.</i>	Calanthe 4
SPATHOGLOTTIS.		TUSSACA.	
<i>Fortuni, Lindl.</i>	Spathoglottis 2	<i>secunda, Rafin.</i>	Goodyera 3
<i>plicata, Bl.</i>	" 2	<i>reticulata, Rafin.</i>	" 3
STANHOPEA.		UROPEDIUM.	
<i>amœna, Kl.</i>	Stanhopea 8	<i>Lindenii, Lindl.</i>	Cypripedium 13
<i>aurata, Hort.</i>	" 10	VANDA.	
<i>aurea, Lodd.</i>	" 9	<i>alpina, Lindl.</i>	Vanda 13
<i>Barkeriana, Hort.</i>	" 9	<i>Batemanni, Lindl.</i>	" 5, 6, 10
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<i>eburnea, Lindl.</i>	" 12	<i>fuscoviridis, Lindl.</i>	" 12
<i>ecornuta, Lem.</i>	" 12	<i>insignis, Bl.</i>	" 11
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<i>grandiflora, Lindl.</i>	" 12	<i>lissochiloides, Lindl.</i>	" 10
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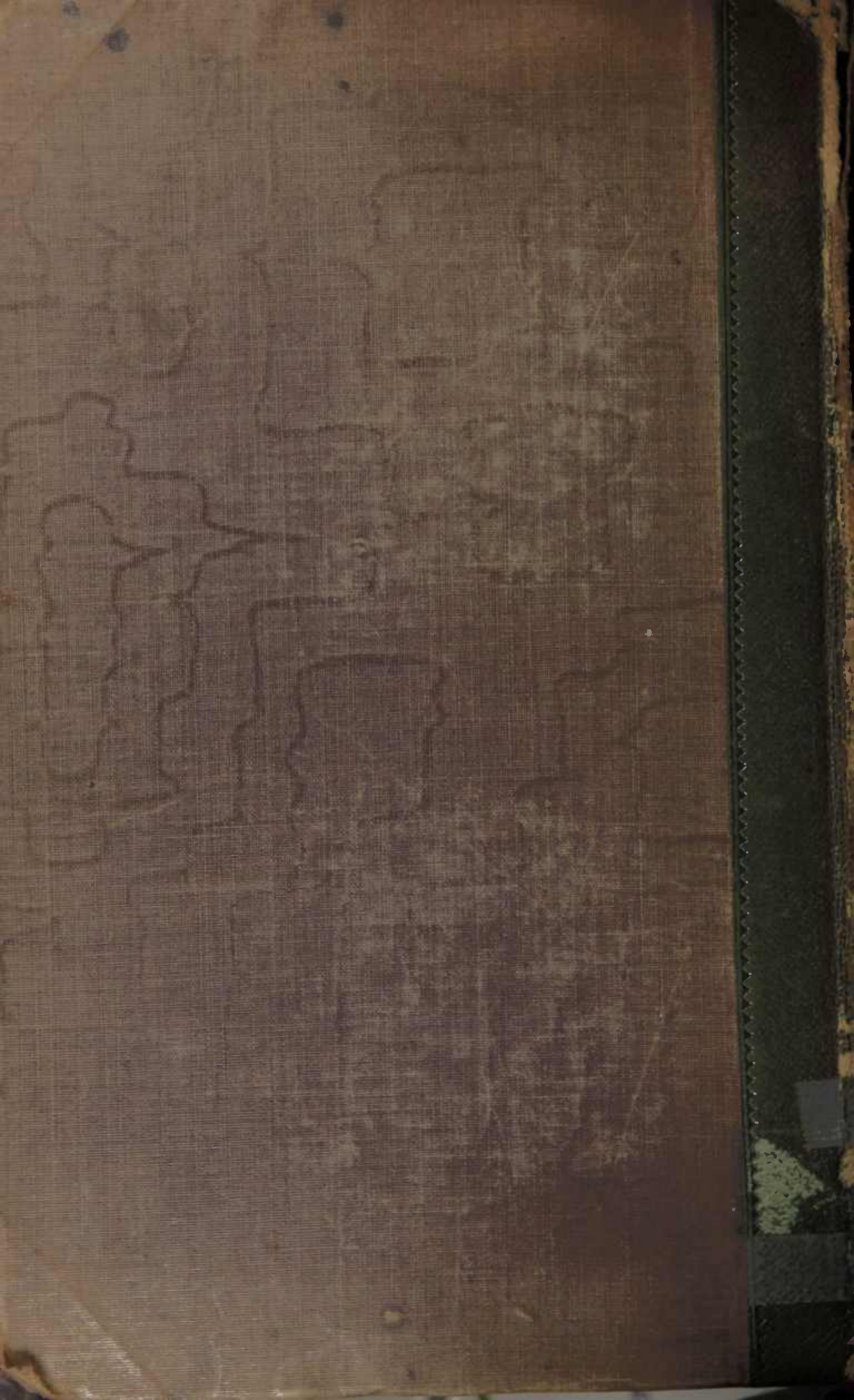
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