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# SERTUM

# ORCHIDACEUM:

A

WREATH

OF

THE MOST BEAUTIFUL

ORCHIDACEOUS FLOWERS;

SELECTED

BY JOHN LINDLEY, Ph.D. F.R.S.

PROFESSOR OF BOTANY IN UNIVERSITY COLLEGE, LONDON, AND IN THE ROYAL INSTITUTION OF GREAT BRITAIN, ETC. ETC.

LONDON:

JAMES RIDGWAY AND SONS, PICCADILLY.

MDCCCXXXVIII.

TO

THE MOST NOBLE

WILLIAM SPENCER CAVENDISH,

DUKE OF DEVONSHIRE, K.G.

&c. &c. &c.

THE MUNIFICENT PATRON OF ART

THE PRINCELY FRIEND OF SCIENCE,

ESPECIALLY OF BOTANY

AT WHOSE COMMAND THE NOBLE PALACE AND GARDENS OF

CHATSWORTH

HAVE BEEN CREATED RATHER THAN RESTORED

IN THE HEART OF THE WOODLANDS OF DERBYSHIRE

THIS HISTORY

OF SOME OF THE MOST BEAUTIFUL

OF HIS FAVOURITE FLOWERS

IS GRATEFULLY INSCRIBED BY

HIS GRACE'S

MOST FAITHFUL AND DEVOTED SERVANT

THE AUTHOR

FRONTISPIECE.

# A WREATH OF EAST INDIAN ORCHIDACEÆ.

The figures here given comprehend magnified views of the flowers employed in forming the wreath selected as a frontispiece to this work. The numbers in both cases refer to those in the following descriptions.

## I. MONOMERIA BARBATA.

Monomeria barbata. *Genera & Species of Orchidaceæ, page* 61.
Dendrobium tripetalum. *Wallich mss.*

All that is known of this rare and very curious plant is derived from a drawing and some imperfect dried specimens brought from India by Dr. Wallich, who found the plant in Nepal in the year 1821.

Its chief peculiarity consists in the absence of petals; a very curious and unusual circumstance in this natural order of plants. Dr. Wallich indeed represents them to be present in the form of a

ragged line interposed on each side of the column between the upper and lateral sepals, as is shown in the accompanying figure, No. 1; but I have not been able to make out this fact in the few and bad dried flowers brought under examination.

The plant has quite the habit of a large Bolbophyllum. From a large creeping scaly RHIZOMA spring at considerable intervals ovate PSEUDO-BULBS, at first covered with the ragged remains of the scales out of which they originally proceeded; each is about two inches long, and bears a single leaf. The LEAVES are rather less than a foot long, oblong, leathery, deep green, reticulate, obtuse, and slightly downy beneath, with the channelled footstalk nearly as long as the blade. The RACEME is rather shorter than the leaf, erect, proceeding from the base of a pseudo-bulb, pale green spotted with dull purple, with about two sheathing scales below the origin of the first flowers. Each FLOWER when fully expanded is about an inch long, with the lip and upper sepal placed transversely with respect to the axis of growth. Of the SEPALS the upper is triangular, acuminate, nearly plane, dull olive green, much shorter than the two lateral ones, which are placed below the lip, a little united with each other at the base, where they are fixed upon the long foot of the column in such a way as to form a kind of blunt spur; on the outside they are very light green, smooth and dotted with light purple; on the inside they are hairy, yellowish, and irregularly spotted with bright purple. The PETALS appear to me to be wholly absent; but in Dr. Wallich's figure they are represented as two ragged lines. The LABELLUM is articulated with a very long foot of the column, horizontal, and yellow, three-lobed, the lateral lobes being falcate and emarginate, the intermediate one ovate, with four continuous acute plates, united into pairs, parallel with its margin. The COLUMN is short, half round, extended at the base into a long slender curved foot, on which the sepals and labellum are inserted; at the two upper angles in front produced into short points. The ANTHER is downy, one-celled, with a fleshy even crest. The POLLEN-MASSES are four, on the same plane, the two interior being the smallest, and not consolidated into a roundish ovate body, without the slightest trace of a caudicula or gland.

Fig. 1 of the above dissections represents a flower of this plant much magnified, with the back sepal cut off.

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# II. SACCOLABIUM ACUTIFOLIUM.

**Saccolabium acutifolium.** *Genera & Species of Orchidaceous Plants, p. 223.*
**Aerides umbellatum.** *Wallich mss.*

A pretty epiphyte inhabiting the East Indies, and at present known only from a drawing in the possession of the East India Company, of which, with all the others forming the wreath before us, I have been permitted to take copies.

Its STEMS are about six inches long, and are covered by numerous leaves, so disposed as to arrange themselves in two rows. Each LEAF is rather more than six inches long, sessile, slightly amplexicaul, oblong-lanceolate, very acute, quite flat and even, and apparently fleshy. The FLOWERS appear in small corymbs, placed on stiff peduncles, from two to three inches long, and springing

# IV. CHILOSCHISTA USNEOIDES.

Chiloschista usneoides. *Genera & Species of Orchidaceous Plants, p. 219.*
Epidendrum usneoides. *D. Don Prodromus Floræ Nepalensis, p. 37*
Aerides convallarioides. *Wallich mss.*

The lower part of the wreath on the left and, consists entirely of this singular plant, whose green entangled roots serve it in place of leaves, of which organs it does not appear to possess a trace. This is one of addition to the countless instances of the power with which nature adapts one part of a plant to perform the office of another, as if she delighted in displaying the endless variety of her resources. Without the green apparatus usually arranged upon the stem in the form of a leaf, a plant can no more digest its food than an animal deprived of a stomach, without the pale and succulent fibres which we call roots, a plant can no more feed than an animal deprived of a mouth, but by combining what is most essential to both organs into one, the root is made both to feed according to its proper nature, and in addition to digest like a leaf. That this is the case in the present instance is obvious, by what exact means the amalgamation of such different organs as root and leaf is effected remains to be ascertained by some one who can examine the plant in a fresh state.

Dr Wallich found it in 1818, growing on the trees in Nepal in many different places, and described it to the following effect. Roots consisting of numerous bundles of long, fleshy, glaucous, simple fibres. Of LEAVES there is no trace. RACEMES numerous, arising from the crown of the root i.e. from the centre of the radical fibres, from six to eight inches long, erect, and downy. PEDUNCLE brown ish, taper, slender, an inch long, furnished with a few alternate membranous bracts, which are ovate, amplexicaul, acute, deciduous, and densely clothed with herbaceous soft semitransparent hairs, finally passing into a flexuose rachis which becomes clavate when old. FLOWERS stalked, alternate, the size and colour of Lily of the Valley, but scentless, drooping, placed on stalks half an inch long, very slender, with a broad, ovate, subcordate, and semitransparent acute deciduous bract at the base. SEGMENTS of the FLOWER oblong, obtuse, spreading, the petals broader than the others, and with the lateral sepals adhering by their whole base to a long foot, which quits the base of the column almost at a right angle. LABELLUM standing at the back of the flower, gibbous at the base and slightly saccate, very small, attached to the extreme point of the foot of the column, slightly tinged with pink, bearded inside, three-lobed at the apex, the lateral lobes linear, parallel, obtuse, that in the middle two-toothed and minute, or rather wanting, its place being supplied by two little revolute teeth. COLUMN very short. ANTHER terminal, deciduous, ovate, two-celled. POLLEN-MASSES two, rounded, two-lobed at the back, waxy, smooth. CAPSULE two inches long, somewhat cylindrical, pink, curved. *Obs.* The four lateral leaves of the perianth being inserted at the sides of the much elongated ascending base of the column, almost so that the sepals which are nearest the labellum cover very little of the margins of the petals, which occupy the middle of the column, may be said to be placed almost in one line. The very base of the column is terminated by the labellum there only inserted.

Of No. 4. the left hand figure represents the labellum seen in front and that on the right a single flower hold magnified.

from the stem on the side opposite a leaf, they are about three-quarters of an inch in diameter. The SEPALS and PETALS are obovate, acute, spreading, yellow and nearly of equal size. The LABELLUM is pale pink, concave at the base, where it has a rounded lobe on each side, and flat beyond the lobes, enlarging into a somewhat triangular three-lobed fringed plate.

Fig. 2. represents the column and lip of this plant, copied from the drawing above mentioned.

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# III. VANDA CRISTATA.

Vanda cristata. *Genera & Species of Orchidaceous Plants, p. 216.*

This species has very much the manner of growth and appearance of Saccolabium guttatum, but its flowers are totally different. Dr Wallich found it in March, 1818, growing upon trees in Nepal. He also obtained it in April at Toka, near Sheopore, on which occasion it was described in his manuscripts with the following addition, "Flos exquisite pulchritudinis. Labelli consistentia crassissima, color atropurpureus præcipuè intus ubi etiam holosericeus." The following is the transcription of the more essential parts of the description referred to.

The shoots are about as thick as the little finger, nearly simple, emitting from the sides near the base thick taper fleshy fibres, adhering to the bark of trees, like Vanda tessellata, to which plant it bears much resemblance in habit and leaves. The LEAVES are stiff, spreading, two-ranked imbricating each other alternately at the base, sinuing channelled, keeled on the under side, very sharp edged from five to six inches long, and one-third of an inch wide, truncated and obliquely three-toothed at the ends. The RACEMES are axillary, generally three or four on the same shoot, scarcely long as the leaves, and bearing but few flowers, (in the figure and specimens before me the produce are three-flowered). The PEDUNCLES are fleshy, taper, two or three inches long, having at the base a few truncated bracts, together with one broad ovate acute membranous one beneath each pedicel. FLOWERS large, fleshy, yellowish green, with a very large purple lip. SEPALS fleshy, lanceolate, spreading, rather obtuse, about half an inch long, nearly distinct, the lateral ones extended a little beyond the origin of the moulium and incumbent on the slightly extended base of the column. PETALS nearly linear. LABELLUM very thick, saccate at the base, and extended into a very short broad sharpish horn, adhering to the fleshy base of the column, with an ovate, obtuse erect lobe on each side, upwards extended into an oblong blade, which terminates below the point in a solid short horn, and has above a crest or transverse border running on three or four irregular cylindrical processes, on the whole of the upper surface it is covered with wavted lines, (on the outside it is white, inside it is strongly streaked with purple broken lines). COLUMN very short, thick conical. ANTHER terminal, rounded, with two remote cast net cells. POLLEN-MASSES wax glouose, two-lobed at the back, (with a short elastic caudicula, and a very large rounded gland.) OVARY with six keeled, projecting angles.

Fig. 3. represents the column and moulium, from a drawing belonging to the East India Company.

# V. SUNIPIA BICOLOR.

Sunipia bicolor. *Genera & Species of Orchidaceous Plants, p.* 179.
Aerides? obcordatum. *Wallich mss.*

Known only from a drawing in the library of the East India Company. It is a native of Nepal, having been collected in that province by Dr. Wallich.

It forms a small patch of ovate PSEUDO-BULBS, about as large as marbles, each of which is terminated by a narrow-oval slightly stalked obtuse LEAF, three inches in length. The RACEMES are erect, rather longer than the leaves, and originate from the base of the pseudo-bulbs; they bear about nine small nitent flowers, arranged upon a flexuose slender rachis, each of which is subtended by a lanceolate colourless BRACT, larger than the short obovate OVARY. The SEPALS are white, slightly streaked with purple, ovate-lanceolate; the two lateral ones being narrower and rather larger than the others, placed parallel with each other below the lip, and slightly adhering by their margins. The PETALS are white, ovate, bluntish, rather more than two or as short as the sepals, with a faint purple streak at their base. The LABELLUM is deep purple, and articulated with a very short foot of the column; its general outline is cuneate; in the middle it is flat and fleshy, and traversed by a sunken (?) line, at the margin it is serrated, at the apex rounded and emarginate; just above the base there is on each side a small erect auricle. All these things are described from the Indian drawing above referred to.

Fig. 5. represents a magnified view of the flower after the sepals are cut off.

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# VI. SACCOLABIUM CALCEOLARE.

Saccolabium calceolare. *Genera & Species of Orchidaceous Plants, p.* 223. *Botanical Register for* 1838, *miscellaneous matter, no.* 139.
Gastrochilus calceolaris. *D. Don Prodromus Floræ Nepalensis, p.* 32.
Aerides calceolare. *Smith in the article Aerides, in the Supplement to Rees' Cyclopædia.*
Aerides leopardinum. *Wallich mss.*

A native of Nepal, where it was found by Dr. Wallich, growing upon trees at a place called Toka, and flowering in March. It is not conspicuous for the showiness of its flowers, but it is exceedingly pretty when closely examined; its blossoms being found to be elegantly spotted and fringed if observed with a little care. It exists in the collection of His Grace the Duke of Devon-

shire, and flowered at Chatsworth a year or two since, having been collected by Mr. G. Mann at Cherra, on the Khasseen Hills, at an elevation of 4000 feet, growing on trees.

The following is the substance of Dr. Wallich's description of the dried plant.

Roots imperfect, thick, cylindrical, long, and smooth, as in Saccolabium guttatum. STEM short, thick, compressed, entirely concealed by the sheathing bases of the leaves. LEAVES close together, arranged in two rows, linear, coriaceous, smooth, a foot and more long, obliquely one or two-toothed at the point, generally rising upwards and curved to one side so as to assume a somewhat falcate appearance, thick, slightly channelled, with a convex keel on the under side; their sheaths are short, compressed, and finely dotted with purple. COLUMNS short-stalked, solitary or twin, each consisting of from ten to sixteen flowers, with a very thick clavate peduncle an inch and half long, erect or ascending, taper, spotted with purple. FLOWERS middle-sized, yellowish-green, most elegantly sprinkled with roundish purple spots. SEPALS spreading, distinct, fleshy and stiff, somewhat oblongate, obtuse, a little narrower at the base, about four lines long. PETALS rather narrower and more round. LABELLUM large, bag-shaped, twice as large as the sepals, smooth, obtuse at the bottom, truncated and almost circular at the mouth, pale yellow, with a transverse plate, of a somewhat cordiform figure, inserted horizontally from a little below the orifice of the mouth, snow-white, yellow and spotted with purple in the middle, and bearded above with white hairs. COLUMN very short, compact. ANTHER ovate, short, obtuse, with two cells, themselves half divided into two other cells, in front extended into a long double-toothed gladiatorial process applied to the double-toothed apex of the stigma. POLLEN MASSES two, globose, with a little excavation on one side, attached to a long slender caudicum.

Fig. 6. represents a single flower seen in front obliquely, and magnified.

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# VII. AERIDES DIFFORME.

Aerides difforme. *Wallich in Genera & Species of Orchidaceous Plants, p. 242.*
Ornithochilus fuscus. *Wallich mss.*

This is one of the most singular flowers among the many strange forms peculiar to India, and in some respects it possesses considerable beauty, though not of a high order.

It inhabits the branches of trees in Nepal, whence it was sent in March, 1818, to the Botanic Garden, Calcutta, where it flowered in the following May. No specimen of it has fallen in my way, but the linear drawing made under Dr. Wallich's superintendence sufficiently explains its structure, especially when assisted by so detailed a description as the following, chiefly translated from Dr. Wallich's Latin manuscripts.

The plant has scarcely any stem, but consists of three or four very broad, oblong spreading LEAVES, about six inches long by two and a half broad, of a thick fleshy consistence, of a dark glaucous colour, a very thin membranous margin, and an acute obliquely emarginate point. From the axils of these leaves spring one or two stiff erect, lax RACEMES, about as long as the leaves themselves; their peduncles taper, dotted, and somewhat fleshy. The BRACTS are few, remote, lanceolate, small, acute, adnate at the base. FLOWERS scattered, rather small, sweet-scented, yellowish, very sparingly

tinged with green, and streaked with dull purple, forming an oblong racemo about the length of the finger, seated upon slender pedicels about an inch in length, with a small membranous bractlet at the base. SEPALS and PETALS all turned towards the same side, spreading flat; of the former the lateral are somewhat falcate, lanceolate, prominent on their outer margin, scarcely extended beyond the column, adnate to the base of the lip; the latter are linear, shorter, obtuse. LABELLUM placed at the back of the flower, and hanging down upon it, divided in the middle into two parts; of these the lower (or hypochilium) is unguiculate, and extended in front into a long greenish yellow spur which curves upwards and is closed by numerous white hairs, white its margin, of a dull purple, is curved inwards; the upper (or epichilium) is broad, kidney-shaped, retuse, slightly unguiculate, with an intermediate point, dull purple with a yellow border divided into fringed like teeth and an acute longitudinal crest through its centre. The COLUMN is erect, thick, purplish, very short, tapering upwards into a narrow space, and extended downwards into a short foot. The STIGMA is large, oblique, and extended into a large projection from the upper edge of the anther-bed. The ANTHER is oblique, obtuse, not crested, and extended in front into a truncated plate which covers over the caudicula and gland. POLLEN-MASSES two, round, hard, deeply two-lobed at the back, attached to a long broad caudicula.—*Note.* The structure of this singular flower is so very intricate that it is unusually difficult to describe it correctly. The lateral sepals are united below the slightly extended foot of the column, and together with the ungues of the hypochilium form a very short spur, while the more conspicuous horn-like spur is really the apex of the same part.

Dr Wallich named the plant ORNITHOCHILUS, or Bird-bill, in allusion to the appearance of the column and anther, which together resemble very much a duck's head. I have however combined it with Aerides, for the present at least.

Fig. 7 is a complete flower, about three times the natural size, copied from Dr Wallich's drawing.

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# VIII. SUNIPIA SCARIOSA.

Sunipia scariosa. *Genera & Species of Orchidaceous Plants, p.* 179.
Ornithalium bracteatum. *Wallich mss.*

This, the last subject in the wreath, was like all the others found by Dr Wallich, who met with it in May, 1818, growing upon the branches of trees at Tokan in Nepal, where such epiphytes are called *Sunipang*, whence the name Sunipia was taken by Dr Buchanan Hamilton. All those however which were described from that traveller's papers by the late Sir James Smith in Rees's Cyclopædia, under the genus Stens, appear to have belonged to the genus Bolbophyllum.

A very long and minute Latin description of living specimens of this plant, by Dr Wallich, is before me, of which I avail myself in part, with such additions or corrections as the examination of dried flowers in my herbarium renders necessary.

The SHOOTS or RHIZOMATA are as much as a foot long, and form an entangled mass held down to the ground by numerous perpendicular roots, just as some hardy species of Iris. From these, springing in abundance small inversely pear-shaped PSEUDO-BULBS, which are about an inch long and terminated

by a single leaf. Each LEAF is about four inches long, oval-lanceolate, flat, shining, firm, neatly double-toothed at the point, and at the base contracted into a short channelled petiole. The SCAPES spring from the base of the pseudo-bulbs, and are very slender, erect, rigid, brownish green, hardly thicker than a piece of twine, and clothed with a few long narrow sheathing scales. These are terminated by distichous SPIKES, which are drooping, and about six inches long. The FLOWERS are exactly alternate in a distichous manner, yellowish purple, nearly parallel with the flattened rachis, which is half encommaced below each flower by a single BRACT, dry, ovate, concave, acuminate, striated, and sometimes expanded into an ovate outside lobe on each side. The FLOWERS are two-lipped, much shorter than the bracts, and partially hidden by them. The SEPALS are ovate, obtuse, slightly tinged with pink, the lateral ones the largest, and placed next the rachis, at the back of the labellum. The PETALS are roundish-ovate, white, very obtuse, three as short as the sepals. The LABELLUM is fleshy, tinged with pink, tongue-shaped, blunt, much shorter than the sepals, and a little dilated near the base where the margins stand erect, producing something the appearance of a shoe. The COLUMN is very short, not at all extended at the base into a foot, but quite continuous with the ovary, in front it is hollowed out into a sinus, and at the summit it bears the anther.

It is from the very unusual structure of the anther that the genus derives its principal distinguishing feature. Instead of being loose in the anther-bed, hinged by its back, and opening along its under side so as to allow the pollen-masses to drop out upon the anther-bed, it is so fastened down by its face that the latter operation becomes impossible, and in order to provide for the escape of the pollen the cells open vertically, so that when their sides are drawn asunder the pollen-masses are at once seen reposing in their places. The POLLEN-MASSES themselves are four adhering in two pairs, and according to memoranda made by me twenty years ago, for I have not seen them since, they are attached to two caudicuae, the nature of whose connection with the stigma is not yet known.

In fig. 8, the left-hand figure represents a side view of a flower much magnified, while the right is a front view shewing the position of the pollen-masses and anthers when undisturbed.

*Stanhopea Devoniensis.*

PLATE I.

# STANHOPEA DEVONIENSIS.

S. *Devoniensis*, foliis oblongis 5-nervis utrinque acutis petiolo maculato semisulcato, labello medio quam maxime constricto, hypochilio subrotundo antice basi gibboso marginibus carnosis dilatatis reflexis, epichilio ovato subcanaliculato apice obsolete tridentato cornibus duobus hypochilii incurvis æquali, columnæ marginibus parum dilatatis subparallelis.

Coatzonte Coxochitl seu Lyncea. *Hernandez, thesaur. rer. med. nov. hisp. p.* 266.
Angulon Hernandezii. *Kunth synops.* 1. 332.
Maxillaria lyncea. *Gen. et sp. orch. p.* 151.

This noble Mexican Orchidaceous plant flowered for the first time in this country, in the epiphyte house at Chatsworth, in the beginning of August, 1837 and certainly there never was a more beautiful sight than when it expanded its large rich leopard-spotted blossoms, in all the perfection of their singular form and deep soft colours. The full blown flowers measured nearly four inches and a half across, and emitted a very agreeable odour resembling a combination of Chamomile, the Heliotrope, and the perfume called Marechal.

I cannot doubt that this was the famous Lynx flower of Hernandez, when his figure, rude as it is, and his description are considered. The flowers, he says, are of a reddish colour, but also white and confusedly spotted. He compares the roots, meaning the pseudo-bulbs, to a fig still green; the narrow place of the plant he describes as rocks and the trunks of trees, but he adds that it is cultivated for the sake of its beautiful flowers, which are more striking than words can describe, or the pencil imitate, with the fragrance of a lily, by which he probably meant the White Lily, a favourite Spanish flower.

From all the species of this striking genus hitherto observed, it differs, as Mr. Paxton has remarked to me, in the furrow which terminates the upper side of the leaf at the lower end not extending through to the pseudo-bulb, but losing itself about half way down the petiole. Independently of this circumstance, it is distinguished from all the varieties of S. insignis, by its much larger flowers, and by the conspicuous reflexing broad coated margin, so conspicuous in that species, to say nothing of its very different form of the lower part of the lip, which in S. Devoniensis is perfectly at the base on the middle and drawn sharply and abruptly inwards. It approaches more nearly to S. tigrina, another Mexican plant the rival of this in beauty, which is about to appear in Mr. Bateman's magnificent monographic upon the "Orchidaceæ of Mexico and Guatemala," but in that species the middle part of the lip is divided into three nearly equal portions, both the upper and lower parts of the same organ very much broader and the lateral narrower and more attenuated at the base.

In the habit and manner of flowering of this species there is nothing particular to notice beyond the points already adverted to. The following is a description of one of the flowers.

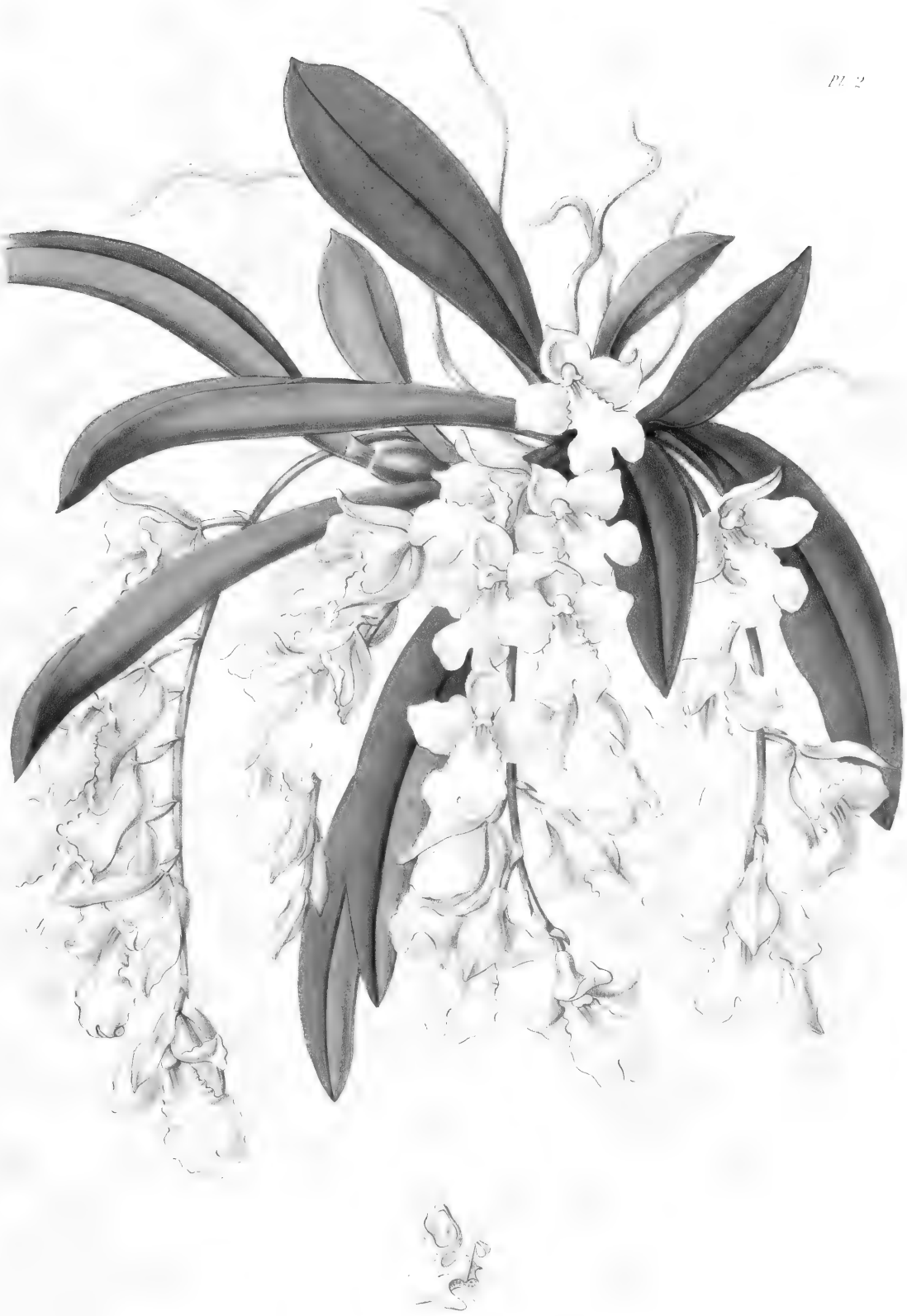
SEPALS ovate, obtuse, acute, undulate, the lateral ones united at the base under the lip, about two inches and a quarter long by an inch and a half in width, their ground colour a clear yellowish orange richly spotted with deep brown, reddish-brown blotches, especially in the middle where the spots are larger and fewer. PETALS oblong lanceolate, very wavy, acute, an inch and three-quarters long by three quarters of an inch in breadth, turned back at the point, of the same colour with the sepals, but with fewer and smaller spots, assuming the form of broken bands. LIP white, very fleshy, with a few

[illegible] and here and an extremely deep purple [illegible] flower in *Cyrtochilum* [illegible] united to the column at the base rather prominent [illegible] each side with excessively thick dilated margins their anterior angle extended on each side into a long [illegible] whose [illegible] meet at the base in a broad fleshy tubercle standing at the base of the epichilium, and [illegible] the upper half (*epichilium*) ovate, channelled, obsoletely 3-toothed, slightly articulated with the [illegible] (*[illegible]*) plano-convex, with the margin so little widened upwards that the two edges are almost parallel [illegible] dotted with crimson.

I am gratified by being allowed to name this superb plant in compliment to the Noble Duke in whose unrivalled collection at Chatsworth it first flowered. The success with which epiphytes are here cultivated by Mr Paxton is wonderful, and the climate in which they [illegible] so hot and damp that the plants can only be seen with [illegible] as if one had to visit them in an Indian jungle, is as mild and delightful as that of Madeira. As to luxuriance of growth, never have they been seen in their native woods in such perfect beauty. It, therefore, affords me no little satisfaction to be enabled, by the permission of his Grace the Duke of Devonshire, to publish the following account of the management of Orchidaceae at Chatsworth, drawn up by Mr Paxton himself.

The following statement [illegible]

[illegible]



*Burlingtonia venusta.*

PLATE II

# BURLINGTONIA VENUSTA.

**Burlingtonia venusta,** *Botanical Register under plate* 1927

THE lovely flower as represented only known from a drawing made in Brazil by Mons. J. Th. Descourtilz, and forming part of a manuscript description, with figures of Orchidaceous plants, now the property of M. le Baron Benjamin Delessert. As I have the permission of my friend proceed to describe such as are most remarkable in this collection, I shall have frequent occasion to avail myself of its materials, in illustration of the present work.

There is no description of Burlingtonia venusta among M. Descourtilz's manuscripts, which terminate at the very plate which precedes this; nothing therefore is known of its habits, or of the part of Brazil in which it was found. It is, however, so much like another plant with a somewhat different assemblage of which a more serious account occurs in the same work, under the title of "Epidendrum sandoliflorum," and which I have formerly described as Burlingtonia fragrans, because of its leaves being more obtuse, its racemes of flowers erect not pendulous, its blossoms always half closed with the labellum standing at the back, and the lobe ears at the end of the column almost obliterated, that an account of the one, these differences being kept in mind, will nearly answer for the other.

M. Descourtilz's figures and descriptions of Burlingtonia fragrans to the following effect. The roots are long, brown, and wrapped in numerous dry scales out of which spring the assemblage of bulbs, which are flattened, much compressed and each terminated by a succulent stalk or leaf; the outer is straight, shorter, green, veinless, thick and brittle, and round at the point with a notch. The flower-stem is radical, taper, erect or reflexed, of a greenish yellow, zigzag, and furnished with a bract at each bend; the flowers grow in racemes, and are always half closed. The sepals are white, lanceolate, tinged externally with rose-blue (*violet blue*); the double one is affixed at the point of the column to the lip, the lower, the upper sepal, and in a deep at the base a triangular cavity into which the spur of the lip is inserted. The petals are broader, as white as snow, and parallel with the column. The lip is larger than the other parts of the flower, narrow and prolonged into a short spur at the base, where it swells, broad from side, heart shape at the upper end, and affixed as it were about the middle; its colour is pure white, but at the narrow part in the centre there is a round golden yellow spot which is wide, and terminated in front by three points, and has at the margin two small horns, within which are inserted the horns of the column. The column is shaped upwards, prolonged on each side of the stigma into a short flat horn, about half as long as the lip, with two deep purple coloured ears on a yellow ground at the base of the column. The anther stands upon the end of the column, is hemispherical, and divided internally into two cells by a perpendicular partition, at the apex of which is a small yellow [illegible] which [illegible] two deep yellow pollen masses.

This beautiful species is remarkable for the delicious odour which its flowers exhale, of Jonquil or Tuberose. We found it growing among the [illegible] branches of the [illegible] in the districts of Mirecoagua and Mapa, near the city of Bom Jesus de Banana, blossoming in October.

Dendrobium nobile.

PLATE III

# DENDROBIUM NOBILE.

**Dendrobium nobile,** *Gen. et sp. Orch. p.* 80.

THE first knowledge that we had of this charming plant was from a Chinese drawing in the library of the Horticultural Society, and from that drawing, made in China under the eye of Mr Reeves, the short character above referred to was taken. A live plant brought home by Mr Reeves was presented to Messrs. Loddiges, with whom it flowered for the first time, apparently in great vigour, in February 1837.

Dendrobium is one of the handsomest of the Asiatic genera of this order, and I think D. nobile must be considered the handsomest of all Dendrobia. Its very stems are so bright and transparent that they form a beautiful object, and the effect of the bright green stems on the leaf-sheaths is seen through the semitransparent skin is very striking. The flowers are a rivalled for delicacy of texture, and gracefulness of form, at first nodding as if their slender stalks were unable to sustain their weight, and then, as they distend, the ample folds, assuming a horizontal position, with the two trumpet-shaped lip forming an apparently solid centre, they seem purposely to raise themselves to the closest view of the beholder.

This species is most nearly allied to D. moniliforme, figured in the Botanical Register t. 1334, from which it differs in having a downy lip with a rounded terminal lobe, and much more obtuse and larger petals.

It is not known in what part of China this species is found wild. Mr Reeves bought it in the market at Macao.

STEMS erect, clustered, light green, a foot and more high, rather compressed, with deeply furrowed joints about three-quarters of an inch long. LEAVES rather distichous, narrow oblong, obliquely emarginate, fleshy, flat, obtuse, with thin semi transparent sheaths, which quite surround the stem at the base, and permanently clothe it when the leaves themselves have dropped off. PEDUNCLES ascending, 2-3-flowered, bursting through the leaf-sheaths at their back, about two inches long, with short, membranous acuminate bracts at the base of the peduncles. FLOWERS when in bud nodding, when expanded horizontal, quite spread open, two inches and three-quarters across. SEPALS broadly linear, nearly equal, obtuse, the lateral a very little lengthened at the base, pale greenish yellow, tipped with rich bright purple. PETALS oblong, obtuse, rather wavy, very delicate and transparent, the same colour as the sepals. LIP rolled up, very slightly unguiculate, downy both inside and outside, in form obovate, with a deep notch on each side, separating it into two obscure lobes, of which the lateral are crisped at the edge, the centre one very broad, obscurely cuspidate, in colour deep blood-red at the base, pale greenish yellow at the edges and disk, tinged with purple at the end; a near downy space passes upwards along the centre from the ungues till it loses itself on the disk.

*Cymbidium gigantium*

PLATE IV

# CYMBIDIUM GIGANTEUM.

**Cymbidium giganteum,** *Wallich's Catalogue, no. 7355. Gen. et sp. Orch. p.* **163.**

THIS is the most striking of all the plants belonging to the true genus Cymbidium, and was well named "the gigantic" when compared with other known species. It is a native of Nepal, and Kemaon where it was discovered by Dr Wallich in the year 1821. The accompanying plate has been prepared after a drawing made at the time of its discovery, and liberally placed at my disposal for publication by the Honourable Court of Directors of the East India Company. The plant itself may be soon expected in our gardens, if indeed it does not already exist there.

It will be observed that the spike of flowers is erect in the drawing, and it appears from the dried specimens distributed by the East India Company that this is the natural position. Otherwise, as the lip stands above the column, it might have been supposed that the flowers were pendulous, as in Cymbidium aloifolium and others.

LEAVES upwards of two feet long, 7-nerved, narrow strap-shaped, thick and tough, dilated at the base, where they are pale, strongly ribbed, and closely imbricated in a distichous manner; these bases remain permanently after the leaves have dropped off them, and form a hard flattened crown to the simple, creeping roots of the plant, eventually they split into fragments, and become coarse ragged membranes. SCAPE erect, closely covered at the base with loose imbricated striated scales, changing into a spike about a foot long. BRACTS short, ovate, acute scales. OVARIES an inch and half long. FLOWERS rather closed, dull purple, tessellated, very large for the genus. SEPALS oblong, acute, erect, an inch and half long, many veined, nearly equal, the two lateral uppermost. PETALS linear-lanceolate, acute, spreading, rather shorter than the sepals. LIP oblong, upper half at the base, where it adheres to the column, complicated, 3-lobed; the lateral lobes entire, but narrow, the intermediate crisped, ciliated; the disk with two converging elevated lamellæ, enclosing a line of hairs that reach to the point of the lip, and bordered by two distant hairy lines on each side. COLUMN semiterete, edged, smooth, with a terminal anther, which adheres firmly to the back and hardly opens in front.


1. Cattleya bicolor, 2. Sophronitis grandiflora.

PLATE V.—FIG. 1.

# CATTLEYA BICOLOR.

**Cattleya bicolor,** ***Botanical Register, plate*** **1919** ***in the letter-press.***
**Epidendre bicolore,** ***Descourtilz's drawings, pl.*** **49,** ***p.*** **105.**

A very distinct Brazilian species of this charming genus. It is for the present only known from the drawings of M. Descourtilz, who speaks of it as follows:

"This beautiful plant grows at a great elevation on the trunks and branches of the largest trees, where it sometimes forms a ponderous tuft. I have only found it in the neighbourhood of Bom Jesus, Bahama. Its flowers endures for a great while, opens in the month of April, and exhales the sweet smell of the garden pink.

RHIZOMA reddish, cylindrical, articulated, with short ringed segments, which put forth thick white, shining, cylindrical or very simple roots. STEMS radical, often pendulous, from two to three feet long, green, simple, covered completely with sheaths which are long, dry, alternate, finely striated, of a [illegible] silver-grey colour at the extremities of its summit two leaves, which are alternate, lanceolate, obtuse, very thick, veiniess, of a glaucous or bluish green. FLOWER-STALKS proceeding from a compressed, brown, green or purple spathe at the summit of the common peduncle pale green. FLOWER very large, half-expanded. SEPALS greenish brown, purple or reddish-brown, shining, striated lengthwise; the upper oval-lanceolate, pointed, convex, the lower ascending and of a similar form. PETALS thinner, spathulate, crisp, of the same reddish-brown colour as the sepals. LIP narrow, channelled at its base, which is pure white, forming a tube which extends as far as the middle of the disk, where it is dotted longitudinally with purple; at the level where this white tube terminates the disk enlarges, and forms a round plate of a bright violet, turned downwards and regularly crenellated at the edges. COLUMN very thick, broad, convex above, flat or a little concave beneath, clear white, striated, lengthwise with yellow at the base. STIGMA heart-shaped, acute at the point. POLLEN-MASSES four, yellow, lenticular, compressed, inserted laterally on a curved, gelatinous thread and lodging in four cells of the anther, which is simply white and convex.

PLATE V. FIG. 2

# SOPHRONITIS GRANDIFLORA.

**Cattleya coccinea,** ***Botanical Register, folio*** **1919,** ***in the letter-press.***
**Epidendre poncean,** ***Descourtitz's drawings, pl.*** **10,** ***p.*** **27.**

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A most brilliant little epiphyte, found in Brazil by M. Descourtiz, upon the high mountains that separate the district of Barnaud from that of Rio Grande. It grows there in abundance upon fallen and decaying trees, its scentless flowers appear in June.

At first I took it for a species of Cattleya, of which it has all the habit, but upon a more attentive examination of M. Descourtitz's description and figure, I have satisfied myself that it is a distinct genus, differing from Cattleya in having right pod-masses, a pseudo-bulb rather thicker and shorter, the leaves to grow on it, and no spathaceous bract within which the flowers are engendered. In the manner of pod-masses it agrees with Laelia, but but gives a very different habit, its resupinate flowers, pseudo-bulbs, and long equitant spathaceous bracts. The original species of Sophronitis agrees with this in colour, habit and many other particulars, but it has the petals smaller, not longer than the sepals, a circumstance that seems to point to a different order of development. I am however, upon the whole disposed to agree with Mr. Bateman in referring this to the genus Sophronitis.

M. Descourtitz describes the plant as follows:

Roots entwisted together, long, flexuose, pearl-white, exserted at the base of a short pseudo-bulb, which is not unlike the Polypodium called Isis, having on the upper part flattened, long, rather obtuse, which are smooth but not shining, and often enveloped in a dry, wrinkled greyish violet sheath. LEAF solitary, terminal, thick, firm, tongue shaped, pointed, channelled at the base. PEDUNCLE simple, cylindrical, twisted, bright green, having at its base a broad short bract, and at its upper end two smaller opposite bracts which form a bifurcation from their axil springs a fusiform violet ovary, terminated by a broad fully expanded flower. FLOWER with all its parts of a bright vermilion, red, or orange; the sepals narrow, ovate; the petals much broader, forming lateral wings, all streaked with deep red longitudinal lines, and having a satiny violet cast externally. LIP something like the standard of a leguminous plant inverted, clear yellow, with a broad crest of mucronated border and a deep orange yellow and the same colour circular at the base, slightly 3-lobed, with the middle division ovate, obtuse, and much shorter than the sepals. There are many varieties passing from yellow orange to the deepest cinnabar-red, but in all of them the exterior of the flower is covered with numerous streaks or veins. COLUMN short, triangular, having two lateral wings of a pink or white, bordered by bright crimson. ANTHER convex, greenish, divided into two [illegible] POLLEN [illegible] hooked at their upper end [illegible] arranged in two rows.

*Brassia macrostachya.*

PLATE VI

# BRASSIA MACROSTACHYA.

**B. *macrostachya*; pseudobulbis compressis margine obtusis 2-3-phyllis, foliis angulato-oblongis striatis acuptis acutis, scapo nutante multiflora, sepalis linearibus acuminatis lateralibus longissimis, labello oblongo-lanceolato acuminato petalis longiore.**

No species of the genus Brassia hitherto discovered can be compared for beauty with its most graceful and brilliant plant, whose long nodding racemes of flowers wind gently over the rich and verdant foliage, while the slender petals are so long, so slight, and so delicate as to be agitated by every impulse given them by the air.

Messrs. Loddiges imported it from Demerara, and the accompanying drawing has been lying in my portfolio since October 1838, when the flowers were first seen. The only species with which it is necessary to compare it is B. caudata, figured in the *Botanical Register*, t. 832, which differs in the following particulars. Its pseudobulbs are acute at the margin, not obtuse as is represented by the sections at the lower right-hand corner of the plate; its flowers are smaller, greener, and much more mottled with deep brown; and its labellum is ovate, acuminate, and the same length as the petals, instead of being oblong-lanceolate and longer than the petals.

If it were proposed to combine Odontoglossum with Brassia it would be difficult to point out any great difference to justify so. Their principal distinct is consists in the sepals and petals of Odontoglossum being acuminate, and in column winged, or bordered by a thin margin. In habit they are very similar, and if the genus has not been proposed by M. Kunth, it may be doubted whether it would be now distinguished.

A vigorous growing plant, but not deep green, epiphyte. Pseudobulbs oblong, between four and five inches long, compressed binot and rather extended at the base springing from the axis of green, carinate, striated scales, the uppermost of which have a foliaceous lamina. Leaves two or three on each pseudobulb, oblong-lanceolate, about eight inches long and one and a half wide, more sometimes tumid at the base. Scape radical, a foot and a half long, greenish, nutant, terminal, nodding, covered with flowers almost from the base. Bracts ovate, scale-like, much shorter than the ovary. Sepals linear, acuminate, spreading, pale yellow, with a very few spots of crimson, the upper about two inches long, the lower hanging down, and six being long. Petals the same form and colour as the sepals, curving inwards till the tips cross each other, rather more than an inch long. Labellum rather more than two inches long, pale cream-colour, oblong-lanceolate, acute, crisp at the edge, with a few crimson spots at the base, where it is furnished with two elevated downy lamellæ in front of which stand three horns, the lateral of which are erect and rather recurved, the middle one much smaller and projecting forward.

*Coryrtochilum stellatum*

PLATE VII

# CYRTOCHILUM STELLATUM.

C. *stellatum;* pseudobulbis diphyllis ovalibus compressis striatis inter squamas lanceolatas carinatas axillaribus, foliis ligulatis obtusis avenis scapo multo brevioribus, scapo tereti erecto basi vaginato, racemo disticho multiflaro, bracteis carinatis convolutis acuminatis glumaceis ovario longioribus, sepalis petalisque lineari-obovatis acutis stellatis, labello oblongo undulato acuto basi canaliculato striato, alis costarum acuminiformibus integerrimis.

Epidendre étoilée. *Descourtilz drawings, plate* 37 *p.* 81

This noble species of the genus Cyrtochilum is nearly related to C. flavescens of the *Botanical Register*, t. 1627, differing in its much larger flowers, the sepals of which are by no means acuminated, but only drawn to a sharp point, in the greater breadth of the pseudo-bulbs, in its stature being four times as great, and in the labellum being white instead of yellow. The following is the accompanying account of the plant by M. Descourtilz in his manuscript work on the Orchidaceæ of Brazil.

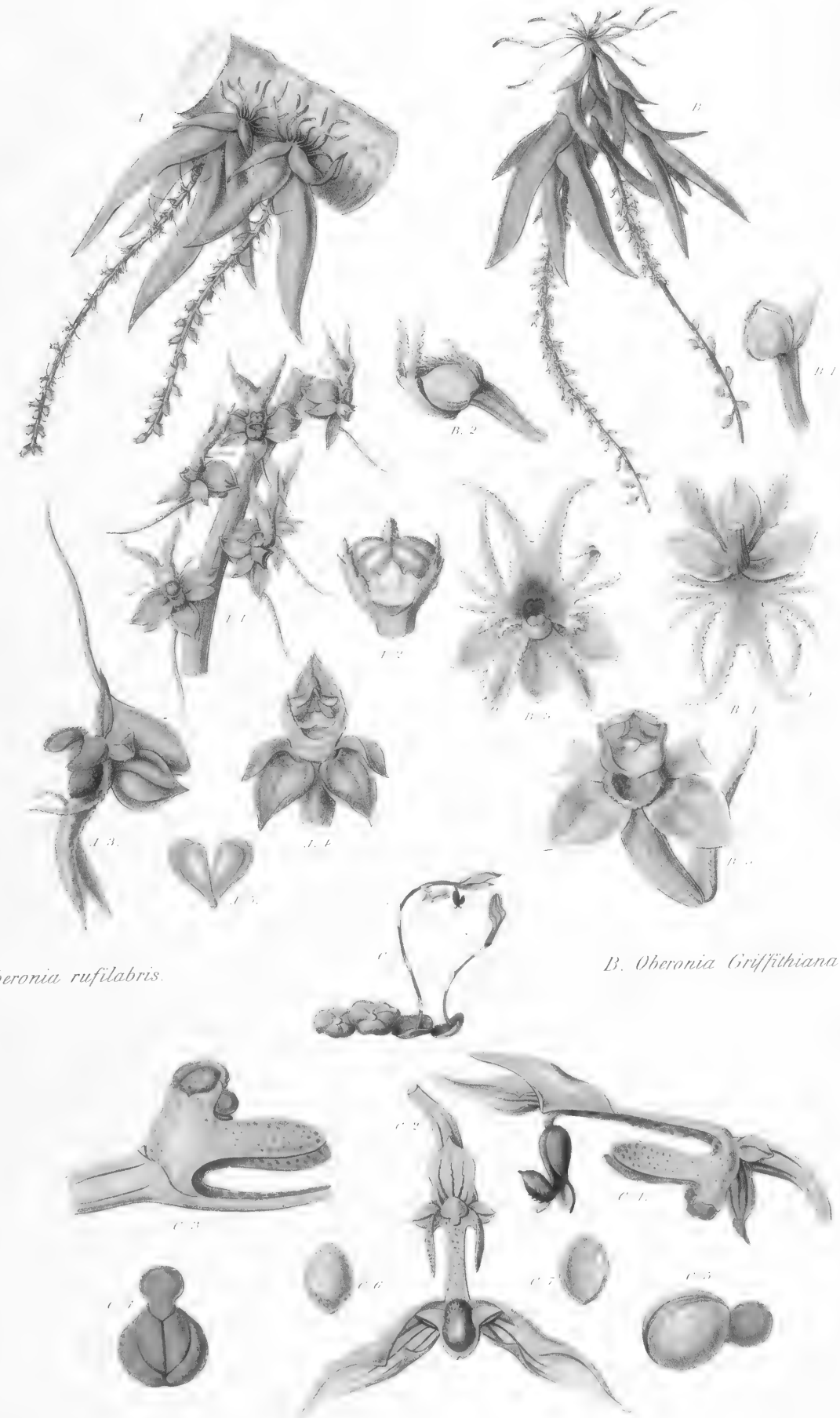
"This magnificent species is dispersed through the districts of Macahé and Bonanal. It flowers in September and remains in that state till the end of January. It diffuses but a weak perfume, but the beautiful spikes, which seen at a distance make it resemble a mass of verdure strewed with large stars, render it a most remarkable object.

RHIZOMA very thick, cylindrical, whitish, sinuous, provided at its lower part with numerous cylindrical succulent roots, which fix themselves upon the bark of the tallest trees over which it spreads to the extent of many feet. PSEUDO-BULBS oval, slightly compressed, bright green, surrounded at the base with violet scales, each giving rise to two ribbon-shaped LEAVES, which are obtuse, channelled, compressed at their insertion, of a pure and brilliant green above, yellowish green below, moderately thick and not veiny. From among the dilated leaves proceeds a SCAPE, often more feet long, cylindrical, slender, whitish violet, jointed and furnished at each bend with a narrow very long sharp-pointed bract, which is acute, hollowed out, violet and transparent. FLOWERS very large, spreading open, spiked in two opposite rows, placed upon dull green signoid ovaries, proceeding from the axil of the bracts, which spread from the spike and almost entirely enclose them. SEPALS three, spathulate, very acute, with a midrib long as an furrow, straw or lemon-coloured. PETALS of the same colour, broader and rather obtuse. LABELLUM, wedge-shaped, pointed, wedged at the base, crisped at the edge, and enclosing with the column snow white, but marked internally at the base with longitudinal streaks of a yellowish orange colour. COLUMN straight, short, of an ivory whiteness, winged on each side at the apex, the outer edge of the wings curved, the inner bounded by a deep carmine line, otherwise straight yellow, streaked with transverse blood-coloured lines. ANTHER convex, white. POLLEN-MASSES ovate, pale yellow, attached to an oblong carmine gland."

The genus Cyrtochilum was originally proposed by M. Kunth in Humboldt and Bonpland's Nova Genera et Species Plantarum as distinguished from Oncidium by its convex lip, in allusion to which the name was formed. This character is however by no means sufficient to limit any group of species of which I have knowledge, and consequently, in admitting Cyrtochilum into the systematic arrangement of the order, I have found it necessary to alter its definition, and to allow it

to comprehend such Orchidaceæ as would have been referred to Oncidium if they had had a lobed anterior. In this view of the character, the genus becomes little more than an artificial dismemberment of Oncidium, and I am by no means sure that can be preserved in its present state, especially as many of the species have all the habit of Oncidium proper. It is however impossible to form any fixed opinion upon the subject in the present state of our information and therefore I abstain upon this occasion from doing more than describing the present very remarkable species, whose large spathaceous bracts possibly afford a surer character for a genus than any thing in the flower itself.

Cyrtochilum parishiana and axiodes ought rather to be referred to Odontoglossum along with Cyrtochilum volubile of Poppig.



A. Oberonia rufilabris.

B. Oberonia Griffithiana.

C. Dendrobium picta.

Plate VII

A

# OBERONIA RUFILABRIS.

**O. *rufilabris*,** foliis subfalcatis acutis, spicâ sub-verticillatâ completâ, bracteis ovatis aristatis floribus duplò longioribus, petalis lineari-lanceolatis acutis integerrimis, labello trilobo basi tuberculato sepalis longiore laciniis lateralibus setaceis intermedia oblongâ apiculatâ lobis acutis divergentibus.

Although it is not intended in this work to make a practice of figuring, among plants which are interesting only for their curious structure, yet the extremely remarkable forms of some species render them even more worthy of illustration than the more striking plants for which these plates are chiefly destined. Such a case is the present, where a page is occupied by figures of three microscopic Orchidaceæ, each of which is still more strangely fashioned from the other, and all so different from other plants that one might almost doubt their even belonging to the vegetable world. If the Brahmins had seen botanists, one might have fancied they took their doctrine of metempsychosis from these productions; or the ancient Chinese and Peripatetic Pythagoras would have found a living evidence of animals transmuted into plants.

The genus Oberonia consists principally of small fleshy-leaved epiphytes, inhabiting the branches of trees in the woods of India and having the habit of flowers. Fourteen species have been described, of which one only, and that the least interesting, Oberonia Cordata, has been seen alive in Europe. The resemblances to insects and other animal forms which have been perceived in the Orchidaceous plants of Europe, and which have given rise to such names as Fly Orchis, Bee Orchis, Man Orchis, Butterfly Orchis, and Lizard Orchis, may be traced still more in the genus Oberonia in every species, that alone would furnish a magazine of new ideas for the grotesque pencil of a German admirer of the wild and preternatural.

The two species now figured were discovered in the Burmese empire by Mr Griffith, a botanist of great reputation, from whose indefatigable zeal and exertions the greatest discoveries may be expected in the Flora of the British possessions in India. The plates have been prepared from sketches made by Mr Griffith himself on the spot, and since compared with dried specimens collected at the same time.

Oberonia rufilabris is an epiphytic stemless plant, hanging down from the branches on which it grows, and to which the roots cling by its slender thread-like roots. The leaves are arranged at the lower part in whorls, but in irregular succession, alternately along a slender simple axis, at the base of which they open first. Each flower is subtended by a thin transparent ovate BRACT, which is lengthened at the point into a very long soft transparent bristle. The SEPALS are three, ovate, acute, and spread, slightly mottled with dark red; they are of the same size, and rather longer than the PETALS; the latter are linear-lanceolate, and quite entire. The LABELLUM stands at the back of the flowers as they hang, is of a bright red colour, and firm fleshy consistence; at its base it has a large granulated tubercle or gorge, which presses upwards against the column; near the base on each side is a slender setaceous lobe; the apex is spatulate, with curved overlapping edges. The COLUMN is very short, incurved, with the anterior angles of the clinandrium lobed, red, and crystalline; there is a bright ovate gland at the apex of the stigma, but it does not appear that the pollen-masses, which are four in two pairs, ever attach themselves to it.

This species is very nearly allied to Oberonia anthropophora, which is also a Burmese plant. That species is caulescent, nor stemless, has no tubercle at the base of its lip, has the round e cobes of that organ more scarcerous, and the lateral lobes broad, short and half ovate; the spike is evanescent at the point and finally the bracts are not so long, as the flowers.

A represents this plant of its natural size. A 1 is a highly magnified view of one of the spike, with half a dozen flowers adhering to it at a part where they are not vertic ate. A 2, represents the column very highly magnified, with the stigmatic gland in front and the anther which is crested, lying quietly at its back. A 3, is a profile of a flower, showing the long ovate-pointed ovary, the column with the anther raised up, and the great gorge at the neck of the labellum. A 4 shows the front of a full-blown flower from which the labellum has been cut off, the anther raised up, the pollen-masses lying below it, and the stigmatic gland withered up. A 5, represents the two parts of pollen-masses.

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B.

# OBERONIA GRIFFITHIANA.

O. *Griffithiana;* subcaulescens, foliis linearibus subfalcatis apiculatis, spicâ subverticillatâ apice evanescente, bracteis ovato-lanceolatis serrulatis floribus longitudine, sepalis ovatis acutis, petalis obovatis obtusis aceris glandulosis, labello cordato basi saccato apice bipartito utrinque multifido margine scabro, columnâ antice excavatâ.

This singular plant wants altogether the bri ant colouring of the last, but its form is not less extraordinary. Figures B 3 and 4, represent this so perfectly that I may safely leave the imagination of the reader to discover with what it can be most justly compared.

The HABIT of Oberonia Griffithiana is very much that of the last species, but the stem is more evident. The arrangement of the FLOWERS is also the same. The BRACTS are ovate-lanceolate acuminate, minutely notched at the edge, and not longer than the flower. The SEPALS are like those of O. anthropophora but more angry. The PETALS are a dull greenish brown, obtuse as long as the sepals and not so broad; the margin is a number of coarse processes, but covered with fleshy warts which give them the appearance of some shaggy edge. The LABELLUM is of the same colour as the petals, except that it has more purple at the base, its edge and surface are rough, with little raised papillae, and it is deeply divided into a number of finger-like lobes, of which the two central ones are the largest, and there are about five smaller ones gradually diminishing to the base on each side. The front of the COLUMN is so singularly excavated into a sort of trough, the inferior edge of which the labellum is joined. The pollen-masses in this and some other species have been determined by Mr. Griffith to be four in number, as in B 5.

Fig. 5 represents this species of the natural size. B 1 is a young flower-bud nearly to expand. B 2, is the same in a more advanced state with the labellum just beginning to unfold, two of its lobes stand out in front of the other pair like a pair of horns. B 3 and 4, are highly magnified views of

the back (4) and front (3) of a full-blown flower. B 5. exhibits a part of the front of a flower still more magnified together with a bract; the labellum and the points of the petals are cut away, and the cup-shaped base of the column is seen below the stigmatic surface.

To these two new species of Oberonia, and the 14 previously known, I have the following to add.

O. *anceps*, caule elongato anceps, foliis distichis ovatis incurvis obtusis densè imbricatis, spicâ cylindraceâ densissimè imbricatâ, bracteis subrotundo-ovatis erosis, sepalis [illegible] petalis oblongo-lanceolatis serrulatis, labello truncato subquadrato obscurè 4-lobo, laciniis subæqualibus acutis. Burmese empire (No. 1097) Mr. Griffith, a plant with the foliage of Aporum anceps.

O. *brachystachys*, acaulis, foliis oblongis obtusis apiculatis rectis racemis subæqualibus, spicâ densâ vertice ratâ, verticillis multifloris, bracteis ovatis acutis floribus brevioribus, sepalis ovatis obtusiusculis, petalis obovatis serrulatis, labello cordato trilobato, laciniis cuneatis subæqualibus apice serrulatis. — Burmese empire (Nos. 697 and 778) Mr. Griffith.

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C

# DRYMODA.

**Perianthium valdè inæquale et irregulare. Sepalum supremum erectum, liberum, lateralia postica, cum pede longissimo columnæ connata, suborbicularia acuminata, sessilia, supremo pluriès majora. Petala nana, libera. Labellum cum pede columnæ articulatum, trilobum, convexum, lobo medio deflexo. Columna nuda, semiteres, auriculâ longâ petaloideâ utrinque porrectâ, basi in pedem longissimum linearem canaliculatum elongata. Anthera terminalis, opercularis, cristata, bilocularis. Pollinia 4, accumbentia, glandulæ globosæ carnosæ granosæ separandi adnascentia. — Herba minuta, epiphyta, pseudobulbosa, (aphylla?) scapis radicalibus vaginatis unifloris.**

Drymoda *picta*.

The only knowledge I have of this most curious plant is from a sketch made by Mr. Griffith, from specimens discovered by him in February 1835, at Mergui, in the Burmese empire. It is so entirely different from any other Orchidaceæ with which I am acquainted, that I am unable even to name a genus with which it may be compared. In the structure of the stigmatic glands or anthera it is so peculiar that Mr. Griffith considers the plant situated on the confines of Epidendreæ and Vandeæ.

I have seen no specimen, and it is not worth attempting to describe the plant from the sketches in my possession; those parts which are copied in the accompanying plate sufficiently illustrate the genus. C. is a view of the whole plant in flower: no leaves are represented in Mr. Griffith's drawings, and I presume the plant has nothing but little lenticular angular pseudo-bulbs. It will be seen that the flower is inverted, that is, that the labellum is uppermost, and between the two erect lateral sepals. C 1. shews the flower in its natural position, much magnified: the column with its two long petal-like arms is uppermost, and the long foot of the column stands over it, bearing at the apex a pair of pink and white lateral sepals, between which hangs down the deep red, fleshy, hairy labellum. C 2, represents the same flower in the position which is most frequent in plants of this order: the back sepal and the petals are brought distinctly into view, and the upper part of the labellum is seen standing between two red and yellow arms formed by the lateral sepals. C 3, is a highly magnified profile view of the column with its two petaloid arms, and just above them appears a round large yellow stigmatic gland standing in front of the anther. C 4. are the four pollen-masses seen from below, together with the large stigmatic gland to which they adhere. This gland is stated by Mr. Griffith to be opaque, elevated, round, always separating with the pollen masses, which, especially the inner, adhere to it very firmly; it is composed of soft granulous matter and is easily broken down. C 5, is a profile view of the same parts. C 6. is an exterior view of an outer pollen mass. C 7, is an interior view of the same.

*Calanthe brevicornu*

PLATE IX.

# CALANTHE BREVICORNU.

**Calanthe brevicornu.** *Genera & Species of Orchid. plants, p.* 251.

As yet we know little of the Gardens of the beauty of this extensive Indian genus, for neither of the two species we possess is calculated to convey an idea of the striking appearance of some of the kinds. C. purpurea and Masuca have flowers of the most delicate hue, in C. emarginata and sylvatica they are mauve and purple, in C. speciosa orange-coloured, and in the species now represented stained and neatly striped with brownish red.

C. brevicornu is a native of Nepal, where it was found by Dr Wallich in the year 1821. From a drawing executed under the direction of that celebrated Botanist, the accompanying figure has been prepared by permission of the Honourable Court of Directors of the East India Company.

It varies in height from nine inches to one foot and a half, and produces broad, deep green, smooth, plaited LEAVES, which gradually taper off into a short-sheathing foliaceous stalk, surrounded externally by several sheathing scales. The SCAPE is about the same height as the leaves, smooth, solid, and with a few distant scales. The FLOWERS are racemose and generally arranged on one side of the scape, and are subtended by ovate-lanceolate, slightly downy bracts, rather longer than the pedicels. The OVARY is taper, clavate, and downy. The SEPALS and PETALS are linear-lanceolate, spreading, nearly equal, and of a bright light red. The LABELLUM, which is three-lobed, is not very much united with the column, and has a very short smooth spur; its lateral lobes are acute and much smaller than the middle one, which is obovate, and emarginate with two deep vertical plates, running down the middle towards the spur, and concealing a third, which is smaller, but rather longer; its colour is white, with a few reddish spots at the base. The fruit is an oblong triangular capsule, opening at the angles into three valves.

Up to the present time we can scarcely be said to possess more than two Calanthes in the gardens of this country, one the stately snow-white C. veratrifolia, and the other C. masuca. Two others well worth obtaining have been imported into Flanders and Holland, with flowers much like the kind of which I was three years ago favoured by M. Auguste Mechelynck, a distinguished amateur of rare plants at Ghent. I presume they are natives of Java, where many species exist, but they have not been noticed by Dr Blume. One of these is called Ambigott's flava, but not the species so named by the learned Botanist just mentioned, has large yellow flowers, upper coloured on the outside, in which account it may be called *Calanthe bicolor*. The other resembles C. brevicornu in the size of its flowers and its manner of growth, but has a snow white labellum, and deep chocolate brown sepals and petals, the Belgian gardeners call it C. tricolor, but as it does not appear now the same applies I take the liberty of changing it to that of C. *discolor*.

The following technical characters will enable botanists to recognise these two species.

C. *bicolor*, racemis laxis pubescentibus, sepalis petalis linearibus, labelli columna omnino inserta, lobis sequalibus, intermedio cuneato apiculato, stamine ad basin convexo pubescente bicornuto, calcare tenuissimo, ovario hirsuto.

C. *discolor* racemis laxis, subsecundis, sepalis petalis linearibus, labelli columna omnino inserta, lobis pubescentibus, stamine ad totam circumferentiam bilobo 3-carinato, carinis pubescentibus, aequalibus, calcare.

*Schomburgkia crispa.*

PLATE X.

# SCHOMBURGKIA CRISPA.

## SCHOMBURGKIA

**Sepala et petala conformia, patentia, omninò libera, basi æqualia. Labellum difforme, membranaceum, trilobum, cucullatum, basi cum margine columnæ connatum, supra basin tumidum (intrusum), venis lamellatis. Columna marginata. Pollinia octo.——Rhizoma repens, nudum, annulatum, pseudobulbigerum. Folia coriacea. Scapi terminales vaginati. Bracteæ spathaceæ. Flores speciosi, racemosi, congesti.**

**S. *crispa*, petalis sepalis labellique lobo medio transverso obtuso crispis.**

This very handsome genus seems at present to be confined to British Guayana, where two species have been discovered by the zealous naturalist Mr Schomburgk, after whom they are named.

Schomburgkia is nearly allied to Epidendrum, from which it is distinguished by its large spathaceous bracts, by its membranous labellum adhering to the column only at the base, and having below the middle a distinctly marked prominence, which corresponds with an impression on the under side, and by having eight pollen-masses. In the latter character I trust to a drawing sent home by Mr. Schomburgk, none of the specimens of either species being in a state to shew the structure of the anther.

Schomburgkia crispa inhabits the interior of British Guayana, it was first met with on the banks of the Corentyn, but occurred more frequently afterwards near the river Berbice.

The accompanying figure has been prepared from a drawing sent home by Mr Schomburgk and corrected from dried specimens in my herbarium.

It has a stout round RHIZOMA, closely marked with annular scars indicating the place of scales that have fallen off. The PSEUDO-BULBS are from four to six inches long, fusiform, rather angular from deep furrows, very hard, and covered closely for some time with firm, brownish, membranous, sheathing, sharp-pointed scales. Each pseudo-bulb bears two lanceolate, coriaceous, acute LEAVES, about nine inches long by two and a quarter broad. The SCAPE is terminal, erect, nearly three feet long, hard, stiff, completely covered with pale brown, dry, closely pressed, acuminate scales, carinate at the apex and gradually passing into spathaceous, spreading BRACTS, which are much narrower than the scales of the stem, brown, dry, spreading, about two inches long, but shorter than the ovary. FLOWERS in a dense terminal racemo, spreading, about two and a half inches in diameter. Their stalks and ovary together about two inches long. SEPALS and PETALS bright light yellow, not spotted, near-oblong, acute, excessively crisped and undulated of nearly the same size, texture, and colour. LABELLUM pale, with a deeper coloured apex, membranous, a little wrapped round the column, and united to its edges at the base, oblong, 3-lobed, with a prominence below the middle, and the veins crested at the junction of the middle lobe with the side ones; side lobes nearly flat; middle lobe sessile, transverse, obtuse, very much crisped. COLUMN obovate-

much shorter. In the labellum, which is wedge margin and having three strong veins or ribs. PELEXIAS is inferior to Mr. Schomburgk's drawing, equal, equal in size.

The second species already added to has altogether the same peculiar habit, and was met with in the same country. Mr. Schomburgk states that it differs in the smaller size of the pseudobulbs, and in the sepals and petals being of *a rich crimson bordered by bright yellow!* Specimens of this, which I have received from its discoverer, enable me to give the following specific character:—

S. *marginata*. petalis sepalisque undulatis obtusis, labelli lobo medio ovato acuto plano.

Considering the facility of intercourse with Guayana it may be expected that these two noble plants, by far the finest of the order in that part of America, will not be long unknown in our gardens.

*Septotes serrulata.*

T. Saunders del. W. Hawkes lith.

Published by the Linnean Society, 1st May 1838, Lambeth Street, Whitechapel.

PLATE XI

# LEPTOTES SERRULATA.

L. *serrulata*; caule subdiphyllo, foliis glaucis maculosis, labelli lobo medio oblongo-lanceolato acuminato lateralibus rotundatis serratis.

Epidendre licorne. *Descourtilz drawings, plate* 28. *p.* 63.

This fine species is evidently distinguished from the rare Leptotes bicolor by its glaucous leaves, which often grow in pairs, by its flowers which are three or four times as large, by the labellum which is merely streaked with rays of purple, and by the auricles at its base being serrulated.

The following is a translation of M. Descourtilz's manuscript account of the species.

This charming plant is especially remarkable for the sweet odour of the Lilac which its flowers exhale. It is found in bloom, in the month of December, on the trunk of Cedrela trees, on the ancient Rocas of Brazil, where, without any signs of suffering, it survives the conflagrations that destroy so many other plants. I also found it in plenty in the district of Upper Macahé and in that of Ilha Grande, where however it is more rare.

The roots are very adroit creeping, covered with a sort of dry, smooth membrane, of a silvery whiteness, and covering a portion of the base of each leaf. The LEAVES are cylindrical, thick, succulent, fusiform, deeply channelled on the upper side, glaucous green or bluish, spotted with violet-purple, especially underneath. There is a variety with the leaves twice as long, and linear. The SCAPES are axillaries, both terminal and axillary, erect, purple, covered with acute alternate sheaths. The OVARIES are very long, erected to a drooping incline. The FLOWER BUDS are of a yellowish rose, protuberant at their base. The FLOWER is very large, stellate; the SEPALS ribbon-shaped, rather broad, and white as the petals; the PETALS narrower and thinner, of a pure white. The LABELLUM, at its base, has two short rounded auricles, otherwise it is strap-shaped, with a white centre, whence there emanate numerous lines of the most brilliant lilac, and its edges are dilated into an ovate pointed or lanceolate point of a beautiful white.

*Cyrtopodium punctatum.*

PLATE XII.

# CYRTOPODIUM PUNCTATUM.

**Cyrtopodium punctatum.** *Lindl. Genera et Species Orchid. p.* 188. *Botanical Magazine, t.* 3507.

**Epidendrum punctatum.** *Linn. Sp. Pl.* 1349. *Willd. Sp. Pl.* 4. 116.

**Herba ramosissima, caulibus et floribus maculosis.** *Plum. Plant. American. t.* 187.

Although this plant has been already figured twice before, it deserves a place in this collection, for the representations above quoted in neither case give a correct likeness of it; that in the Botanical Magazine seems to have been taken from a bleached specimen. The plant from which the annexed drawing was made was sent me from Liverpool by Richard Harrison, Esq., and about the same time I received it from Mr. Henry Shepherd who had flowered it in the Botanical Garden, Liverpool.

It is far more striking than the common *C. Andersonii*, on account of the bright, deep or moon stains with which the bracts and flowers, as well as the flower-stems, are richly variegated; and in foliage and general habit is so like it as to be readily distinguished by other botanists.

The species is extensively distributed through the tropical parts of America. I have seen specimens gathered in St. Domingo by Mr. Charles Mackenzie, and others found by Deppe and Schiede in Mexico, on basaltic rocks in Mazayo de Maulinga, in the *tierra templada*, flowering in April. Mr. Gardner found it in Brazil, whence Mr. Harrison's plant was received; and it exists in Dr. von Martius's Brazilian herbarium, under the name of *Oncidium palmophilum*, *palmis aliisque arboribus parasiticum, agris Catingas, provinciæ Bahiensis ad Rio de Contas*, no. 1965.

In STEM and LEAVES this is exactly like Cyrtopodium Andersonii. The SCAPE is from two to three feet high, round, branched above the middle, and finely dotted with dull purple, with a few membranous green scales, which are erect and sheathing near the base, and lanceolate-oblong-acuminate, reflexed, acuminate, pale yellowish green, thickly spotted and shaded with crimson. Towards and among the flowers. The FLOWERS are regularly alternate upon the simple branches of a raceme, about a foot and a half long, and nearly two inches in diameter. The SEPALS and PETALS are spread up and down, reflexed; the former are oblong-lanceolate, acuminate, nearly acute, greenish yellow, and blotched with crimson; the latter are bright yellow, of nearly the same size and form, but less undulated and rather broader, with a few crimson spots near the base. The LIP is about half an inch long, more fleshy than the other parts, shortly unguiculate, with a bright, deep, yellow ground colour, deeply tri-cleft, the two lateral lobes oblong, rounded, rather wavy, and deep crimson; the middle lobe broader, blunt, and crimson, closely dotted with the same; the disk is also spotted and shaded with yellow, and is covered with pale yellow granulations, which are collected into a circle in the centre, and are also all the dispersed over the margins. The COLUMN is gro

*Schomburgkia marginata.*

PLATE XIII

# SCHOMBURGKIA MARGINATA.

**Schomburgkia marginata.** *Supra plate 10. in the text.*

When Schomburgkia crispa was published a few months since in this work, mention was made of a second species of the genus, of which I had received specimens from Mr Schomburgk. I have since been so fortunate as to find a beautiful coloured drawing of this curious epiphyte among a small collection of figures of Surinam plants, made by direction of my friend John Henry Lance, while holding an residency in that colony. From these materials I have been allowed to prepare the accompanying figure, correct, I from specimens in my herbarium, and I think it will bear out the statement formerly made, that the two species of Schomburgkia are among the most beautiful Orchidaceæ of tropical America.

Mr. Lance has favoured me with the following memoranda concerning his plant:

This epiphyte grows abundantly near the town of Paramaribo, in Surinam, in an avenue of very fine trees of a species of Erythrina. This tree has a very rough bark, and appears particularly favourable for the growth of all sorts of epiphytical plants, the trunk and branches being frequently covered with them. It rises from 30 to 80 feet high, and is known by the name of the Coffee Mamma, from being planted among the coffee for the purposes of shade and shelter.

This epiphyte is generally found springing from the first or second fork of the tree, though it is sometimes higher. I do not recollect finding it on any other part of the colony or growing upon any other species of tree.

"I cultivated it in my garden, and it grew very tolerably on an old Mammea americana, but like many others of the same class, would not flower in a pot filled with dead wood and moss, which are I consider, but in this country we require a living tree to support it, though I have more than once seen it growing vigorously on a very large branch which had been blown down and became rotten.

The flowering stalk is so to appear about January or February, and is frequently four feet high, and when the whole of the flowers at its summit are blown, it is the largest and most imposing look in of the Orchidaceæ that I observe in Surinam.

"Species prefer a situation moderately shady, though in the dry season it is capable of standing a very intense heat, as the species of Erythrina on which it grows loses nearly the whole of its leaves at that time.

Many living plants of this species were brought to England by Mr Lance upon his return from Surinam, but although they were given to the most skilful cultivators of Orchidaceæ they all died. In general appearance they were very like what is called the "Spread Eagle Plant," of which dried specimens now exist in many collections, and it is not improbable that that plant, of whose flowers nothing is known, may be a species of Schomburgkia.

*Cymbidium elegans.*

PLATE XIV

# CYMBIDIUM ELEGANS.

**Cymbidium elegans.** *Lindl. in Wallich Cat. no. 7354. Genera et Species Orch.* 163

A native of Nepal, where it was discovered by Dr Wallich in 1821. The accompanying figure has been copied from a drawing in the possession of the Honourable Court of Directors of the East India Company, corrected from dried specimens.

This is much the finest of the Indian Cymbidiums, as is evident from the figure. At present nothing is known of its history or structure beyond what is here represented.

The LEAVES are from one and a half to two feet long, and not more than three-eighths or half an inch wide, acuminate and very obliquely emarginate at the point; in texture they are as stiff as a European Typha, and when dry have about three principal veins on each side of the midrib; at the base they come out into a broad fleshy sort of sheath. The SCAPE arises from near the base of the leaves, is about eight or nine inches long, and so loaded with flowers for half its length, that it hangs down in a pendulous manner; below the flowers it is loosely covered with long, subulated, membranaceous scales, which abruptly change into small narrow, scale-like bracts. The RACEME is from six to ten or eleven inches long, nearly cylindrical, very compactly covered with pale salmon-coloured flowers, each rather more than one inch and a half long, and greenish before they expand. The SEPALS and PETALS form a kind of inverted cone, so little do they open; they are oblong-lanceolate, and of the same figure, but the petals are the shorter and narrower. The LIP is parallel with the column, concave, straight, wedge-shaped at the base, divided at the point into three acute lobes, of which the middle one is the rounded and longest; it is of the same colour as the sepals, but little spotted with red. Along the centre there runs a double elevated line (fig. 4) which is separated near the base into two spreading lamellæ. The COLUMN is very long, very concave, and terminated with a convex plate, another, a little prolonged in front. (fig. 2. The POLLEN-MASSES are two pear-shaped, furrowed, and at the back, and planted separately upon a transversely oval gland. In this respect the present species differs somewhat from other true Cymbidia, but not sufficiently to a sort being made out of it, that I know.

*Aerides affine.*

PLATE XV

# AERIDES AFFINE.

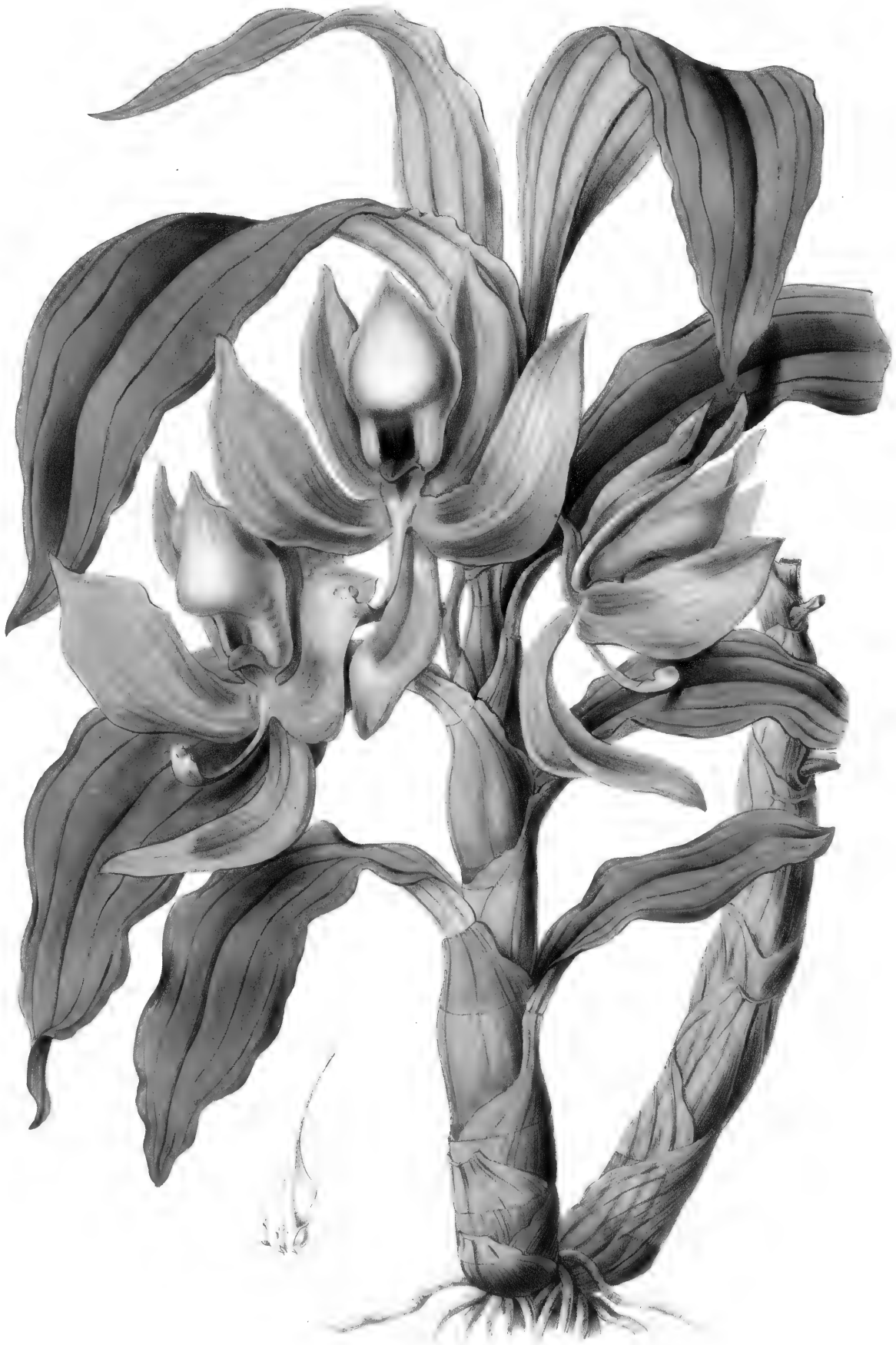
**Aerides affine** *Wallich Cat. no. 7316. Lindl. Genera et Spec. Orchid. 239.*
**A. multiflorum.** *Roxburgh Fl. Ind. 3. 473.*

This very beautiful epiphyte was first discovered by Dr. Roxburgh in Sylhet, where it grows and flowers during the hot season. That Botanist called it *Aerides multiflorum*, but as his Flora Indica had not reached England in March 1833, when the third part of the Genera and Species of Orchidaceæ was published, the name introduced into the latter work was Dr. Wallich's *A. affine*. The last mentioned Botanist met with it on the southern mountains of Nepal, near Sheopore.

The accompanying figure has been prepared from a drawing in the possession of the Honourable Court of Directors of the East India Company, assisted by dried specimens. Since it was made ready for publication the species has flowered in the collection of Messrs. Loddiges.

In its habit, leaves, and inflorescence, it is very like *Saccolabium guttatum*, but the racemes are more erect. The LEAVES are distichous, channelled, truncate and notched at the apex with a sharp mucronulate micro. The FLOWERS are scentless, deep rose-colour spotted with purple in sight, by opening right, either from racemes nearly one inch long. The PEDICELS are short and are obtuse by a small, short, vase, withering brace. The outer SEPALS are oval, obtuse, the lateral ones being shorter than the others, and the whole more fleshy than the petals. The PETALS are oblong and very obtuse. The LIP is very nearly slightly three-lobed, wavy or crisp at the edge, larger than the petals, spreading, with a curved channelled unguis, which is prolonged into a short conical spur, just below the base of the lamina, and is bordered with a rounded membranous margin. The COLUMN is very short, semicylindrical, with a long narrow reflexed, bifid rostellum. The CAPSULES are oblong, about three-quarters of an inch long, with three flat or acuminate angles, and three intermediate elevated fleshy ridges.

This is one of the finest of the East Indian Vanilloids Orchidaceæ. Unfortunately its flowers have no smell.



*Cycnoches chlorochilon.*

PLATE XVI

# CYCNOCHES CHLOROCHILON.

C. *chlorochilon*; racemo subtrifloro suberecto, sepalis ovalibus, petalis paulo majoribus falcatis, labelo subsessili obovato acuto convexo basi concavo, callo elevato transverso obtuso triangulari.

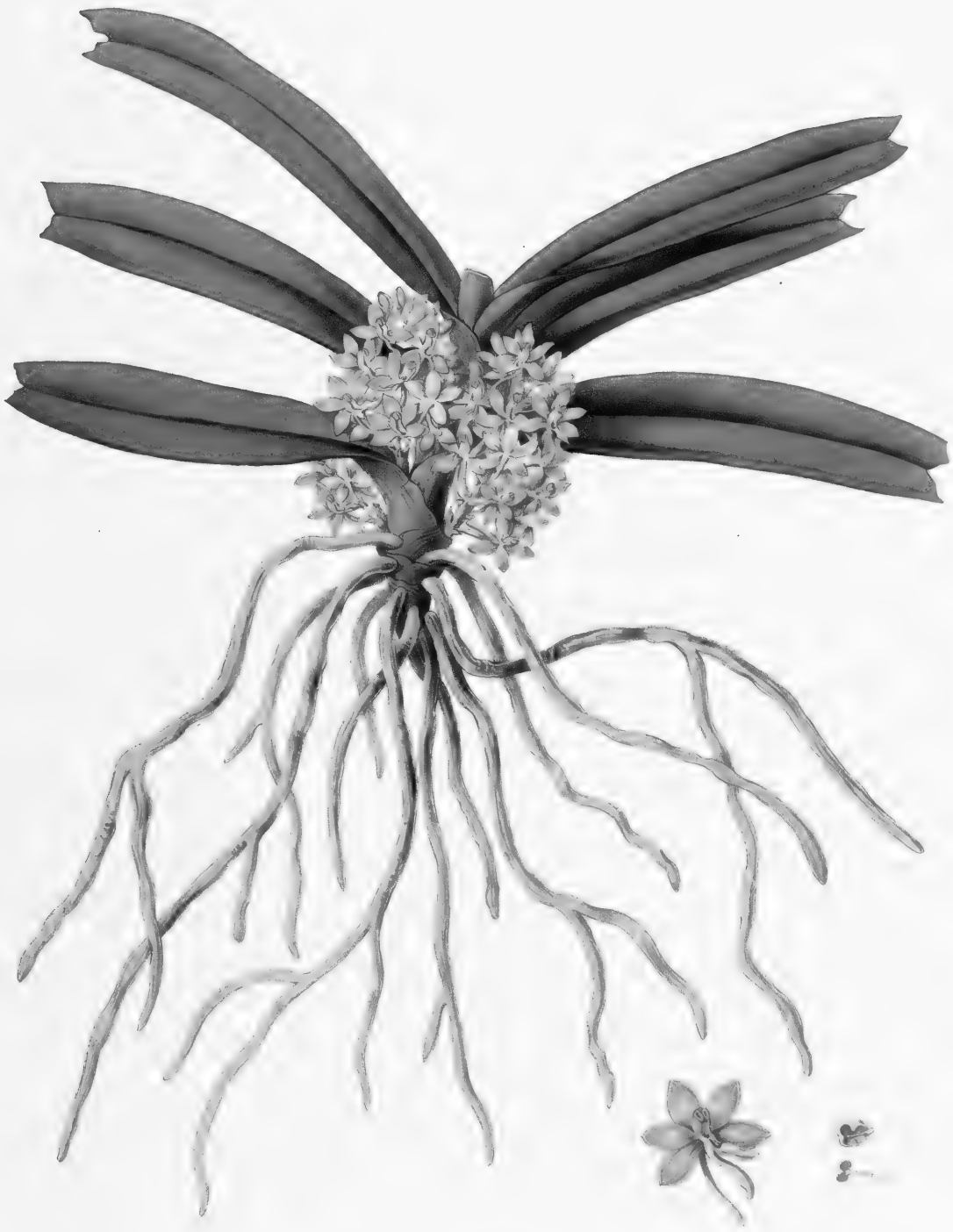
C. chlorochilon, *Klotzsch in Otto u. Dietrichs Allgemeine Gartenzeitung July* 21, 1838. *p.* 225.

This noble species of Cycnoches has been introduced from Demerara by Messrs. Loddiges, in whose collection the annexed figure was taken. It was also sent to Berlin in 1836 from Maracaibo by Mr. Moritz, a naturalist in that country, from the produce of whose plants Dr. Klotzsch obtained the flowering specimen described in the work above quoted; and I have seen a flower of it in the possession of the Messrs. Robinsons of Tooting, who received it from Mr. John Youles, Nurseryman, Great Yarmouth. In every case of its blossoming three flowers were obtained; so that such may be supposed to be the number usually borne by each raceme.

In many respects it resembles the Cycnoches ventricosum figured in Mr. Bateman's princely work on the Orchidaceæ of Mexico and Guatemala, but it differs in the flowers being much larger, the raceme shorter and less graceful, the sepals and petals broader and not so acute, and specially in the form of the lip, which is nearly sessile, obovate and acute, not ovate and acuminate, green not white, with the broad green callosity at the base far larger and differently formed.

In the STEM and LEAVES this species does not sufficiently differ from the two other species of the genus to require a particular description. The RACEME springs from the upper part of the stem, from among some dry, furrowed, acute, close-pressed scales, and usually bears three flowers, of a conform yellowish green colour, nearly six inches in diameter and by their weight bearing down the peduncle in a slight degree, so as to acquire a nodding, not a pendulous, position. Of the SEPALS the lateral ones are oblong, narrowed to the point, but not acuminate, a little longer than the labellum, at the back of which they are placed almost parallel with each other; the intermediate one is narrower, obtuse, a little spreading away from the column, whose curve it follows, except near the end, where it is somewhat recurved. The PETALS are broader than the lateral sepals, in the same form, except that they are slightly falcate, with their concave edge next the lip, towards which they are turned, so that the flower has its parts expanded in two opposite directions, the lateral sepals, petals, and lip upwards, and the intermediate sepal downwards. The LIP stands erect at the back of the flower, is about two inches and a half long, and an inch and a quarter wide in the broadest part; in texture it is firm and fleshy; in colour it is deep green at the base and a yellowish green everywhere else; in form it is widest and very convex a little above the middle, from which it is regularly ovate as far as the point; below the middle it narrows, and becomes concave with thick, round, elevated, recurved edges; and at the base it is contracted into a very short thick fleshy unguis, above the unguis, and across it, is seated a thick green somewhat triangular but rounded callosity, scarcely a quarter of an inch deep. The COLUMN is about an inch and three quarters long, very slender, green, wide at the base, tapering through the greater part of its length and flattened out at the apex, where it terminates in three narrow fleshy teeth curved over the back of the anther, the middle one being the narrowest; it bends away from the lip so gradually that the two taken together almost describe the segment of a circle.

The flowers are from five to eight inches in diameter, and are deliciously fragrant.



Saccolabium ampullaceum

PLATE XVII

# SACCOLABIUM AMPULLACEUM.

S. *ampullaceum*, caule brevissimo, foliis crassissimis distichis ligulatis canaliculatis apice truncatis dentatis, racemis oblongis erectis foliis multò brevioribus, sepalis petalisque ovatis patentibus subæqualibus, labello integro ac unguiculato concavo calcare compresso pendulo duplò breviore.

S. ampullaceum, *Lindl. in Wall. Cat. no.* 7307

Aerides ampullaceum, *Roxb. Fl. Ind.* 3. 476.

A native of trees in the forests of Sylhet, where it was long since discovered by Dr. Roxburgh's correspondents. It was subsequently met with by Dr. Wallich, near Bemphedy, flowering in the month of May.

It is described as having a short and generally simple STEM, which, from the lower part throws out strong fleshy cord-like roots, by which the plant is bound to the tree it grows upon. The LEAVES are distichous, regularly spreading, remarkably thick, spotted with purple on both sides, ligulate about five inches long, with the edges nearly parallel, carinate beneath, channelled above, truncated and toothed at the apex. The FLOWERS are of a deep rose colour and grow in erect, oblong, sessile, axillary RACEMES, which are very much shorter than the leaves. The FLOWER-STALKS and OVARY together are about an inch long. The SEPALS and PETALS spread flat and are ovate, beautifully veined, and nearly equal. The LIP is linear, falcate, twice as short as the sepals, channelled inside, rather convex outwards at the point, with a compressed, straight, slender spur about as long as the flower-stalk; at the base of the lip are two teeth pressed close to the base of the column, and parallel with it. COLUMN short, with a small notched stigma in front. ANTHER purplish, 2-celled, ovate, obtuse, with a tooth transversely curved downwards beneath the pollen-masses on each side. POLLEN-MASSES two, globose, furrowed, with a long slender caudicula.

The foregoing description is entirely taken from Dr. Wallich's MSS. no specimen of the plant having reached me. The figure is a copy from a drawing belonging to the Honourable Court of Directors of the East India Company. I formerly supposed it to be the same as Saccolabium ruppianum, to which I have elsewhere quoted it as a probable synonyme. I am however now satisfied that it is a perfectly distinct species, distinguished by its short erect racemes, by the form of the lip, and by the leaves being regularly distichous, not all curved to one side.

*Dendrobium cærulescens.*

PLATE XVIII

# DENDROBIUM CŒRULESCENS.

D. *cœrulescens;* caule erecto carnoso teret, foliis oblongis obtusis emarginatis subundulatis, racemis horizontalibus 2-3-floris foliis paulò brevioribus, perianthio explanato, sepalis lineari-oblongis obtusis emarginatis lateralibus basi paulò productis, petalis latioribus oblongis apice recurvis, labello ovali subundulato utrinque pubescente apice constricto plano glabro recurvo, antherâ pubescente.

D. cœrulescens, *Wallich Mss.*

The species now represented has altogether the habit of Dendrobium nobile, when out of flower it so much resembles that species that it may be supposed to be the same. In this respect it accords with several others of the genus, such as the Dendrobia Pierardi, cucullatum, and macrostachyum, which can scarcely be distinguished by their foliage. When in flower it is strikingly different from Dendrobium nobile; perhaps it is not quite so handsome, for it wants the very rich purple of that species; but in other respects it has beautiful features of its own. The sepals and petals have a delicate tinge of very pale bluish lilac, especially on their back, and their form is more slender and graceful. Specific differences between the two are furnished by the shape of the lip and sepals, both of which are much narrower than in Dendrobium nobile, and the former has quite a different outline, as well as obvious upon comparison of the accompanying figure, and that in plate 3 of this work.

It was collected for His Grace the Duke of Devonshire, by Mr John Gibson, at Nuwakow, on the northern face of the Khoseen range of hills, where it grows upon rocks and trunks of trees, at an elevation of not less than 4000 feet. The specimen now figured is at present very beautiful, with only two flowers upon it; but Mr Gibson states that he found it loaded with from thirty to forty flowers on a stem. The accompanying plate has been prepared from a drawing and specimens sent by Mr Paxton from Chatsworth, where it blossomed in April 1838.

The SEPALS, which spread nearly at equal angles from each other, are about an inch and half long, and a quarter of an inch wide; they are of a delicate bluish lilac colour, tinged with deep purple at their ends, and slightly plated all over between the veins so as to acquire a somewhat tessellated appearance; they are all notched at the apex, and the lateral ones are slightly extended on one side into a short blunt spur. The PETALS are coloured like the sepals, except that they are rather darker, and less tessellated; they are oval, not emarginate, but undulated, and curved back at their end. The LIP is very exactly oval and concave, except that it is extended into a narrow flat obtuse point, which is curved downwards. Its sides are rolled round the column at the base, and then curved outwards and undulated; it is rich crimson in the middle, yellow at the edge, deep rose colour at the apex, and is covered with conspicuous pubescence everywhere except at the point; as the flowers fade, the yellow changes to brownish purple and becomes marked with purple veins. The COLUMN is very short, flat, and sloped forwards in front; convex at the back; it is terminated by a peaked, purple, hairy anther.

Fig. 1 represents the column and anther, with the bases of the sepals and petals, the lip being removed. Fig. 2 is the lip unrolled, rather magnified, and seen from above.

*Camarotis purpurea.*

PLATE XIX

# CAMAROTIS PURPUREA.

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**C. purpurea,** *Lindl. Gen. et Sp. Orch. p.* 219.
**Aerides rostratum,** *Roxb. Fl. Ind. vol.* 3. 474.

This beautiful and graceful plant, a native of the forests of Sylhet, was originally obtained by Dr Wallich in April 1819, from Dr Carey's Garden at Serampore, which a drawing was made by the artists employed in the Botanic Garden, Calcutta from which the principal part of the materials for the accompanying figure have been taken, by permission of the Honourable Court of Directors of the East India Company

It has not yet been introduced into European cultivation. Dr Wallich, whose manuscript account lies before me, describes it as a climbing plant, with fragrant flowers, it must therefore, be particularly well worth inquiring for in India.

The following description is partly translated from Dr Wallich's papers, but is altered in many respects after the examination of dried specimens.

LEAVES linear, about three inches long, and four or five lines broad, coriaceous, spreading, and slightly curved, truncated, usually obliquely, at the point with two, three, or four denticulations, at the base slightly sheathing the stem, which is two-edged RACEMES opposite the leaves, straggling ascending, sometimes twice as long as the leaves, sometimes much shorter FLOWERS purple, spread open. PEDICELS half an inch long, including the ovary SEPALS pale purple, oval, obtuse, scarcely half an inch long, the lateral united to the back of the lip, except at the point, where they diverge they form together a single, wedge-shaped, two-lobed body. PETALS of the same shape as the dorsal sepal, but darker purple near the upper end. The LIP is narrow, channelled at its base, united at the back for more than half the length to the lateral sepals, furnished at the apex with a hollow conical chamber having a narrow oval aperture, from the anterior edge of which a short subulate process proceeds, and lies down over the orifice in all respects of a deeper purple than the other segments of the perianth, otherwise the lip may be described as three-lobed, with the lateral lobes united by their faces except near the point, which is inflated and extended into a hollow chemical chamber, over the aperture into which the intermediate subulate lobe is inflected The COLUMN is very short, round, with the rostellum prolonged into a conical acuminate beak emarginate at the apex and many times longer than the column. ANTHER placed upon the back of this beak in such a way that where it terminates the column it is almost inverted in position in the ascending direction of the beak, prolonged at the point into a thin narrow, sharp appendage, not quite two-celled POLLEN-MASSES two, globose, attached to the end of a long subulate caudicula which adheres to a minuted peltate gland

The extremely curious structure of the lip, which is distinctly chambered at the point, is one of the principal circumstances by which this genus is distinguished among its allies. Dr. Roxburgh says, that before expansion the beak of the column is lodged in this cavity of the lip.

Fig 2 of the dissections, represents the chamber, as the lip is viewed from above, fig 3. shews it more distinctly, in consequence of the lip having been cut through vertically fig 1 is a back view of the whole flower, representing the adhesion of the lip and the lateral sepals to each other fig 4 shews the column with the long beak like rostellum and pollen-masses, &c., the anther having dropped off. In this figure the gland is erroneously represented as emarginate instead of peltate

* Botanic Garden

*Stanhopea Wardii.*

PLATE XX.

# STANHOPEA WARDII.

S. *Wardii*, racemo pendulo multiflore, sepalis lateralibus subrotundo-oblongis concavis acutis basi altè connatis, petalis lanceolatis undulatis revolutis, hypochilio sessili angusto saccato antùs tuberculato medio augustiore marginibus approximatis depressis complanatis basi connatis, mesochilio utrinque cornuto in medio sinu cornuum foveato, epichilio cornuum longitudine subrotundo-ovato acuto indiviso margine recurvis.

S. Wardii, *Loddiges in litt.*

The species of this genus are so easy to cultivate and with good management they produce their magnificent and singular flowers in such great abundance, that every addition to their number becomes an object of great interest. This now figured was sent to England from La Guayra by Mr. Ward, after whom it has been named by Mr. Loddiges, to whom I am indebted for the specimen that furnishes the accompanying figure. It has also been sent me by Mr. Barker of Birmingham, who obtained his plant from Messrs. Lowe and Co. of Clapton, and who speaks of its appearance as being very striking, when its flowers, eight in each racceme, first expanded.

It differs from S. tigrina quadricornis in the lower part of the lip not having a strong horn on each side; from S. oculata, in the lip being sessile, not stipitate and a great deal shorter in proportion to the other parts; and from S. saccata, an unpublished species of Mr. Bateman's, in the middle segment of the lip not being 3-lobed, in the sharpness of the petals, and in the form of the horns of the lip.

I am not aware of any thing in the foliage or pseudobulbs which deserves particular notice, or indeed in any other part except the flower. As is usual in this genus the distinctions between the species are to be found consisting in variations of the form of the parts of that organ. The SEPALS are a clear bright yellow, rather paler on the outside, and strongly dotted with small scattered patches of crimson. The two front of the flower are round, slightly concave, incurved, and united for some distance by the inner and lower margins. The petals are of a clearer and paler yellow, and are blotched with crimson in a similar manner; they have a lanceolate form, are very slightly undulated, much attenuated, and rolled back, so that their points overlap behind the intermediate sepal. The lip is nearly as in the lower half or hypochilium is very thick and fleshy, hollowed out at the base, and is contracted in the middle, about three-quarters of an inch long and half an inch wide; its edges are depressed, as if they were planed smooth, almost touch each other throughout, and are naturally united at the base; its colour is a deep yellow-orange, with four large deep crimson blotches near the base; the middle or mesochilium is prolonged on each side into two, curved, sharp-pointed fleshy horns, between whose bases there is a little foramen with an elevated fleshy border on one side; the upper end or epichilium is round-ovate, fleshy, sharp-pointed, and hooded, concave in the centre, with the edges curved downwards; both it and the middle are a glossy yellow, slightly dotted with crimson.

The inside of the hollow base of the lip is covered over with numerous rounded tubercles, which give it the singularly rich and sparkling appearance of a gem studded with purple and yellow spots. Its outside is also studded with tubercles, but they are hardly visible to the naked eye, or only

appear in the form of a fine downiness. An examination of the anatomical structure of this part has revealed some facts which deserve to be described.

Let the dissections at the bottom of the plate represent very thin vertical slices of the thick base of the lip, magnified about 500 times in diameter. *A* shews the appearance of the tubercular lining, three of the glittering callosities being cut through; they consist of cellular tissue arranged with great regularity, and there is no distinct cuticle, but the thickness of the sides of the exterior cells is greater than that of the interior; some of the cells are filled with yellow colouring matter or chlorophyll of a granular nature, others contain a red fluid (1, 1); the yellow in the cells next the surface (2, 2) is paler and less granular than that in the inner cells (3, 3); cells still further from the surface (4) gradually contain less granular matter, which appears to stick exclusively to the sides, and not to float in the interior.——*B* represents a similar view of the tissue forming the outer surface, at a part where the colour is uniformly yellow; the whole of the cells contain exclusively yellow granular matter, which becomes less dense as you proceed from the surface (4) towards the interior (5); here also there is no distinct cuticle, or layer of empty cells; the surface is covered closely with conical cells, which form the almost invisible downiness of that part.——*C* is a similar view of the same part, at a place where the colour is both yellow and purple; it is more magnified; in this case it is seen that the colouring matter is distinctly separated into separate cells, and that the colour of one does not interfere with that of the other, but that the yellow is lodged in one cell (1, 5) and the purple in others (4); the hairs themselves are sometimes filled with purple fluid, as at 3; sometimes they are almost colourless, as at 4; or they are stained yellow, by the addition of grumous matter of that colour to their interior, as at 1. At 3. it is seen that the hairs occasionally grow together at the base.

Thus it appears that the varying tints of colour which are found in flowers are not produced by colours proper to the tissue of which they are composed, or by a confused mixture of colouring matter below the surface, but are caused by different colours, separately deposited in separate cells, which are themselves uniformly colourless; I could not perceive that any of the yellow was ever developed in the purple cells, and certainly the reverse did not exist; now and then yellow colour appeared to come from the interior of a purple cell, but this I believe was owing to a purple cell being placed between the eye and a yellow cell. These facts are in accordance with what has been observed by Botanists in other cases.

The yellow cells uniformly presented a grumous or granular appearance, in consequence of their chlorophyll being collected into irregular spherules of various sizes, but I could not succeed in detecting any amylaceous matter in the interior of the spherules. The effect of applying tincture of iodine was to destroy the brilliant orange yellow, and to convert it into that dull olive brown which usually follows the application of this agent to the resinous secretions of plants, but I sought in vain for any sign of blue in the interior of the granules. In one case, however, I remarked a small portion of the membrane of a cell stained blue, much in the same way as is represented in Link's *Icones Anatomicæ*, tab. xvi. fig. 13. in the tubercle of Salep. The application of dilute sulphuric acid coagulated the yellow granules into a ball in the middle of each cell, and changed their colour to an olive green.

While the yellow colour appeared to be entirely produced by the presence of matter in a granular state floating in colourless fluid, the purple was in many cells as uniformly caused by a purple fluid without granules; but in the deepest coloured cells, as at *C* 2, and 3, there was evidently a tendency to granulation, although, when the contents were pressed out of such cells, no distinct granules could be found. Iodine produces no other effect upon the purple than to render its colour less brilliant; but diluted sulphuric acid, without discharging the colour, renders it distinctly grumous. I do not know whether this effect is produced by the acid coagulating the purple chlorophyll, or whether it merely renders distinct and firm that which was previously semifluid and undistinguishable. I am however persuaded that the amylaceous centres, round which Professor Mohl conceives the chlorophyll to mould itself in the interior of vegetable tissue, do not exist in this instance.

It has been stated, that there is no distinct cuticle to be found in this part of the Stanhopea; that is to say, there is no membrane composed of empty cells, which can be discovered either by tearing it off, or by a vertical section; such indeed is a general fact in petals and petaloid parts. It is probable that in these organs its place is supplied by a great thickening and developement of that external homogeneous membrane, first noticed by M. Adolphe Brongniart, afterwards found by Professor Henslow, and subsequently described by myself and others. That it exists in a state of great toughness, in very delicate flowers, has lately been shewn by me in Hydrotania Meleagris, and in this Stanhopea it is also present, although I did not succeed in detaching it. In general it adheres so firmly to the cells it lies upon, that it merely adds to their thickness, as is shown at A, B and C, and cannot be distinguished. But it also rises above the surface in the form of hairs, and then the cell itself has no adhesion to it, but appears in the form of a box, shrivelled, internal membranous sac, as at B 2, and elsewhere in that figure; the cell however, if filled with fluid, extends so as to fill the whole cavity of the hair, as at C 3. In this latter case the membrane adapts itself to the surface of the cells, and may be distinctly seen at their angles.

Possibly the hairs of plants are generally formed in this way, namely, of homogeneous cuticular membrane, covering cells free at the sides, and only adhering to the parenchyma at the base. I am led to this supposition from comparing the hairs of Stanhopea, Tradescantia, Campanula Rapunculus, Polystachya luteola, and others of like nature, all of which are evidently formed upon the same plan, and in which it is probable that the phenomena of circulation may be observed. In these hairs there is always a nucleus (B 3), in the inside of a sac or cell, which later distends when wet, and contracts afterwards, or after death, then leaving a considerable space between its sides and those of the hair (B 1). It is in this space, which when the hair is full of fluid is extremely small, that the motion of the fluids takes place, as is manifest in Tradescantia and Campanula Rapunculus. I have not, indeed, succeeded in seeing any circulation in the hairs of Stanhopea, but when they are killed by too much the inner sac contracts and becomes more distinct, and then appear on the outside of the sac, especially between its end and the point of the hair, evident traces of a reticulation, which may be supposed to be a plexus of capillary anticiferous vessels, whose contents are coagulated by the action of iodine.

Fig. D represents a portion of the mesochilium, with the horns and part of the epichilium cut off; this figure is given for the purpose of shewing the foramen that exists between the bases of the two horns, and the nature of which is at present unknown.


*Miltonia candida.*

PLATE XXI

# MILTONIA CANDIDA.

**M. *candida*; pseudobulbis ovatis apice angustatis diphyllis, foliis angustis racemo brevioribus, bracteis ovatis membranaceis concavis squamæformibus, sepalis petalisque oblongis æqualibus, labello subrotundo crispo circa columnam convoluto basi 5-lamellato, columnâ pubescente basi biauri, clinandrio crispo membranaceo-marginato utrinque in alam decurrente.**

**Miltonia candida** *Bot. Register*, 1838. *misc. no.* 29.

This Brazilian epiphyte is one of the most noble of its race, and is scarcely rivalled by any of the beautiful species of Dendrobium or Cattleya. When it first flowered, it was out of health, the specimen was in an unhealthy state, and consequently the brief character assigned to it in the Botanical Register requires much modification.

It differs in the structure of its column and lipellum in so many respects from the original Miltonia, that if much experience had not taught me to judge more correctly of the value of such differences among Vandeæ, this would have been regarded as a new genus. In the first place, the bed in which the anther lies is bordered by a fringed margin, which runs a little way down the front of the column in the form of two flaps; in Miltonia spectabilis this is not the case, two auricles only appearing on the front edge of the column; but in Oncidium cucullatum[1], a species related to O. Lanceanum, and about the genus of which there can be no doubt, the anther-case is in the manner hooded by the clinandrium, which is not with a variouſ degrees in many well known genera, especially in Coelogyne, Calypso, and Pachyphyllum, and is always to be regarded by the systematist with some suspicion, with reference to its affording a valid mark of generic distinction; unless it exists in excess, as in Centropetalum[2], a Peruvian genus, in which the column is not only entirely petaloid, except at the line which bears the stigma and anthers, but coloured like the lip, and completely convolute.

The cucullate character of the lip is another circumstance in which this species is obviously at variance with the original Miltonia; but the same difference is found between Cattleya bicolor and other species of that genus.

The PSEUDO-BULBS are ovate, with a long neck, and are each terminated by a pair of coriaceous LEAVES, which are narrow, spreading, and shorter than the racemes, which springs from the axils of the primary leaves which surround the base of the pseudo-bulb. Each RACEMUS consists of five or six flowers, which are separated from each other by intervals of from one and a half to two inches, and

1. *Oncidium cucullatum*. Pseudobulbis foliisque [illegible] scapo paniculato angulato bracteis squamiformibus carnosis concavis acutis, sepalo superiore oblongo inferioribus omnino connatis, petalisque ovalibus carnosis glabris, labello cordato gibbo fimbriato apice maximo limbo ciliato cum appendice lanceolata apiculata, tuberculo baseos ovato subtridentato, columna nana basi auriculis rotundatis bilobatis, clinandrio cucullato. *In arboribus secundum arenosos montis Pichinchae.* Jameson.

2. CENTROPETALUM. M. Sepala et petala libera, labello duplo minores. Labellum obovatum, indivisum, medium, basi appendice parva excavata auctum. Columna petaloidea, convoluta, basi cum labello adnata. Anthera membranacea, unilocularis, [illegible] dimidia, glutinosa, gossypium convolvulo 2 longis ascendentibus affixa. *C. dilatatum.* Folia distycha, carnosa, linearia, falcata. Pedunculi solitarii, terminales. Flores luteo-pell. rati. Columna denticulata. Labellum integerrimum. *Perkins, prov. Huacho, Peruvian.* Mathews.

ing nearly horizontally. The FLOWERS themselves are nearly three and a half inches in diameter; their SEPALS and PETALS are oblong, rather obtuse, spreading equally, much undulated, and mottled with rich brown upon a dull yellowish ground. The LIP is white, very much undulated, rolled round the column, when spread open a most orbicular, with a small downy tubercle at its very base and five elevated lines running from it towards the upper end; of these lines the central and outside ones are shorter than the intermediate one; the latter and the external lines are slightly toothed, the central one is uninterrupted. The COLUMN is short, downy, with two fleshy truncated ears at the base, and a winged crisp anther bed, which runs down in front, on each side of the stigma, in the form of two flaps. The ANTHER itself is round and hairy. Fig. 1. represents the inside of a lip spread open; 2. is a front view of the column; 3. an anther; and 4. the pollen-masses, with their caudicula and gland; one of the pollen-masses being cut across to show that it is excavated at the back.

As a genus Maltonia need only be compared with Oncidium, Cyrtochilum, and Odontoglossum. It differs from the first in its lateral sepals being not only distinct, but spreading equally from the centre and not placed beneath the column; in its lip being either flat or convolute, undivided, not lobed or indented at the sides; and finally in the elevations at the base of the lip not being tubercles or papillæ or sexulus, but simply plates following the course of the veins. With Cyrtochilum it agrees in the latter character, but it differs in its lip not being tapered to the point or unguiculate, and much more developed. From Odontoglossum it is known by its lip not being unguiculate, nor furnished with a pair of parallel often coalescent plates at the base, and by its short column

Cattleya superba.

PLATE XXII

# CATTLEYA SUPERBA.

**C. *superba*; foliis ovato-oblongis obtusis coriaceis marginatis caule clavato brevioribus, sepalis oblongis acutiusculis, petalis lanceolatis acutis membranaceis duplò latioribus, labelli trilobi cucullati lobis lateralibus acutis: intermedio transverso plano denticulato emarginato subunguiculato basi venis elevatis rugoso, callis duobus pone basin.**

Cattleya superba. *Schomburgk in litt.*

Cattleya Schomburgkii. *Loddiges' Orchid. no. 434.*

This magnificent sweet-scented Cattleya has been found in British Guayana by Mr. Schomburgk, who sent a live plant of it to Messrs. Loddiges, and a drawing to the Linnean Society, by permission of which I am able to publish it in this work.

The plant represented by Mr. Schomburgk is inferior in size to a dried specimen sent by him to me, the stem of the latter being ten inches long, and stout in proportion. The flowers, if not so large as those of Cattleya Mossiæ, are, from the richness of their colours, inferior to none in beauty.

The following is taken from the account of this plant communicated to the Linnean Society by Mr. Schomburgk.

The species is an epiphyte. The STEM is narrow at the base, and increases in diameter upwards; it is however seldom more than two inches in circumference; when young it is covered with sheaths resembling the spathe, except in position, and so closely incrusted that the stem appears to be round; but in old specimens whence the sheaths have fallen, it is found to be compressed and deeply channelled. From the apex of the stem spring two coriaceous, elliptical, acute LEAVES, between which the peduncle makes its appearance from the midst of a large membranous SPATHE, the latter when young is striated and speckled, but soon dries up and becomes straw-coloured. The PEDUNCLE bears from three to six FLOWERS, each between five and six inches in diameter. The SEPALS are fleshy, the two lateral almost acinaciform, the intermediate one lanceolate, the whole terminated by a sharp greenish point. The PETALS are somewhat larger, wavy, ovate-lanceolate, toothletted towards the upper end; both sepals and petals are of a beautiful pink colour, their lower surface being paler with a bluish cast. The LIP is 3-lobed, and cucullate; the middle lobe is rounded and saddle-backed, wavy, apiculate, and along its edge denticulate, of a dark purple colour, but yellow and striated in the middle; the lateral lobes fold over the column and each other, are reflexed at the upper end, deep purple on the outside becoming paler downwards, yellowish white on the inside. The COLUMN has an incurved denticulated margin, and is white tinged with pink at the base.

This plant appears to be peculiar to the 3rd or 4th degree of N. Lat.; it is not to be met with in the Essequibo north of the mouth of the Rupununy; from thence it is found southwards on trees which skirt the banks of the brooks and rivers which meander through the savannahs. I discovered only a few solitary specimens in the Essequibo south of the Cayuwini, and none at the equator. The Caribees call it *Oponopodoli* or *Duckmouth*, the Macoussies *Massaie*. I venture to say that in beauty, odour, and duration it is not to be surpassed by any orchidaceous plant; the odour in the morning and evening becomes too powerful in a confined place; its spread flowers last from three to four weeks.

Although only now brought into notice, the species was many years since discovered by Dr Von Martius, who found it near Tacuma on the banks of the Rio Negro, in woods at the Barra de Rio Negro, and in forests near Para.

It is readily distinguished from all previously described species by its three-lobed lip with acute lateral segments, the middle lobe being flat, toothed and emarginate, and by the crester or elevated veins at the junction of the epichilium and hypochilium.

The species of this beautiful genus have not been well defined. They are with difficulty preserved as dried specimens; they have been described at various times from plants in different states, and for a small genus there is probably as much to correct or amend in the genus Cattleya as in any in the whole order. I therefore take this opportunity of making some observations upon this subject.

In the first place it is necessary to remove from the genus Cattleya cocciniea, which is Sophronitis grandiflora; C. Grahami and maxima, which are Lelias; and C. dolangensis, which is possibly a species of Barkeria.

Of the genuine species then left there are two sections, the first of which has an undivided lip and the other a lip with three deep distinct lobes.

The *first section* consists of C. crispa, labiata, bicolor, pumila, and Mossiæ, with the unpolished C. Skinneri of Mr. Bateman, which is nearly related to the last.

Of the *second section* C. gaskoniæ has to be expunged, having been founded upon a bad or specimen of C. guttata. C. Perrinii is really known by the narrow middle lobe of its lip, and its connective ovary; C. gaskoniæ has yellow flowers, and is otherwise well marked; C. superba has already been spoken of; the remainder consist of C. Forbesii, intermedia, Loddigesii, ovata, Harrisonii, and maxima. Of these C. Forbesii has the back sepal and the petals very narrow, the middle lobe of the lip rounded and not emarginate, and two elevated lines along the middle of the axis; C. maxima has small roundish ovate leaves, but its flowers have not been sufficiently examined; and C. intermedia, ovata, and Harrisonii are probably varieties of C. Loddigesii; at least I am unable to point out any positive marks of distinction between them.

*Phaius bicolor.*

PLATE XXLI

# PHAIUS BICOLOR.

**Phaius bicolor** *Genera & Species of Orchidaceous plants, p.* 128.

It is in Ceylon, in dry pastures, on the sides of high hills near Peradenia, the village where the Botanical garden is stationed, that this charming plant grows wild and flowers in November. It was first made known to me by Mr. James Macrae, who unfortunately died a few months after his arrival in the island, and I have since seen a drawing by Mrs. Walker in the possession of Sir Wm. Hooker from which the accompanying plate has been prepared.

It is probably rare in the nursery of Messrs. Loddiges as it seems to be the only Phaius found in Ceylon, and it appears from their Catalogue that there is a species from that island in their vast collection.

From a fleshy knobby RHIZOMA like that of an Iris, the leaves and flower-stems spring independently of each other. The LEAVES are about a foot and a half long, do not taper into a distinct petiole, but are rolled round each other at the base; they are plaited and very sharp pointed; at the base on the outside they are invested with green scales. The FLOWER-STEM is as much as two feet high, naked at the lower part, but at the upper end covered by large, distant, yellow and crimson flowers, which are nearly four inches in diameter. The BRACTS are large, greenish yellow, oblong, concave, and are thrown off as the flowers expand. The SEPALS and PETALS are linear-lanceolate, spreading, taper-pointed, and nearly of the same size. The LIP is very much broader, oblong, rolled round the column, much undulated at the edge, acuminated, and curved downwards at the upper end, with a pink limb and a yellow tube; at its base it is lengthened into a curved horn, which is emarginate at the point and about one-third the length of itself. The flowers do not appear to be fragrant.

It would seem that there are two varieties of this plant, viz. that now figured with crimson sepals and petals, and a pink lip; the other with every part yellow except the lip; the latter I know only from a drawing in my library executed in Ceylon by a native artist.

*Calanthe plantaginea.*

PLATE XXIV

# CALANTHE PLANTAGINEA.

C. plantaginea. *Genera & Species of Orchidaceous plants, p. 250*

The species of Calanthe are so very beautiful, and their cultivation so easy as to render it quite a subject of regret that there should not be more of them in our gardens. Of at least twenty-two species, inhabiting various parts of tropical Asia not more than five or six have been seen alive in this country, and these are not the handsomest.

That which forms the subject of the present notice was originally discovered by Dr Wallich, whose manuscript notes are before me, and from one of whose drawings the accompanying plate has been prepared, by the permission of the Honourable Court of Directors of the East India Company.

It was found common about the roots of trees in various mountain places in the valley of Nepal and on the forest on the summit of Mount Chandagheery, where it was beginning to flower in the month of February. The following is translated from Dr Wallich's Latin description of the plant.

The ROOTS are thick, white and clustered, smooth when old, but originally covered with dense white hairs. The STEM is a creeping rhizoma with round KNOBS, whence the leaves are produced. The LEAVES are ovate, acute at each end, from six to eight inches long, wavy, smooth, shining on the upper side, plaited, with five principal and several smaller veins, which project on the under side of the leaf; their STALK is about six inches long, deeply channelled, angular, gradually widening upwards. The SCAPE springs from the outside of the leaves, and is from a foot to a foot and a half high, taper, often tinged with purple; at the base it is enclosed in three or four sheathing scales, each from two to three inches long, striated, angular and obliquely acute at the point; together these scales form a sort of spoon three times wider than the scape. The FLOWERS are arranged in an oblong terminal racème from six to eight inches in length, and closely covered with rather large, pale purple fragrant flowers, placed upon PEDICELS about half an inch long, and covered with short down, like the external parts of the flowers. The BRACTS are oblong-lanceolate, about four lines long, downy, and nearly white. The PERIANTH is spread open, and pale violet; the SEPALS are lanceolate, acute, and about five-eighths of an inch long, those at the base of the labellum having one of their edges more convex than the other; the PETALS are linear, rather broadest in the middle, slightly fleshy and reflexed. The LIP is naked, three-parted, with cuneate-obovate segments, of which those at the sides are more obtuse than that in the middle, which is apiculate; at the base it is narrowed, has three furrows, and then becomes connate with the column, for the whole length of the latter; at this part it is compressed, has some reflexed hairs inside, and at the base is prolonged into a slender spur, which is notched at the end, pendulous, and as long or longer than the pedicel.

The fragrance of the flowers of this species is the more remarkable, because those which we have in cultivation, or of which there is any particular account, are scentless.

The figure at the bottom of the plate represents a lip, with the column to which it adheres, the spur and the ovary enlarged.

*Cyrtochilum maculatum.*

PLATE XXV

# CYRTOCHILUM MACULATUM.

Cyrtochilum maculatum *Botanical Register*, 1838, *misc. no.* 39. *t.* 44. *Knowles and Westcott, Floral Cabinet, t.* 57

Although the plan of this work is not to admit any plant of which a figure has been previously published, yet the variable appearance of the present species, and the great beauty of some of its varieties seem to justify a deviation from the rule, especially as it is impossible to do justice to the species on a page the size of the monthly Botanical periodicals.

The specimens which first flowered had but little beauty, the colour of their sepals and petals being green, and the number of flowers inconsiderable; but there have lately appeared, among the plants sent from Vera Cruz to the Horticultural Society of London, by Mr Hartweg, many specimens in which a rich yellowish brown is almost tinted for green, the size of the flowers much increased, and the whole inflorescence arranged in a large nodding panicle, instead of a few flowered racceme. Among the varieties one in which is in the possession of John Rogers, Esq. Jun. of Sevenoaks, has been selected for illustration.

It is not merely its beauty that renders this species valuable; its fragrance is of the most delicate kind, resembling primroses; it is very easily cultivated, and it remains in flower a considerable time.

At Plate VII. of this work some observations were made upon the difficulty of finding a good distinction between Cyrtochilum and Oncidium. This, and some other plants now in cultivation, have rendered it necessary that the question should be fully considered. I have been led into an extensive examination of these two genera and of Odontoglossum, also vaguely characterized, which has led me to the following conclusions.

Cyrtochilum is not to be distinguished from Oncidium by any character derived from its column, for in this respect they are essentially the same. M. Kunth assigned his species a column winged at the margin, and not auricled, as in Oncidium and Odontoglossum; but the auricles are not found in Oncidium corynephorum[1], and scarcely in O. coriandrum; two new Peruvian species nearly allied to Oncidium micranthum. The convexity of the lip of Cyrtochilum is not greater than is found in many common Oncidia, and is much less than in O. excavatum[2], in which the tubercular base is excavated into a kind of niche the opening of which looks towards the apex of the lip. Neither will the undivided margin of the lip afford a more valid mark of distinction, for independently of all other cases, I have not fewer than three unpublished species of Oncidium in which the lip is perfectly entire, viz. O. cochleatum[3], aureum[4], and cruciger[5]. I not

(1) Oncidium corynephorum. Pseudobulbis magnis ovato-oblongis compressis; foliis angusto-oblongis acutissimis; scapis ramosis paniculatis, bractea membranacea acuminata; sepalis petalisque oblongis, obtusiusculis, subtrilobis, longe unguiculatis; labello ovato-oblongo, obtuse acuminato, callis tuberculatis denique in apice trilobo, intus rugosis, glandulosis, columna elongata alata. *Peruvia*, Mathews. (ll. 84.)

(2) [illegible] pseudobulbis [illegible] foliis oblongo-lanceolatis acutis coriaceis, basi angustatis; scapo paniculato ramoso; bractea oblonga, acuminata; sepalis petalisque lineari-oblongis, obtusis, angustioribus, basi attenuatis; sepalo lateralibus cordatim marginis exterioribus denticulatis; labelli basin unguiculatis, tubo angusto, apice dilatato, appendicibus disci pendulis, columna elongata. —*Peruvia, regnibus of Pozuzo dictum, prope Cuyaco*, Mathews (1067).

(3) [illegible] pseudobulbis foliisque [illegible] scapo paniculato; bractea squamiformibus; monophyllis; sepalis lateralibus oblongis, obtusis, liberis, superiori connato; sepalis petalisque membranaceis, oblongis, rotundatis; labelli unguiculatis, labello sessili, membranaceo, semicordato, in apicem obtusum, basi vaginato, convexo; fornicatum excavato, sub intra sulcis, columnae. *Peruvia, in prope Cuzco, ex herbario*, Mathews.

(4) Oncidium aureum. Pseudobulbis foliisque [illegible] in latere oblongis membranaceis, obtusis, floribus denique sequalibus; sepalis lateralibus a [illegible] petalisque lanceolatis, in apice [illegible] acuminatis; labelli unguiculatis, cordatis, obtusiusculis, [illegible] obtusis, parvo intra incisum, albisque distinctis; integrum, [illegible] unguiculatis; labello [illegible] *Peruvia, in Nova Granata, Jameson.*

(5) Oncidium cruciger. Pseudobulbis [illegible] foliis linearis-lanceolatis, acuminatis, obtusis; scapis [illegible] flexuosis, bractea; [illegible] sepalis lateralibus, sepalo superiori [illegible] petalis [illegible] sepalis; [illegible] integrum, unguiculatum, semicordatum, [illegible] sessili, simplice, integro; [illegible] columnae armatorum; [illegible] *In nemoribus [illegible] prope Andoamazonas*, Mathews (1068).

(6) Oncidium [illegible] pseudobulbis foliisque [illegible] scapis [illegible] oblongis, [illegible] lanceolatis, [illegible] acuminatis

however, for these reasons propose the union of Cyrtochilum and Oncidium, which I think may be distinguished satisfactorily in the following manner. Oncidium always has the two lateral sepals rather more or less united or distinctly approximated at the base, Cyrtochilum has them equally spreading; on this account my C. Karwinskii must be reduced to Oncidium, notwithstanding its entire lip, with lamellæ in lieu of tubercles at its concave base. In the second place, the lip of a true Cyrtochilum is narrowed towards the apex, while in Oncidium, except in those species where it is deeply hastate, it is dilated and rounded at the apex.

With respect to Odontoglossum, it was first distinguished by an unguiculate labellum adnate halfway up the face of the column, a reflexed lamina with three minute tubercles at the base, and a column with two auricles. Of these characters the first is not found in any species I have examined, and probably arose in some mistake; the others are inconstant. Thus the reflexed lamina, although characteristic of some species as not of others, in Odontoglossum nebulosum[67], lacerum[68], Hallii, cirrhosum, &c. it is a conspicuous feature, but it can hardly be observed in O. Rossii[69], and maculatum (or coronatum of the Botanical Register), and it does not exist at all in O. Cervantesii, which is very near O. nebulosum. The nature of the tubercles is also I suspect misunderstood in the species to which it is assigned; for while two teeth or setæ are common, I do not find the number three in any case except O. lacerum, and then it is accompanied by other characters. The presence or absence of auricles upon the column is not to be taken as a generic character, because it has already been shewn that the character is inconstant in Oncidium, because it is equally variable in Cyrtochilum, of which C. volubile is really a species, and because they are absent in Odontoglossum pardinum (Cyrtochilum pardinum *Gen. et Sp.* 210), nebulosum, Cervantesii and Rossii, while they are present in O. membranaceum[70], which is hardly distinguishable from the last, and in several other species.

The true characters of Odontoglossum, and those by which alone it can be distinguished generically from Cyrtochilum and Oncidium, are a long column, and an entire unguiculate lip, narrowing to the point, and furnished at the base with a pair of fleshy, entire, or fringed lamellæ, in front of which stand two, or rarely three, teeth or bristles. In this view of the question, Mr. Bateman's Cyrtochilum bictoniense will belong to Odontoglossum, while my own Cyrtochilum ixioides, which I once thought would best arrange with Odontoglossum, will retain its original position.

In conclusion, the differentiæ characters of Oncidium, Cyrtochilum, Miltonia, and Odontoglossum, may now be considered settled as follows,

Oncidium. Sepala lateralia labello supposita, nunc connata. Labellum planum, saepius sessile, cordatum, pandurinum v. trilobum, apice dilatatum, disco saepius varie tuberculatum.

Cyrtochilum. Sepala omnia in patula, libera. Labellum planum, oblongum, sepalis unguicularibus, integrum, vel margine dentatum, apice angustatum, basi tuberculatum villosum aut plurides lamellatum.

Miltonia. Sepala lateralia patula, libera. Labellum sessile, integrum, ex flabellato v. cuneiformi, apice rotundatum, venis baseos, duabus tuberculato-lamellatis.

Odontoglossum. Sepala lateralia patula libera. Labellum planum unguiculatum, ascendens, in o reflexo diviso denuo, apice angustato, basi concavum crista bilamellata, raro fimbriata; sepalis ab ore oriens atque auctum. Columna elongata, a nice ad rostrum aut apicem.

[67] Oncidium nebulosum. Pseudobulbis ovato-oblongis, foliis oblongis, acutis, petiolatis, scapo radicali, petalis oblongis, acutis, labello ovato-oblongo, ungue columnae adnato, margine undulato, lamellis duabus conniventibus, columnae auriculis 2 anterioribus obtusis, columna apice pubescente. *Mexico.* Galeotti, legit et ex herb. Karwinski.

[68] Oncidium lacerum. Pseudobulbis ovatis, compressis, sulcatis, unifoliis; foliis lineari-oblongis, petiolatis, coriaceis, sepalis lanceolatis, petalis subpanduratis, lamellis duabus, ut in labello, arcuatis, squamaeformibus, sepalis petalisque, thyrsoideo-paniculatis, acuminatis, labello ovato, cuneato, apice crispato, lamellis fimbriatis, denticulis 2 anterioribus subulatis glabris, columna glabra, auriculis obtusissimis. *Peruvia.* Pavon. Mulhen. 807.

[69] Oncidium Rossii. Pseudobulbis ovato-oblongis, unifoliis; foliis oblongo-lanceolatis, scapo radicali, subtubiformi, bracteis membranaceis, ovatis, acuminatis, sepalis lanceolatis, et petalis ovato-oblongis, labello ovato-oblongo, ungue columnae adnato, margine undulato, lamellis duabus conniventibus, columnae auriculis obtusis, columna apice pubescente. *Mexico.* Galeotti, legit et ex herb. Karwinski.

[70] Oncidium membranaceum. Pseudobulbis foliisque scapo 2-3-floro, bracteis vaginisque membranaceis, sepalis lanceolatis, petalis lanceolatis equitantibus, sepalis membranaceis unguiculatis lanceolatis, petalis lineari-oblongis, labello ovato-oblongo, lamellis duabus rotundatis denticulis 2 anterioribus elongatis pubescentibus, columna pubescente, apice denique auriculata. *Mexico.* ex Pavonianis. Herb. Karwinski.

Mrs. Drake del. *Huntleya violacea.* H. [illegible] Sch.

[illegible] Dall. [illegible]

Printed by [illegible]

PLATE XXVI

# HUNTLEYA VIOLACEA.

*H. violacea*, sepalis petalisque oblongis obtusis margine crispis, labio lobo terminali emarginato cristâ unâ sulcatâ, cum unâ vix ruâ carnosâ bivocalari.

So beautiful a plant as this it is rare to find even among Orchidaceæ, not that its heritage is poor in rich, or its flowers very large or their form particularly strange, but because of their soft yet intense violet, which varies from the depth of the richest sapphire to the milky iridescence of opal.

It is a native of Demerara, whence it was received by Mr George Loddiges, who has remarked that the genus itself seems very near some of the Zygopetala, especially Z. maxillare. In fact there is nothing to distinguish Huntleya from them except the excessively enlarged column of that genus, and the union of its lateral sepals at their base after the manner of Maxillaria, between which and Zygopetalum Huntleya stands as it were intermediate yet distinct.

The genus was originally established by Mr Bateman upon a Demerara plant received from Mr Schomburgk, and said to have sessile flowers, but of which I know nothing, except that its structure was found to resemble the Huntleya Meleagris of the Botanical Register, tab. 1439, ann. 1839. The new species has, at the base of the lip, a large transverse crest bordered with long yellow fringes, its column is widest at the point and slightly toothed, and its sepals and petals are sanded with wine-purple veins and blotches upon a yellowish ground. It is therefore evident it is very different from the present species, and in fact not to be compared with it for beauty.

In this plant there are no visible PSEUDO-BULBS, but the plant consists of a tuft of LEAVES, enclosing each other at the base, with which they are very distinctly articulated at from two to three inches above the base, and blunt as a goat's or nine inches long, erect, acute, but not plicated, and between them numerous, leathery in texture. From the axils of the lower leaves spring the PEDUNCLES, which are about six inches long, one-flowered, and pendulous, each has two oblong bracts at nearly equal distances, the one of which one is very small, at the base of the ovary. The FLOWERS measure three inches in diameter, and are of a thick leathery texture. The SEPALS are oblong, obtuse, curved inwards at the point, and very much crisped at the edges; the two lower are united by their bases into an inconspicuous pouch, as shewn in the right hand figure; on side they are a pale soft violet fading to white at the edge, inside below the middle they are of a much deeper and richer violet, but even this fades to white at the points. The PETALS are oblong, like the back sepal, and are coloured nearly the same, only more deeply and brightly. The LIP is united to the pouch of the lateral sepals by a short narrow foot which curves upwards and dilates into the lamina; the latter is deep rich violet, kidney-shaped, with a little notch at the end and slightly toothed towards the base; the edge is irregularly sinuous; in the middle above the foot is excavated into a hollow like a tea-spoon, and there it is brown; between the excavation and the violet deep border there lies a brown ridge, fleshy, and deeply furrowed on both sides, which gradually slopes forwards till it ends in a crenelled boundary. The COLUMN is as large as the lip, fleshy, very deep violet, broadest at the base, curved forwards at the apex, and probably entire at the edge, so that it looks like a portion of the lobe of a boat turned bottom upwards. Below the apex of the column stands the ANTHER, containing four yellow pollen-masses, attached to a narrow medicula and triangular gland, which are of the same violet colour as the column itself.

Mr Schomburgk, since his return to this country, has highly favoured me with the following interesting account of his discovery of this plant.

I discovered the Huntleya in Guiana for the first time in October, 1837, when on my ascent of the river Essequibo. The river entered Cunaka falls, or Sick Cotton fall, obliged us to unload our canoes and to transport our baggage overland, in order to avoid the dangers which a mass of water at once so powerful and rapid, and bounded by numerous rocks, might offer to our ascent. While the Indians were thus occupied, I rambled about one of the small islands, which the diverging arms of the river formed in their descent, and the vegetation of which had a peculiar lively appearance, which is so characteristic in the vicinity of cataracts, where a humid cloud, the effects of the spray, always hovers around them. Blocks of syenite were heaped together, and while their black shining surface contrasted strongly with the whitish foam of the torrent, and the early waves beating against the rocky barriers, as if angry at the boundary which they attempted to set, the recessed domes near dome-shaped summits were adorned with a vegetation at once rich and interesting. Heteconias, Tillandsias, Bromelias, Ferns, Pothos, Cyrtopodiums, Epidendrums, Peperomias, all appeared to struggle for the place which so small a surface afforded to them. The lofty mountains Akaywanna, Comoni or Tacuiari, and Twasuik, recede, and form by an amphitheatre, afford a highly interesting scene. In doing the most delicate sketch of that part of the river Essequibo, I was attracted by a number of Oncidiums a tillandsia which covered one of the rocky piles, and astonished me by their hanging stems and the bright colour of their flowers, when my attention was more powerfully attracted by a plant the appearance of which, although different from the previous orchids, I immediately nevertheless that it belonged to that interesting family the orchideous. The specimens were numerous, and clothed almost with their vivid green the rugged and dark trunks of the gigantic trees, which, contrasted to the magnificent scene around me. It was not long before I discovered one of the plants in flower. It was as singular as it was new to me. The sepals and petals of a rich purple and velvet-like appearance, the labellum, to which form the column bore the nearest resemblance, of the same colour, the labellum striated with yellow.*

In the sequel of my expeditions I found it generally in the vicinity of cataracts, where a rapid current is constantly suspended, and where the rays of the sun are scarcely admitted through the thick canopy of foliage. I traced the Huntleya from the sixth parallel of latitude to the shady mountains of the Acarai chain near the equator, but in its finest splendour it appeared at one of the small islands among the Christmas cataracts in the river Berbice, and there is a melancholy circumstance connected with the plant, which its appearance never fails to call to my memory. The singular beauty of this plant induced my friend Mr Ross, who accompanied me as volunteer during the unfortunate expedition up the river Berbice, to draw and paint it on the spot. He was yet occupied with this task when the last of our canoes was to descend the dangerous cataract. He arose from his occupation, desirous to descend with the Indians in the canoe, although against my wish, but he persisted. The canoe approached the fatal—it upset—and of the seven persons who were in it at the time, he was the only one who paid the rash attempt with his life. He is now buried opposite that island, the richest vegetable productions of which it was his last occupation to imitate on paper and in colours.

* It appears easy of cultivation, although the first plants which I sent to England to Messrs. Loddiges appear to have perished. I was more fortunate with former transports, and I saw lately among the splendid collections of my kind friend, Mr. George Barker at Springfield, a Huntleya in blossom, the flower of which could hardly vie with any in their native country. A humid atmosphere and shade are the distinguishing features of their habitat.

(see the first account of it, see Journal of the Royal Geographical Society, vol. [illegible], p. 92.)

*Oncidium sanguineum.*

PLATE XXVII

# ONCIDIUM SANGUINEUM.

O. *sanguineum*, caulibe, foliis oblongis coriaceis dorso carinatis, scapo longissimo punctulato, sepalis subrotundis unguiculatis lateralibus basi subconnatis petalisque crispis sublobatis, labelli trilobi suberispi vermiculatis lobis subaequalibus intermedio retuso cuneato, cristâ ovatâ convexâ corrugatâ, columnae alis rotundatis sublobatis, antherâ piberula. *Botanical Register*, 1839, *miscell. no.* 68

In Guiana, a country of whose vegetable wealth but little is yet known, has furnished Messrs. Loddiges with this gaily painted plant, in which we find quite a new mixture of colours for Oncidium. Instead of the ground colour of the flowers being a deep brownish yellow, it is here of a soft pale green, and for purple, or violet, or chocolate-coloured blotches we have a rich crimson.

In habit the plant resembles O. carthaginense, with which it must be arranged, it differs from it in being smaller, in having the lateral lobes of the lip nearly as large as that in the middle, in the surface of the lip being so polished as to appear as if varnished, and finally in the crest not being three-toothed, but merely oblong and corrugated.

There are no visible PSEUDO-BULBS to this plant, but the LEAVES fold up at their base, where they are enveloped in rigid brown sheaths, and after a time produce from their axis the flowering scape. They are from six to eight inches long, very stiff, sharp-pointed, with a sharp ridge along their back. The SCAPE is about two feet high, curved, and bending gracefully over the leaves. It is smooth and obscurely spotted with dull crimson. The BRACTS at the forks of the branches are ovate, and acute with a membranous edge. In all that relates to the arrangement of the inflorescence and the form of the parts it agrees with Oncidium carthaginense. The SEPALS and PETALS are roundish, concave, very much crested, and lobed at the edge, and long-stalked, pale greenish yellow blotched with bright crimson. The lateral sepals are very slightly united at the base. The LIP is oblong, connected like an hour-glass at the middle, and heart-shaped at the base, by which means it is separated into three lobes, of which the lateral are very much puckered and curled, and project as far as the sides of the middle lobe, which is much less curled, wedge-shaped, rounded off at the angles, and emarginate. In form it is very much like a saddle as seen from above; in the middle it is bright crimson, and so smooth as to appear varnished, otherwise it is coloured like the other parts; the crest is ovate, very much shrivelled, blunt at the end, with an oblong central tubercle, deep crimson except on the ridges of the folds, which are much paler. The COLUMN has a pair of roundish spreading ears, and an anther that is slightly covered with down which runs down over the ridges of the stigma.


Miss J. Walker del.

*Lælia cinnabarina.*

PLATE XXVIII

# LÆLIA CINNABARINA.

L. *cinnabarina* (Bateman MSS.) pseudobulbis cylindraceo-ampullaceis elongatis, foliis binis basi discretis oblongis subrecurvis et undulatis, scapo tenui ascendente foliis multo longiore 4-5-floro, sepalis petalisque oblongo-lanceolatis obtusis æqualibus, labelli convoluti recurvi lobis lateralibus acutis intermedio ovali crispato lineis 3 elevatis in axi.

The colour of the flowers of this brilliant species, and its graceful manner of growth, render it one of the most ornamental species which we possess; for it seldom is impossible to match exactly the peculiar tints of its blossoms among the race to which it belongs. Thus of Laeliadeorum vitellina and cinnabarinum two species of great beauty, of which the former in cultivation approach the nearest, but their colours are really very different.

The species is native of Brazil, whence it was introduced in the year 1836 by Mr. Young, Nurseryman, Epsom, and in the spring of 1837 it was exhibited in flower in one of the meetings of the Horticultural Society in Regent Street. Subsequently it has appeared in other collections, and I owe the opportunity of preparing the accompanying figure to materials supplied to me by Mr. Bateman and Messrs. Loddiges. It flowers freely in the month of April.

The PSEUDO-BULBS are from four to five inches long, erect, clustered, thickest at the base, and tapering upwards, so as to resemble a wine-flask stretched longer, closely invested with withered scales, and having at the apex one or two leaves, which are separated at the base by a considerable interval. The LEAVES are about as long as the pseudo-bulbs of a narrow oblong figure, slightly five- or seven-nerved, and are curved downwards by their own weight. From the apex of the pseudo-bulbs springs the SCAPE, a foot or more long, very slender, green with about three withered scales attached to it at nearly equal distances. It is unable to bear the weight of four or five flowers that spring from its end, and consequently it is bowed downwards, and as it swings in the air from among its dense foliage hanging from a bough of a tree, it must look like a many-headed reptile, watching impatiently for its prey. The BRACTS are extremely small, sharp-pointed scales. Each FLOWER is seated on a stalk which, taken together with the ovary, measures about an inch and half in length. The CALYX and COROLLA are of a most brilliant yellowish-scarlet; their divisions are of nearly the same size, linear, obtuse, the back sepal being straight, the two anterior and the petals being falcate in the direction of the LABELLUM. The latter (fig. 2) is of the same rich colour as the other parts, but it is finely painted with numerous obscure bright purple veins, which rise themselves towards the points of the lateral and base of the middle lobes; it is closely wrapped round the column, except at the upper end, where it curves backwards; along the middle are three elevated lines; at its base is a passage, passing down the side the ovary and indicating that the labellum is really calcarate, but that its spur is adherent to the flower-stalk, as in Pelargonium. The mouth of this passage is shown at fig. 2, *a*. The POLLEN-MASSES are eight, arranged as in the accompanying figure 1.

When this plant was first seen by me I had no opportunity of examining its pollen-masses, and took it for a Cattleya, of which it has rather more the habit than of the Laelias at that time known; but recent discoveries have shewn that there may be Laelias with the habit of Cattleya, as in this case, and Cattleyas with the habit of Laelia, as in C. citrina. The difference between them is not

ous of habit but of structure the pollen-masses of Cattleya being four and those of Lælia eight in number.

Our gardens now contain all the known species of this most noble genus, with one exception. L. anceps, albida, furfuracea, and autumnalis have all been figured in the Botanical Register the latter also beautifully in Mr Bateman's splendid work on the Orchidaceæ of Mexico and Guatemala. L. majalis, the Flor de Mayo, has been sent alive by Mr Hartweg from Mexico to the Horticultural Society, and has been extensively distributed. The species at all to procure is the real L. grandiflora, the Bletia grandiflora of De la Llave and Lexarza, and Flor de Corpus of the people of Mechoacan. This latter is too imperfectly described to enable us to judge very correctly of its appearance, it is however said to have large flowers, pale purple, elegant, and rather sweet, to which is added, that they are "spithamæi," but whether by this expression the Mexican authors intended to say that the flowers are a span high above the ground, or a span in diameter, two very different things, there are no means of ascertaining. In the former case they would resemble L. majalis in the latter they would be much larger than any thing yet discovered. Whatever sense is to be attached to the meaning of spithamæus, it seems clear that L. grandiflora, with oblong or round sub-pear-shaped pseudo-bulbs, a scape occasionally dichotomous, and amplexicaul sheets, is a very different species from any thing yet seen in our gardens or herbaria.

*Lobralia liliastrum.*

PLATE XXIX.

# SOBRALIA LILIASTRUM.

S. *Liliastrum*: foliis lanceolatis acutissimis vaginisque striatis glaberrimis, racemo multiflorо laxiflexo, rachi tortuosâ, bracteis ovatis acuminatis spathaceis distiche imbricatis, sepalis patentibus angustis lanceolatis acuminatis, petalis conformibus undulatis, labello undulato crispo plicato emarginato undato? vel is flabellatus, alis columnæ maximis falcatis.

S. Liliastrum. *Gen. & Sp. Orch.* 177.

The genus Sobralia is one of the most remarkable among Orchidaceæ, with its lofty reedy stems, large lily-like flowers, and stiff plaited leaves, which resemble those of the smaller kinds of Palm-tree. It is found in Peru, in Brazil, and in Mexico, where the species are among the most showy and conspicuous of the bush. They are thus spoken of by Poppig, who found four species in the first of these countries. They consist of terrestrial perennial plants, with simple roots, and stems not uncommonly growing three times as high as a man, very rarely branched, thickly clothed with leaves. Their inflorescence consists of terminal racemes, which are straight or flexuose, sometimes necklaced and bifid, and loaded with snow-white, pink, crimson, or violet flowers. The petals and the sepals are pretty round, the column, which at first appears as if funnel-shaped, and is bordered by a lacerated fringed edge. The species inhabit dry, sunny, rocky, and very hot places, where they often form extensive thickets. A few are sweet-scented, and of some the flowers last for only a short time. (*Nov. gen. et sp.* i. 54.)

Can anything be conceived more beautiful than thickets of such plants as these in the dense, pathless plain?

The species before us was originally discovered at Bahia by Sellmann, a German collector, from whom I some years since bought a specimen marked Epidendrum fragrans, and been found in thickets in sandy places. More recently it has been met with in British Guayana, by Mr Schomburgk, by whom the drawing from which the annexed figure has been prepared was sent to Messrs. Loddiges. The stems are stated to be from ten to twelve feet high. Mr Schomburgk supposes that he found white specimens belonging to a different species, the former being distinguished by the leaves sheathing the stem at the base, and in the latter they are flat at that part, but as I have seen no specimens which would enable me to judge of the value of this distinction, and as the flowers appear to be the same, I have not separated them even as varieties. Should it appear hereafter that the red is a different species, then the name Liliastrum will belong to the white species, which most certainly is that of Bahia.

For some reason unknown to me Messrs. Poppig and Endlicher exclude this species from the genus Sobralia (see their *Nov. gen. & sp.* i. 53), but I cannot conjecture their reason for so doing. Into what genus the species of Sobralia there is not the smallest doubt. This species now seems to be considered, and in opinion entertained by the same authors, that the species well as not first, to the exclusion of the species of the Cattleyas in Peru, which however they are mistaken, for perhaps the finest of the species. In Schomburgk's of Mexico, a place from near Oaxaca, it

Sobralia, [illegible] foliis alternis, [illegible] globus tegentibus strictis, [illegible] oblongis, abelli [illegible] glabris.

Count Karwinski, with a medallion at least three inches and a half long. The same plant was found in flower in the month of July, on shady rocks near the Hacienda de la Laguna by Schiede, who reports the flower to be rose-colour.

It is matter to be regretted that all these magnificent plants should not yet have reached us alive; still more is it to be lamented that there is no probability of the Peruvian species ever arriving here unless some zealous patron of gardening will send a collector for the express purpose of procuring them, and other precious gems of the Western Andes. They are found more especially on the rocky and shrubby summit of the range of Cassapillo. S. rosea is probably the finest of them, with its large flowers (four inches in diameter) of a beautiful pink; but S. dichotoma seems the favourite of the Peruvians themselves. Of the latter Poppig speaks as follows: "This perennial plant is found only on the more sterile mountain-tops, where the limestone rocks, flung over the ground in mighty ruins, are either assembled in heaps, or are separated by large fissures, or sometimes are suspended as it were over the brink of some dreadful precipice. They there bring forth a tremendous square of cactuses and ferns, which is overrun by that dwarf, prostrate, impenetrable thicket, rich in beautiful but spiny rigid branching shrubs, which can only be penetrated by the traveller with great toil and danger, and which, as it constitutes the highest limit of arborescent vegetation, the Peruvian calls the eyebrow of the forest (*la ceja de la montaña*). In such places the Sobrenia dichotoma appears loaded with violet blossoms, and scattering around a delicious fragrance, like that of the Tuberose or Stock. Because of its surpassing but transitory beauty the people of the country regard it as a vegetable wonder, and name it the Flower of Paradise (*flor del paraiso*).

I am happy to add that through the exertions of Mr. Schomburgk Messrs. Loddiges have at length obtained the white variety of this interesting plant to our collections."

When the genus was published in the Flora Peruviana an entirely false account was given of the nature of the pollen-masses, which were represented as being those of the Asclepiadeæ section of Orchidaceæ, and as the publication of the third part of the *Genera and Species* of Orchidaceæ no opportunity had ever occurred to me of examining into this point of structure. Subsequently Mr. Poppig pointed out the error, and then I also the pollen at the point of entirely different.

Mr. Schomburgk not being aware of these facts and unable to reconcile the plant discovered by him with the supposed character of Sobralia, naturally regarded it as a new genus, and proposed to dedicate it to Her Royal Highness the Grand Princess of Prussia, with a view to which magnificent drawings were sent to Baron Humboldt for publication. In the meantime the specimen of engraving sent by our distinguished traveller to Messrs. Loddiges, having attracted their attention, I begged to have them for the present work, and it was not till the eve of their publication here that it became known that Mr. Schomburgk had wished to dedicate the plant to Her Royal Highness. Since however neither the great rose species nor the white had been imported, it will be necessary to select some other plant to bear the name of Her Royal Highness, and fortunately, in many new and most interesting discoveries, Mr. Schomburgk will have no difficulty in selecting some other equally worthy of such a dedication.

*Aerides quinquevulnera*

PLATE XXX

# AERIDES QUINQUEVULNERA.

A. *quinquevulnera*, foliis ligulatis apice rotundatis obliquè emarginatis apiculo interjecto, racemis pendulis multifloris foliis longioribus, labelli cuneiformi-oblongaris laciniis lateralibus erectis intermediâ oblongâ inflexâ denticulatâ, calcare conico incurvo.

Mr Hugh Cuming, who has been passing some time in the Philippines, and who has investigated the Botany of those rich islands with great zeal and success, sent us dried specimens of the plant now published, to Messrs Loddiges, in which it flowered in August last.

It is one of the most showy of that beautiful race which is confined to the tropical parts of Asia, and which claims for itself more particularly the name of air plants. Of these a great store, by far the largest number, inhabit the eastern parts of Asia, in the genus Aerides proper, for instance, out of twenty-six species, sixteen are Javanese, and of them very little is known to botanists in this country. Let us hope that the labours of Mr Cuming will by degrees make them familiar to us.

What is now represented is nearly allied to the delicious A. odoratum of Bengal, of which it has all the habit, but it wants the delicate fragrance of that species, and yet it has a pleasant aromatic odour, its flowers have each five purple blotches, and the middle lobe of the lip is serrated; in all which circumstances the two species disagree.

The STEM, LEAVES, and mode of growth are altogether those of A. odoratum.

The SEPALS and PETALS are fleshy, firm, cottonish, white, with a few purple speckles near the base, and a rich crimson stain at the apex; the lateral sepals are much larger than the upper or the petals. The LIP is funnel-shaped, curved inwards at the base of its spur, which is conical, and green; with its mouth it presses against the column, which is embraced by its two lateral lobes, which are white speckled with purple; the middle lobe is oblong, convex, serrated, deep crimson with a white edge, and pressed close to the anther.

*Catasetum longifolium*

PLATE XXXI

# CATASETUM LONGIFOLIUM

*C. longifolium*, foliis longissimis graminea, racemo cylindraceo pendulo multifloro, sepalis ovatis subrotundis petalorum conformium dorso applicatis, labello arcuato a tergo incurvo, antico truncato apiculato intus cereaceo glabro margine fimbriato. *Botanical Register for* 1839, *miscellaneous matter no.* 154

The genus Catasetum, including the suppressed and spurious genera Monachanthus and Myanthus, but exclusive of Mormodes whose obliquely twisted column separates it from these, proves to be one of which the species are numerous in tropical America, and in the adjacent countries almost every large importation producing some novelty belonging to the race. None however of those yet discovered, can be compared for beauty with the species now figured, of which a short account was already published in the Botanical Register.

It was imported from Demerara by Mr Valentine Morris, of the Retreat, Battersea, to whom it was also sent by his friend Mr Henry Gloster, Attorney-General of the Colony, a great admirer and cultivator of Orchidaceous plants. It has also been received by several other persons, but no one, except Mr Morris has succeeded in causing it to produce its beautiful flowers. It blossomed at the Retreat in October and November 1839.

Its general HABIT is rather like other species of its genus, but its LEAVES are a foot and half or more in length, not more than three quarters of an inch broad, somewhat resembling those of a wild or grassy kind, but are much to support themselves, and hang down of the plant is made to grow in a pot, as well as present is seen, from Mr Schomburgk's observations, that when growing naturally, the pseudo-bulbs cling to the stems of Palms, whence the leaves hang down gracefully. The RACEMES are about a foot long, arising from the base of the pseudo-bulbs, whence they curve downwards and become pendulous; they are so closely covered by from twenty to thirty flowers, which nearly touch each other, that they have something of a cylindrical appearance. Each FLOWER is seated upon a stalk which taken together with the ovary, is an inch and half long, with a small ovate herbaceous sheath at its base. The SEPALS and PETALS are both shaped and coloured alike; they are of a roundish form, tapering to the point, where they are stained with purple, otherwise they are green. The sepals are twisted in such a manner as to be placed exactly at the back of the petals, and the whole together are placed above the horizontal line of the flower. The LABELLUM is very fleshy, somewhat cup-shaped, or rather bag-shaped and curved backwards at its end, firm, fleshy about an inch in diameter at the brim of a deep rich orange running into crimson at the edge, a little rugged on the outside, very smooth and waxy in the inside; in front it is abruptly terminated by a rich deep crimson warted border, at the sides it edge throws away into a greenish violet fringe. The COLUMN is very short, with the extremities in front into two short horns, but quite destitute of claws, in the back it terminates in a [illegible] [illegible] the [illegible] of the anther.

Mr Schomburgk informs us that this plant was first discovered by him in 1836, and sent that year to Messrs. Loddiges. "We found it growing on the Elin Palm (Maurtia flexuosa) where the spathes generally developes itself; and in consequence of the height and the little resemblance which its long leaves bear to the general appearance of Orchidaceous plants, it had been no doubt overlooked.

The [illegible] [illegible] in the place is unnatural. The rapid decomposition of [illegible] under the [illegible] the scars which have been left where the fronds fell off. The place of [illegible], the decomposition of which was the origin

of the scanty mould, has been taken by Tillandsiæ, Peperomiæ, and other succulent plants, and among them thrives the Camœtum longifolium. The pseudo-bulbs adopt however a pendulous position, and the fleshy roots find in the store of black vegetable mould such abundant nourishment that a thick tuft of long slender leaves is pushed forth, and hangs down the majestic Mauritia, or their bright green forming a strong contrast with the sombre hue of the large bunches of scaly fruit of this spectacle palm, and so increasing its otherwise interesting appearance.

It was first discovered in the Camœni Creek, a tributary of the river Demerara; we found it afterwards frequently at the low and marshy ground of the rivers Waini and Wicki, tributaries of the river Berbice, where the Mauritia Palm is so numerous, that it occupies large tracts exclusively.

Its leaves are sometimes from six to eight feet long, but I never observed in its native climate a bunch covered with such numerous flowers as the one here represented. The flowers which I saw were of a brown ash colour.

The Macusi Indians call C. longifolium Massanu; the Warraus Ouitvois.

*Saccolabium compressum*

PLATE XXXII

# SACCOLABIUM COMPRESSUM.

S. *compressum*, caule unione compresso incapito, foliis distichis amplexicaulibus [illegible] obtusis obliquè 3-dentatis, racemis cylindraceis pendulis, labelli carinare falcato obtuso sepalis triplo longiore laminâ carnosâ marginâ dent form Saccolabium compressum. *Botanical Register for* 1840, *miscellaneous matter, no* 5

The foliage of this plant is very handsome, when in health, and readily distinguishes it from all its kindred, not only by the concave sheath with which it is covered, but by the broad thin amplexicaul leaves, whose base is so wrapped round the stem as to form something like ears on each side.

The flowers, though individually small, nevertheless have a graceful and pretty appearance from their drooping position, from their white and [illegible] colour, contrasted with their very white spur and the party-coloured lobes of the lip, [illegible] colours.

It was sent from Manila by Mr. Hugh Cuming to Messrs. Loddiges, with whom it flowered in November, 1839.

The STEM when old is round and hard, and pushes forth numerous long, [illegible] powerful roots, by which the plant clings to the branches of trees; when young it is compressed, and, in consequence of the manner in which the bases of the leaves are rolled round it, appears quite thin and [illegible].

The LEAVES are from six to ten inches long, sea-green, broad, strap-shaped, very [illegible], very oblique, and very oblique and unequally three-toothed at the end; at the base they surround the stem, and, uniting by their margins, form a short compressed sheath, through which the [illegible] pierce when they make their appearance, although not drawn regularly in two lines. The leaves have very much the aspect of a [illegible] arrangement.

The FLOWERS are small, but [illegible] arranged in long pendulous RACEMES, which have about three, distant, ovate, acute, sheathing brown scales near the base, including the spur. The flowers when unexpanded are something more than half an inch long, which is about the length of the very slender pedicels on which they are supported. The SEPALS are oblong, rather acute, and spotted with crimson upon a ground at first white, but afterwards yellow; the two inner ones converge round the column till their points touch; that at the back forms an arch over the column, and is very prominent at the back. The PETALS are similar in form, size, and colour to the sepals, but they are somewhat lanceolate and spread a little longer from the column. The LABELLUM or lip consists of a long, hollow, falcate, obtuse, pendulous spur, which is perfectly free from all appendage or projection on the inside; its rim is nearly circular, obsoletely three-lobed, the side lobes being rounded, that in front more acute and fleshy. The COLUMN is very short, wingless, lengthened over the stigma into a narrow awl-shaped process (rostellum), to which the pollen-masses adhere by means of a long, ascending, slender, mucronate, channelled caudicula, and a minute gland. The ANTHER is rounded, rather ragged, extended in front into a long awl-shaped beak, which turns upwards, following the course of the rostellum. The POLLEN-MASSES are two, obovate, slightly split at the back.

Fig. 1 represents a flower seen in front, the spur being cut away. 2 is a side view of the [illegible] and the [illegible] pollen-masses with the caudicula and gland.

*Cycnoches maculatum*

PLATE XXXIII

# CYCNOCHES MACULATUM.

*C. maculatum*, racemo longissimo multiflore, labello lineari-lanceolato, hypochilio lineari, metachilio apice cornuto glandulisque teretibus elongatis genitalibus utrinque punctatifidè marginato, epichilio lanceolato membranaceo acuto margine merulo. *Botanical Register for* 1840, *miscellaneous matter*, *no.* 8. *Botanist*, *t.* 156.

Had such a plant as this flowered near London twenty years ago, it would have afforded subject of conversation among Botanists and the lovers of Botany for a fortnight, which is a long time for any thing to retain its interest in London; but now so familiar have become the faces of the strange parasites of the tropics, it only receives a passing glance of admiration, except among *the few*.

Surely it is one of the most curious productions of nature in her wildest mood. Did any one ever see such a flower before? Which is the top, which is the bottom? What are we to call that long club foot? which is cloven too, and what the crooked fingers daggled with blood, which spread from the middle of one of the leaves, as if about to claw in something? And what moreover can they be *for*? Such knotty points as these we commend most heartily to some of our German friends for their solution, while we sink back into the matter-of-fact prose which so much better suits the enquiries of science.

Cycnoches maculatum then is a Mexican plant, imported by Mr. Barker of Birmingham, with which it flowered in November 1838. It has long slender STEMS, from the sides of which spring forth as many as four long graceful nodding racemes, each having about thirty flowers. In their appearance and habit of life LEAVES there is little to distinguish the plant from a Catasetum, or other species of its own genus. The RACEMES are nearly a foot and half long, clothed at the base with numerous thin scales, and hanging downwards from the sides of the stems. The stalks of the flowers are at right angles with the axis, more or less curved, and shorter than the sepals. Each FLOWER when fully expanded measures nearly three inches from tip to tip of the divisions; they have a dull yellowish brown ground-colour on which are a few obscure numerous rich brown blotches in a confused manner. The SEPALS and PETALS are alike in form, size and colour, lanceolate, wavy, and spreading in a starry or rather one-sided manner. The LABELLUM is exactly continuous with the foot of the column, upon which it seems as if inserted; its general form is linear-lanceolate; in the middle it is white, and divided in the edge on each side into about five round fleshy crooked fingers spotted with purple, below on the front pair of which is placed a straight fleshy horn directed backwards, and greener than any of the fingers. The upper end is thin lanceolate, acuminate, white, with three purple spots, of which one is near the point, and the two others lower down and nearly equidistant from the middle and the margin. The COLUMN is very long, quite taper at the base, enlarged into a thick knob at the apex, purple, spotted with a lighter shade of the same; at the back of the anther it is extended into a two-lobed horn, below which the anther is inserted upon a slender filament. The caudicula is very long, and rests upon a large round fleshy gland.

This species has also been found in La Guayra, by one of the collectors employed by Messrs. Lowe and Co. of Clapton.

Miltonia Clowesii.

PLATE XXXIV

# MILTONIA CLOWESII.

M. *Clowesii*, pseudobulbis ovalibus diphyllis, foliis ensiformibus angustis erectis scapo longioribus, racemo pauciflorо laxo, bracteis minimis setaceis, sepalis petalisque lanceolatis æqualibus, labelli cordati in medio constricti apice subrotundo acuto basi latioribus 5 marginibus acuptis quinquenervibus auctâ.

Odontoglossum Clowesii. *Botanical Register for* 1839, *miscellaneous matter, no.* 153.

Among the dried specimens of plants collected by Mr George Gardner in his early journeys in Brazil was this (and No 668 of his herbarium) from upon the Organ mountains, in deep woods. A supply sent home by that indefatigable naturalist afforded the specimen now represented, from a drawing by Miss M. A. Means, of a plant in the collection of the Rev John Clowes of Broughton Hall, a most zealous and successful cultivator of these curious productions. It flowered in September, 1839, under the care of Mr Wm. Hammond, the gardener to Mr Clowes, from whom I have received the following memorandum concerning its habits

"The pseudobulbs are ovate, gradually tapering into a neck, glaucous and smooth, (the old ones slightly furrowed,) and are each terminated by a pair of coriaceous leaves, narrow and acuminate at the point, slightly twisting, spreading and longer than the racemo, which springs from the axils of the primary leaves that surround the base of the pseudobulbs. The outer stand erect on a short rhizoma, about one inch in length, covered with a few yellow, brown or green, scales.

"The lip when first expanded is the most beautiful white, and afterwards changes as shewn in the drawing."

As Mr Hammond's wish it has been named after his master, than whom few persons can be found more a stronger claim to such a little compliment

When I first received it from Mr Gardner I regarded it as an Odontoglossum, and at the time Mr Clowes's specimen reached me I had not seen cause to change my opinion on which account I referred it to that genus instead of Miltonia, of which Mr Clowes had correctly considered it a species. More recent information has however satisfied me that it should be transferred into Odontoglossum across which it diagrams the lip, and consequently the name under which it was first published has to be altered.

EACH RACEME bears from four to seven flowers, as much as three inches from the tips of the petals to that of the opposite sepals, sessile on footstalks about an inch and a half long, and disposed in a loose manner, somewhat in the way of a corymb when the lower flowers are removed, but in a perfect state in the usual equitant manner. The SEPALS and PETALS are lanceolate, distinctly quinquenervate, and in form both in colour and form, richly spotted with brown upon a yellow ground. The LABELLUM is sessile, heart shaped at the base, oblong contracted at the middle and a little above the point of contraction above this it expands into a roundish white rather acute extremity which finally rolls up and becomes dull yellow at the base of the upper surface five narrow elevated lines abruptly cut off at the end of which the two lateral exterior are the shortest, the two intermediate the longest and that in the middle shorter than any but intermediate in length. The COLUMN is erect, earless, and gradually dilated upward with a tall obtuse cup-like anther, beyond which the sign. or two glandular substances

*Dendrobium macrophyllum*

PLATE XXXV

# DENDROBIUM MACROPHYLLUM.

D. macrophyllum. *Botanical Register* 1839, *misc. no.* 46.

Although the Orchidaceous plants of the Philippines have not proved handsome in many cases, yet it must be confessed that this yields in magnificence of appearance to no species that have yet been discovered.

In the specimen now represented the flowers were nine inches in circumference and they will probably be much larger, and a pair of them is produced from opposite every leaf, except in the lowermost, upon all the drooping branches of the stout and numerous stems. In this respect it resembles the well-known Dendrobium macrostachyum, Pierardi, cucullatum, and pulchellum, but it is far handsomer than even the finest of them. Its flowers indeed are more like those of D. nobile but they are purple all over, the leaves are full four inches long by two in breadth, and the stems are ventricosus not erect.

The species was sent from Manilla by Cuming, and flowered in the possession of the Messrs Loddiges.

At the base of the lip there is a dissected callosity, which lies across the channel that leads from the apex to the ungues. It is worthy of the especial consideration of Botanists that this callosity is absent in D. coerulescens and nobile, two species to which D. macrophyllum approaches very nearly in many respects, for we learn from that fact that the absence or presence of such projections is not of generic importance, as it has been supposed to be. It is also to be observed that the fine ridge which runs down the middle of the lip in many allied species is here altogether missing.

*Burlingtonia rigida.*

PLATE XXXVI

# BURLINGTONIA RIGIDA.

Burlingtonia rigida. *Botanical Register, under plate* 1927

One of the many fine plants inhabiting the woods of Brazil, our knowledge of which was confined to dried specimens until the enterprise of British cultivators succeeded in transferring it to our gardens. It was originally found in Brazil, near Villa nova de Almeida, by the Prince Maximilian of Wied Neuwied; it was afterwards gathered by Mr Gardner near Rio Janeiro, forming no. 125 of that traveller's herbarium; and it has been at length procured in a living state by the Messrs. Loddiges, in whose stove it flowered some months ago.

It is a beautiful species, with a habit unlike that of any other genus hitherto discovered. It first forms a tuft of two or three LEAVES, of an ovate lanceolate form and rigid texture, whose petiole is thin, folded together in an equitant manner, and articulated with the lamina. Subsequently in the middle of these leaves appears a short branch, in the form of a PSEUDO-BULB, oval, thin and furrowed, on whose apex arise one or occasionally two leaves, like the first in form but without the equitant petiole. The plant having advanced to this point, and succeeded in establishing itself on the branch of a tree by means of numerous fine rather stiff roots, it next produces, from the axil of one of the lower leaves, a rigid STEM, slender and as thick as a crow's quill, which rises erect into the air, forming two or three membranous sheaths upon its surface, and ceasing to grow as soon as it has acquired the length of eight or ten inches. At its apex it developes just such a tuft of leaves as that from which it sprang, and thus the plant continues to live till the period of flowering has arrived. At that time it emits from the axis of one of its lower leaves a flowering stem or SCAPE, six or eight inches long, having a few distant membranous scales enclosing it, and bearing at the apex a very short umbel-like raceme of several large drooping white FLOWERS, delicately tinged with pink. The BRACTS are ovate, acuminate, membranous, and rather longer than the pedicels. Of the SEPALS, which are shorter than the petals, the uppermost is oblong, acute, and pressed close to the back of the petals; the lowermost are united into a single piece, corresponding in form with the upper, slightly split at the point, pressed close up to the lip, and extended at the base into a short spur, which is notched at the point. The PETALS are oblong, wavy, parallel with the column and lip, rounded and spreading at the point. The LIP is considerably longer than the petals, broadly obovate, two-lobed, wavy, and narrowed at the base into a stalk, which is introduced within the spur formed by the two lower sepals; near its base it has four short wavy elevated plates, placed in unequal pairs on each side of two slightly elevated lines. The COLUMN is parallel with the base of the lip, club-shaped, tapering and hairy, and much shorter than the petals; at the upper end on each side stands a long membranous narrow ear, guarded in front by a curved tooth of considerable size. Within these teeth is stationed a glutinous circular excavation, which is the STIGMA. The ANTHER is rounded, incrested, and abruptly cut off in front. The POLLEN-MASSES are two, excavated at the back, and placed upon a long obovate strap or caudicula attached to a small oval gland.

When the column is deprived of all the parts that surrounded it, and so placed as to be seen in front, as in one of the figures of the accompanying plate, it bears far more resemblance to a bird's head and neck than to any part of a flower.

Travellers in Brazil report this species to have a delicious scent of violets, but I did not perceive it in Messrs. Loddiges's specimen.

To the species of Burlingtonia already mentioned in the Botanical Register on or plate 1927 B maculata has been already added in the volume of that work for 1838. I have since received a third South species with the habit of B rigida, in forms no. 664 of Mr Gardner's collections in the Organ Mountains of Brazil, and differs from that plant in its leaves being smaller, narrower and obtuse, in its flowers being smaller, and in the inflorescence being slightly panicled. These two species may be distinguished by the following characters.

B. rigida. Bot. Reg. tab. t. 1927. Sertum Orchid. t. 96. caule erecto ramoso teretiusculo distantiflorum, foliis ovato-lanceolatis acutis, racemo simplice nutante, bracteis oblongis acuminatis, labelli trilobi lobis approximatis.

B. obtusifolia. caule erecto ramoso teretiusculo distantiflorum, foliis oblongis obtusiusculis, racemis subpaniculatis nutantibus, bracteis subulatis, labelli trilobi lobis divaricatis rotundatis.


*Galeandra Devoniana.*

PLATE XXXVII

# GALEANDRA DEVONIANA.

*GALEANDRA. (Bauer's Illustrations of Orchidaceous Plants, Genera, t. 8 Lindley's Genera & Species of Orchidaceous Plants, p. 186. Botanical Register for 1840, t. 49.)* Perianthium patens, petalis sepalisque subæqualibus ascendentibus. Labellum infundibuliforme, indivisum v. obsoletè trilobum, calcaratum, ut in lamellis (4) auctum. Columna erecta membranaceo-alata, clinandrio declivi. Polinia 2, postice excavata, caudiculâ brevi glandulæ brevi divergenti binæ adnatâ.—— Herbæ terrestres, et epiphytæ, caulibus foliatis, racemis terminalibus.

G. *Devoniana*, caule erecto simplici teretì polyphyllo, foliis lanceolatis 3-nervis, racemo sessili erecto multifloro, labelli laminâ ovatâ obtusâ crenulatâ lamellis 4 pone basin, antheræ cristâ carnosâ rotundatâ pubescente.

G. Devoniana. *Schomburgk in litteris.*

Among the many interesting plants sent from British Guayana to Messrs. Loddiges by Mr. Schomburgk was that now represented concerning which I have received the following memorandum from this distinguished traveller.

"During our peregrinations we have seen this plant no where else but at the banks of the Rio Negro, a tributary of the Amazon, where, in the neighbourhood of Barcellos, or Mariva, we found it growing in large clusters on the trees which lined the river, sometimes on the Mauritia aculeata, or even on the ground where the soil consisted of vegetable mould. It was so luxuriant in growth that some of the large clusters of stems which sprouted from a common root might have been from ten to twelve feet in circumference. When I first observed them on that pretty Palm the Mauritia aculeata, I considered it to be an Epidendrum, allied in its outward appearance to that species which you have done me the honour to call after me. We did not find either buds, flowers, or seeds when we passed the Rio Negro in April, and even on a closer inspection its appearance resembled some of the Epidendreæ. The stems were often from five to six feet high in the lower part almost of a purple appearance, and changing into green higher up. As already observed it is very abundant about Barcellos and equally in the vicinity of Barcellos or Pedrero. I wonder therefore that it escaped Spix, when he visited the Rio Negro. Although the Rio Branco falls into the Rio Negro above Pedrero, we did not observe a single specimen in that river, nor do I think that it is in the Amazon, as it is not likely that it would have escaped Martius. As soon as I looked at it when it was for the first time in blossom at Messrs. Loddiges, I considered it to be a Galeandra, and observed so much to you, who had not seen it as yet. As its flower is not only larger than the generality of its tribe, but likewise handsome, I availed myself the readier of this opportunity to request the permission of his Grace the Duke of Devonshire that I might call it in honour of him, who not only

as known as one of the most successful cultivators of this, one of the most interesting tribes among monocotyledonous plants, but of whose urbanity and condescension I have personally experienced numerous proofs since my return to Europe."

That it is a Galeandra there is no doubt, but it renders it necessary to modify the essential character of that genus, concerning whose true marks of distinction the present is a favourable opportunity for making a few observations.

When Galeandra was first proposed I had imagined that the original species, G. Baueri, might be combined with the Eulophia gracilis of the Botanical Register, and a third Sierra Leone plant, by the funnel-shaped undivided lip, the crested anther, and the peculiar form of the gland to which the pollen-masses are attached. But while experience shews that these characters are in fact essential to the genus Galeandra, it also teaches us that they are also in part unimportant, and that it is requisite for them to be combined with other peculiarities in order to constitute a really good genus. Of the characters to be rejected the crested anther is the principal; of those to be added, the presence of four parallel plates upon the lip, and a terminal inflorescence, appear essential. The Eulophia gracilis will in that case be excluded from the genus Galeandra, and so perhaps will G. extinctoria, both which require further examination in order to determine whether or not they are to be stationed definitively in the genus Eulophia.

With regard to that genus, Zygopetalum, and some others nearly allied to Galeandra, they involve some very difficult enquiry, for which sufficient materials have hardly been as yet accumulated.

To the genus Galeandra, in its restricted sense, I have one species to add; a grassy plant about two feet high, with long narrow leaves, small pink flowers, and tubers in size and form resembling the corms of a Crocus. Mr. Schomburgk found it in abundance in the Savannahs, adjacent to the River Berbice, and Dr. von Martius met with it in Brazil, in fields near Amorim in the Province of Para. It may be distinguished thus

*G. graeca*, tuberosa, caule stricto paucifolio, foliis linearibus acuminatis trinerviis longè vaginantibus, racemo erecto multifloro. labelli lamina denticulatâ obsoletè trilobâ rotunatâ lamellis 4 pone basin contiguis juxta medium incurvis exinde in tribus serrulatis confluentibus.

*Catasetum laminatum.*

PLATE XXXVIII

# CATASETUM LAMINATUM.

*(The Variety with spotted flowers.)*

C. *laminatum;* labello lanceolato basi saccato apice marginibusque incurvo basin versus fimbriato per axin lamellâ unicâ carnosâ altâ integrâ v. denticulatâ basi bilobâ instructo, columnâ curvatâ.

C. laminatum. *Lindl. in Ann. nat. hist. vol.* 4, *p.* 384. *Bentham, Plantæ Hartwegianæ, p.* 72.

*Var* 1. *maculatum,* labello, columnâ petalisque purpureo-fusco maculatis.

*Var* 2. *eburneum,* labello eburneo columnâ petalisque immaculatis.

In the general aspect of this plant before flowering there is little to distinguish it from Catasetum tridentatum, but its flowers are marked by many striking peculiarities.

The INFLORESCENCE is a nodding many-flowered racemo, proceeding from the base of the pseudo-bulbs. The SEPALS are narrowly lanceolate and acuminate, of a greenish purple colour, which varies in intensity in different specimens, the uppermost is pressed close to the petals, the two side ones are turned back till they touch each other. The PETALS are thin, pale pink, stained with dull purple, rather broader than the upper sepal, with which they are parallel, so as to form a kind of arch over the column, but not covering it, sometimes however they separate, and fall backwards towards the lateral sepals, or simply spread away from the column. Such was the case in the specimen that furnished the accompanying drawing, so that this plant has at one time the arrangement of parts found in the abolished genus Myanthus, and at another a disposition peculiar to itself.

The LIP is altogether of a new form in this genus. It has a lanceolate outline, and is hollowed at its base into a deep pouch, its edges and point are curved inwards, and along the margin, towards the base, it is bordered by a fine fringe of slender hairs. From the front edge of the pouch to nearly the apex is carried a fleshy plate, planted perpendicularly upon the lip, and from four to five lines deep, which, near the pouch, divides into two lobes, but otherwise is perfectly entire except on the upper edge, which in some varieties is unequally toothed. In colour this part is variable, in the specimen now figured it was pale greenish pink, spotted with dull but deep purple, and in a plant that flowered in the Garden of the Horticultural Society, at the time that this article was going through the press, it was of the purest ivory white, eventually changing to cream colour. The COLUMN is spotted in the variety with a spotted lip, and nearly plain in that with the white lip, in structure it is like C. tridentatum.

The only Botanists who have found this plant wild were Count Karwinski, whose specimens exist in the Royal Herbarium of Munich, and Mr. Hartweg; in both cases it was observed in the neighbourhood of Oaxaca. By the latter it was sent to the Horticultural Society, who have distributed it extensively. The specimen now represented was the first that flowered in this country, and was drawn in the stove of Messrs. Loddiges.

Oncidium pectorale.

PLATE XXXIX

# ONCIDIUM PECTORALE.

O. *pectorale*, pseudobulbis ovatis compressis sulcatis diphyllis, foliis oblongis obtusis papyraceis scapo a basi paniculato brevioribus, sepalis laterali bus semiconnatis petalisque obovatis majoribus undulatis, labelli lobis lateralibus nanis intermedio maximo convexo undulato bilobo, cristâ ovatâ depressâ acuminatâ margine verrucosâ tuberculisque numerosis in frusti formâ ordinatis circumdatâ, columnæ alis truncatis.

The woods of Brazil, teeming with plants of beautiful form, rich colour, and singular structure, have furnished this, the handsomest of the yellow Oncidiums. I am indebted for my knowledge of it to James Wentworth Butler, Esq. of Downes near Exeter, from whom I received a specimen and drawing in April, 1840, with the following memorandum

"I have ascertained that it was imported from Rio de Janeiro, and it seems to me to resemble in habit the O. Forbesii which I received at the same time, but in the structure of the leaves it approaches closely to O. flexuosum. The pseudo-bulbs are also furnished with leaves at their base as well as at their point, which is the case with O. flexuosum, but I apprehend not uniformly the case with all Oncidiums. It seems to me also that the anther, which forms as it were the termination of the column and surmounts the stigma (in which there is a considerable secretion of honey), is more fully developed than I have observed it to be in the flowers of other Oncidiums, and in this respect the flowers remind me of an effect I formerly observed in that of Peristeria elata. My gardener accidentally bruised the anther of one of the flowers in measuring them with a carpenter's rule, and I observed that the flower drooped immediately, and died in the course of two days. The other flowers are as fresh as on the day in which they first expanded, and I hope to preserve them in full beauty for a month longer by keeping the plant in the shade."

The arrangement of the tubercles at the base of the lip is represented in the figure at the left-hand corner of the plate. It is difficult to describe, and may be compared for general appearance to an old-fashioned ladies stomacher, studded with little knots; hence the name.

The circumstance alluded to by Mr Butler is a singular phenomenon common in the whole Orchidaceous order. He found that when the anther was disturbed the flower quickly died. This was not because the anther was removed, but because in removing the anther the pollen was brought into contact with the stigma, and thus the act of fecundation was accomplished. In general, from the absence of insects, or of those other disturbing causes to which Orchideæ are exposed in their native places, the pollen cannot come into contact with the stigma, and so long as this is prevented the flowers of many species will retain their freshness for weeks, as if in expectation of that event for which they were created. But as soon as the act of fecundation is accomplished, that is to say from twelve to twenty-four hours after the pollen touches the stigma, the flowers collapse, the bright colours become dim, the ovary begins to enlarge, and the beauty of the flower is gone.

1. Diothonea imbricata. 2. Maxillaria durnea

PLATE XL.

No. 1.

# DIOTHONEA IMBRICATA.

D. *imbricata*; caulis articulati internodiis fusiformibus sulcatis dense squamis imbricatis, foliis linearibus apice retusis aut emarginatis denticulo interjecto, pedunculis terminalibus 2-3-floris paritèr imbricatis, labello ovato acuminato sepalis petalisque conformi.

The two plants which form the subject of the accompanying plate are represented from drawings brought home from Guayana by Mr Schomburgk, who has favoured us with the following account of his remarkable situations.

"The Diothonea was met with on the high mountain chain between the 65th and 66th meridian and the 4th parallel of latitude, at an elevation of 6 to 7,000 feet above the sea. The summits of those elevations are thickly covered with two species of lichen, the Usnea ramulosa and reticulata, the white colour of which conveys entirely the supposition that the ground is covered with snow. The thermometer stood frequently in the morning at 57° F. and this decrease of heat became sensible to our body, and communicated to the nose a reddish appearance. This, connected with the snow-white lichens, powerfully reminded us of a winter landscape. And, indeed, the stunted trees, with grey tortuous branches and their foliage, would have assisted to make the picture more perfect. Numerous Orchidaceæ, conjointly with green mosses, had not clothed the branches and trunks of trees. Indeed, it was the Orchidaceæ alone which gave the vegetation a tropical aspect; neither Palms nor Heliconias nor Musas were to be seen. The Diothonea, with its bright red blossoms, looked beautiful among the tufts of mosses and white lichens, and I was so delighted with meeting this pretty plant, which grew in such abundance at these heights, that I collected again and again, as though I knew how to be chance there was of bringing a specimen alive to England, for I had yet to cross upwards of 1,500 miles by water and land before I could reach the sea-coast of Demerara.

"I have already observed that it grows in tufts and among the moss which clothes in such profusion the trunks and branches of trees in that situation. Mosses are generally found in humid places, and here, where every thing bore the stamp of dryness, this profusion of mosses and lichens was surprising. The former covered the ground to such a thickness that on sitting down one might have fancied oneself reclining on the softest cushion. Among the moss on the ground I observed numerous specimens of Sobralia liliastrum and Evelyna. Mosses, it appears, do not always require humid atmosphere, nor Sobralias a sandy soil and sunny situation. I need not say how surprised I was to meet the Sobralia again at Esmeralda among the ridge of heaped up blocks at a short distance from the village, and which is called Cuquire. I found numerous specimens growing in the vegetable soil which had collected between the blocks. Duida is, however, of the same formation as Roraima, in the vicinity of which I found the first Sobralia liliastrum in Guayana. We discovered the Maxillaria near Moura Morivaca, which belongs to the same sandstone-formation. It grew in profusion on trunks and branches of trees at a height of about 5 to 6,000 feet.

above the sea, where a humid atmosphere was prevailing. Maraycu is about forty miles in a N.N.E. direction from Esmeralda.

The genus Diothonea differs from Isochilus only in having the lip united to the column by an intervening membrane, and it therefore bears the same relation to that genus, as is borne to Epidendrum by Encyclium. It may therefore be regarded as either a distinct genus, or a mere form of Isochilus. The original species, however, collected by the late Colonel Hall in the valley of Lion, on the western face of the Cordilleras of Peru, has a lip very different in form from the other divisions of the perianth, and both have a strong double callosity at the base of the fore part of the lip; in the true species of Isochilus, on the contrary, the lip has either one tubercle only at that part, or none at all.

Fig. 1. represents the column and lip of this plant.

Neither this nor the following species have yet appeared in our gardens.

No. 2.

# MAXILLARIA EBURNEA.

M. *eburnea*; pseudobulbis ovatis sulcatis monophyllis, foliis lineari-oblongis acutis subcoriaceis in petiolum canaliculatum angustatis, scapo erecto unifloro vaginato longioribus, vaginis distantibus acutiusculis, sepalis explanatis lateralibus triangularibus elongatis supremo petalisque lanceolatis, labello ovato-oblongo leviter crenulato calto unico acuto per medium et duobus lateralibus sejunctis multò minoribus, columnâ apice rotundâ cardine dentato.

This plant is one of the most genuine species of a genus that seems to require reconsideration but among whose numerous forms no good marks of division have hitherto been found.

It must be a plant of considerable beauty, for its flowers are nearly five inches from tip to tip of the lower sepals, and of the purest white. Some of the leaves in my wild specimens are as much as fifteen inches long, and are remarkable for the long channelled stalk into which they taper at their junction with the pseudo-bulbs; their texture is more papery than leathery.

The nearest relationship of the plant appears to be with M. grandiflora, which is said to have compressed 2-leaved pseudo-bulbs, and a lip pointed transversely at the base.

Fig. 2 *a* represents the column, with its long foot, from which the sepals and petals have been cut away. Fig. 2 *b* shews the lip with the three callosities upon its surface.

Catasetum saccatum.

PLATE XLI.

# CATASETUM SACCATUM.

C. *saccatum*; sepalis lanceolatis patentibus dorsali petalisque formcatis, labello subrotundo abruptè acuminato fimbriato medio saccato ostio contracto reniformi posticè dentato, columnâ carinatâ. *Lindley in Botanical Register*, 1840, *misc.* 179.

This species is one of the handsomest of the singular genus to which it belongs, the colours of its large flowers being much brighter than is usual among the race. For its introduction to this country we are indebted to the Messrs. Loddiges, who procured it from British Guayana.

In FOLIAGE it is so little different from others that it cannot be distinguished by any describable marks. The FLOWER-STEMS are from a foot to fifteen inches high and each bears seven or eight flowers, from four inches in diameter: at first they grow erect, but towards the point they bend down gracefully, as if beneath the weight of the flowers. The SEPALS are lanceolate, equal, spreading, inside deep purple, spotted with yellow, outside tinged with yellow. The PETALS are of the same form and nearly the same size, but are thinner in texture, more spotted with yellow, and at first form an arch over the column, but, after the flower has been for some time expanded, they spread back even more than the dorsal sepal. The LIP is of a most irregular form, and rich yellow, thickly sprinkled with dark crimson dots; in form it is roundish ovate, with a contraction on each side, and a gradual tapering to the point; all round it is bordered by long fine fringes; in the middle is a circular perforation, kidney-shaped in front, slightly two-lobed and warted at the back; this perforation opens into a small bag-shaped chamber, which projects below the underside of the lip. At first the lip is flat, but it soon turns back at the point, so that at last it is bent in the middle at almost a right angle, and lies the concave chamber already described.

*Calanthe versicolor*

PLATE XLII

# CALANTHE VERSICOLOR.

C. *versicolor*, foliis oblongo-lanceolatis erectis concavis 7-9-nervis scapo apice pubescente brevioribus, racemo denso pyramidato, labelli columnæ brevi accreti trilobi lobis lateralibus ovatis nanis intermedio cuneato bilobo multò majore basi tritaberculato seriatim lineam medianam verrucosam, calcare gabro ovarii pubescentis longitudine.

All the species of Calanthe are handsome, and well deserving introduction to our gardens; none among them however seems to excel in beauty the subject of the present figure, which flowered in September 1840, in the collection of His Grace the Duke of Northumberland at Sion. It is a native of the East Indies, whence it has also been sent from the Botanic Garden, Calcutta, to the Horticultural Society.

The plant has much the habit of Calanthe veratrifolia. The LEAVES are very broad, rather concave when in great vigour, and as much as a foot and a half long. Among them rise the stout radical scapes, round here and there furnished with a sheathing scale, smooth near the ground, but downy over all the upper portion. The FLOWERS are quite smooth, of a deep rich violet, very beautiful for some time after opening, but fading at last into a dirty buff. The SEPALS are ovate, nearly spreading, and rather larger than the PETALS, which have the same form, but are a little curved back at the tips. The LIP adheres by its base to the whole edge of the column, which is unusually short; it is three-lobed, the side lobes are half ovate, obtuse, and much smaller than the middle lobe, which is obovate, almost wedge-shaped, and deeply split; along its middle runs a line of warts, which terminate next the column in three much larger oblong tubercles. The SPUR is curved, but little thickened towards the end, and about the same length as the downy ovary.

The side figure on the right hand represents the lip and ovary, with the sepals and petals cut away.


*Maxillaria Brocklehurstiana.*

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PLATE XLIII.

# HOULLETIA BROCKLEHURSTIANA.

*HOULLETIA.* (*Adolphe Brongniart in Annales des Sciences Naturelles, vol* 15. *new series, p* 37. *Lindley in Bot. Reg.* 1841, *misc. p* 47.) Perianthium patens, sepalis subæqualibus petalis paulo minoribus, unguiculatis. Labellum cum basi columnæ continuum, patens, hypochilio angusto, basi excavato quasi bilobato, apice ligulæque in laciniam producto, lobulis nano interjecto, mesochilio nullo, epichilio unguiculari dilatato cum hypochilio articulato. Columna erecta, arcuata, clavata, semiteres, labello paulo brevior. Anthera bilocularis depressa. Pollinia 2, posticè fissa, caudiculâ lineari-lanceolatâ in glandulam acutam elongatâ, nec infixâ.—— Herbæ epiphytæ, pseudobulbosæ, Americæ æquinoctialis, foliis solitariis plicatis. Scapi radicales, erecti, apice racemosi. Flores speciosi, luteo-fusci, bracteis parvis nec spathaceis.

H. *Brocklehurstiana*, foliis longipedunculatis, racemo 6-7-floro, sepalis oblongis petalisque apice rotundatis, hypochilii laciniis lineari-lanceolatis reflexis, epichilio ovato-triangulari sublunato angulis lateralibus acuminatis.

Maxillaria? Brocklehurstiana. *Lindley in Botanical Register*, 1841, *misc. no.* 27.

This singular plant has in many respects the character of Maxillaria, and so much resembles M. Warceana in habit, that I had intended to consider it one provisionally, until I could examine with the necessary care the whole of those genera which constitute a division of Vandeæ, to which I propose to assign the name of Maxillarieæ. For this reason the accompanying plate, which has been engraved for some months, bears a different name from that at the head of this page.

Recently, however, a plant has flowered in the Garden of Plants at Paris, which, if not the same species as this, must be very near it, and to which Mons. Adolphe Brongniart has given the name of Houlletia, after Mons. Houllet, a zealous French Gardener, who found it on trees in the Corcovado. I therefore at once adopt the genus, without waiting for further information.

In some respects no doubt it approaches Stanhopea, also a Maxillarioïdous genus; but it has a totally different habit, and the hypochilium (lower half of the lip) is not concave, on the contrary it is flat, with a funnel-shaped hollow at its base. Its generic affinities however cannot be usefully discussed till the whole subject of the supposed species of Maxillaria is brought under review.

The FLOWERS are full 3½ inches in diameter, and spread out so as to form a somewhat concave perianth, thickly spotted with brown upon a cinnamon-coloured ground. In texture they are leathery and firm. The SEPALS are oblong, rather obtuse, the lateral being very slightly united at the base, and somewhat larger than that at the back. The PETALS are rather shorter, much narrower, oblong, and narrowed at the base into a claw. The LIP consists of a hypochilium or lower, and an epichilium or upper half, with no intervening joint; it is continuous with the base of the column, and rather

shorter than the lateral sepals. The HYPOCHEILIUM is narrow, flat, spotted with brown, and hollowed out next the foot of the column into a kind of two-lipped funnel, from its anterior end spring two long linear-lanceolate taper-pointed appendages, which turn back towards the column, reaching almost half way up it, just at the junction of the hypochilium and epichilium, and between those appendages is a minute reflexed fleshy tooth, such as is found in the same situation in Stanhopea. The EPICHILIUM is broader than the last, with which it is articulated; in colour it is a deep rich violet; in form it is somewhat triangular, with curved sides, and at the lower angles it is extended into a very narrow acuminate appendage, so that upon the whole it has sometimes the form technically called hastate. The COLUMN is curved, rounded at the back, slightly concave in front, thicker at the upper than the lower end. The pollen-masses are two, deeply two-lobed at the back, and planted on the end of a long narrow caudicula, which runs into an acute gland, in such a manner that the two are completely blended together. The solitary withered flower, which alone I have had the opportunity of examining, prevents my describing those parts more exactly.

It appears that the credit of first introducing this noble plant from the Brazils is due to J. H. Wankyn, Esq., of Crumpsal House, near Manchester. It was first flowered by T. Brocklehurst, Esq., of the Fence, near Macclesfield, to whom I am indebted for the drawing, by Mrs. Powell. Mr. Thomas Appleby, the gardener at the Fence, informs me that he has cultivated it in a basket suspended in the Orchidaceous house, but he thinks it will succeed better in a pot treated like a Maxillaria or a Peristeria.

Fig. 1. represents the column and lip, after the surrounding parts have been cut away. 2. is a pair of pollen-masses, with their caudicula and gland, seen from above; 3. is the same viewed from below.


Orchis foliosa?

PLATE XLIV

# ORCHIS FOLIOSA.

Orchis foliosa. *Solander's mss. in Mus. Brit. Lowe primitiæ Floræ Maderensis, p.* 13. *Botanical Register, t.* 1701. *Lindley Genera and Species of Orchidaceous plants, p.* 264.

Although contrary to the practice I have hitherto observed of admitting into the present work no plants that have been figured elsewhere, I must to be excused for introducing the subject of the present plate as a most noble example of the beauty of plants nearly approaching to the Orchises of our own climates.

This species is not uncommon in our gardens, and is treated successfully as a greenhouse plant. It is a native of Madeira, where, according to the Rev. Mr. Lowe, it inhabits woods and thickets. It is usually in bloom sooner than the wild O. latifolia, to which it in fact approaches very nearly; but under skilful management it grows three feet high, and produces such magnificent pyramids of flowers as are now represented from the conservatory of William Wells, Esq. of Redleaf. I possess a wild specimen from Madeira, for which I am indebted to Dr. Lemann, but it bears no kind of comparison for vigour with that before us.

It grows further to the southward than any species of Orchis properly so called, with the exception of Orchis Canarensis, which occurs in the Canaries, on the rocky ridges, called Los Organos, above the valley of Orotava, and is known by its shorter bracts, thicker spur, and truncate lip.

Fig. 1 gives a view of the general appearance of the plant. 2 shows the lip, column and spur.

*Epidendrum vitellinum.*

PLATE XLV

# EPIDENDRUM VITELLINUM.

Epidendrum vitellinum. *Lindl. gen. and sp. of orchidaceous plants, p. 97. Botanical Register*, 1840. *t.* 35.

This plant has been already figured in the Botanical Register, from a small pallid specimen produced in the garden of George Barker, Esq. of Birmingham. Yet I venture to add it to this collection, for who could recognize the gorgeous species on the opposite page, in the starveling just alluded to.

Epidendrum vitellinum is undoubtedly the handsomest of its genus, not yielding to even such a plant as E. Skinneri, when it is in a state of perfect health; a condition in which I regret to say no one has seen it in this country. Let me hope that the accompanying faithful representation, taken from specimens gathered by Mr. Hartweg on the Cumbre of Totontepeque, at 9000 feet above the level of the sea, and in which nothing is in the smallest degree exaggerated, will rouse the possessors of it to exertion, and induce them to give it the care its singular merits entitle it to.

In what is known of its habits in its native country we possess the key to its proper management, and the explanation of any failure that has accompanied its cultivation up to the present time. It is, strictly speaking, an alpine plant, rooting among Lichens, Jungermannias, and other inhabitants of a cool moist climate; and never exposed, on the one hand, to a higher temperature than 75°, nor on the other to one lower than 45°, but undoubtedly, in its season of rest, enduring as small an amount of heat as that. Indeed the circumstance, mentioned by Humboldt, that at the elevation of 9000 feet on the mountains of Mexico, there are found Dog Roses and Strawberries, mixed with Pepperworts (Peperomia) and the Manita (Cheirostemon platanoides), indicates with some accuracy the kind of climate enjoyed by Epidendrum vitellinum.

H. Winter delt.

*Epidendrum phœniceum.*

PLATE XLVI

# EPIDENDRUM PHŒNICEUM.

Epidendrum phœniceum. *Botanical Reg. for* 1841, *number* 120 *of the miscellaneous matter*

This is one of the few Orchidaceous plants yet imported from Cuba, where no doubt there are great numbers to reward the search of the collector. It has been introduced by Messrs. Lodiges.

Beautiful as it is, it approaches very nearly to the dingy Epidendrum adenocarpon of La Llave and Lexarza, which is the same as Mr. Bateman's E. papilionum, and differs principally in the structure of the lip, which in this species has two distinct elevated plates at its base, ending abruptly without throwing out any runners into the main surface of the lip; whereas in E. adenocarpon there are no plates, but the whole base of the lip below the column is thick and fleshy, whence diverge five slender ramifying veins, the central of which is thicker.

The PSEUDOBULBS are large, roundish-ovate, 2-leaved. The LEAVES are oblong, narrow, erect, somewhat twisted. The SCAPE is much longer than the leaves, panicled, erect, all over rough with minute asperities, from two to three feet high. The FLOWERS are scentless. The SEPALS and PETALS are of a leathery texture, deep purple, slightly mottled with green specks, obovate-lanceolate and widely spreading. The LIP is nearly an inch and half long, of the clear bright violet of Cattleya labiata, with deep crimson veins and zones; its side lobes are paler, erect, oblong, ovate and wavy at the point where they are turned backwards; the middle lobe is nearly round, deeply emarginate with two elevated plates just below the column.

*Saccolabium Blumei.*

PLATE XLVII

# SACCOLABIUM BLUMEI.

**Saccolabium Blumei.** *Lindley in Bot. Reg* 1841, *misc.* 115.

Although this plant has much resemblance to the common Saccolabium guttatum, it is in reality very different. That species is a native, as it would seem, exclusively of the continent of India; this of Java. That has long slender racemes, this short broad ones. That a leaf with the point irregularly truncate, this a leaf rather acute, and terminating in a kind of mucro. That has a lip of an oblong ovate form, this has a lip broader, at the end and deeply emarginate. Finally, the flowers of this are twice as large as those of Saccolabium guttatum, and differently coloured, there being no spots, but the sepals and petals having each a streak of violet below their points, and the lip a broad one same everywhere except at the point, which is white.

At one time I thought this species might be the Rhynchostylis retusa of Blume, because it is the only Javanese plant I have seen which could be mistaken for Saccolabium guttatum; but upon examining the dried specimens brought from the Philippines by Cuming, I find another still more like that species than the present, and with the "folia apice obtusum retusa" which Blume assigns to his plant, but which do not occur in the species before us.

These three plants, namely the true Saccolabium guttatum, the S. Blumei, and the Manilla plant, which may be named S. macrostachyum, and which is a most noble species with a stem as thick as the barrel of a musket, and a racemes as long as a field officer's plume, may be distinguished in the following manner:

S. guttatum *Cl.* p. 220. *Saccolabium guttatum. Bot. Reg.* 1443. Caule longe radiculato inaequaliter truncato arcuatis racemis cylindraceis deciduis aequalibus sepalis ovato petalis duplo angustioribus, labello calcare compresso truncato-cordato lamina ovato-oblonga glabra dorso subcostata, capsulis obovato hexagonis. *Th. Peninsula of India.*

S. *Blumei* *Lindl. Bot. Reg.* 84 *misc.* 115. *Section Orch.* 237. Caule longe radiculato arcuato inferiorum racemis pendulis deciduis sepalis aequalibus, sepalis ovatis, petalis oblongis duplo angustioribus, labello calcare compresso obtuse-cordato lamina oblonga retusulata ciliata emarginata utrinque costata. *Java.*

S. *macrostachyum* *Hieracorchis retusa. Blume Orchid. Verh.* 6. Caule longo ligulato apice retusulato emarginato racemis pendulis longissimis multifloris deciduis, sepalis oblongis, petalis duplo angustioribus, labelli calcare compresso obtuse lamina oblonga angulatulata obtusa.— *Philippines. and Java.*

*Oncidium Barkeri.*

PLATE XLVIII

# ONCIDIUM BARKERI.

Oncidium Barkeri. *Lindley in Botanical Register for* 1841, *no.* 174 *of the Miscellaneous matter*

Of the great genus Oncidium most of the species have flowers sufficiently large and gaily coloured to render them plants of striking beauty but among them are a few pre-eminent in this respect, and of these the species now figured may be regarded as one of the finest. In the size of the flowers it is only equalled by O. Papilio, Insignis, and a few Peruvian species; in the brilliancy of the yellow lip it is not inferior to O. bifolium, while the rich spotting of the sepals and petals is only equalled by O. Papilio itself.

At present the species is of the rarest occurrence, having only flowered in the collections of Mr. Barker, who imported it from Mexico, and of Mrs. Lawrence of Ealing Park.

Its PSEUDO-BULBS are exactly oval, compressed, blunt-edged, with a furrow or two passing down each side. The LEAVES are small for the size of the plant, two to each pseudo-bulb, of an oblong lanceolate form, with a long sheathing striated footstalk, which is distinctly articulated in the middle. The SCAPE is terminal, a very unusual circumstance in Oncidium, with about three sheaths on the part which supports the flowers. The LATTER are disposed in a simple curved RACEME, and are from five to seven in number. The SEPALS and PETALS are alike in form and colour, linear-lanceolate, wavy, spreading or turned back, the lateral very slightly adhering at the base; they are covered with deep rich brown spots and bands on a pale cinnamon-coloured ground. The LIP is pure yellow without a single spot, much paler on the under side, and longer than the sepals; its middle lobe is very large, broader than long, slightly pointed at the apex, which nevertheless curves inwards in the manner usual in this genus; it is distinctly stalked; the lateral lobes are flat, oblong, truncated with rounded angles, and not more than a third the breadth of the middle lobe. The CREST (fig. 1) consists of an anterior tubercle, which is slightly three-lobed and hollowed out in front, and of a depressed two-lobed elevation immediately behind it. The COLUMN is unusually short, pale yellow, with a pair of rounded oblong wings.

At Plate XXV. of this work an attempt having been made to distinguish on more satisfactory grounds than before the genera Cyrtochilum and Oncidium, I now feel bound to state that the examination of more species, and a very full revision of these and the neighbouring genera, has satisfied me that the reasons assigned in the place referred to are unsatisfactory, and that Cyrtochilum cannot be longer regarded as having a claim to stand as more than an artificial section of Oncidium. It will be remembered that this genus was established by Messrs. Humboldt and Kunth, in their Nova Genera et Species Plantarum, upon two species with stalked petals and an undivided lip, characters certainly very striking in several Peruvian and other species. But there are so many insensible gradations by which the form of the petals and labellum varies in the numerous forms of Oncidium, that those distinctions cannot be maintained, and all others substituted in lieu of them have equally failed when applied to practice. In the attempt, too, to amplify the character of Cyrtochilum, species have been introduced which would be more properly stationed elsewhere. These are

Cyrtochilum excedens also paid onto which are rather Oncidiums and C. flavescens and atropurpureum which are better placed with Oncidium Russellianum in Miltonia.

For the purpose of putting this matter in as cl[illegible] increase of the genus Oncidium itself of late years, from 38 species in 1832 to [illegible] in 1842 together with the many repetitions of the same species under different names now scattered through many books and many p[illegible] I have been tempted to draw up the following abstract of the g[illegible] which an opportunity has been taken of entirely remodelling it.

## ONCIDIUM *Swartz* *L. p. 1[illegible]9.

[illegible]


A. O. magellanicum Lamb. Bot.

*Disa grandiflora.*

PLATE XLIX.

# DISA GRANDIFLORA.

Disa grandiflora. *Linn. Suppl.* 406. *Swartz, Act. Holm.* 1800, *p.* 210. *Thunberg, Fl. Cap. ed. Schultes, p.* 7. *Ker in Brande's Journal, vol.* 4. *p.* 205. *t.* 5. *f.* 1. *Botanical Register, t.* 926. *Lindl. Gen. & Sp. Orch. p.* 341.
Satyrium grandiflorum. *Thunb. prodr. fl. capens. p.* 4.
Disa uniflora. *Bergii Plantæ Capenses, p.* 348. *t.* 4. *fig.* 7.
Orchis africana flore singulari herbaceo. *Ray Historia Plantarum, vol.* 3. *p.* 586.

I trust I may be excused for closing this work with the noble plant now represented, even although it is not figured for the first time; for all the previous delineations fail entirely in doing it justice.

It is the finest Orchidaceous plant found at the Cape of Good Hope, and we may almost add in the world, whether we regard the large size of its regal flowers, or the brilliant colours by which they are accompanied. The magnificent specimens from which the accompanying drawing has been made were sent in a dried state from the Cape by Mr. Harvey, who remarks that the specimen is the largest he ever saw, the stem being two feet and a half high, and the flowers five inches and a half from tip to tip of the expanded sepals.

It occurs in various parts of the Colony, but principally on Table Mountain, where it is so common, according to Mr. Harvey, that every stream is literally bordered with it in March. Sir John Herschel tells us, that the temperature of the situations where it is found is *occasionally* as low as 3 p.m., and also occasionally as high as 95°. Its habitat is on the margin of pools of standing water, the drainage of the boggy slopes of the Mountain, wherein its roots are immersed. These are dry or nearly so in summer. In such localities it is of course frequently involved in the dense mist of the clouds, which, even in the hottest months, often cover its habitation for a week or a fortnight uninterruptedly.

Alas! that I must add that it has hitherto proved uncultivable. It occasionally indeed is imported, and in the year 1825 it even flowered at South Lambeth near London, in the garden of Mr. William Grebin, a zealous and well-known collector of bulbous and other plants. But it soon disappeared, and no other English specimen seems to have been put on record.

In the absence of all certainty as to the mode of cultivating this plant, some speculation may be indulged in. We would then advise those who are in communication with the Cape, to proceed as follows.

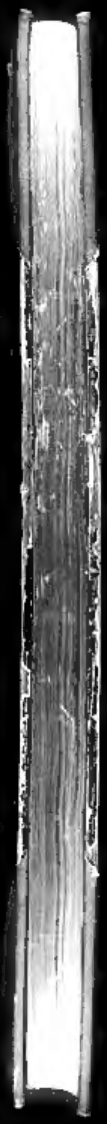
We should procure the roots immediately after the leaves are withered; we should pack them in moist moss, and so transport them to Europe. On their arrival here, we should preserve them in the same state in a cool greenhouse till the month of February, at which time we should plant them in sandy well-drained peat and transfer them to the stove. As soon as the roots begin to grow we should water them, gently for the first time, and we should then force them in the manner usual with Orchidaceous plants, keeping them in a hot damp atmosphere. There, and under such circumstances, it is to be presumed they would flower. During the whole of the growing season we should keep the plants in the same house, until the leaves were fully formed and the flowers expanded.

thereupon we should immediately transfer them to an intermediate house, (an) stove half greenhouse, until the leaves were withered. Subsequently to that period we should keep them in a cold shaded frame, just moist and no more, till the beginning of winter. Up to the beginning of February we should just keep them from frost in a cold conservatory—and as soon as February arrived we should begin again to treat the plant as at first. In addition to all this, we should keep the pots in pans full of water during all the time that the plants are in rapid growth.

Is it not worth the while of some one of our great Amateurs to try this experiment?

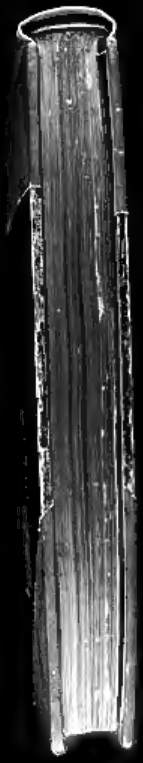
# INDEX TO THE PLATES.


Spine



Fore

Foot



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