August 1. 1822.

EXOTIC FLORA,

CONTAINING

FIGURES AND DESCRIPTIONS

OF

NEW, RARE, OR OTHERWISE INTERESTING

Exotic Plants,

ESPECIALLY OF SUCH AS ARE DESERVING OF BEING CULTIVATED IN OUR GARDENS;

TOGETHER WITH

REMARKS UPON THEIR GENERIC AND SPECIFIC CHARACTERS, NATURAL ORDERS, HISTORY, CULTURE, TIME OF FLOWERING, &c.

BY

WILLIAM JACKSON HOOKER,

LL.D. F.R.A. & L.S.

MEMBER OF THE IMPERIAL ACADEMY NATURÆ CURIOSORUM; OF THE WERNERIAN NATURAL HISTORY SOCIETY OF EDINBURGH; OF THE ROYAL BOTANIC SOCIETY OF RATISBON; OF THE HELVETIC SOCIETY OF NATURAL HISTORY, &c. &c.

AND

REGIUS PROFESSOR OF BOTANY IN THE UNIVERSITY OF GLASGOW.

PART I.

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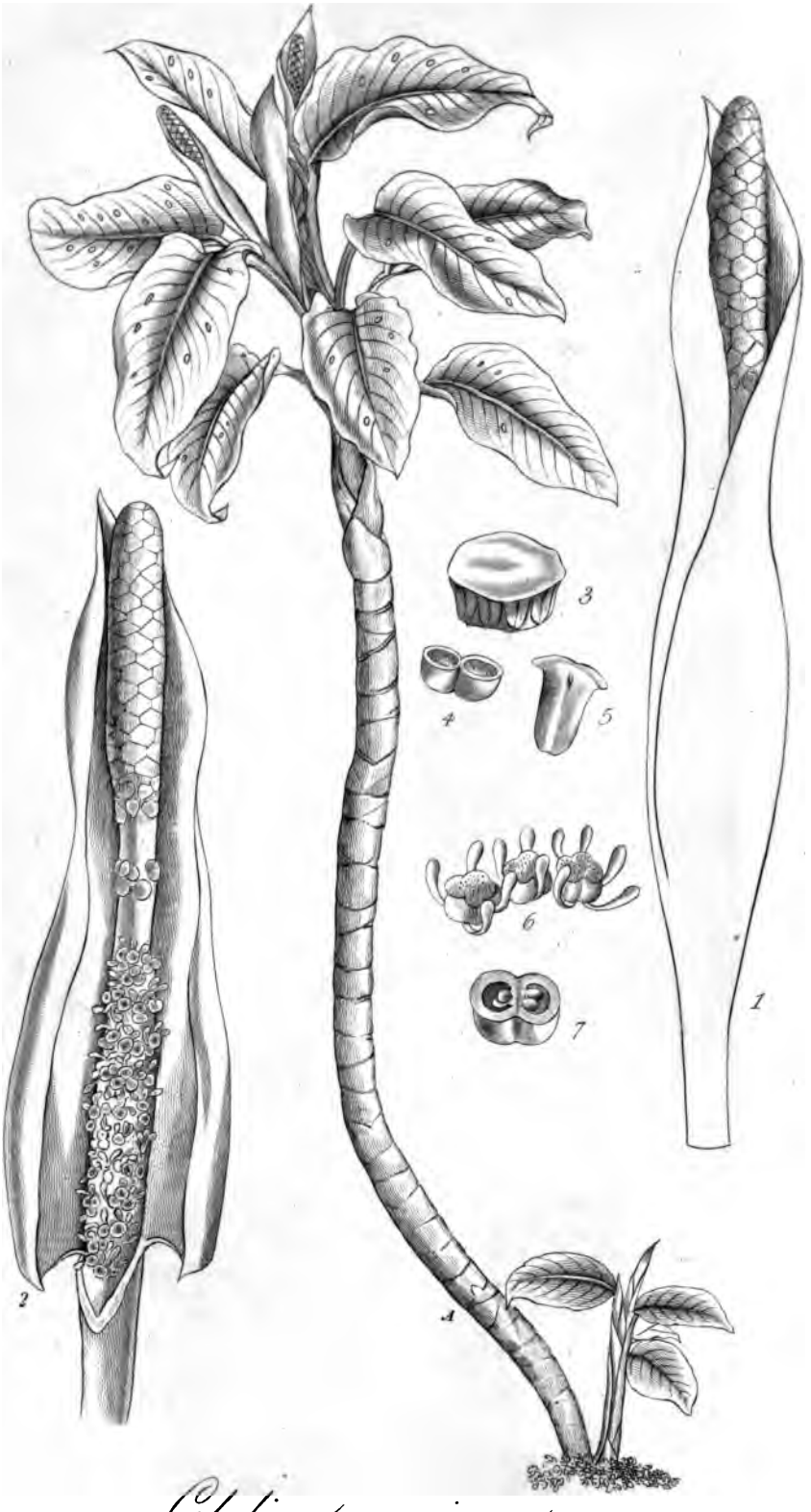

Caladium sequinum.

Engd by T. Swan Glasgow.

CALADIUM SEGUINUM.

Dumb Cane.

MONŒCIA POLYANDRIA.—NAT. ORD. *AROIDEÆ.*

GEN. CHAR.—Masc. *Cal.* 0. *Cor.* 0. *Antheræ* peltatæ, multiloculares, in spicam ad apicem spadicis compositæ.

Fœm. *Cal.* 0. *Cor.* 0. *Germina* ad basin spadicis inserta. *Stylus* 0. *Bacca* uni- (bi-) locularis, polysperma.—*Willd.*

Caladium *Seguinum;* caulescens suberectum, foliis oblongo-ovatis cuspidatis, spadice spatha oblonga breviore.

C. Seguinum, WILLD. *Sp. Pl.* v. iv. p. 490.—AITON, *Hort. Kew.* ed. 2. v. 5. p. 312.

Arum Seguinum, LINN. *Sp. Pl.* p. 1371.

Stem from 3 to 5, and even 6 feet in height, and sometimes as thick as a man's wrist; it is generally a little procumbent at the base, then erect, naked, jointed, green, often discoloured with the dried sheathing bases of the former years' leaves, smooth, succulent, filled with a green, highly acrid juice. *Leaves* all springing from the summit of the stem, 8 or 10 inches in length, ovato-oblong, cuspidate, undulated, having a thick midrib, and lateral parallel veins, their substance marked with pellucid white spots, often perforated; they are horizontal or deflexed, deep green, subcoriaceous, petiolated, *petioles* about half as long as the leaves, channelled, sheathing, *sheaths* terminated in a short green ligule, as in the grasses. From the sheathing bases of these petioles, arise the *spathas,* which are 5 or 6 inches in length, oblong, pedunculated, pale green, convoluted, rather shorter than the *spadix,* which is cylindrical, but attached for the greater part of its length to the *spatha.*

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This is a fine, handsome, palm-like plant, rising with a long, jointed stem, and having a cluster of leaves at the extremity. It is a native of the West Indian Islands, and of the warmer parts of South America. We are assured by BROWN, in his Natural History of Jamaica, that the stalk is employed to bring sugar to a good grain, when the juice is too viscid, and cannot be made to granulate properly by the application of lime alone.

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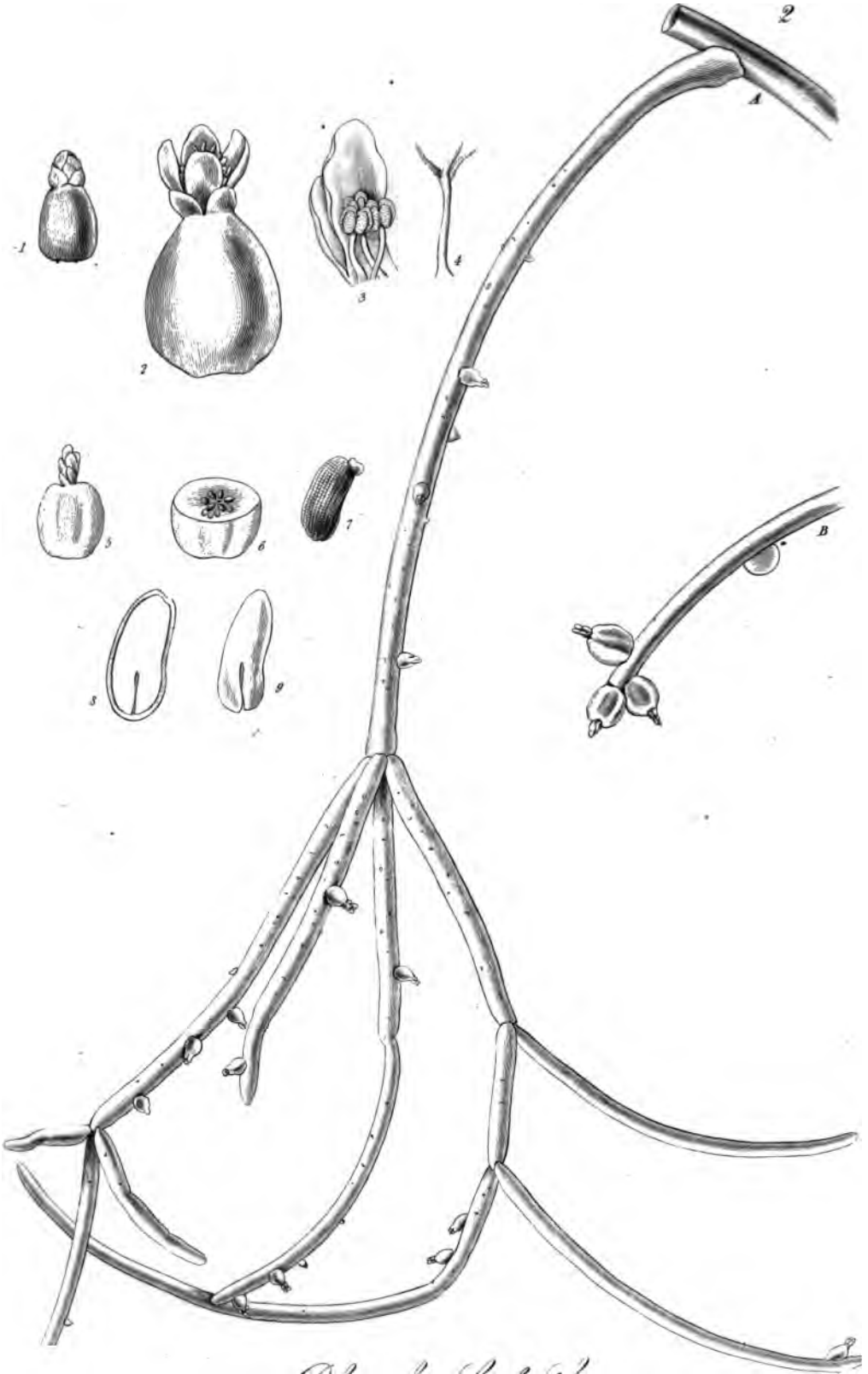
The drawing was made from a fine plant which flowered in the Royal Botanic Garden, Glasgow, in the middle of winter.

A, Plant about $\frac{1}{12}$th of the *natural size*. Fig. 1. Spatha, *nat. size*. Fig. 2. The same cut open, to shew the Spadix. Fig. 3. Single Stamen. Fig. 4. Two of the Cells of the Anther cut open transversely. Fig. 5. Two of the Cells entire. Fig. 6. Three Pistils, with the accompanying clavate bodies. Fig. 7. Germen, cut through transversely.—*All from* Fig. 3. *are more or less magnified.*



Rhipsalis Cassutha

Engd by J. Swan Glasgow.

RHIPSALIS CASSUTHA.

Naked Cassutha.

ICOSANDRIA MONOGYNIA.—NAT. ORD. *NOPALEÆ.*
JUSS. *ined.*—DE CAND.—Cactoides, VENT.—Cactorum pars, JUSS. *Gen. Pl.*

GEN. CHAR.—*Cal.* superne subquadrifidus. *Corolla* 4-partita, una cum calyce persistens. *Stam.* sub-duodecim; antheris rotundatis. *Stigma* 3-fidum. *Bacca* pellucida. *Semina* 12-20 intra pulpam nidulantia.

Plantæ aphyllæ. *Caules* cylindracei nunc fasciculatim pilosi, obscure articulati. *Flores* parvi.

Rhipsalis *Cassutha;* ramis verticillatis cylindraceis glabris nudis.

R. Cassutha, GÆRTN. *De Fruct.* v. i. p. 137. t. 28. f. 1.—HAW. *Syn: Pl. Succ.* p. 187.

Cactus pendulus, SW. *Fl. Ind. Occ.* v. ii. p. 876.—WILLD. *Sp. Pl.* v. ii. p. 942. AIT. *Hort. Kew.* ed. 2. v. iii. p. 178.

Cassytha baccifera, MILL. *Illustr.*

Stems 2 feet, or rather more, in length, growing in their native country either upon the ground, or from the trunks of trees, drooping, much branched, the branches mostly verticillate, jointed, fragile at the joints, everywhere almost exactly cylindrical, green, smooth, and naked.

From the *branches* on all sides appear the small scattered *flowers*, when in perfection scarcely exceeding a hemp-seed in size, yellowish-white. *Calyx* very minute, cut into usually four ovate, obtuse, segments. *Corolla* 4-partite, segments oblongo-ovate concave, nearly equal, erecto-patent, including the stamens and style. *Stamens* about 12, united at the base of the petals. *Filaments* white, short. *Anthers* rounded, 4-lobed, dotted, yellowish-white. *Germen* inferior, or, more correctly speaking, incorporated with the tube of the calyx, thrice as large as the calyx and corolla, green, glabrous. *Style* longer than the stamens, but shorter than the corolla, filiform. *Stigma* 3-cleft, downy. The *Fruit* forms nearly spherical *berries*, about as large as pease, which are not unfrequently on the same plant with the flowers; flesh-coloured, pellucid, terminated with the persistent calyx and corolla, very juicy, containing from 12 to 20 oblong subangular brown *seeds*, which seem to be collected around a pellucid central receptacle, and are beautifully striated with dots. *Albumen* 0. *Embryo* of the same shape as the seed, its *radicle* placed next the *hilum*.

An inhabitant of the West Indian Islands and New Spain, growing, as it is said, generally from the trunks of trees, in the same manner as the Misseltoe does with us.

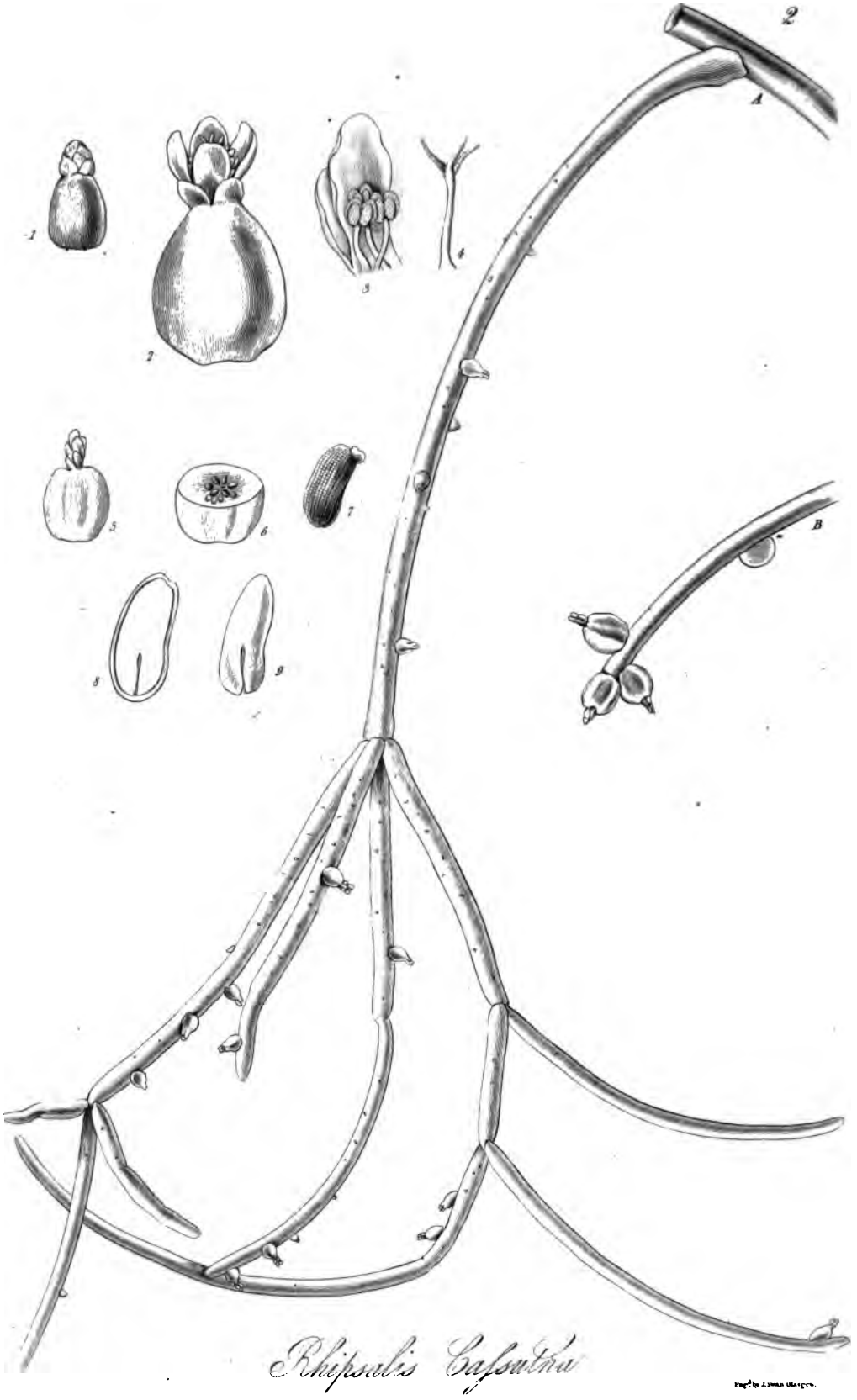
Such a place of growth, combined with such a habit as we

see in the plant before us, and such inconspicuous flowers, with the proportionally large fruit, would, at first sight, seem to indicate a distinct genus from those shewy and splendid species of *Cactus* which we are accustomed to behold in every garden. GÆRTNER first separated the present individual from that genus, and gave it the name which I have adopted; in doing which he has been followed by HAWORTH, and by some of the continental botanists. At the same time, it must be confessed, that the characters of the genus have been very imperfectly investigated. The calyx is undoubtedly erroneously described by GÆRTNER and HAWORTH; the corolla, stamens, and style, are not noticed, and the number of seeds, in each berry, is by no means confined to 12, for I counted as many as 20 in one fruit. These seeds, too, GÆRTNER says, differ from those of the *Cactus*, inasmuch as the latter have an albumen; but when that author proceeds to figure and describe those of *Cactus*, he speaks of them as exalbuminose.

I have found myself, therefore, under the necessity of making considerable alterations in the generic character, and am still far from looking upon it as satisfactory. Indeed, the whole fructification is so nearly allied to the other cactoid plants, that, were it not for the strong peculiarity in the habit of the plant, and the high authority of GÆRTNER and HAWORTH, the latter of whom has laboured so much among the genera and species of succulent plants, I should scarcely have ventured to keep the genus *Rhipsalis* distinct.

This plant flowers during the greater part of the year, and requires the heat of the stove. We possess in the Botanic Garden some other species of this genus, which are described by Mr HAWORTH. Of these, the *C. parasiticus*, figured by DE CANDOLLE in his *Plantes Grasses*, comes nearest to the present individual, but differs, in the young branches having fascicles of hair.

Fig. A, Portion of a plant in flower; and B portion of a plant in fruit, *natural size*. Fig. 1. The unexpanded bud. Fig. 2. Flower. Fig. 3. Petal and portion of the calyx, with 3 stamens. Fig. 4. Style and stigma. Fig. 5. Berry. Fig. 6. The same cut through transversely, shewing the position of the seeds. Fig. 7. Single seed. Fig. 8. Seed, cut through vertically, to shew the embryo. Fig. 9. Embryo removed from the seed, *magnified*.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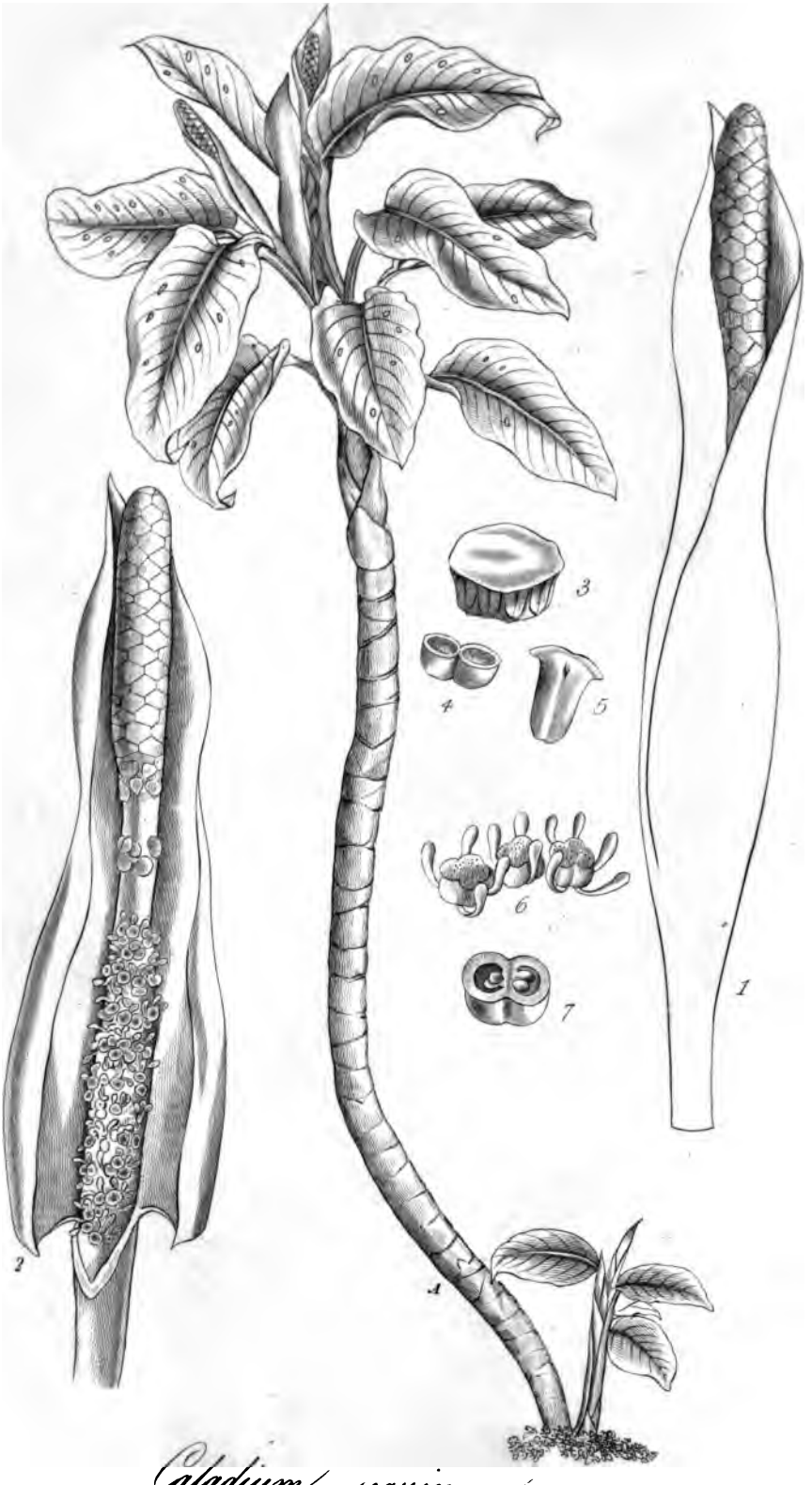

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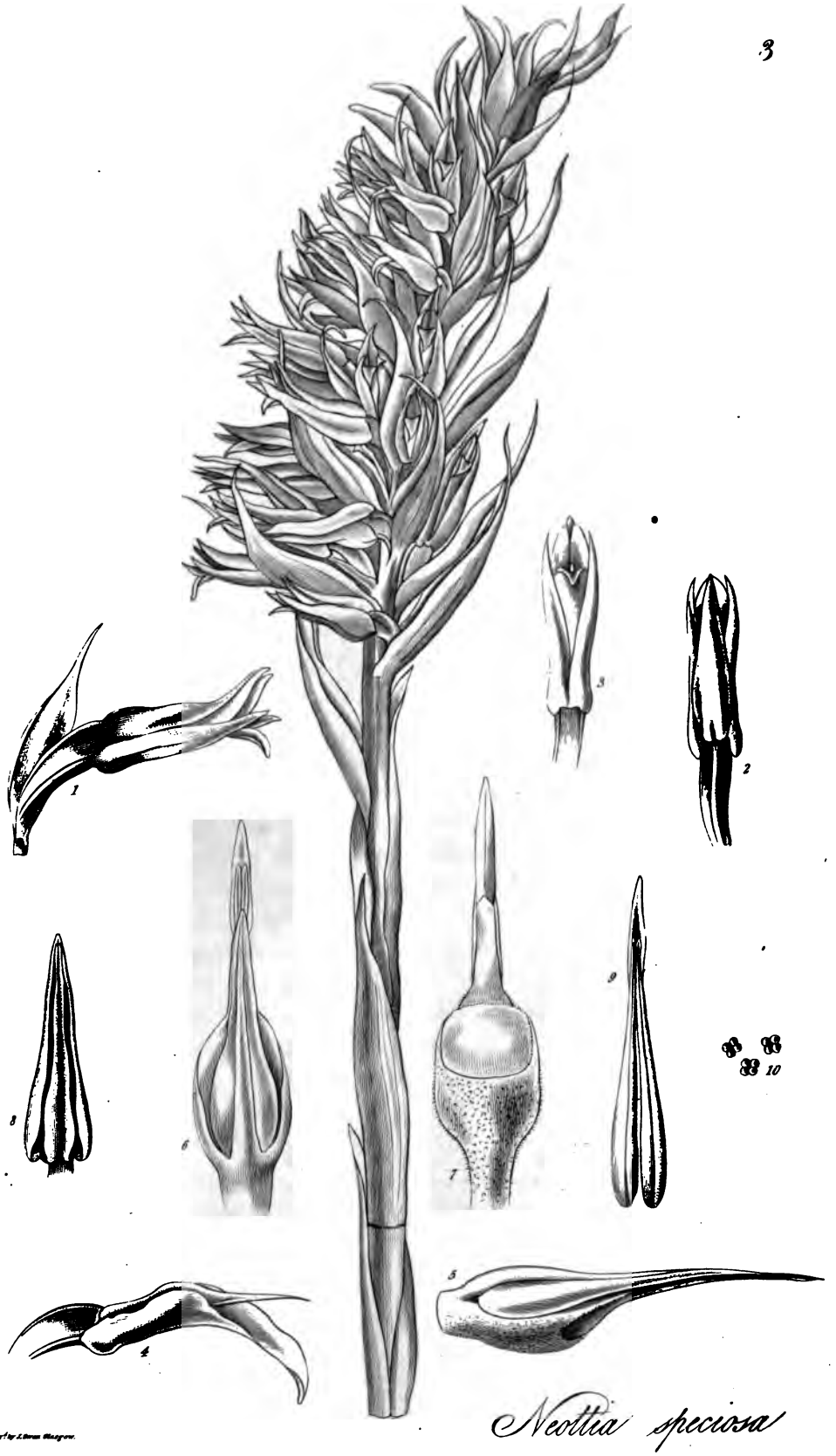

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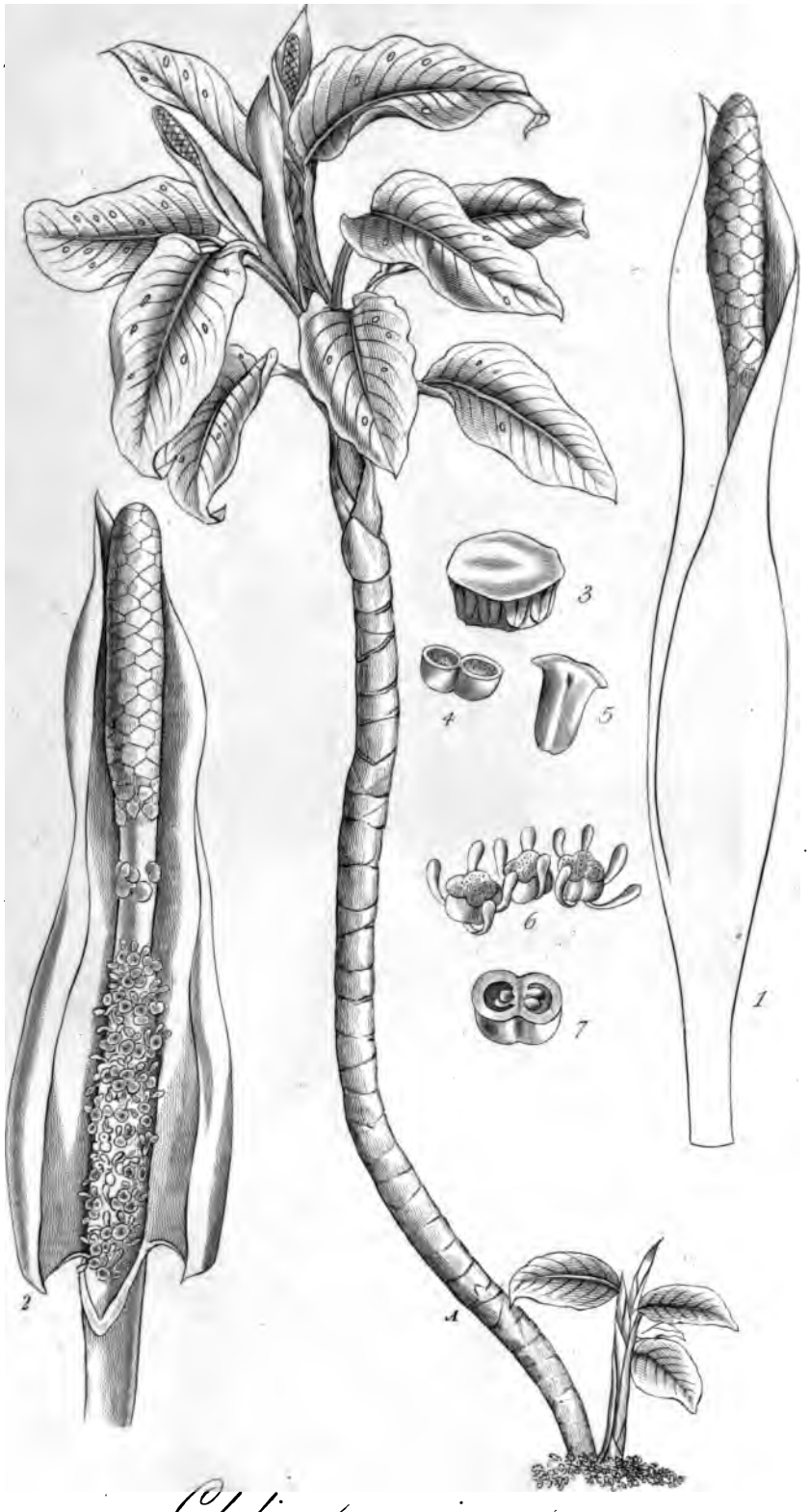

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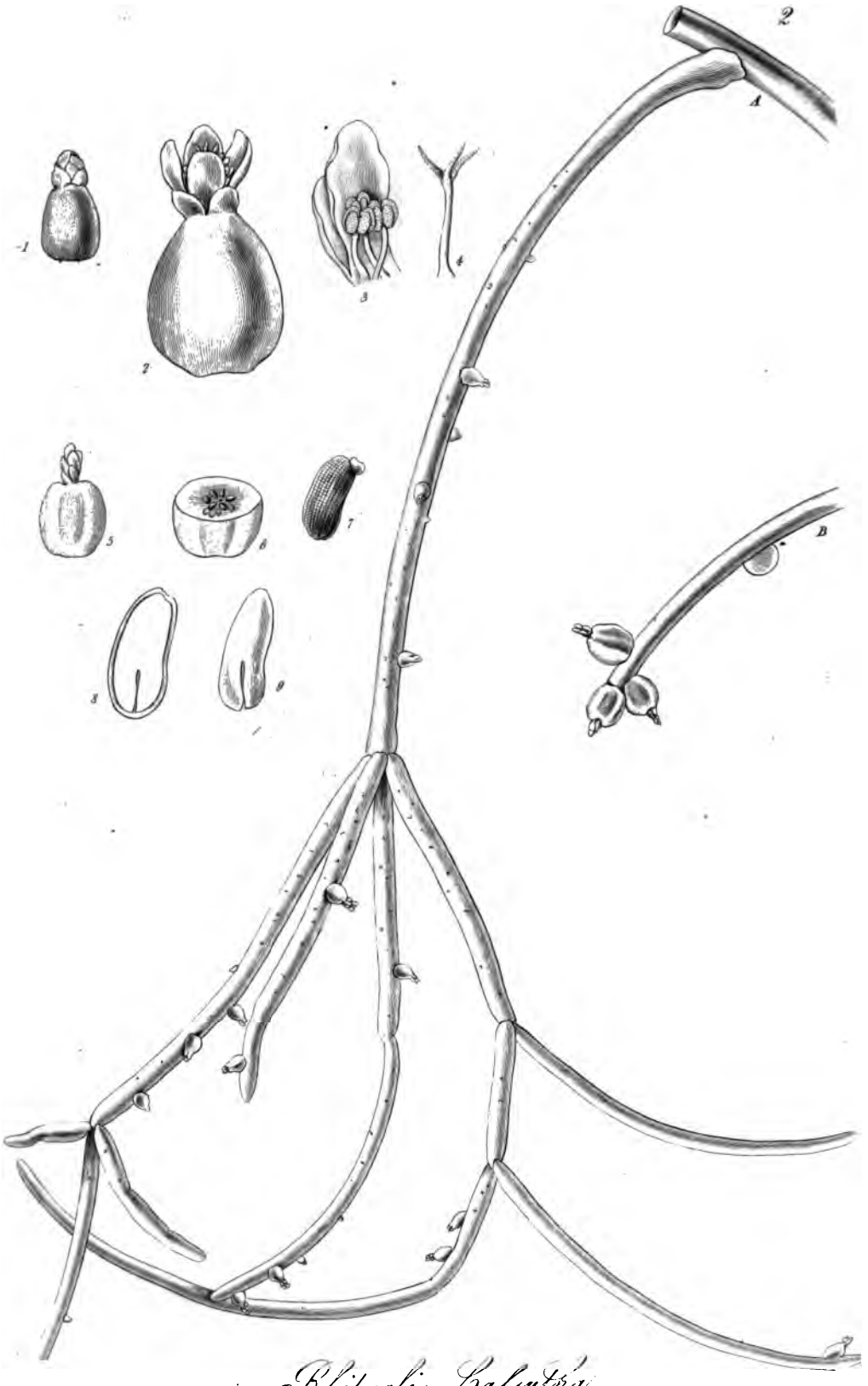

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Cactus pendulus, Sw. *Fl. Ind. Occ.* v. ii. p. 876.—Willd. *Sp. Pl.* v. ii. p. 942. Ait. *Hort. Kew.* ed. 2. v. iii. p. 178.

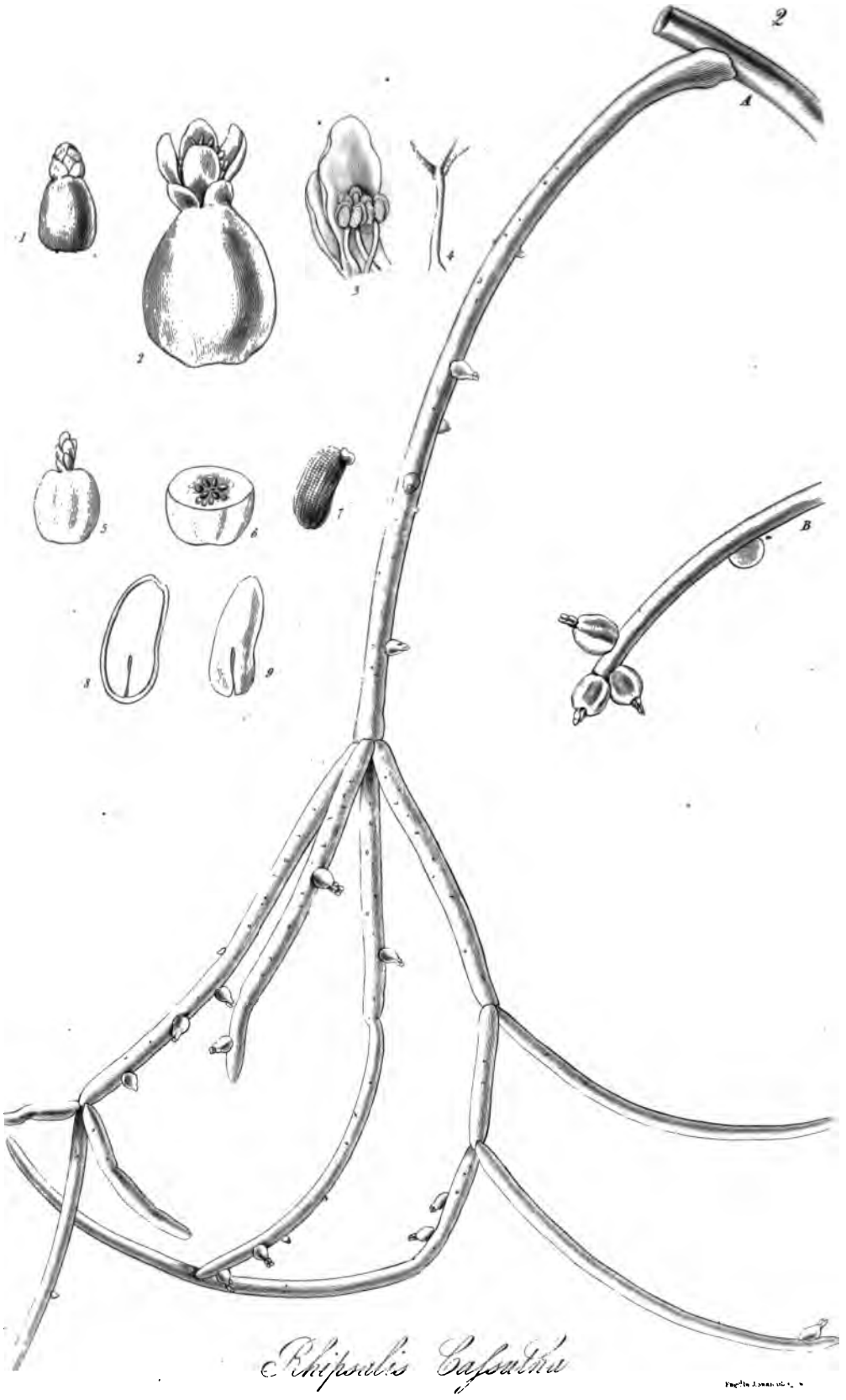
Cassytha baccifera, Mill. *Illustr.*

Stems 2 feet, or rather more, in length, growing in their native country either upon the ground, or from the trunks of trees, drooping, much branched, the branches mostly verticillate, jointed, fragile at the joints, everywhere almost exactly cylindrical, green, smooth, and naked.

From the *branches* on all sides appear the small scattered *flowers*, when in perfection scarcely exceeding a hemp-seed in size, yellowish-white. *Calyx* very minute, cut into usually four ovate, obtuse, segments. *Corolla* 4-partite, segments oblongo-ovate concave, nearly equal, erecto-patent, including the stamens and style. *Stamens* about 12, united at the base of the petals. *Filaments* white, short. *Anthers* rounded, 4-lobed, dotted, yellowish-white. *Germen* inferior, or, more correctly speaking, incorporated with the tube of the calyx, thrice as large as the calyx and corolla, green, glabrous. *Style* longer than the stamens, but shorter than the corolla, filiform. *Stigma* 3-cleft, downy. The *Fruit* forms nearly spherical *berries*, about as large as pease, which are not unfrequently on the same plant with the flowers; flesh-coloured, pellucid, terminated with the persistent calyx and corolla, very juicy, containing from 12 to 20 oblong subangular brown *seeds*, which seem to be collected around a pellucid central receptacle, and are beautifully striated with dots. *Albumen* 0. *Embryo* of the same shape as the seed, its *radicle* placed next the *hilum*.

An inhabitant of the West Indian Islands and New Spain, growing, as it is said, generally from the trunks of trees, in the same manner as the Misseltoe does with us.

Such a place of growth, combined with such a habit as we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Rhipsalis Cassutha

RHIPSALIS Cassutha.

Naked Cassutha.

ICOSANDRIA MONOGYNIA.—Nat. Ord. *NOPALEÆ.*
Juss. *ined.*—De Cand.—Cactoides, Vent.—Cactorum pars, Juss. *Gen. Pl.*

Gen. Char.—*Cal.* superne subquadrifidus. *Corolla* 4-partita, una cum calyce persistens. *Stam.* sub-duodecim; antheris rotundatis. *Stigma* 3-fidum. *Bacca* pellucida. *Semina* 12-20 intra pulpam nidulantia.

Plantæ aphyllæ. *Caules* cylindracei nunc fasciculatim pilosi, obscure articulati. *Flores* parvi.

Rhipsalis *Cassutha;* ramis verticillatis cylindraceis glabris nudis.

R. Cassutha, Gærtn. *De Fruct.* v. i. p. 137. t. 28. f. 1.—Haw. *Syn: Pl. Succ.* p. 187.

Cactus pendulus, Sw. *Fl. Ind. Occ.* v. ii. p. 876.—Willd. *Sp. Pl.* v. ii. p. 942. Ait. *Hort. Kew.* ed. 2. v. iii. p. 178.

Cassytha baccifera, Mill. *Illustr.*

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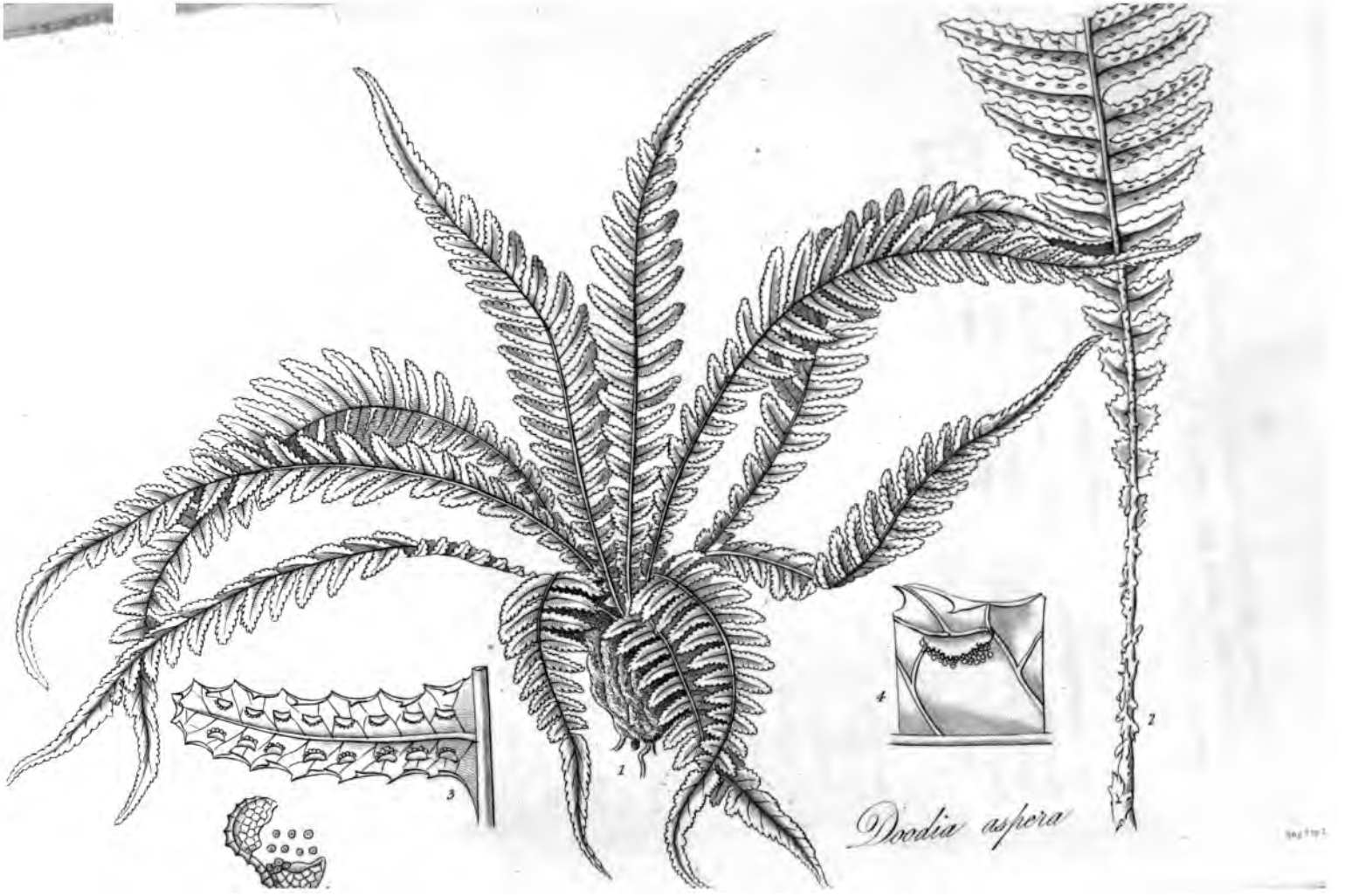
An inhabitant of the West Indian Islands and New Spain, growing, as it is said, generally from the trunks of trees, in the same manner as the Misseltoe does with us.

Such a place of growth, combined with such a habit as we

Its upright tree-like mode of growth is unusual among the genus, and this species seems to hold the same rank in it as the splendid *Hypnum Menziesii*, *H. dendroideum*, &c. among the Mosses, do with the rest of that genus.

Fig. 1. Plant, *natural size.* Fig. 2. Leaf. Fig. 3. Scale of the spike of fructification. Fig. 4. Scale with its bivalved capsule. Fig. 5. Capsule separated from the scale. Fig. 6. Seeds.—*All but* Fig. 1. *more or less magnified.*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Doodia aspera

DOODIA ASPERA.

* *Rigid Doodia.*

CRYPTOGAMIA FILICES.—Nat. Ord. *FILICES*, Div. Gyratæ, *Br.*

Gen. Char.—*Sori* lunulati vel lineares, seriati, costæ paralleli. *Involucrum* e ramulo anastomosante venæ ortum, planum, intus liberum.—*Br.*

Frondes cæspitosæ, pinnatæ, pinnis dentatis quandoque coadunatis. *Sori* interdum biseriati.—*Br.*

Doodia *aspera;* frondibus lanceolatis pinnatifidis, laciniis lineari-ensiformibus acuminatis spinuloso-serratis, soris lunulatis, distinctis, passim biseriatis, stipite rachique asperis.—*Br.*

D. aspera, Brown, *Prod. Fl. Nov. Holl.* p. 151.

Every part of this plant is singularly rigid. The *fronds*, about 8 inches in length, grow in a tufted manner, but spreading out with their extremities in all directions; their form is lanceolate, attenuated at the base and at the extremity, terminating below in a short *stipes*, beset with stiff, hard, black, mostly reversed scales, as is the back of the rachis, dark green: these *fronds* are deeply pinnatifid, the *pinnæ* or segments linear-ensiform, the terminal one thrice as long as the rest, all with a central rib and many nerves branching off from it, which ramify and anastomose with each other; the margins spinuloso-serrate, and nearly every other spinule reflexed. *Sori*, or *clusters of fructification*, oblong, bursting from a branch of the veins which runs parallel with the central rib, and is about half-way between it and the margin. *Involucre* lunulato-oblong, plane, opening internally, and then exhibiting a number of spherical, reticulated, annulated, and pedunculated capsules. *Seeds* spherical.

The genus *Doodia* is peculiar to New Holland, and was named by our learned countryman Mr Brown, in honour of Samuel Doody, one of our earliest investigators of Cryptogamic Plants. One of its species, *D. caudata*, has been arranged by Cavanilles and Willdenow under *Woodwardia*, from which the present genus differs in its plane (not fornicate) involucre, unconnected at its inner margin, and

arising from an anastomosing or connecting branch of the veins. Three species are described by Mr BROWN.

The specimen from which the accompanying figure was taken, flourishes in the green-house in peat-earth, but is increased with difficulty. It was communicated to our collection by our liberal friend Mr SHEPHERD of Liverpool.

Fig. 1. Plant, *one-half* of the *natural size*. Fig. 2. Portion of a frond, *natural size*. Fig. 3. Segment of a leaf. Fig. 4. Portion of a segment, with a cluster of fructification. Fig. 5. Capsule and seeds, *magnified*.

back of the anther, and by means of which it is fixed to the top of the back of the column: within, it contains 2 cells, each furnished with an elevated line, or imperfect septum, and each containing 2 *pollen-masses* of an ovate form, and double, or formed of 2 portions, yellow, waxy. *Stigma* in front of the column, just below the anther. *Germen* very long, slender, slightly twisted, resembling a pedicel.

Well, indeed, might Dr CAREY, who introduced this plant to our gardens, say, that "it is one of the most beautiful vegetables in the world," when we consider, that its numerously ramified stems, which, in their native country, attain a length of 6 feet, are covered with a mass of blossoms, of such loveliness, as the annexed figure can convey a very imperfect idea. It thrives, however, well in our gardens, treated in the same manner as the more common parasitic *Orchideæ*; and the specimen from which the reduced sketch (kindly communicated, as well as living plants, by Mr H. SHEPHERD,) was taken, had reached the length of 14 inches, and had 16 flowers upon it, all expanded at the same time.

A very accurate delineation of this species exists among the drawings belonging to the East India Company sent over by Dr ROXBURGH, and which I had the opportunity of seeing when in the possession of Sir JOSEPH BANKS some years ago; and a slight sketch taken from which, is now lying before me. It there stands under the name of *Dendrobium Pierardi*, having been discovered by M. PIERARD upon trees in the Delta of the Ganges.

A plant, very nearly allied to the present one, is figured both in the Botanical Register (No. 548.), and Botanical Magazine (No. 2242.), under the name of *D. cucullatum*, but it is inferior to the *D. Pierardi*, both in the size and beauty of its flowers, which also grow opposite to the leaves, and have a labellum of a very different shape. The stem, the figure of the leaves, and general structure of the inflorescence, are remarkably similar.

It blossoms in the month of April in the stove of the Liverpool Garden. A fine young plant which we have in the Glasgow Botanic Garden has not yet produced flowers.

Fig. 1. Portion of a plant, reduced to half the natural size, from a sketch of Mr H. SHEPHERD. Fig. 2. Two of the flowers, *nat. size.* Fig. 3. Back view of a flower cut off from the top of the germen. Fig. 4. Front view of a flower, the lip being cut away. Fig. 5. Front view of the column of fructification. Fig. 6. Back view of ditto. Fig. 7. Back view of a column, the Anther-case having sprung from the summit, but remaining attached to its filament; the Pollen-masses, Fig. 8. being discharged,—*all from* Fig. 3. *more or less magnified.* Fig. 9. Leaf, *nat. size.*

DENDROBIUM PIERARDI.

Splendid Dendrobium.

GYNANDRIA MONANDRIA.—NAT. ORD. *ORCHIDEÆ.*

GEN. CHAR.—*Labellum* ecalcaratum, articulatum cum apice processus unguiformis, cujus lateribus petala antica adnata, calcar æmulantia. *Massæ pollinis* 4, parallelæ.—*Br.*

Dendrobium *Pierardi;* caulibus pendulis superne nudis foliis bifariis late lanceolatis, pedunculis sub-bifloris, labello indiviso tubiformi, ore dilatato obliquo, perianthii foliolis tribus exterioribus basi obtuse calcaratis.

Dendrobium Pierardi, ROXBURGH'S *MSS. with a figure.*

Stems, in their native country, pendent from the trunks of trees, and reaching (according to Dr CAREY, in a note which accompanied the individuals sent by him to the Liverpool Garden in 1819,) to 6 feet in length, cylindrical, much branched, with the branches tapering, fleshy and rigid jointed, green, and each joint seems to be covered with a whitish, pellucid, membranous sheath, marked with still more decidedly white lines, giving the whole an elegantly striated appearance. From various parts of the joints, particularly at the setting on of the branches, numerous bundles of whitish succulent roots are thrown out, which float in the atmosphere, or attach themselves slightly to whatever may come in their way. The *leaves* appear to be confined to the lower parts of the branches, springing from the joints, alternate, horizontal, bifarious, broadly lanceolate, about 3 inches long, thick and succulent, dark green, with longitudinal lines or nerves.

From the *joints,* almost immediately above the termination of the leaves, appear the *flowers,* in a lax raceme, almost constantly in pairs, (in ROXBURGH'S figure occasionally in threes), from short *footstalks,* alternate, bifarious, large, and very handsome.

Leaflets of the Perianth all nearly equal in length, the 5 *superior* ones are pale rose-colored and spreading, the three outermost narrow, lanceolate, united at the base around the top of the *germen,* their 2 lateral ones forming an obtuse pouch, which extends a quarter of an inch; 2 inner ones large oblong, faintly marked with lines. *Labellum* springing from the inside of the pouch, one inch and three-quarters long, pale sulphur-coloured, with some oblique, bright purple lines near its base. The *margins* are ciliated, and for the greater part of the length are curved up and meet, so as to form a tube; the mouth, however, is much expanded, so that the whole *labellum* is nearly trumpet-shaped, slightly depressed, and oblique at the mouth, veined, and pubescent within.

Column of fructification short, and wholly concealed within the tube, very broad at the base, and appearing to unite all the divisions of the perianth, white, tinged and veined with deep rose colour, plane or slightly grooved in front, semicylindrical behind. *Anther* ovate, white, 2-lobed, ciliated in the lower edge, moveable, separating horizontally, and remaining attached; united to a filiform process, which runs along a groove on the

back of the anther, and by means of which it is fixed to the top of the back of the column: within, it contains 2 cells, each furnished with an elevated line, or imperfect septum, and each containing 2 *pollen-masses* of an ovate form, and double, or formed of 2 portions, yellow, waxy. *Stigma* in front of the column, just below the anther. *Germen* very long, slender, slightly twisted, resembling a pedicel.

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the present individual, which inhabits the still more southern countries of Europe.

TOURNEFORT seems to have paid great attention to this tribe of plants during his voyage to the Levant, and has caused several of them to be drawn upon vellum, by that admirable artist AUBRIET, who accompanied him as a botanical draughtsman. These figures form a part of the splendid Vellum Collection, as it is called, of Natural History, begun under the auspices of GASTON, Duke of Orleans, brother of LOUIS XIII. and continued to the present time at the expence of the French Government. Five new species, taken from those drawings, are figured and described by DESFONTAINES in the 10th volume of the *Annales du Muséum d'Histoire Naturelle.* Two of them, the *O. villosa* of DESFONTAINES (*O. tenthredinifera* of WILLD.) and the *O. Speculum*, and, as it would appear, the only exotic true *Ophrides* ever introduced in a living state into this country, were brought by Mr SWAINSON from Palermo; and, of these, excellent figures have been given by Mr GAWLER in the numbers of the Botanical Register. Tubers of *O. lutea* were received from Gibraltar, by the Botanical Garden here, through the kindness of Captain DUNN of Greenock; and, though inclosed, in a dry state, in a bag of Ranunculus roots, they flowered in the green-house in the succeeding spring.

In a growing state this plant is beautiful, and most resembles *O. iricolor* of the *Annales du Muséum*, v. 10. t. 13. differing, however, from it, in the fewer number of flowers upon its spike, the dissimilar form of the lip, and the yellow, not purple, colour of the blossoms.

WILLDENOW states it to be a general inhabitant of Spain and Portugal; and BIVONA BERNARDI of the hills and meadows about Palermo and Catania.

Fig. 1. The small inner segment of the perianth. Fig. 2. Lip and column of fructification. Fig. 3. Upper part of the stigma, with the anther. Fig. 4. One of the pollen-masses.—*All more or less magnified.*

OPHRYS LUTEA.

Yellow Ophrys.

GYNANDRIA MONANDRIA.—NAT. ORD. *ORCHIDEÆ.*

GEN. CHAR.—*Corolla* subpatens. *Labellum* ecalcaratum. *Glandulæ pollinis* cucullis distinctis inclusæ.—*Br.*

Ophrys *lutea*; labello trilobo, lobo medio productiore rotundato emarginato mutico, perianthii laciniis tribus exterioribus late ovatis petentibus, duobus interioribus minutis.

O. lutea, CAVAN. *Ic.* v. ii. p. 46. t. 160. (fide WILLD.)—WILLD. *Sp. Pl.* v. iv. p. 60.—BIV. BERN. *Sicul. Pl.* cent. 2da, p. 40. t. 5.

Root of 2 rounded tubers, with a few fibres proceeding from near the summit. *Stem* about 8 inches in height, cylindrical, flexuose, leafy; *leaves* oblong, spreading, obtuse, striated, the upper ones narrower, lanceolate, erect, and gradually passing into bracteas.

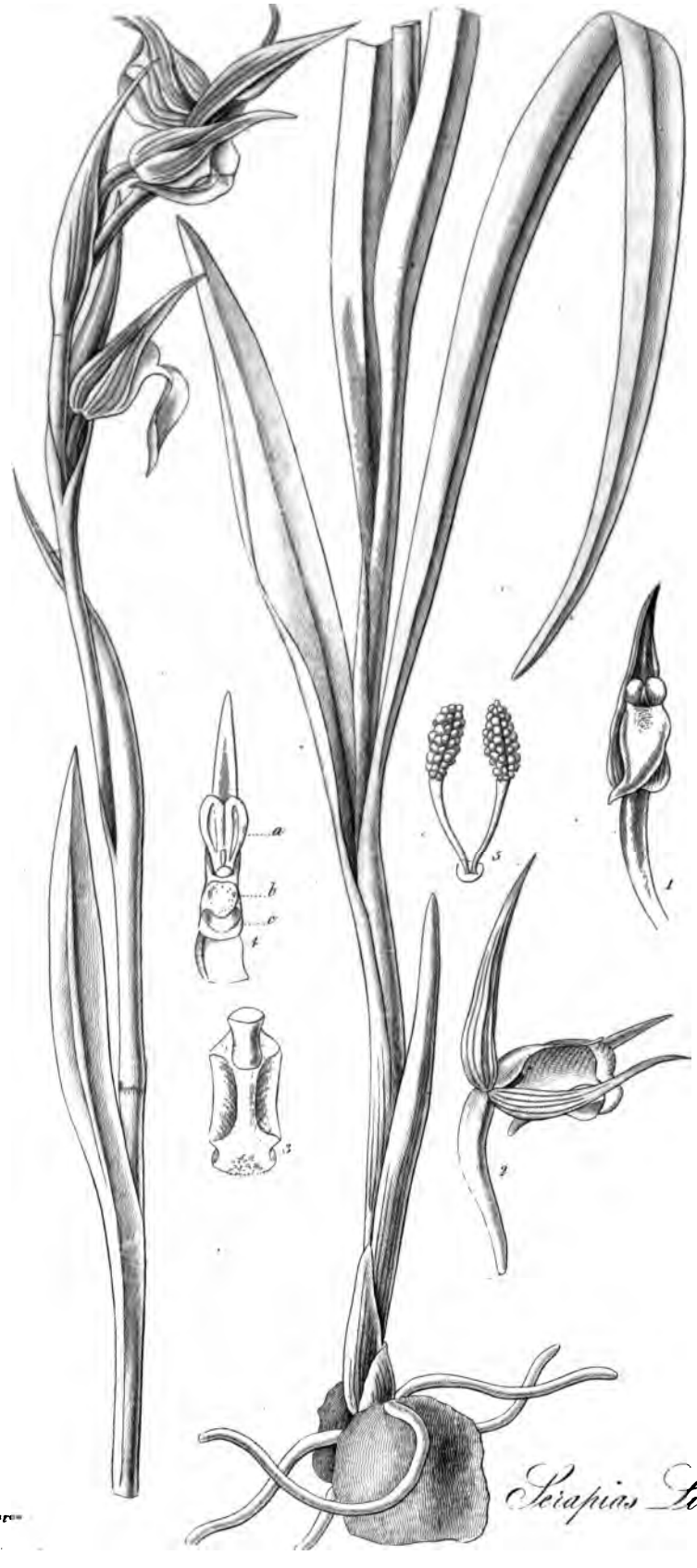
Flowers about 3, from the extremity of the stalk, each accompanied by a lanceolate bractea, about as long as the germen. The outer divisions of the perianth are nearly alike, broadly ovate, concave, green, spreading; the two inner ones linear, oblong, small, yellow, glabrous, almost erect; the *labellum* or *lip* large, pendent, broadly ovate, obtuse, the sides and extremity glabrous, a little deflexed, the centre prominent, of a fine velvety brown, with a double greenish spot at the base; the lip is 3-lobed, the 2 lateral lobes the smallest, the extreme one protruded, broad, so as to leave a very narrow sinus on each side, rounded, and slightly notched in the middle, with a small swelling or elevation.

Column of fructification short. *Stigma* roundish, margined, yellow. *Anther* from the upper margin of the stigma, clavate, green at the back, yellow in the front, 2-celled, with the base of the cells distinct, rounded. *Pollen-masses* 2, distinct, each clavate, bipartible, with the glandular base of the pedicel of each inserted in a distinct pouch of the anther. *Germen* oblong, twisted.

Of this curious genus, which is so well defined by Mr BROWN, we have three species, indigenous to the warmer parts of Great Britain, but which, beautiful as they are, must yield to

broadly ovate middle segment of its lip. I find both plants to be hairy at the base of the lower lip, the *S. cordigera* most so, according to the fine specimens preserved in my herbarium, which were gathered by W. SWAINSON, Esq. at Palermo in Sicily. The same excellent naturalist brought home living plants of *S. Lingua*, which flowered for two successive seasons at the Botanic Garden, Liverpool, in the month of April. It was from these individuals, kindly communicated by Mr SHEPHERD, that the accompanying figure was taken.

Fig. 1. Front view of a single flower, *nat. size.* Fig. 2. A flower partly spread open, two of the leaflets of the perianth being separated from the 3 conjoined ones above, and shewing the column of fructification and lip. Fig. 3. Front view of the lip, removed from the flower. Fig. 4. Column; *a*, The anther; *b*, The stigma; *c*, The scar where the lip was attached. Fig. 5. Pollen-masses, united upon one common gland.



Engd by J. Swan Glasgow

SERAPIAS Lingua.

Tongue-lipped Serapias.

GYNANDRIA MONANDRIA.—Nat. Ord. *ORCHIDEÆ.*

Gen. Char.—*Corolla* ringens. *Labellum* ecalcaratum. *Columna* cuspidata. *Pedicelli pollinis* inserti glandula unica cucullo inclusa.—*Br. in Hort. Kew.*

Serapis *Lingua*; labello tripartito, laciniis lateralibus obtusis erectis conniventibus, media oblonga lanceolata acutiuscula glabriuscula dependente.—*Willd.*

S. *Lingua*, Linn. *Sp. Pl.* p. 1344.—Willd. *Sp. Pl.* v. iv. p. 70.—Ait. *Hort. Kew.* ed. 2, v. 5. p. 195.

The *root* of this plant consists of one large, nearly spherical, plump and fleshy tuber, with a smaller shrivelled one by its side, and above these a few rather thick, carnose, simple *fibres*. *Stem* 8 inches to 1½ foot high, flexuose, leafy. *Leaves* lanceolate, the middle ones long and narrow, smooth, pale green, obscurely nerved; the uppermost passing gradually into bracteas.

Spike composed of from 2 to 5, or even 8 inclined *flowers*, each subtended by a lanceolate and acuminated, sheathing, purplish-green, large *bractea*. *Perianth* of 5 narrow, lanceolate and much acuminated, connivent, united *leaflets*, the 2 innermost being very narrow, and scarcely separable from the upper one; their colour is a pale yellow-green, with purplish red lines. *Lip* large, and 3-lobed, yellowish-white at its base within, and having, just where it joins on to the receptacle, an oblong, deep purple *tubercle* or *gland* (Fig. 3.), the 2 *lateral lobes* broad, erect and incurved, fine purple colour, almost wholly covered by the galea; *middle lobe* oblongo-ovate, rather acute, pendent, or even reflexed, a little waved, yellowish-white, pubescent at the base, the margin reddish. *Column of fructification* rather lengthened, yellowish-green, running out into a long attenuated point beyond the *Anther*. *Germen* somewhat clavate, not twisted. *Stigma* broadly ovate, viscid, in the front of the column. *Anther* fine yellow, obovate, 2-celled, with one little point at the base, in which is inserted the single *gland*, bearing the 2 yellow *pollen-masses* (Fig. 5.)

The two species of *Serapias*, *S. Lingua* and *S. cordigera*, have a very close affinity with each other, and are scarcely to be distinguished but by the larger size of the latter, and the

bia river. In 1811, Mr NUTTALL gathered it, but without flower, on the Island of St Helena, near the outlet of Lake Michigan, in the shade of *Abies canadensis*, attached to recent vegetable soil.

Mr BROWN has separated, in the *Hortus Kewensis*, the American state of this plant from the European, and has ascribed to it, " a lip narrowed and subunguiculate at the base, the spur exceeding the lamina or ligule of the lip in length, and the peduncle longer than the germen." The first character is by no means apparent in my living specimens. The second is variable; for though, in the individuals here figured, the spur is longer than the ligule, yet, in some of those in my herbarium, which were gathered by Mr GOLDIE at Montreal, the ligule rather exceeds the spur in length, and the peduncle is about as long as the germen. I have, for these reasons, ventured again to unite the American species with the European, particularly as it sufficiently well accords with the figure of the latter given by SWARTZ in the *Svensk Botanik*. The ligule, I should however observe, in SWARTZ's plate, is represented much larger in proportion than in my specimens, and entire at the extremity.

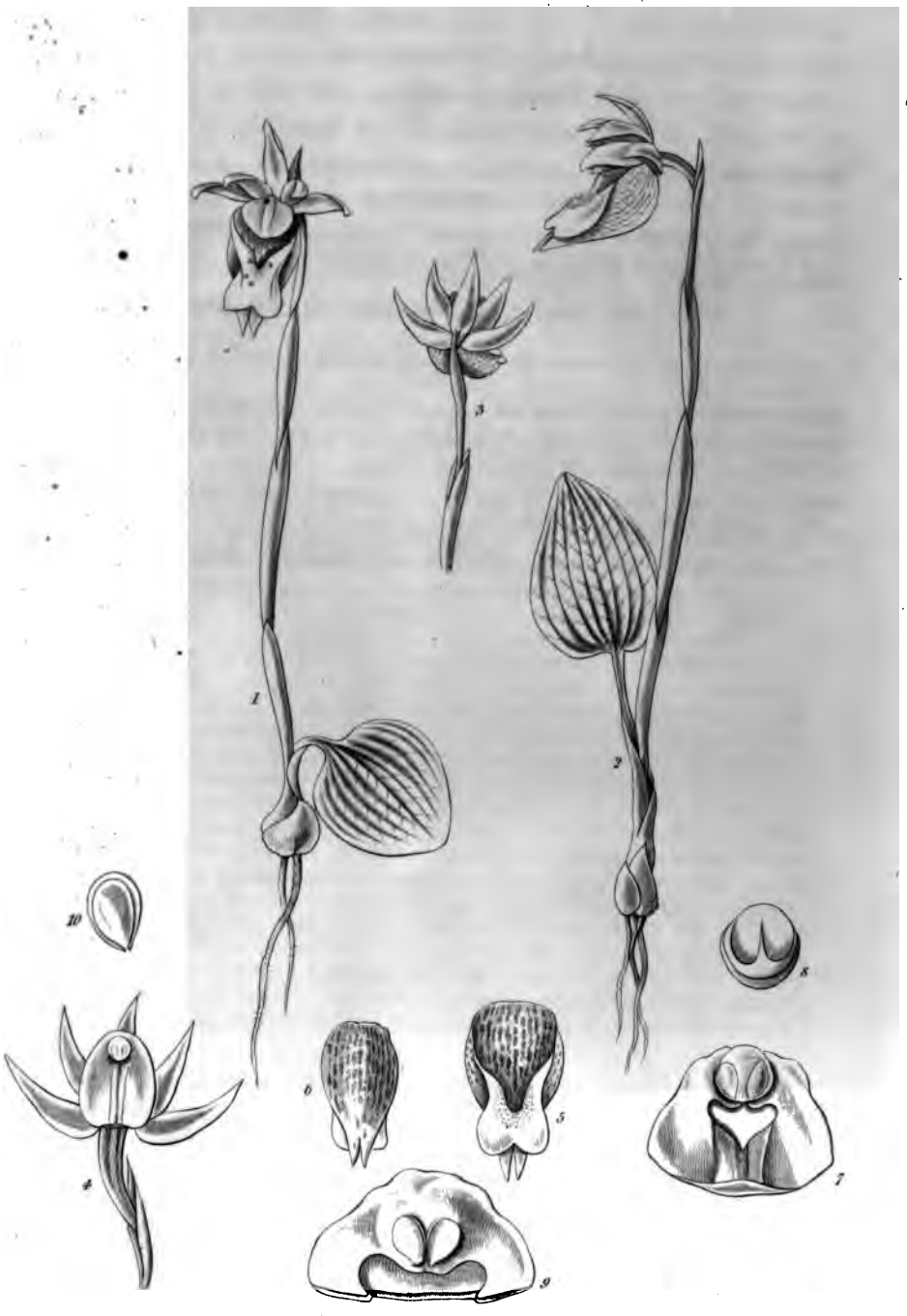
SMITH says, that he has in vain sought for a permanent difference between the American and European plants; and RICHARD adds, " An Calypso Americana, Hort. Kew. 208. specie differat non satis constat."

The Genus was established by SALISBURY, in his beautiful *Paradisus Londinensis*, " from καλυπτω, *to cover*, or *conceal*, not merely alluding to the covering of the stigma, but preserving a poetical analogy between this botanical beauty, so difficult of access, and the secluded goddess, whose isle was fabled to be miraculously protected from the observation of navigators."—SM. *in Rees' Cycl.*

In Europe, the plant is considered of great rarity. In Canada, especially about Montreal, it appears to be not uncommon.

Its mode of cultivation with us is in pots of peat-earth; and it is sheltered by a frame in winter.

Fig. 1. Plant, exhibiting a front view of the flower. Fig. 2. Ditto, shewing a side view of it. Fig. 3. Back view of a flower, *natural size*. Fig. 4. Front view of a flower, deprived of its lip; shewing the under side of the column. Fig. 5. Front view of the lip, removed from Fig. 4. Fig. 6. Back view of the lip. Fig. 7. Upper extremity of the column, to shew the Stigma and the Anther. Fig. 8. Anther removed from the pollen-masses. Fig. 9. Summit of the column, with its pollen-masses, after the anther is removed. Fig. 10. Two of the four Pollen-masses, *magnified*.



Calypso borealis.

Engd by J Swan

CALYPSO BOREALIS.

Northern Calypso.

GYNANDRIA MONANDRIA.—NAT. ORD. *ORCHIDEÆ*, DIV. IV. Anthera terminalis, mobilis decidua. Massæ pollinis demum cereaceæ.—*Br.*

GEN. CHAR.—*Labellum* ventricosum, prope apicem subtus calcaratum. *Petala* adscendentia, secunda. *Columna* petaloidea, dilatata. *Massæ pollinis* 4.—*Br.*

Calypso *borealis*, SALISB. *Parad. Lond.* n. 89.—RICHARD, *De Orchid. in Mem. du Mus.* v. iv. p. 60.—PURSH, *Fl. Am. Sept.* v. ii. p. 593.
Calypso *Americana*, BR. *in Hort. Kew.* v. 5. p. 208.—NUTT. *Am. Fl.* v. ii. p. 194.
Orchidium *boreale*, SW. *in Svensk. Botanik.* t. 518.
Limodorum *boreale*, WILLD. *Sp. Pl.* v. iv. p. 123.—SW. *De Orchid.* p. 85.
Cymbidium *boreale*, SW. *in Nov. Act. Ups.* vi. p. 76. (fide WILLD.)
Cypripedium *bulbosum*, LINN. *Sp. Pl.* p. 1347.

Root a small bulb, sheathed with scales, and throwing out from its base 2 or 3 rather long, and somewhat downy fibres. *Stem* from 4 to 6 inches, or even more, in height, covered, throughout its whole length, with long, cylindrical, membranaceous, brownish-green, sheathing scales, and with one, rather large, ovato-rotund dark-green *leaf*, deeply marked with longitudinal nerves, and somewhat reticulated.

Flower solitary, terminal, drooping, about an inch long. *Peduncle* short, curved, as well as the elongated germen. *Five segments* of the *perianth* lanceolate, rose-coloured, patent, and all curved forward. *Lip* inclined downwards, ovate, remarkably inflated, dingy pink, marked internally with deep purple interrupted lines, externally with obscure ones, open above at the base, the margins reflexed, with a tuft of yellow hairs at the sinus, and running down towards the apex into a broad, pale rose-coloured, spotless 2-lobed *ligule;* beneath this, the lip terminates in a sharp, bifid, yellow point, which is sometimes longer than the ligule, and sometimes scarcely equalling it in length. *Column of fructification* dilated at the margin, into a petal-like form, ovate, convex, rose-coloured, and covering the aperture of the lip. *Anther* seated on a small swelling, just beneath the extremity of the column on the under side, nearly hemispherical, yellow-white, membranaceous, moveable, attached by its base; when fallen away leaving 2 pairs of flattened, yellow, waxy pollen-masses, attached by their narrower extremities. *Stigma* a concave heart-shaped excavation, in part covered by the anther-bearing process.

Bulbs of this truly beautiful and interesting plant were communicated by Mr KIPPIN, from Montreal to our Botanic Garden in 1821, and from those which blossomed there in the month of March 1822, the accompanying figures were taken.

It is a native of Siberia, near the river Lena, in the 55th degree of North Latitude, according to GMELIN; of Ostrobothnia, according to LINNÆUS. Mr MENZIES found it in Nova Scotia, as did Governor LEWIS on the banks of Colum-

bia river. In 1811, Mr NUTTALL gathered it, but without flower, on the Island of St Helena, near the outlet of Lake Michigan, in the shade of *Abies canadensis*, attached to recent vegetable soil.

Mr BROWN has separated, in the *Hortus Kewensis*, the American state of this plant from the European, and has ascribed to it, "a lip narrowed and subunguiculate at the base, the spur exceeding the lamina or ligule of the lip in length, and the peduncle longer than the germen." The first character is by no means apparent in my living specimens. The second is variable; for though, in the individuals here figured, the spur is longer than the ligule, yet, in some of those in my herbarium, which were gathered by Mr GOLDIE at Montreal, the ligule rather exceeds the spur in length, and the peduncle is about as long as the germen. I have, for these reasons, ventured again to unite the American species with the European, particularly as it sufficiently well accords with the figure of the latter given by SWARTZ in the *Svensk Botanik*. The ligule, I should however observe, in SWARTZ's plate, is represented much larger in proportion than in my specimens, and entire at the extremity.

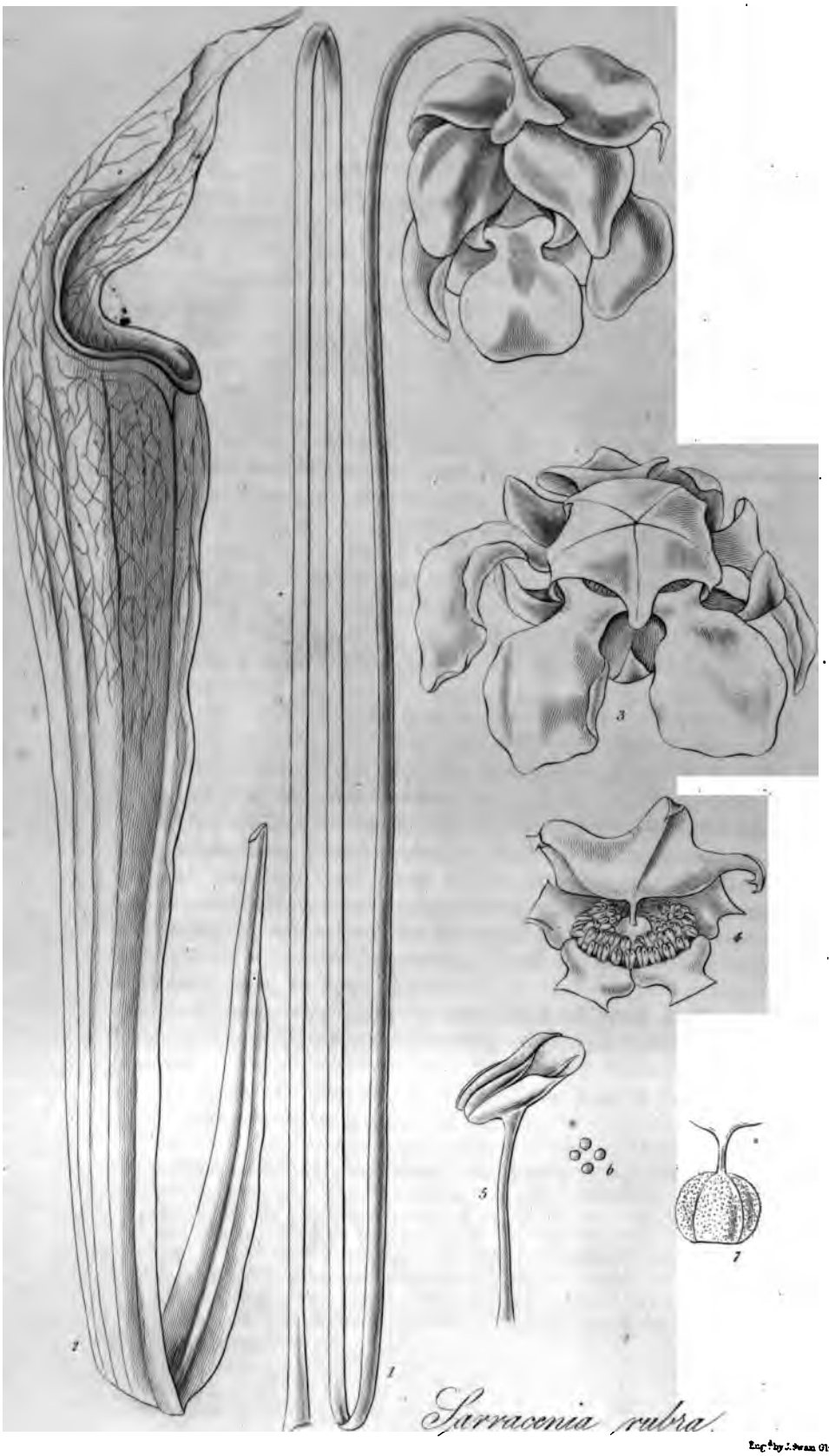
SMITH says, that he has in vain sought for a permanent difference between the American and European plants; and RICHARD adds, "An Calypso Americana, Hort. Kew. 208. specie differat non satis constat."

The Genus was established by SALISBURY, in his beautiful *Paradisus Londinensis*, "from *καλυπτω, to cover*, or *conceal*, not merely alluding to the covering of the stigma, but preserving a poetical analogy between this botanical beauty, so difficult of access, and the secluded goddess, whose isle was fabled to be miraculously protected from the observation of navigators."—SM. *in Rees' Cycl.*

In Europe, the plant is considered of great rarity. In Canada, especially about Montreal, it appears to be not uncommon.

Its mode of cultivation with us is in pots of peat-earth; and it is sheltered by a frame in winter.

Fig. 1. Plant, exhibiting a front view of the flower. Fig. 2. Ditto, shewing a side view of it. Fig. 3. Back view of a flower, *natural size*. Fig. 4. Front view of a flower, deprived of its lip; shewing the under side of the column. Fig. 5. Front view of the lip, removed from Fig. 4. Fig. 6. Back view of the lip. Fig. 7. Upper extremity of the column, to shew the Stigma and the Anther. Fig. 8. Anther removed from the pollen-masses. Fig. 9. Summit of the column, with its pollen-masses, after the anther is removed. Fig. 10. Two of the four Pollen-masses, *magnified*.



Sarracenia rubra.

Engd by J. Swan Glasgow.

SARRACENIA RUBRA.

Red Side-saddle Flower.

POLYANDRIA MONOGYNIA.—Nat. Ord. *INC. SEDIS*, Juss.

Gen. Char.—*Calyx* duplex persistens; *ext.* minore triphyllo; *int.* pentaphyllo. *Petala* 5, decidua. *Stigma* magnum, clypeatum, pentangulare, persistens, stamina obtegens. *Capsula* 5-locularis, 5-valvis, polysperma, valvis medio septiferis.

Sarracenia *rubra*; foliis scapo brevioribus tubo superne sensim dilatato reticulatim venoso, appendice ovato-acuminata, planiuscula erecta.

S. rubra, Watt, *Carol.* p. 152.—Willd. *Sp. Pl.* v. ii. p. 1150.—Ait. *Hort. Kew.* ed. 2. v. iii. p. 291.

S. psittacina, Mich. *Fl. Bor. Am.* v. i. p. 311.?—Pursh, *Fl. N. Am.* v. ii. p. 369.?

Leaves radical, 8 or 9 inches long, oblong, gradually tapering from the nearly cylindrical base upwards to the mouth of the *tube*, where it is about an inch and a half in its greatest diameter: it is laterally compressed, of a green colour, marked with longitudinal nerves and connecting reticulated veins, which, in the upper part, are of a purple colour. In the front of the leaf, there runs a longitudinal waved *ala* or *wing*, from the mouth to the base of the tube, and which is about one-third of an inch deep. The *mouth* of the tube is ovate, scarcely at all contracted, thickened at the margin, the front declined, the back of it surmounted with a broadly ovato-lanceolate, acuminate, nearly erect appendage, which is slightly convex, the margin alone, near the base, being recurved. This is usually of a purplish colour, marked with veins like the rest of the leaf, within covered with very minute reflexed hairs.

Scape twice the length of the leaves, one foot and a half long, cylindrical, erect, green, purplish above, and curved at the extremity, bearing a single, drooping, large, richly coloured *flower*.

Calyx double, the *outer* one of 3 small, ovate, yellow-green leaflets; the *inner* of 5, broadly ovate, bright purplish crimson spreading leaflets, the extremities pointing downwards, and protecting the rest of the flower. *Petals* 5, broadly ovato-rotundate, remarkably contracted below the middle, flaccid, pendent, of a very deep, fine purple colour, greenish at their bases. *Stamens* in a hollow cup-shaped receptacle, formed by the bases of the petals, numerous. *Filaments* rather short, purplish dotted. *Anther* inserted by the middle of its back, nearly horizontal, oblong, yellowish, formed of 2 cells, which open with a large aperture at the extremity. *Pollen*

I am indebted to my kind correspondent, Mr H. SHEPHERD, for the opportunity of representing this interesting species of *Berberis*, which was communicated by him to me, from the Botanic Garden at Liverpool, in full flower, early in April, and which he conjectured might be the *B. ilicifolia* of FORSTER. That species, however, according to DE CANDOLLE, in his admirable history of the Genus, should bear its flowers in racemes; and the present plant appears to me to accord in every particular with the *B. heterophylla* of that work, and of POIRET. If I entertain any doubt as to its identity with the last-named plant, it is from the circumstance of the berry being described as 1-seeded, whereas the *germen*, in the individual before us, is evidently furnished with many ovules.

The present species certainly departs from the generic character of *Berberis*, as given by DE CANDOLLE, inasmuch as the calyx has no scales at the base; nor are the filaments destitute of teeth, for there are two most distinct ones just beneath the anther. I am aware that this is the character appropriated to *Mahonia*; but besides the difference in habit, that genus has its petals without glands, which in the plant before us are as distinct as in any species of *Berberis*.

B. heterophylla is, as well as *B. ilicifolia*, an inhabitant of the Straits of Magellan, where it was discovered by COMMERSON; but when, or by whom, it was introduced to our gardens, I cannot learn. It is a rare species, though its hardy nature, and the bright yellow of its flowers, as contrasted with the deep green of the leaves, would render it a desirable plant for the shrubbery.

A. Portion of a plant, *natural size*. Fig. 1. Flower. Fig. 2. Petal, with its glands, and anther. Fig. 3. Stamen, with its valves closed. Fig. 4. Stamen with its valves expanded. Fig. 5. Pollen. Fig. 6. Pistil. Fig. 7. Germen, cut through transversely, to shew the ovules.—*More or less magnified.*

14

Berberis heterophylla

Engd by J. Swan Glasgow

BERBERIS HETEROPYHLLA.

Various-leaved Barberry.

HEXANDRIA MONOGYNIA.—NAT. ORD. *BERBERIDES.*

GEN. CHAR.—*Calyx* hexaphyllus (squamis 3 extus stipata). *Petala* 6, intus biglandulosa. *Antheræ* valvis dehiscentes. *Bacca* monolocularis, 2–3-(poly-) sperma.—*D. C.*

Berberis *heterophylla;* spinis tripartitis, foliis ovato-lanceolatis glabris, aliis integris, aliis tridentato-pungentibus, pedicellis solitariis unifloris folio vix longioribus.—*Dec.*

B. heterophylla, POIRET, *in Encycl. Bot.* v. viii. p. 622.—DE CAND. *Regn. Veget.* v. ii. p. 16.

B. tricuspidata, SMITH, *Herb.* (fide DE CAND.)

A *shrub,* rising about 3 feet in height, much branched, the older branches covered with dark wrinkled bark; the younger ones brown, and somewhat angled. *Leaves* clustered, of 2 kinds, the younger ones being pale green unarmed, and the margins entire, softish; the old ones terminated with a sharp spinose point, and having a lateral spinule on each side above the middle; hence the appropriate MS. name of Sir JAMES SMITH; those older ones, too, are quite rigid, dark green, shining: all of them obovato-cuneate, slightly nerved.

Peduncles axillary, solitary, curved, longer than the young leaves from among which they spring; bearing a single *flower* at the extremity. The *flower* about the size of a pea, composed of 6 *calycine leaflets,* ovato-concave, of which the three exterior and alternate leaflets are the smallest; and of as many *petals,* broadly ovate, connivent, deep yellowish-orange, crenated at the margin. At the base of each petal are 2 oblong, reddish-yellow *glands,* and between these, on each petal, is placed the *stamen;* this is shorter than the petal, yellow-orange coloured: *Filament* short, thick, with 2 lateral teeth, one on each side below the anther. *Anther* 2-celled, opening with 2 valves, whose broadest part is at the back of the anther; these open from the base upward, and remain erect, attached by their upper (now become their lower) extremity: *Pollen* globose. *Pistil* about as long as the stamens. *Germen* globose, glabrous, green, 1-celled, with several, from 8–10, ovules: *Style,* scarcely any: *Stigma* plane, glandular, and honey-bearing at the margin, umbilicated in the centre.

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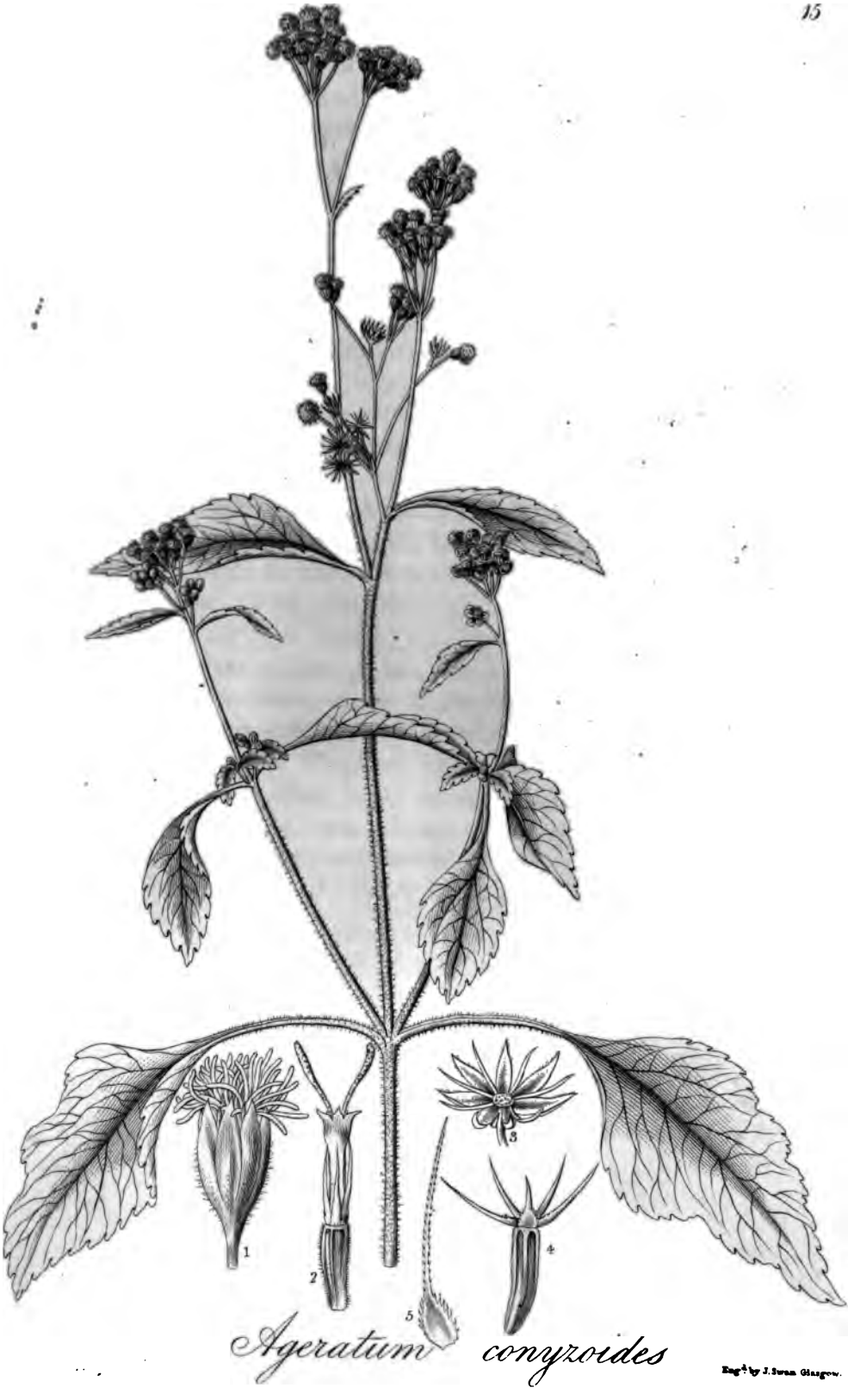


Ageratum conyzoides

Engd by J. Swan Glasgow.

AGERATUM CONYZOIDES.

Hairy Ageratum.

SYNGENESIA POLYGAMIA ÆQUALIS.—NAT. ORD. *COMPOSITÆ, De Cand. SYNANTHEREÆ*, Trib. EUPATORIÆ, *Cass.*

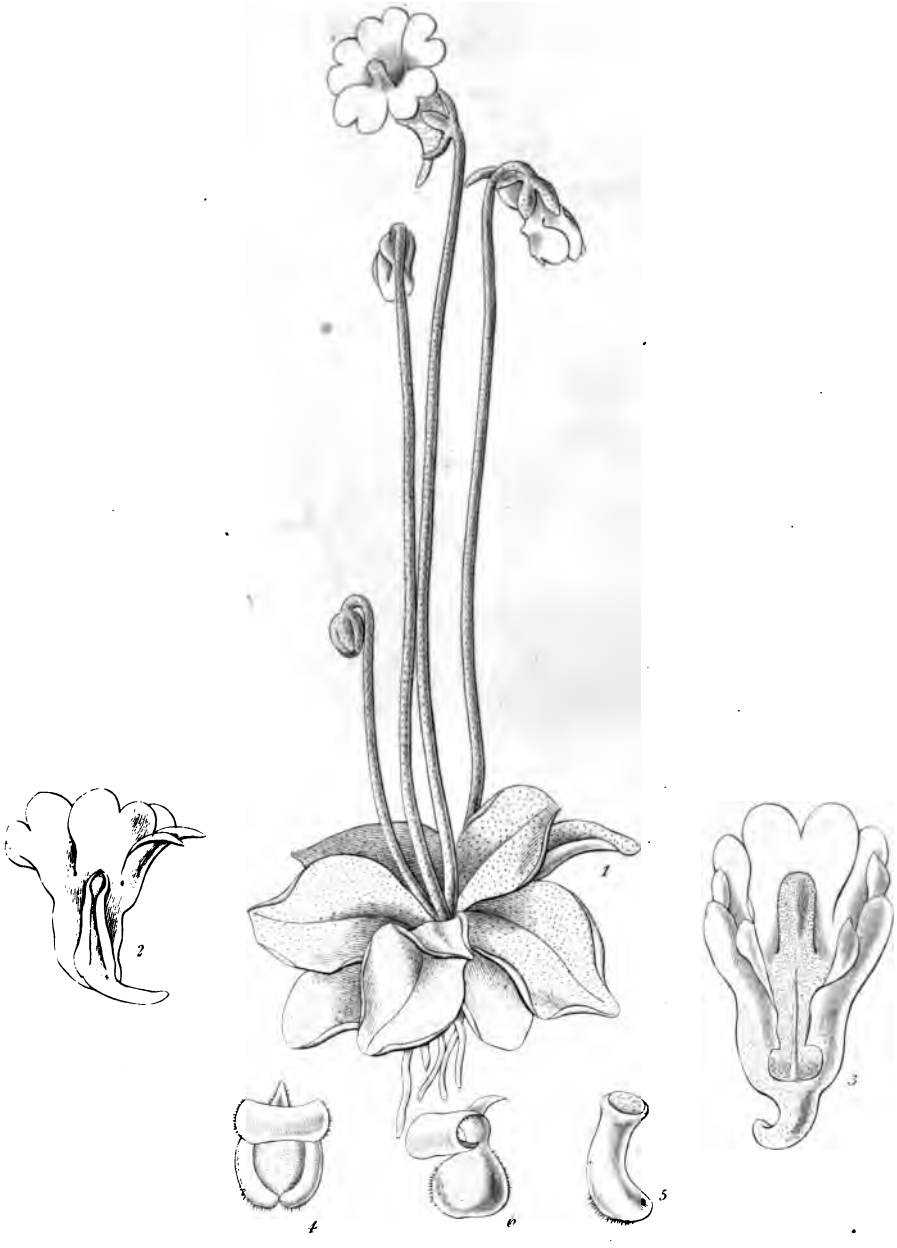
GEN. CHAR.—*Receptaculum* nudum. *Pappus* paleis 5, subaristatis. *Involucrum* oblongum, duplici foliorum serie. *Corollulæ* 4 seu 5-fidæ, *Willd.*

Ageratum *conyzoides;* foliis ovato-rhomboideis, caule piloso, paleis pappi aristatis denticulatis.

A. conyzoides, WILLD. *Sp. Pl.* v. iii. p. 1773.—AIT. *Hort. Kew.* ed 2. v. iv. p. 509.—SCHKUHR, *Bot. Handb.* t. 238.

Stem, 1–2 feet high, cylindrical, hairy, erect, much branched, with the branches opposite, erecto-patent. *Leaves* ovate, approaching to rhomboid, rugose, recurvo-patent, pubescent, the lower part of the margins acutely serrated, petiolated; petioles as long as the leaf, grooved, pilose. *Flowers* bright blue, inclining to purple, in terminal and lateral small pedunculated corymbs, which have small bracteas at the base of the stalk. *Involucre* ovato-cylindrical, slightly pilose, composed of about 14 erect scales in 2 rows, of which the outer half are oblongo-lanceolate, the inner (alternate with the outer) almost setaceous; they appear slightly toothed, under a high magnifying power. *Receptacle* small, naked, containing few florets, which are shorter than the involucre, so that nothing but the styles are protruded. *Corollules* tubular, with 5 blue teeth, the rest white. *Styles* much protruded, filiform, pubescent, blue. *Germen* scabrous, terminated by 5 white setæ, which are broad at the base. *Pericarp* (*achenium*) blackish-brown, soon falling out from the expanded involucre. *Pappus* of 5 ovate scales, terminated each by a long arista, minutely toothed for their whole length.

A native of South America and the West Indian Islands, and an annual, but easily propagated, and well deserving of a place in every stove. It flowers during a considerable period of the summer; and even the severities of winter witness the expansion of its pretty blue blossoms.



Pinguicula edentula

Engd by J. Swan, Glasgow.

PINGUICULA EDENTULA.

Toothless-flowered Yellow Butterwort.

DIANDRIA MONOGYNIA.—NAT. ORD. *LENTIBULARIÆ, Rich. Br.*

GEN. CHAR.—*Corolla* ringens, calcarata. *Calyx* bilabiatus, quinquefidus. *Capsula* unilocularis.

Pinguicula *edentula*; nectario subulato recurvo, corolla campanulata breviore, quinquelobo, lobis emarginatis integerrimis, palato prominente, scapo pubescente.

Root perennial, fibrous, slightly villous. *Leaves* all radical, spreading, ovate, with their margins incurved, pale green, the surface studded with minute pellucid dots, or papillæ, which are soft and unctuous to the touch, furnished through the centre with one nerve. From the centre of these leaves arise 3 or 4 erect, single-flowered scapes, about 5 inches long, cylyndrical, downy.

Calyx small, 2-lipped, the upper lip of 3, the lower of 2 oblong-lanceolate obtuse segments, downy on the outside. *Corolla* large, drooping before expansion, pale yellow, rather obliquely campanulate, with a small deflexed spur at the base, tube with a deep furrow on one side, running into a tubular palate in the interior of the corolla: *Limb* divided into 5 equal spreading, obcordate, deeply emarginated, almost semibifid lobes, but destitute of teeth or crenatures. The *corolla* is glabrous, except within the tube, and upon the surface of its prominent oblong, obtuse, palate, which are downy. *Stamens* 2, placed at the base of the germen, one on each side. *Filament* curved, thick, a little ciliated. *Anther* with a single, terminal, transverse cell. *Germen* spherical, with glandular hairs. *Style* short, columnar, thick: *Stigma* of 2 lobes, one small and resembling a hook, the other a large involute white plate, ciliated at the margin, covering entirely the upper part of the stamen.

This beautiful species of *Pinguicula* was sent from the swampy grounds of Savannah, North America, along with many other rare plants, to our Botanic Garden, by Mr WILSON, an intelligent gardener of that country. It blossomed in the stove in April, and as it continues some time in flower, it is

likely, if it prove easy of increase, to be a valuable addition to our gardens. We cultivate it in peat-earth; and it seems to prefer the stove to the green-house.

At first sight, I believed this to be the *P. lutea* of WALTER, *Fl. Carn.* but every writer describes that plant, and Mr GAWLER has represented it in the Botanical Register, t. 126. with three of the five lobes having four distinct teeth. No such peculiarity is visible in our specimen. To this difference, I may add, that the leaves are much larger than in *P. lutea*, the scape is taller, and the flower paler, never having "the tube and the spur marked with a trace of purplish veins."

The foliage is precisely similar to that of *P. grandiflora* (Flora Londinensis, New Series), and the structure of the stamens and the pistil is also the same; but it differs strikingly in the form of the corolla, here almost entirely regular, and its singularly prominent palate. Most of the genus have blue flowers, those of this species and of *P. lutea* alone being yellow.

Fig. I. Plant, *natural size.* Fig. 2. Back view of a flower, with the groove and the aperture leading to the palate. Fig. 2. Front view of a corolla, cut open to shew the palate. Fig. 4. Stamens, and pistil; the large stigma covering, with one of its lobes, the Anthers. Fig. 5. Single stamen. Fig. 6. Pistil.—*More or less magnified.*

Begonia humilis

BEGONIA HUMILIS.

Small flowered Begonia.

MONOECIA POLYANDRIA.—NAT. ORD. *BEGONIACEÆ, Bonpl. De Cand.*

GEN. CHAR.—MAS. *Cal.* 0. *Cor.* polypetala. *Petala* plerumque 4, inæqualia.—FŒM. *Cal.* 0. *Cor.* petalis 4–9, plerumque inæqualibus. *Styli* 3, bifidi. *Caps.* triquetra, alata, 3-locularis, polysperma.

Begonia *humilis;* caulescens erecta, foliis hispidis semicordatis duplicato-serratis, capsulæ alis rotundatis parum inæqualibus.—*Dr.*

B. humilis, AIT. *Hort. Kew.* ed. 1. v. iii. p. 353.—DRYANDR. *in Linn. Trans.* v. i. p. 166. t. 15.—HAW. *Syn. Pl. Succ.* p. 318.

B. lucida, HAW. *Sax. et Rev. Pl. Succ.* p. 197.

Plant about one foot and a half high, perennial. *Stems* much branched, jointed, swelling at the joints; branches erecto-patent, all of them semi-pellucid, succulent, brittle, greenish below, reddish above, marked with longitudinal deeper-coloured lines. *Leaves* 2–3 inches long, semi-cordate, acuminate, bright, green, shining, hispid above, glabrous beneath, but covered with minute furfuraceous scales, visible with the microscope; their margins doubly serrated and ciliated. *Petioles* short, glabrous. *Stipules* rather large, ovate, pellucid, greenish, very delicate, and membranaceous, ciliated at the margin, soon falling away.

Peduncles axillary and terminal, 2–3 inches long, reddish, branched at the extremity in a dichotomous manner, with ciliated bracteas at their base: *Pedicels* shortish, some bearing male, some female flowers; the former, generally, upon the longest stalks.

Male flower.—*Petals* 4, unequal, 2 larger, and 2 smaller, orbicular, spreading, white: the latter, as DRYANDER observes, are often wanting; in my specimen they were wholly absent. *Stamens* 10–15, yellow, with very short filaments, which are all united at their bases. *Anther* oblongo-ovate. *Cells* lateral, opposite, opening longitudinally. *Female flower* composed of 5 petals, or rather of 1 very deeply quinquepartite petal; the segments spreading, linear, oblong, persistent. *Germen* greenish, large, with unequal longitudinal wings, veined, with two minute ciliated bracteas at the base. *Styles* 3, very short. *Stigma* bipartite, the segments a little divaricated, linear, oblong, glandular, capitate at the extremity.

Capsule of the same shape as the germen, membranaceous, brown; the wings remain attached only by their upper and lower extremities: the capsule itself, in the centre of these wings, opening by three longitudinal fissures, exactly at that part where the wings were longitudinally attached, and exhibiting the trialate central receptacle. My capsules had discharged all their seeds.

A native of the West Indies, having been discovered there by Mr ALEXANDER ANDERSON, and first introduced into our gardens in 1788, by Messrs LEE and KENNEDY. It is cultivated in the Botanic Garden of Glasgow, and in that of Liverpool, whence Mr SHEPHERD sent the specimen represented.

The perfect accordance of the present plant, in almost every particular, with the *B. humilis* of DRYANDER, leaves not a doubt on my mind of its being the same species. If, however,

my idea be correct, the *B. humilis* of *Botanical Register* . cannot be the same; for it is there figured with large ense panicles of numerous flowers, the staminiferous blos- ms having four, almost equal, white petals, the stem wanting he beautiful transparency so striking in our plant, the stipules very large, tipped with a mucro, and the leaves, besides their larger size, and deeper green colour, being represented as wholly destitute of any kind of hairiness. I am aware that the description in the *Bot. Reg.* speaks of the hispidity and ciliation of the foliage; but that is professedly copied from DRYANDER's *B. humilis*. GAWLER's plant is the *B. suaveolens* of LODDIGES and HAWORTH, according to the latter author.

I confess that I can find no difference in the *B. lucida* of HAWORTH, in the work quoted above; and the author says of it, " Affinis maximè B. humili."

B. humilis of BONPLAND is considered by GAWLER as a distinct species, and is probably really so, being neither his nor our plant, since it is described as having the stem roughly furred.

BONPLAND, in his beautiful work on the Plants of the Garden at La Malmaison, has no doubt, with great propriety, formed of this single genus the Order *Begoniaceæ*. The question is, what are its natural affinities? LINNÆUS ranked it with the *Polygona* and *Rumices*, and SMITH and DE CANDOLLE seem to be satisfied of the propriety of this arrangement. BROWN observes, that its place is not satisfactorily determined; while Mr LINDLEY, in a recent number of the *Bot. Register*, thinks that he has detected a remarkable affinity between the genera *Begonia* and *Hydrangea*, adding, that the idea of its being allied to the *Polygoneæ*, probably originated in the taste of the leaves, which bears assuredly a striking resemblance to that of the foliage of different species of *Rumex*.

Indeed, such is the agreeably acid flavour of the leaves of these plants, that the French colonists in the West Indies eat them under the name of *Wild Sorrel*.

As a genus, it is found in the tropical parts of America, in several districts of the East Indies, in the Isles of France and Bourbon, according to Mr BROWN, upon the Island of Joanna, and in Madagascar; but none of the species have been detected in Africa, although the *B. diptera* of DRYANDER, from Joanna, has erroneously gone under the appellation of *B. Capensis*.

Fig. 1. Portion of a plant, *natural size*. Fig. 2. Male and female flowers. Fig. 3. Cluster of stamens. Fig. 4. Single stamen. Fig. 5. Styles and pistils. Fig. 6. Germen cut open, to show the 3 cells, and the 3-winged receptacle of the seeds. Fig. 7. Capsule burst open, having discharged its seeds.—*All magnified.*

This work is destined to include, under the title of EXOTIC FLORA, figures and descriptions of such plants, not natives of Great Britain, as are cultivated in our gardens, or, in defect of them, of such as can be faithfully represented from well preserved specimens in our Herbaria. In the selection of species, preference will, of course, be given to such as recommend themselves by their beauty, their history, novelty, or some remarkable or little known characters in their flowers and fruit.

The greatest pains will be taken in delineating the different parts of the fructification, so as to exemplify the generic as well as specific characters, and the Natural Order to which the plant belongs; the general neglect of which, in similar works, has caused an obscurity, which renders the ascertainment of a genus very difficult to the student, and which has greatly retarded the progress of the delightful science of Botany. The cultivation, also, and the soil best suited to the individual, will not be omitted, nor the history of the plant, so far as it can be ascertained; so that the utility of the work will not be confined to the botanical student, but extend likewise to the horticulturist and general admirer of plants.

As this is the first publication of the kind to which Scotland has given birth, those unacquainted with the state of Botanical Science in this northern part of the kingdom, may require to know what means the Author possesses of obtaining subjects of sufficient interest to insure the continuance of his work. The chief resource will be derived from the collection of the Royal Botanic Garden at Glasgow,—a collection which, by the munificence of the inhabitants of that City, aided by the University, has, in the short space of five years, attained to a degree of perfection scarcely to be paralleled in the annals of similar establishments, and comprising now scarcely fewer than 9000 species of plants. With a liberality that merits the Author's grateful acknowledgments, the magnificent New Botanic Garden of the sister University of Edinburgh has been thrown open to him by Dr GRAHAM. Dr HOOKER's own Herbarium will likewise afford many materials for publication, particularly among that beautiful tribe of plants, the Ferns, with which, as well as in other departments, it has been greatly enriched by rare East Indian species, and especially from the hitherto almost unknown regions of Nepaul, through the kindness of Dr WALLICH.

The work will be published in Parts, on a royal 8vo size, every three months, each part containing 20 Plates, Price 8s. A few copies coloured, Price 16s.

J. Neill, Printer.

December 1, 1822.

EXOTIC FLORA,

CONTAINING

FIGURES AND DESCRIPTIONS

OF

NEW, RARE, OR OTHERWISE INTERESTING

Exotic Plants,

ESPECIALLY OF SUCH AS ARE DESERVING OF BEING CULTIVATED IN OUR GARDENS;

TOGETHER WITH

REMARKS UPON THEIR GENERIC AND SPECIFIC CHARACTERS, NATURAL ORDERS, HISTORY, CULTURE, TIME OF FLOWERING, &c.

BY

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PART II.

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MDCCCXXII.

J. Swan Sculpt

Begonia argyrostigma

BEGONIA ARGYROSTIGMA.

Silver-spotted Begonia.

MONOECIA POLYANDRIA.—NAT. ORD. *BEGONIACEÆ, Benpl. De Cand.*

GEN. CHAR.—MAS. *Cal.* 0. *Cor.* polypetala. *Petala,* plerumque 4, inæqualia.—FŒM. *Cal.* 0. *Cor.* petalis 4–9, plerumque inæqualibus. *Styli* 3, bifidi. *Caps.* triquetra, alata, 3-locularis, polysperma.

Begonia *argyrostigma*; foliis oblongis semicordatis acuminatis repandis glabris discoloribus, superne argenteo-maculatis.

B. argyrostigma, FISCH. *Hort. Gorenk.* (fide Link et Otto).—LINK et OTTO, *Abbild. Anserl. Gew.* v. i. p. 23. t. 10.—HAW. *Succ. Pl.* 1821, p. 197.

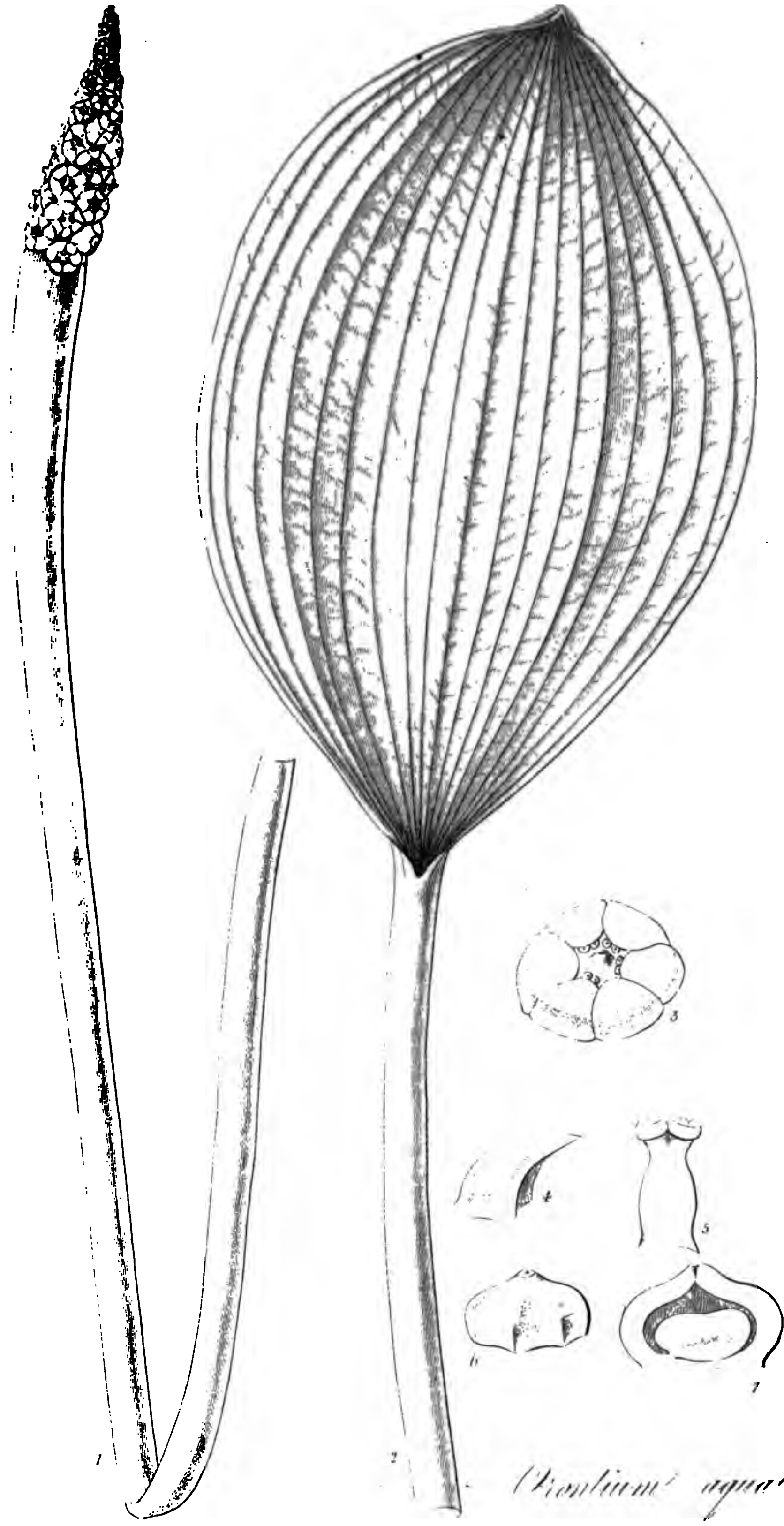
Stem erect, from 8 or 10 inches to 2 or 3 feet in height, according to LINK, branched; its thickness about that of the human finger; reddish, jointed, glabrous. *Leaves* numerous, more or less crowded, alternate, petiolated, pendent, oblong, unequally cordate, the large lobe being almost half the size of the rest of the leaf, quite glabrous, the margin thickened, repand, scarcely crenated, the upper surface deep green, nerved, and studded with numerous white roundish spots, which in the older leaves have a shining appearance, not unlike silver; these spots have again one or more green spots or points in their centre; the under side of the leaf is a fine deep reddish-purple, quite destitute of spots. *Petioles* about 2 or 3 inches long, terete, with large, ovate, membranous stipules at the base.

Flowers large, monoecious; male and female generally borne on distinct axillary peduncles, and collected into many-flowered panicles, drooping, as it appears, from the weight. *Peduncles* and *pedicels* pale reddish, the latter with two ovate, rather small bracteas. MALE *flower* composed of two roundish, large, and two obovato-oblong, white, spreading *petals*. *Stamens* numerous, united by their base. *Filaments* short, yellow, sometimes forked at the extremity. *Anther* oblong, yellow, opening behind longitudinally, the opening near the margins. FEMALE *flower* of six, rather unequal, ovate, concave, pale rose-coloured *petals*. *Germen* very large, rose-coloured, triangular, trialate, wings broad, rounded at the upper angle, membranaceous, nearly equal. *Style* short, yellow; *stigmas* 3, large, variously lobed, yellow, glandular, the lower lobe broad, and curved downwards.

Singular and beautiful as this species of *Begonia* is, in the appearance of the leaves, it is scarcely less striking in its flowers, the male blossoms of which are pure white, the female of a delicate rose colour. These were produced, probably for the first time in Britain, at the stove of the Botanic Garden at Edinburgh, where the accompanying figure was taken in June 1822. The species is well represented in the excellent *Icones Selectæ* of LINK and OTTO. Our plant is far more compact, and of shorter stature, in consequence, perhaps, of its being cultivated in a small pot. From those authors we learn that it is a native of Brazil.

It seems easy of cultivation, and may probably, at a future time, be as common as the hardly less beautiful *B. Evansiana*. The soil best suited to all the individuals of this genus is a mixture of loam and peat; and it is particularly requisite that the bottom of the pot be well drained, as the roots are readily injured by stagnant water. The plant in our Botanic Garden was received from that of Edinburgh.

Fig. 1. Plant, *natural size.* Fig. 2. Male flower. Fig. 3. Bundle of stamens. Fig. 4. Single stamen. Fig. 5. Forked ditto. Fig. 6. Female flower. Fig. 7. Style and stigma. Fig. 8. Section of the germen.— *All but* Fig. 1. *more or less magnified.*



Orontium aquaticum

ORONTIUM AQUATICUM.

Aquatic Orontium.

HEXANDRIA MONOGYNIA.—NAT. ORD. *AROIDEÆ.*

GEN. CHAR.—*Spadix* cylindricus tectus flosculis. *Spatha* nulla. *Perianthium* simplex, hexaphyllum, foliolis inflexis. *Stylus* nullus. *Utriculus* monospermus.

Orontium *aquaticum*; foliis lanceolato-ovatis.—*Willd.*

O. aquaticum, LINN. *Sp. Pl.* p. 463.—*Amœn. Acad.* v. iii. p. 17. t. 1. f. 3.—WILLD. *Sp. Pl.* v. ii. p. 199.—AIT. *Hort. Kew.* ed. 2. v. ii. p. 306.—PURSH, *Fl. Amer. Sept.* v. i. p. 235.—NUTT. *Am. Pl.* v. i. p. 227.

Whole plant smooth (according to SMITH), with floating foliage, and like a *Potamogeton* in its mode of growth. *Leaves* upon long cylindrical stalks, varying, as it would appear, remarkably in their form; in my specimens broadly elliptical and acute, characterised by most authors as lanceolate-ovate, whilst PURSH observed a variety growing in salt-marshes near New York, with almost linear leaves. They are quite entire at the margin, nearly plane on the surface, dark green, and marked with a number of parallel ribs, which are connected by faint transverse lines. The lamina of the leaf is fixed upon the summit of the *petiole* in such a manner as to leave a depression in front, and the petiole becomes almost immediately cylindrical.

Scape long, cylindrical, green, thickened, and much yellower above; terminating in the conico-cylindrical greenish-white spadix, about 2 inches in length, totally destitute of spatha.

Florets crowded, composed of a single perianth, of 6 yellowish-green *leaflets*, fleshy, convex, the margins thin, and somewhat scariose, the extremities inflexed, so that the essential organs of the flower are almost concealed by them. The upper florets have generally 5 or 4 leaflets to the perianth. Within each leaflet is a single stamen. Its *filament* short, broad, and flat, a little contracted above, and terminated by the 2-lobed and 2-celled, yellowish anthers, which open *vertically*. *Pollen* yellow. *Pistil* semiglobose, with 5 longitudinal slightly elevated lines. *Style* none. *Stigma* conico-obtuse. Within the *ovary* is one cell, and a single *ovule*, fixed near one extremity by its under side to the base of the cell, of a transversely oblong form. As I have not had the opportunity of seeing the *fruit* of this plant myself, I shall transcribe what Mr NUTTALL says of it in his genera of North American Plants: "*Utriculus* naked, green,

roundish, 1-seeded, the size of a large pea. *Gemmule* viviparous, or commencing to vegetate as soon as mature, (cotyledons none), primary vaginate leaves 2 or 3, linear, and subulate, the 4th leaf usually exhibiting a small lamina. *Primary radicle* conspicuous, conic. *Somorhize* * roundish, large, dark green, umbilically depressed at the summit, having a small concealed internal cavity, and a lateral shallow groove, for the reception of the gemmule, which is appressed to it, and curved over the greater part of the somorhize."

A native of North America, from Canada to Florida, growing in rivulets, and low and stagnant waters (PURSH), and, as Mr NUTTALL believes, almost exclusively within the limits of tide-water. It bears the winter well with us, and is readily cultivated in ponds, along with other aquatic plants. It was introduced to this country by Dr JOHN FOTHERGILL, in the year 1775, but hitherto no delineation of it has appeared in any British botanical publication. That in the *Amœnitates Academicæ*, if really intended for this plant, conveys a most incorrect idea of it; for the scape is represented as deeply furrowed, furnished with a large bractea; the leaf has one central rib, and several lateral parallel nerves, resembling the foliage of most *Dicotyledonous Plants*.

PURSH observes, what I did not remark, that the flowers have a very peculiar smell.

The drawing, from which the annexed plate was engraved, was taken from specimens communicated from the Botanic Garden of Liverpool in June last, by Mr H. SHEPHERD.

Fig. 1. Scape with its spadix. Fig. 2. Leaf. Fig. 3. Single flower. Fig. 4. Leaflet of the perianth. Fig. 5. Stamen. Fig. 6. Pistil. Fig. 7. The same cut through vertically.—*All but* Fig. 1. and 2. *more or less magnified.*

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* "In this case, a large, round, ingerminative body, laterally connected by a vascular system to the gemmule, and forming the principal part of the seed."


1
2

encatus

CACTUS TRUNCATUS.

Truncated Cactus.

ICOSANDRIA MONOGYNIA.—NAT. ORD. *NOPALEÆ; Juss. ined. De Cand.—CACTI, Juss. Gen. Pl.* DIV. PHYLLANTHI.

GEN. CHAR.—*Cal.* e squamis numerosis imbricatis, superus. *Petala* numerosa, calyci inserta, interiora majora, basi coalita. *Stigma* multifidum. *Bacca* umbilicata, polysperma. *Semina* intra pulpam nidulantia.—*Frutices* pingues, aphylli sæpius articulati, spinosi vel fasciculatim pilosi, compressi vel angulati. *Flores* plerisque magni, speciosi.

Cactus *truncatus;* caulibus articulatis ramosis, ramis cernuis, articulis compressis oblongis truncatis, limbo floris obliquo.

Epiphyllum truncatum, HAW. *Suppl. Pl. Succ.* p. 85.

Flowering plants not exceeding at most 8 or 10 inches in length. The *stems* rise erect, and soon become branched, the *branches* drooping. *Whole plant* composed of compressed, somewhat foliaceous, oblong *joints,* plane above, with a slight groove or channel, somewhat keeled beneath, the margins having distant serratures, which are often red, especially in the young joints, and there also furnished with small fascicles of hairs; the extremity truncated, with 2 rather long teeth at the angles.

Flower arising from the truncated extremities of the joints, 3 inches long, of a beautifully deep rose colour, standing out horizontally, formed of many imbricating petals: or the 4 or 5 lowermost of these may be considered a calyx, since they stand a little remote from the others; the rest are united by their bases into a long whitish tube, the *limb* of 8 or 9 segments, large, spreading, oblique, ovate. *Stamens* numerous, much longer than the tube of the corolla, in 2 rows, the outermost arising from the base of the corolla, the inner, from the receptacle, and forming a tube around the style, (see f. 2.) *Filaments* slender, filiform; *Anthers* oblong, 2-celled, yellow, as well as the pollen. *Pistil:*—*Germen* obconical, small, inferior, greenish, tipped with rose-colour, smooth. *Style* filiform, red, as long as the stamens, a little curved downwards. *Stigma* clavate, formed of 6 connivent segments.

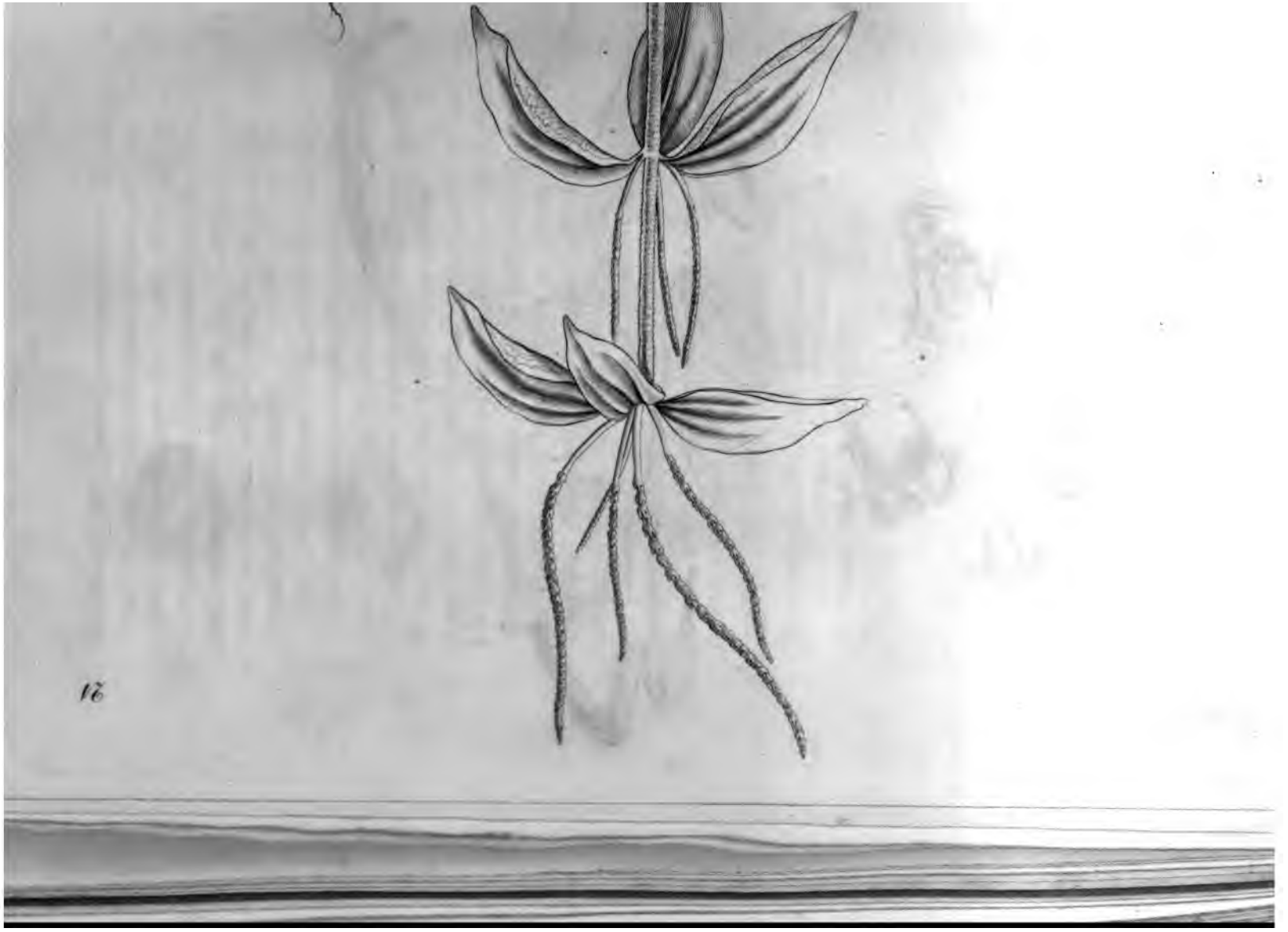
This beautiful species, to the brilliant colour of whose blossoms no pencil can do justice, flowered in our Botanic Garden

in October 1821, having been received in the spring of that same year, with many other botanical treasures, from the Royal Garden at Kew, through the liberality of my kind friend W. T. Aiton, Esq. It was by him obtained from the Brazils in 1818, and is described by none but Mr Haworth, in the Supplement to his work on Succulent Plants, at a time when its flowers were not known.

In another instance, I have followed, though not without hesitation, the able investigator of Succulent Plants just mentioned, in taking up the genus *Rhipsalis;* but in the present I do not see sufficient grounds for constituting a generic character. Nothing, indeed, can be more natural than the divisional characters of the genus *Cactus*, taken from the stems; but it does not appear to me that the structure of the flowers affords marks equally constant. A more intimate acquaintance with the flowers and fruit than we yet possess, may enable us to discover differences, but at present I think it safest to confine myself to the old genus.

There can hardly be a more desirable plant for the stove than the present individual, as it increases readily by cuttings, and only requires the common treatment of the rest of its congeners.

Fig. 1. Front view of a flower, *slightly magnified.* Fig. 2. Portion of the tube, to shew the insertion of the stamens. Fig. 3. Anther. Fig. 4. Stigma.—*All more or less magnified.*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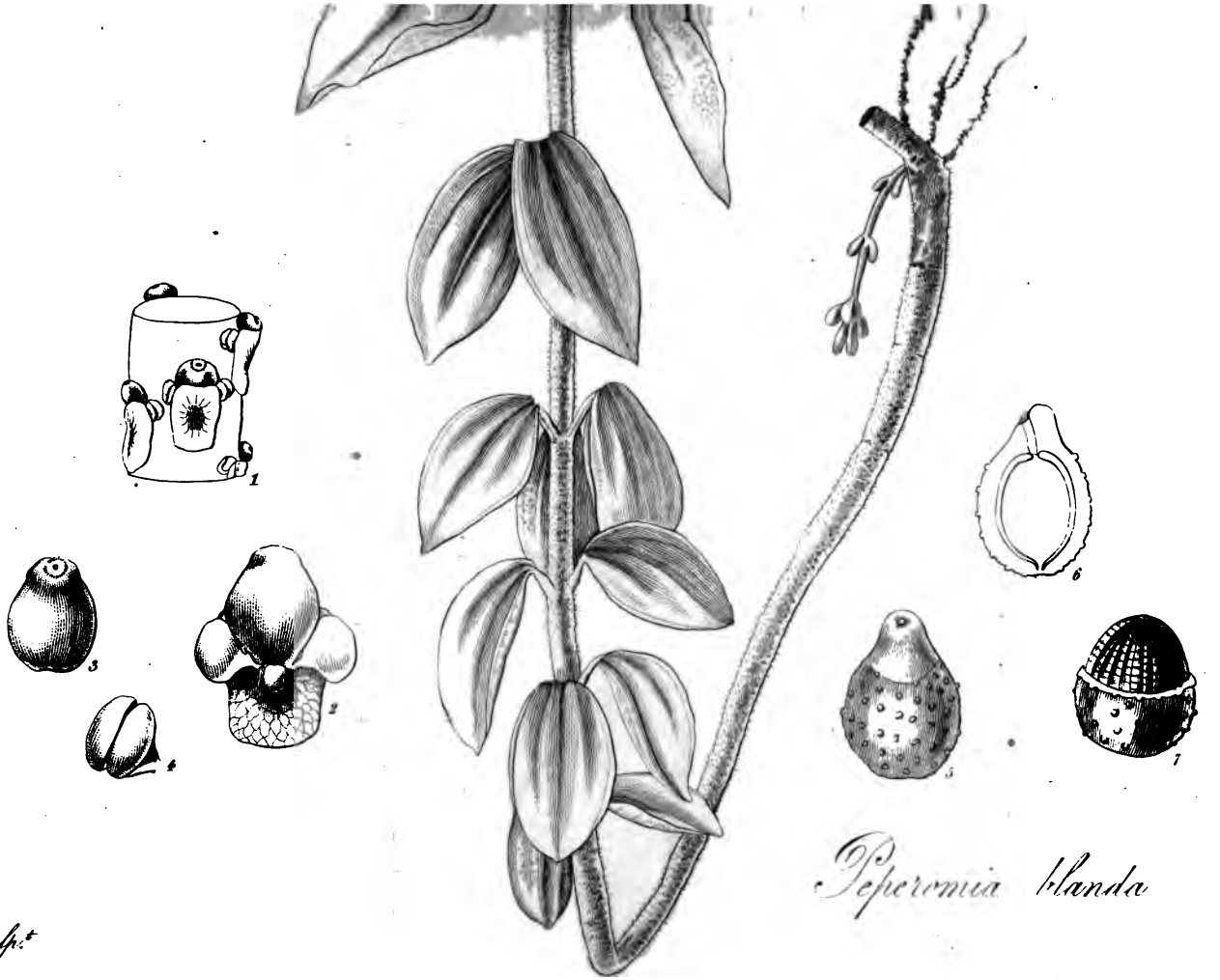
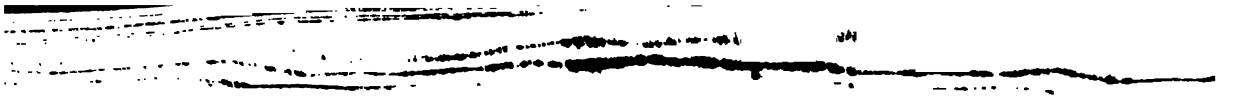


Peperomia blanda

J. Swan Sculp.t



PEPEROMIA BLANDA.

Villous Peperomia.

DIANDRIA MONOGYNIA.—NAT. ORD. *PIPERACEÆ, Humb. et Kunth.*—PIPIRETEES, *De Cand.*—URTICIS AFFINIS, *Juss.*

GEN. CHAR.—*Spadix* cylindraceus, floribus undique tectus. *Stamina* duo. *Stigma* indivisum. *Bacca* monosperma. *Caulis* herbaceus.—*Humb. et Kunth.*

Peperomia *blanda;* pubescens, caule erecto simplici terete, foliis ternis oblongis trinervis carnosis, superioribus utrinque attenuatis, spadicibus terminalibus axillaribusque solitariis.

Peperomia blanda, HUMB. et KUNTH, *Nov. Gen.* v. i. p. 67.

Piper blandum, JACQ. *Coll.* v. iii. p. 210.—Ic. *Var.* v. ii. p. 218.—WILLD. *Sp. Pl.* v. i. p. 164.—HAWORTH, *Syn. Pl. Succ.* p. 7.—ROEM. et SCHULTZ, *Syst. Veg.* v. i. p. 329.

Root creeping and fibrous. *Stem* about 1 foot in height, erect, simple, cylindrical, jointed, pubescent, and red to the very extremity. *Leaves* distantly placed upon short, semicylindrical footstalks, recurved, oblongo-ovate, thick and fleshy, pubescent, three-nerved, green above, yellowish, with red margins, nerves and dots beneath, the lowermost ones obtuse, the superior ones more or less attenuated at the base and at the extremity.

The *spadix* is solitary at the base of each of the leaves which are nearest to the extremity; the terminal ones are often 4 or 5 together, green, 2–4 inches long, slender, pedunculated, peduncles shortish, red. *Flowers* rather distantly placed. *Scales* rotundo-quadrate, pellucid, reticulated, peltate. *Germen* broadly ovate, sessile. *Stigma* sessile, oblique, somewhat fringed. *Anthers* 2, one on each side of the germen, borne upon filaments, which are so short that they are scarcely protruded beyond the scale, of one cell.

The genus *Peperomia* was long ago divided from *Piper* by RUIZ and PAVON; but by most subsequent botanists it has again been united to it, under the idea that such a separation was not founded in nature. To me, however, it appears well distinguished, as being constant, so far as an examination of the individuals cultivated in our stoves enables me to speak, to the characters above given, and agreeing also in the peculiar habit of the species. The individuals belonging to the genus *Piper*, according to the information of M. HUMBOLDT, have a shrubby stem, sometimes attaining to 15 and 25 feet in length, and dull green leaves; the *Peperomiæ*, on the other hand, possess somewhat herbaceous, fleshy stems, and have leaves of a bright green colour. The latter, though endowed with a very fleshy or succulent parenchyme, are more patient of cold than the former, and grow in several instances at an elevation

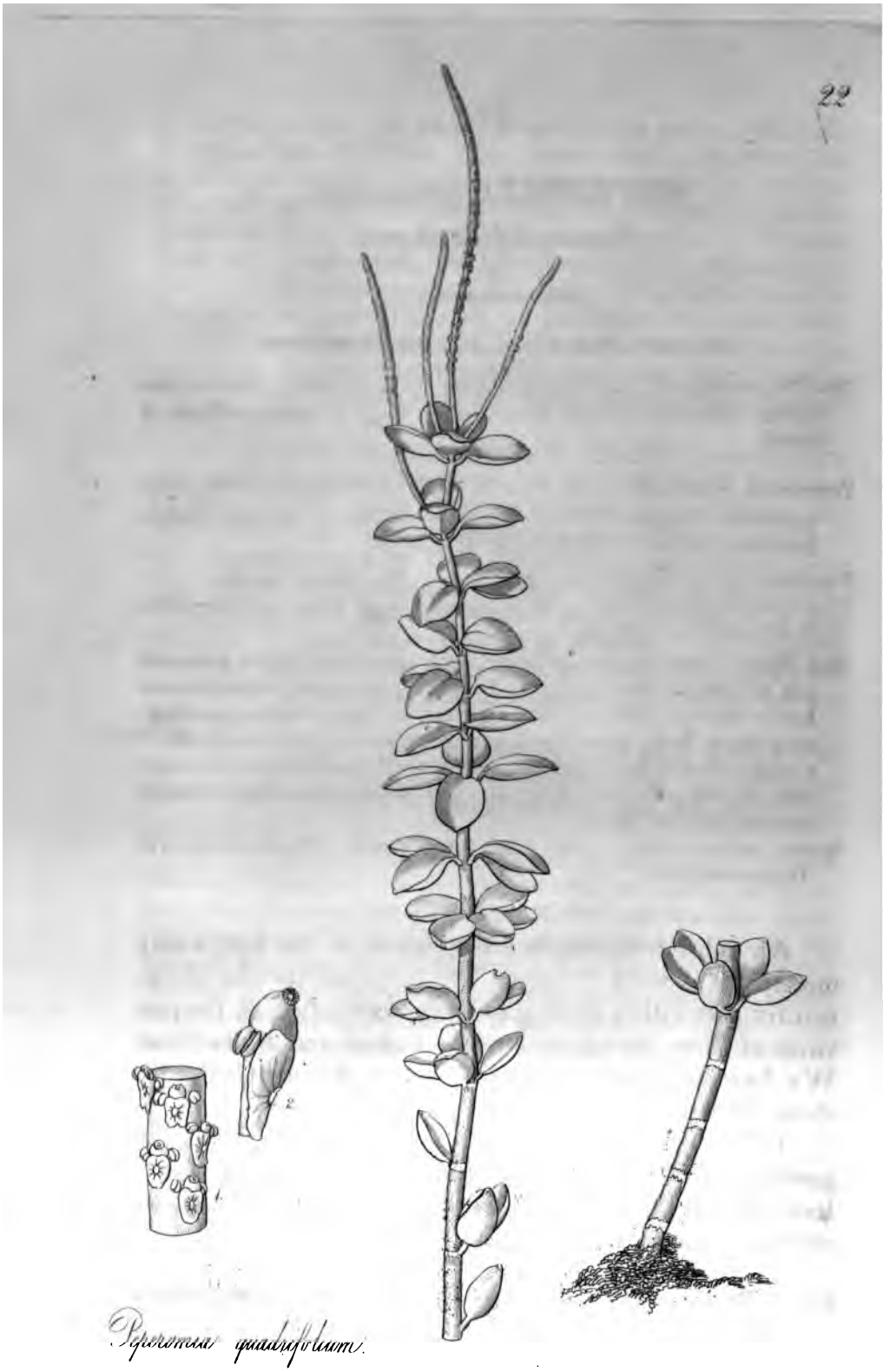
of 1700 toises upon the Andes, along with the genera *Alstonia*, *Escallonia* and *Wintera*. The greater number, however, are found in the temperate regions of those mountains, at a height of between 300 and 900 toises. There they adhere sometimes to the trunks of trees, along with various species of Epidendrum and Dendrobium, and sometimes to the perpendicular faces of rocks which overhang the water. The individuals belonging to the genus *Piper* are, as this learned traveller adds, separated from the *Peperomiæ* by this mark, that wherever the latter were observed upon the Andes, the former were found to be at a greater distance from the limits of perpetual snow, by as much as 200 toises.

Of the genus *Peperomia* alone, M. De Humboldt enumerates no fewer than 44 species, the most of which are new. United with the genus *Piper*, as it stands in Roemer and Schultz's *Syst. Veget.* its species amount to 225, of which 77 were first discovered by MM. Humboldt and Bonpland. The present individual is also one found by them on the trunks of trees, in moist and uncultivated places, between Caraccas and Rio Guayare, at an elevation of 460 toises, flowering in January. Jacquin also states the Caraccas as its native place of growth. Introduced into our gardens, according to Mr Haworth, in 1802.

It is an elegant plant, beautifully edged and dotted with red beneath. With us it flowers in September and October, and is easily cultivated in pots filled with light soil, and kept in the stove.

As the seeds of this genus do not appear to ripen in this country, I have, in order to illustrate still more fully its generic character, copied the dissections of the fruit from the beautiful drawings of Richard, which are published in the 1st volume of Humboldt and Kunth's *Nov. Gen. et Sp. Plant.* The embryo does not appear in that figure, but this part is distinctly expressed in a species of *Piper* on the same plate, and is of so dubious a character, that, while the greater number of botanists consider it to be dicotyledonous, MM. Richard and Kunth look upon it as monocotyledonous. It consists of a minute pouch, enclosing a two-lobed body, which M. Kunth denominated the plumule, while Mirbel and others call it the entire embryo. A structure very nearly similar is found in the *Nymphæaceæ*, concerning whose classification in the Natural System the same difference of opinion has existed.

Fig. 1. Portion of a spadix with flower. Fig. 2. Back view of a single flower. Fig. 3. Pistil. Fig. 4. Stamen. Fig. 5. Berry. Fig. 6. The same with the upper part of the pericarp removed. Fig. 7. The same cut through vertically.—*All more or less magnified.* The last three figures copied from Richard.



Peperomia quadrifolium.

PEPEROMIA QUADRIFOLIA.

Four-leaved Peperomia.

DIANDRIA MONOGYNIA.—NAT. ORD. *PIPERACEÆ.*

GEN. CHAR.—*Spadix* cylindraceus, floribus undique tectus. *Stamina* duo. *Stigma* indivisum. *Bacca* monosperma. *Caulis* herbaceus.—*Humb. et Kunth.*

Peperomia *quadrifolia;* glabriuscula, caule erecto simplici terete, foliis quaternis obovato-ellipticis enerviis carnosis subtus convexis, spadicibus terminalibus axillaribusque solitariis.

Peperomia quadrifolia, HUMBOLDT et KUNTH, *Nov. Gen.* v. i. p. 69.

Piper quadrifolium, SWARTZ, *Obs.* p. 22.—WILLD. *Sp. Pl.* v. i. p. 168.—ROEM. et SCHULTZ, v. i. p. 331.

Stem about a span or more in height, erect, cylindrical, jointed, pubescent and red below, above green, and very slightly pubescent, almost glabrous. *Leaves* mostly quaternate, rarely quinate, on short footstalks, spreading, very thick, fleshy, plane above, deep green, very convex beneath, and of a paler yellowish hue; the lower ones only, and those chiefly on the underside, slightly pubescent: upper ones quite smooth, of a somewhat thinner texture, and less obtuse.

Spadix solitary, about 2 inches long, green, slender. *Flowers* nearly as in *Peperomia blanda.*

An inhabitant, according to SWARTZ, of the lofty woody mountains of South America. The celebrated traveller HUMBOLDT met with it growing in shady, warm places of the province of New Andalusia, between Cariaco and Santa Cruz. We have possessed it in the stove of our Botanic Garden for these three years.

It has not been hitherto noticed as existing in any of our gardens, nor is it likely to be prized by the generality of collectors, as it presents nothing striking to the eye of a common observer.

Fig. 1. Portion of the spadix, with flowers. Fig. 2. Single flower, with its scale.—*Magnified.*


Peperomia polystachya

PEPEROMIA POLYSTACHYA.

Many-stalked Peperomia.

DIANDRIA MONOGYNIA.—NAT. ORD. *PIPERACEÆ.*

GEN. CHAR.—*Spadix* cylindraceus, floribus undique tectus. *Stamina* duo. *Stigma* indivisum. *Bacca* monosperma. *Caulis* herbaceus.—*Humb. et Kunth.*

Peperomia *polystachya;* pubescens, foliis ter-quaternisque rhombeo-rotundatis petiolatis trinerviis reflexis.

Piper polystachyon, AIT. *Hort. Kew.* ed. 1. v. i. p. 49.; ed. 2. v. i. p. 72.—WILLD. *Sp. Pl.* v. i. p. 168.—HAW. *Succ. Pl.* p. 7.—ROEM. et SCHULTZ, *Syst. Veget.* v. i. p. 330.

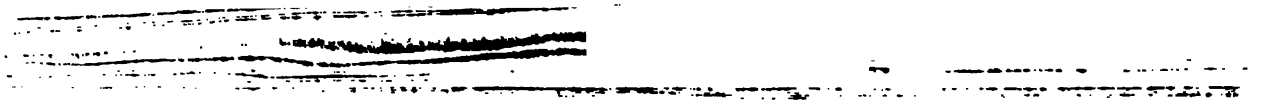
Piper obtusifolium, JACQ. *Coll.* v. i. p. 141. (fide AIT.)—*Icon. rar.* v. i. t. 9. (fide WILLD.)

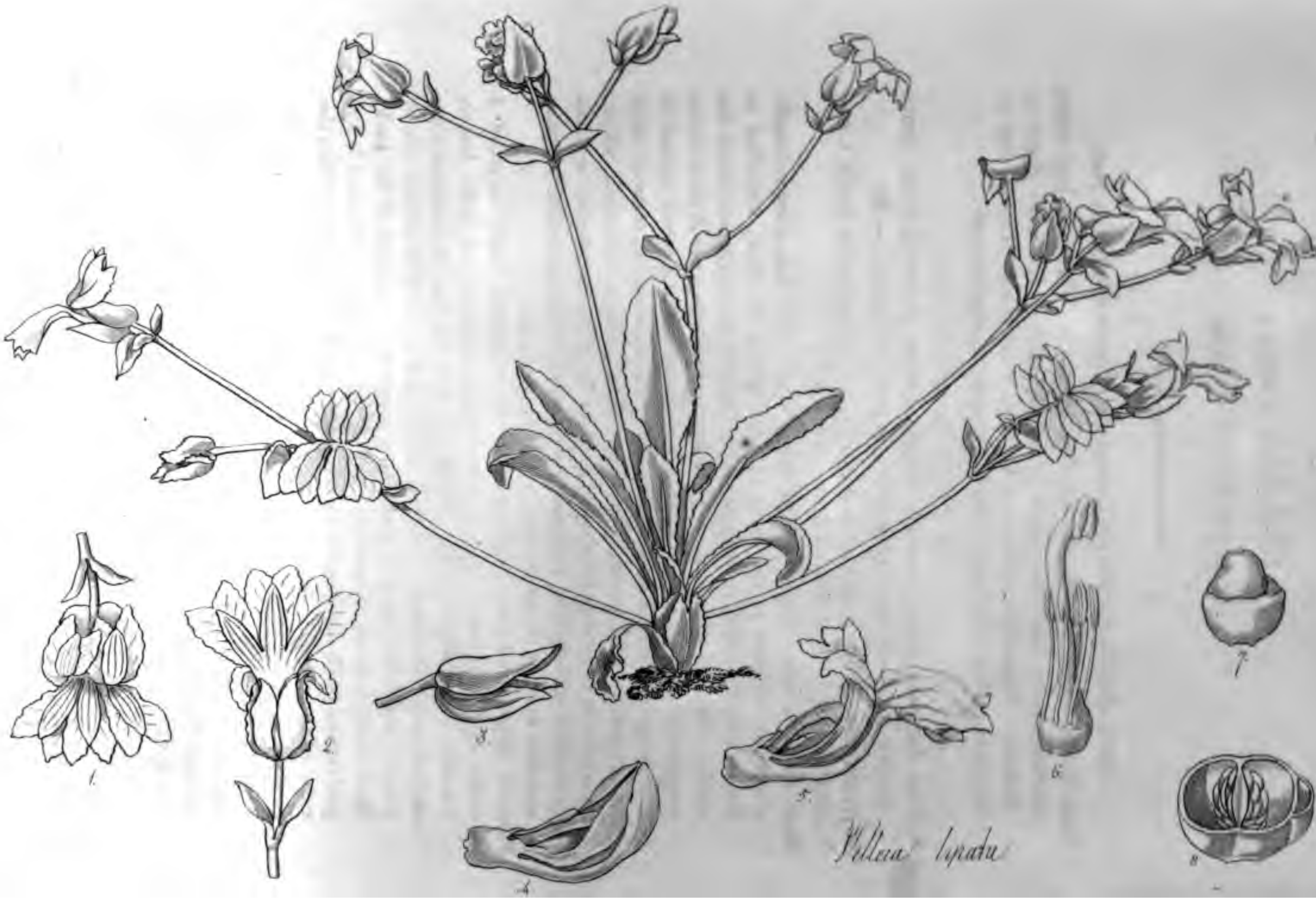
Root very much creeping, jointed, and sending up several stems which are from 8 to 10 inches high, rather stout, green, succulent, jointed, glabrous below, the rest pubescent, cylindrical, branched only upwards, branches ternate. *Leaves* mostly ternate, nearly an inch long, rather thick, green, pubescent, rhomboid, approaching to orbicular, obtuse, marked with 3 nerves, deflexed, petiolated, *petioles* nearly half an inch long on the lower part of the stem, very short, and scarcely existing in the upper part.

Spadices of flowers arising singly, or 2–3 together, from the extremities of the branches, green, about 3 inches long, upon short peduncles. *Flowers* numerous. *Scales* rotundato-quadrate. *Stamens* 2, roundish, yellow. *Pistil* ovate: *Stigma* sessile, radiate.

A handsome species, inhabitant of Jamaica and Santa Cruz, of a delicate pale green colour, and well distinguished by the peculiar form of the leaves from all the rest of the genus with which I am acquainted. Cultivated in the stove of the Botanic Garden of Glasgow, where it flowers in the autumn. It was was first brought to this country by Dr JOHN FOTHERGILL in 1775.

Fig. 1. Portion of a spike, *magnified,* to shew the structure of the flowers.





Welleca lyrata

VELLEIA LYRATA.

Lyrate-leaved Velleia.

PENTANDRIA MONOGYNIA.—Nat. Ord. *GOODENOVIÆ, Br. Prodr.*

Gen. Char.—*Cal.* inferus, 3–5 phyllus, inæqualis. *Cor.* tubo basi ovario accreto, apice hinc fisso; limbo bilabiato. *Antheræ* distinctæ: *Stylus* indivisus. *Glandula epigyna* inter filamenta 2 anteriora. *Capsula* basi biloculari, valvis bipartitis. *Semina* imbricata, compressa.—*Br.*

Velleia *lyrata;* glabra, bracteis dichotomiarum distinctis, foliis lyratis basive inciso-dentatis, calycis foliolis ovato-orbiculatis.—*Br.*

V. lyrata, Br. *Prodr.* p. 580.—Sm. *in Rees' Cycl.* v. xxxvi.—*Bot. Regist.* t. 551.

V. spathulata, Juss. *in Ann. du Mus.* v. xviii. p. 17. t. 1.

Stem scarcely any. *Leaves* radical, from 1 to 3 inches and more in length, glabrous, dentate at the margins, especially at the base, according to Brown even lyrate; sometimes entire. Midrib strong, prominent on the under side, and of a purplish-red colour. From the axils of these leaves appear the *scapes* or *flowerstalks,* which spread out in a patent manner to the length of 4 or 5 inches; they are glabrous, rounded, once or twice dichotomous, with generally an intermediate solitary flowerstalk, which, however, is sometimes abortive. At the axils of the dichotomies is usually a small tuft of hairs, and constantly a pair of ovato-lanceolate bracteas, and the same at the pedicels or partial flowerstalks.

Flowers large, handsome, bright yellow. *Calyx* patent, rather large, of 3 ovate slightly toothed leaves, of which the superior one is the larger. *Corolla* monopetalous, tubular, cleft almost to the base on its upper side, and deeply transversely 2-lipped: *upper* lip composed of 2, *lower* one of 3 bifid segments, marked with lines, green in the middle at the back, their margin broad, winged and waved. Mouth closed. *Stamens* 5, hypogynous, erect, distinct. *Anthers* oblong, yellow. *Pistil* shorter than the tube of the corolla. *Germen* roundish, ovate, with a swelling or gland in front, and adhering by its base to the base of the corolla. *Style* thickish, slightly curved, and appearing above the cleft of the corolla, cylindrical, pubescent above. *Stigma* oblique, ciliated, concave, with an elevated margin, which is brownish, and slightly two-lobed below, (*indusium* of Brown).

This pretty little plant flowered in our green-house during the month of July 1821, being raised in a mixture of peat and loam from seeds sent during the preceding year from New Holland. Its dark, smooth and shining leaves, with the long, slender spreading scapes, each of which is terminated by two or four large and bright yellow flowers, which expand at the same time, render this plant a desirable subject for cultivation. Mr BROWN, who found the species in New Holland, states that it is an inhabitant of the vicinity of Port Jackson; and SMITH, with whom the genus originated, tells us, under the article *Velleia* in REES's Cyclopædia, that the present individual is the only one of the genus which has made its appearance in the European gardens. No figure of the whole plant, as far as I am able to discover, exists in any work, except that of the Botanical Register, which was recently published from a specimen far more luxuriant than the one now delineated. The flower of this plant, under the name of *V. spathulata*, is represented in the 18th volume of the *Annales du Muséum d'Histoire Naturelle*, t. 1. f. 3. and is connected with an interesting memoir written by M. DE JUSSIEU, in which he endeavours to establish that *Lobelia* belongs to the same natural order as *Velleia*, and that the former should be the type of the order, affording the name to it.

The *Goodenia tenella* (Bot. Reg. 1137.) is not the *G. tenella* of BROWN, but the *Euthyales trinervis* of the latter author, (*Velleia trinervis* of LABILLARDIERE and SMITH). In habit it is most closely allied to our plant, but differs generically in the calyx, which is tubular and 5-cleft.

Fig. 1. Front view of a flower. Fig. 2. Back view of ditto. Fig. 3. Side view of a calyx. Fig. 4. Flower-bud removed from the calyx. Fig. 5. Expanded flower, removed from the calyx. Fig. 6. Pistils and stamens; with the base of the corolla attached to the lower part of the germen. Fig. 7. Advanced germen. Fig. 8. Transverse section of the same.—*All more or less magnified.*


2
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Doodia caudata.

DOODIA CAUDATA.

Caudate Doodia.

CRYPTOGAMIA FILICES.—NAT. ORD. *FILICES*, Div. GYRATÆ, *Br.*

GEN. CHAR.—*Sori* lunulati vel lineares, seriati, costæ paralleli. *Involucrum* e ramulo anastomosante venæ ortum, planum, intus liberum.

Frondes cæspitosæ, pinnatæ, pinnis dentatis quandoque coadunatis. *Sori* interdum biseriati.—*Br.*

Doodia *caudata*; frondibus pinnatis, pinnis (plurimis) distinctis linearioblongis obtusis serrulatis, terminali elongata lineari.—*Br.*

Doodia caudata, BR. *Prodr. Fl. Nov. Holl.* p. 151.

Woodwardia caudata, CAV. *Demonstr.* n. 653.—SWARTZ, *Syn. Fil.* p. 116.—WILLD. *Sp. Pl.* v. v. p. 417.

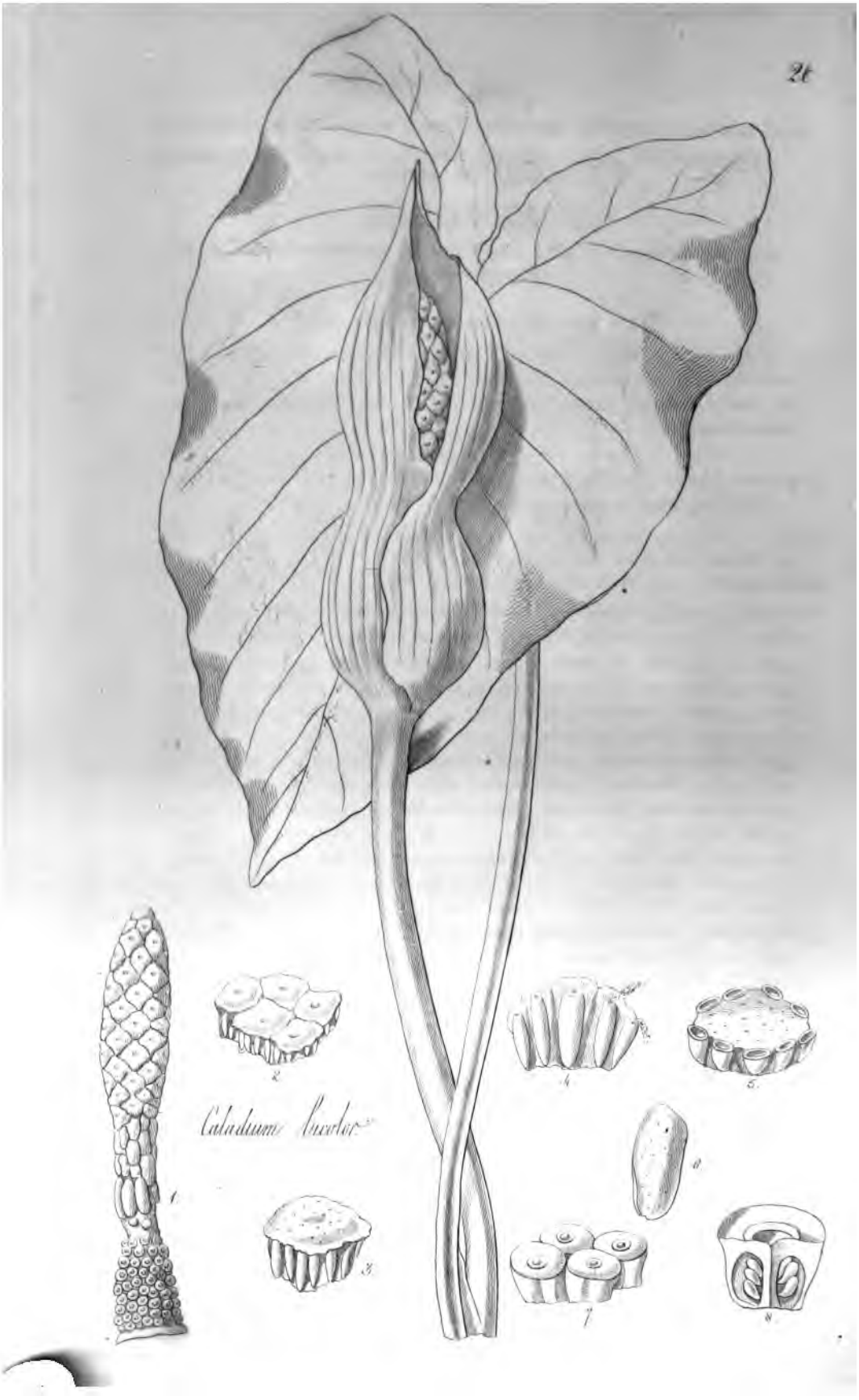
Fronds numerous, tufted, 6 or 7 inches in length, erect, flexuose, linear-lanceolate in their outline, terminating below in a slender dark coloured stipes, from two to four inches in length. *Rachis* similar to the stipes, but slightly pubescent. These *fronds* are composed of numerous, rather distantly placed pinnæ, in the barren frond oblongo-ovate, somewhat oblique, in the fertile ones linear-oblong, all of them spinuloso-serrate at the margins. The *terminal pinna* is remarkably lengthened out, most so in the fertile fronds, in them 2 or 3 inches long, and equally serrated with the other pinnæ. Their colour is a dirty green, and they are marked with a central rib, and lateral nerves, which are intersected by transverse ones.

Upon these transverse nerves appear the *Sori*, or *clusters of fructification*, oblong, parallel with the midrib. The *involucre* is plane, opening interiorly, and containing numerous *capsules*, which, as well as the seeds, are precisely similar to those figured and described in *Doodia aspera*, t. 8. of this work.

A native of Port Jackson and Van Diemen's Land, according to Mr BROWN; but I am not aware that it is yet known in a state of cultivation in this country. The representation

here annexed was taken from a specimen preserved in the herbarium of my friend G. A. W. ARNOTT, Esq. Edinburgh.

Fig. 1. Plant, *natural size.* Fig. 2. Pinna. Fig. 3. Capsule, *magnified.*


21
Caladium Aucolor

CALADIUM BICOLOR.

Two-coloured Caladium.

MONOECIA POLYANDRIA.—NAT. ORD. *AROIDEÆ.*

GEN. CHAR.—MAS. *Cal.* 0. *Cor.* 0. *Antheræ* peltatæ, multiloculares, in spicam ad apicem spadicis compositæ. FŒM. *Cal.* 0. *Cor.* 0. *Germina* ad basin spadicis inserta. *Stylus* 0. *Bacca* uni- (bi-) locularis, polysperma.—*Willd.*

Caladium *bicolor;* acaule, foliis peltatis cordato-sagittatis disco coloratis, spadice spatha cucullata medio contracta breviore.—*Will.*

Caladium bicolor, VENT. *Pl. Rar. Hort. Cels.* t. 30.—WILLD. *Sp. Pl.* v. iv. p. 488.—AIT. *Hort. Kew.* ed. 2. v. iv. p. 311.

Arum bicolor, AIT. *Hort. Kew.* ed. 1. v. iii. p. 316.—*Bot. Mag.* t. 820.

Root most probably tuberous, as in the other individuals of this natural family. *Leaves* springing from the root, few in number, cordato-sagittate, acute or slightly acuminate, waved, but entire at the margin, distinctly nerved, the margin yellowish-green, the broad disk a beautiful rose-colour; *petioles* from 4 to 6 inches long, cylindrical, sheathing at the base.

Spadix rising upon a peduncle, which is somewhat shorter than the leaf-stalk, and surrounded by a large convolute slightly acuminated *spatha*, of a yellowish-white colour, marked with longitudinal lines, contracted near the middle, swoln, and green at the base, exceeding sometimes the spadix in length, which last is 3 or 4 inches long, club-shaped. *Anthers* occupying the upper half, yellowish-white, sessile, peltate, fleshy, nearly tetragonal, crowded. If one of these be removed, and carefully examined with a lens, it will be found dotted at the top, and indeed through the whole substance, slightly depressed in the centre, the sides occupied with several longitudinal cells, which open by a small pore beneath the margin, whence a pale yellowish minute granular *pollen* may be seen oozing out. A little below the centre of the spadix are some oblong, angular fleshy bodies, of the same colour and texture as the anther, but destitute of cells, whilst beneath, or with a short naked space intervening between them, and at the base of the spadix, are the numerous sessile, crowded *germens*, their sides irregular from mutual pressure, yellowish-white, their top a little convex, or having, in the centre, a slightly elevated, yellow ring, which is the *stigma*. The *cells* of the germen are 2; the number of the *ovules* in each cell I have generally found to be 3.

A well known plant, and native, according to WILLDENOW, of the Brazils. It has long been cultivated in the Island of Madeira, and thence was introduced, in the year 1773, to the stoves of our country, where it is become an universal favourite, on account of the beauty and singularity of its leaves.

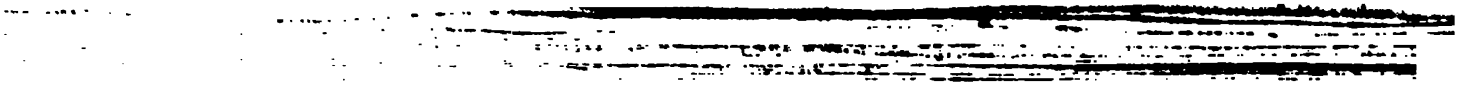
The genus *Caladium* was established by VENTENAT, in his beautiful work on the rare plants of the garden of M. CELS, and is now generally adopted; the character of the spadix, which is covered with stamens to its extremity, by no means according with that of the genus *Arum*, in which all the species of *Caladium* had been placed. The number of individuals belonging to *Caladium* is considerable: they are all inhabitants of the tropics, and, although the present is of humble growth, yet some of its congeners are remarkable for their large stature. One of these, already figured in this work, is furnished with a stem 5 or 6 feet in height; whilst the *C. arboreum* of HUMBOLDT and KUNTH acquires a trunk of 20 feet. *C. odorum*, a new species, recently published in the *Botanical Register*, has leaves, of which the blade or lamina is from 2 to 4 feet long, and from 2 or 3 feet broad.

It flowers in the autumn and winter months.

Fig. 1. Spadix, *natural size.* Fig. 2. Anther, removed from the spadix. Fig. 3. Single anther. Fig. 4. Portion of an anther, seen from the side, to shew the cells. Fig. 5. Transverse section of an anther. Fig. 6. Abortive anther. Fig. 7. Cluster of pistils. Fig. 8. Pistil cut open vertically, to shew the cells and the ovules.—*All, but* Fig. 1., *more or less magnified.*

Caprifolium pubescens

J. Swan Sculp.



CAPRIFOLIUM PUBESCENS.

Downy American Woodbine.

PENTANDRIA MONOGYNIA.—NAT. ORD. *CAPRIFOLIACEÆ*.

GEN. CHAR.—*Cal.* superus, 5–4 dentatus, et subinteger. *Cor.* tubus elongatus, limbo quinquefido, subregulari vel bilabiato. *Stamina* longitudine corollæ. *Stigma* globosum. *Bacca* distincta, trilocularis, polysperma.—*Roem. et Schultz.*

Caprifolium *pubescens;* verticillis terminalibus subcapitatis glanduloso-pubescentibus, foliis late ovato-ellipticis breviter petiolatis pubescentibus ciliatisque subtus glaucis, summis connato-perfoliatis.

C. pubescens, GOLDIE, *in Edin. Phil. Journ.* Apr. 1822, v. vi. p. 323.

Stem climbing, from 6 to 8 feet high, hairy below, nearly glabrous above. *Leaves* large, 4 inches or more in length, in opposite distant pairs, broadly ovato-elliptical, entire at the margin, distinctly nerved, with the nerves prominent beneath, bright green, and slightly pubescent above, the margins finely ciliated, beneath glaucous, and very pubescent. The lower leaves are situated upon short footstalks, the upper ones sessile or perfoliate; the uppermost, or the pair immediately beneath the flowers, are connato-perfoliate, quite glabrous above, and nearly so beneath.

Peduncles generally in threes, terminal, with heads or whorls of beautiful deep yellow, almost orange coloured *flowers*, which are rather crowded.

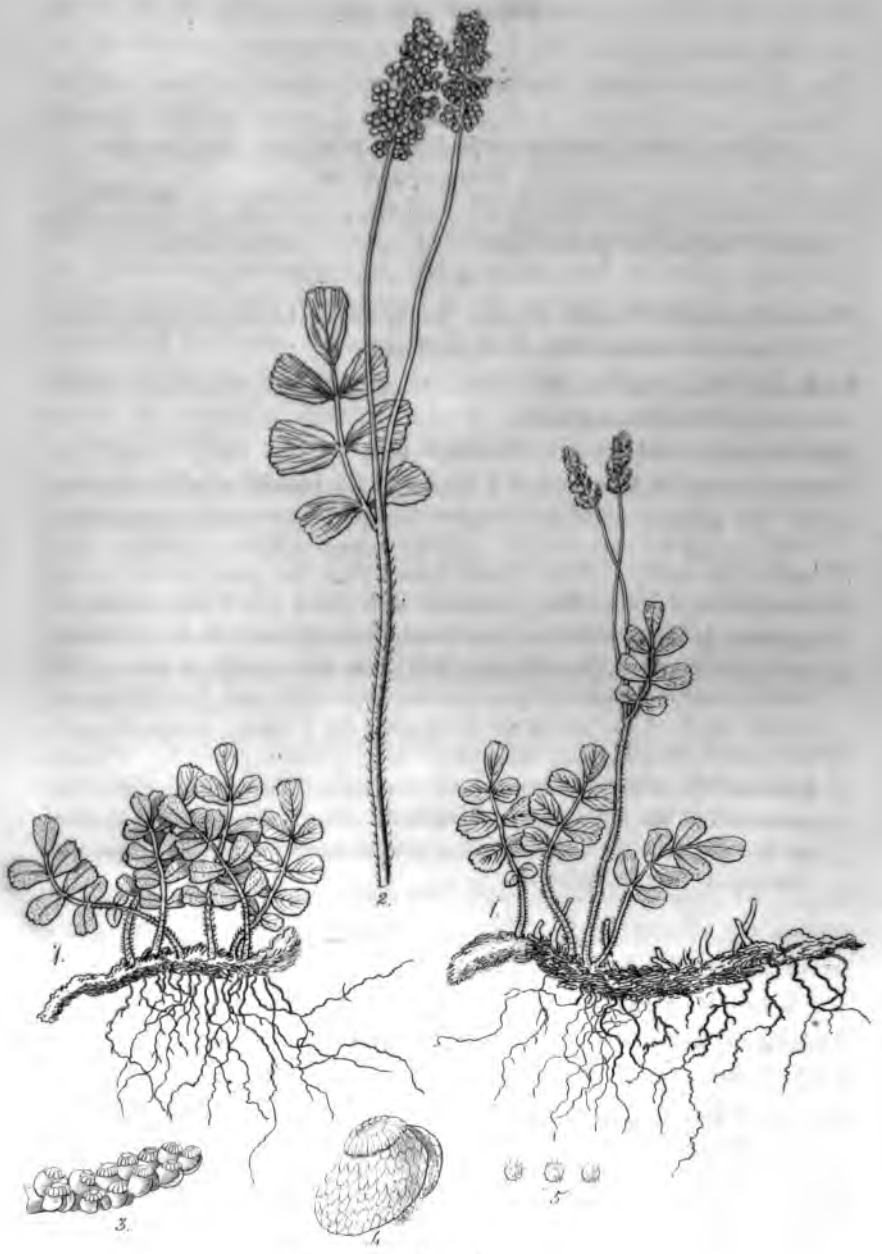
Germens sessile, crowded, spherical, crowned with 5 small calycine teeth, coated with a yellow glandular pubescence, and having at their base a small ovate bractea. *Corolla* full an inch in length. *Tube* long, slender, gibbous on one side near the base, and, like the germen, strikingly glanduloso-pubescent. *Limb* two-lipped, lower lip deflexed, linear oblong, entire; upper one broad, reflexed, with 4 obtuse lobes at the extremity. *Stamens* 5: *Filaments* much exserted beyond the tube, slender, hairy on one side: *Anthers* oblong, yellow. *Style* almost equal in length with the stamens. *Stigma* globose.

I had carefully examined original dried specimens of this plant with Mr GOLDIE, previously to its publication in the description which that zealous and meritorious naturalist has

given, in the *Edinburgh Philosophical Journal*, of some of the new and rare plants which he found in his travels through Canada in the year 1819; and now that I have had the opportunity of seeing living individuals cultivated in the garden of Mr SMITH, nurseryman at Ayr, I feel more than ever satisfied, that the present species is distinct from every *Caprifolium* of which a figure or description has hitherto been published. Its nearest affinity appears to be with the *Lonicera flava* of Botanical Magazine, t. 1318. (*Caprifolium Fraseri*, PURSH), but it were hardly possible that so striking a circumstance as the glandular pubescence of the germen and corolla, and that of the ciliation and pubescence of the leaves, should have been overlooked by these authors, had such marks existed in their plant; added to which, the cartilaginous margins which form one of the essential characters in *C. Fraseri*, are wholly wanting here. That species also appears to have been found only upon the Paris Mountains, South Carolina, and the Kaatskill Mountains, near New York. The *Lonicera dioica* of Botanical Register, t. 138. (*Caprifolium parviflorum*, PURSH), has its upper leaves of a similar form, and the flowers sometimes yellow; but here, again, appears no pubescence or glands, the flowers are smaller, and of a different figure, and *all* the leaves are connato-perfoliate.

Mr GOLDIE discovered this woodbine in woods near Kingston, and near Lake Simcoe, in Upper Canada, flowering in July. Living plants of it, which he brought to the nursery-ground of Mr SMITH at Monkswood Grove, Ayr, flourish well; and as they flower in June and July, as readily and in equal profusion with our British honeysuckles, there can be no doubt that this beautiful and desirable species will soon become common in our gardens, particularly as the blossoms, in addition to their fine golden hue, have an agreeable scent to recommend them.

Fig. 1. Lower petiolated leaf. Fig. 2. Flower, with its bractea. Fig. 3. stamen. Fig. 4. Germen and calyx.—*All but* Fig. 1. *more or less magnified.*



Anemia humilis

ANEMIA HUMILIS.

Dwarf Anemia.

CRYPTOGAMIA SCHISMATOPTERIDES, *Willd.*—NAT. ORD. *FILICES*, Div. OSMUNDACEÆ, *Brown.*

GEN. CHAR.—*Capsulæ* subturbinatæ sessiles, vertice radiatim striatæ, altero latere hiantes, in spicis dispositæ. *Involucrum* nullum.—*Willd.*

Anemia *humilis;* fronde pinnata, pinnis obovato-cuneatis apice truncatis crenatis subtus villosis, stipite hirto.

A. humilis, SWARTZ, *Syn. Fil.* p. 156.—WILLD. *Sp. Pl.* v. 5. p. 90.—SCHKUHR. t. 141. (from CAVANILLES).

Anemia repens, RADDI, *Syn. Fil. Brazil.* p. 4.

Osmunda humilis, CAV. *Ic.* v. vi. p. 69. t. 592. f. 3. (according to WILLDENOW).

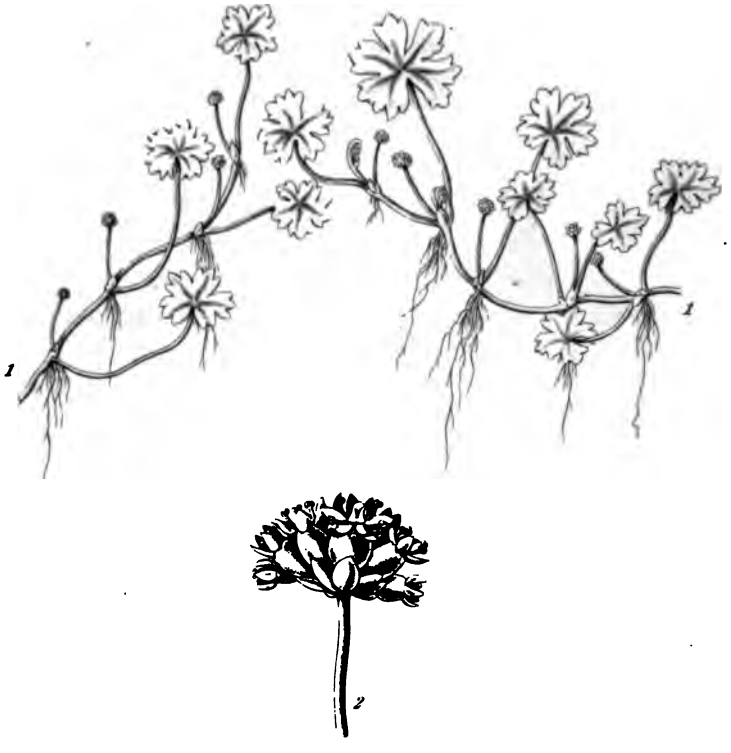
Caudex creeping, covered with numerous, chaffy, brown scales, and sending forth many flexuose, blackish, slightly branched fibrous radicles. *Stipes* and *rachis* hairy. *Sterile fronds*, several from the same caudex, scarcely more than 2 inches long, pinnated, with about 7 or 9 obovato-cuneate, opposite leaflets, which are terminated by an odd one: these are strongly veined, crenate at the extremity, hairy beneath, scarcely so above. The *fertile frond* is supported upon a rather long stalk; and from the summit of this stalk, at the base of the frond, arise the 2 oblong, compound *spikes of fructification*, standing upon rather long, glabrous peduncles. *Capsules* crowded, but somewhat secund; each is obovato-spherical, reticulated, surmounted at the top with a concentrically striated swelling, and opening outwardly by a vertical fissure. *Seeds* numerous, spherical, beset with numerous elevated points.

I am indebted for my specimens of this pretty little fern to Professor RADDI of Florence, who gathered it in clefts of old walls, and especially near the aqueduct which conveys the water from the mountains of Corcovado to the city of Rio Janeiro in the Brazils. That gentleman has described it under the name of *A. repens*, quoting doubtfully the *A. tenella* of CAVANILLES; but I think there cannot be a question of its identity with the *Osmunda humilis* of CAVANILLES, whose figure

is copied into SCHKUHR's excellent work on *Filices*. With regard to its being the *tenella*, RADDI has given his reasons for thinking it may be so, in these words: "The common length of the plant is from 2–3 inches, but when it is found in cold, dark, and somewhat moist situations, it attains a height of 9 inches: this, however, rarely happens; and then the pinnules are deeply laciniated, the root is thicker, and always hairy;" which characters bring the present plant near to the *tenella*.

The whole genus is a very beautiful one, and was first distinguished by SWARTZ from that of *Osmunda*, with which it agrees in many points. Here, however, there is a concentrically striated swelling upon the top of the capsule, very much indeed approaching to the nature of an annulus, and not a transversely striated tubercle, as in *Osmunda*. The genus *Botrychium* has nothing of the kind, although in habit these two genera are similar. In all the species of *Anemia* that have their spikes of fructification arising from the frond, these spikes are geminate.

Fig. 1. Plants, *natural size*. Fig. 2. Part of a fertile frond. Fig. 3. Branch of the compound spike. Fig. 4. Capsule. Fig. 5. Seeds,—*more or less magnified*.



Hydrocotyle intidula

Engd by J.Swan Glasgow.

HYDROCOTYLE NITIDULA.

Shining Pennywort.

PENTANDRIA DIGYNIA.—NAT. ORD. *UMBELLIFERÆ.*

TRIB. II. HYDROCOTYLINÆ. *Umbellæ imperfectæ. Involucra obsoleta aut nulla. Folia cum petiolo confluentia subsimplicia.*

GEN. CHAR.—*Umbellæ* imperfectæ. *Fructus* raphe dorsoque angustis, hoc tricostato, lateribus compressis, subrotundi, cortice plerumque articulato-venoso. *Folia* subrotunda.—*Spreng.*

Hydrocotyle *nitidula;* foliis orbiculato-reniformibus 5–7 lobatis lobis trifidis, floribus capitatis subsessilibus, capitulo pedunculato, pedunculis petiolo brevioribus.

H. nitidula, RICH. *Monogr. du Gen. Hydroc.* p. 60. t. 63. f. 33.

Stems a few inches in length, subsimple, slender, and, as well as the whole plant, perfectly smooth, and somewhat shining, creeping, throwing out roots at the joints. *Leaves* solitary, or rarely two from the same point of the stem, scarcely more than half an inch in diameter, orbicular, but cut down to the insertion of the footstalk at the base, so as to be somewhat reniform, 5 or 7 cleft, nerved, segments subcuneate, trifid at the extremity, petiolated, the petiole about an inch and a half or nearly two inches long, terete, with 2 ovate stipules at the base.

Heads of flowers upon axillary peduncles, which are not above half the length of the petioles of the leaves, very slender, composed of about 10 crowded flowers, each having an ovate scale or leaflet of the involucre at its base. *Germen* ovate. *Petals* greenish-white.

Specimens of this delicate little species of *Hydrocotyle,* agreeing in all respects with the *H. nitidula* of RICHARD, were sent to me from the Botanic Garden at Liverpool, having been there raised from seeds received from Russia under the name of *H. Sibthorpioides,* but from what country originally derived did not appear. RICHARD gives the *H. nitidula* as a native of Java, and speaks of it as being closely allied to the

Australasian *H. pulchella* of BROWN's MS., differing from it in the number of the lobes of the leaf, these being decidedly tridentate, and in the common peduncle being shorter than the petiole. From the true *H. Sibthorpioides* it is perfectly distinct, as it appears to be also from all the described species of the genus.

Fig. 1. Plant, *nat. size.* Fig. 2. Head of flowers, *magnified.*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Hydrocotyle Nepalensis

HYDROCOTYLE NEPALENSIS.

Nepal Pennywort.

PENTANDRIA DIGYNIA.—Nat. Ord. *UMBELLIFERÆ.*

Trib. II. Hydrocotylinæ. *Umbellæ imperfectæ. Involucra obsoleta aut nulla. Folia cum petiolo confluentia subsimplicia.*

Gen. Char.—Umbellæ imperfectæ. *Fructus* raphe dorsoque angustis, hoc tricostato, lateribus compressis, subrotundi, cortice plerumque reticulato-venoso. *Folia* subrotunda.—*Spreng.*

Hydrocotyle *nepalensis;* foliis orbiculato-reniformibus 7-lobatis crenatis, floribus (monoicis?) numerosis subsessilibus dense capitatis, capitulis breviter pedunculatis.

The *stems* of this plant, which are rather stout in proportion to the size of the individual, are nearly a foot in length, creeping, somewhat branched, and covered with short, rusty-coloured hairs. *Leaves* fasciculated, 3 or 4 together, very much resembling those of *Alchemilla vulgaris*, and the largest of them 2 inches across, orbiculato-reniform, 7 or rarely 9-lobed, with as many nerves which throw out lateral branches, the margins crenate, hispid, especially upon the nerves, petiolated; *petiole* about 3 inches long, terete, beset with reddish hairs, and having at the base 3 or 4 acute stipules.

Heads of flowers of two kinds, some almost entirely sessile, and appearing to be constantly abortive, with yellow flowers, destitute of perfect germens, and having even the anthers often abortive; and fertile flowers, which are elevated upon peduncles about $\frac{1}{2}$ or $\frac{3}{4}$ of an inch long, hispid with short reddish hairs. These I have only seen in an advanced state, when the corolla and anthers, if there were any, had fallen away, and the fruit was nearly perfected.

In both, the flowers are numerous, 30 or 40, collected into an exactly spherical, extremely compact head. The abortive flowers are almost all sessile, the fertile ones upon short pedicels. *Fruit* rotundato-cordate, compressed, didymous, with a faint depressed line on each lobe. *Seeds* pendulous, brown, slightly punctated.

Were not the name pre-occupied, I should gladly have applied to the present species the appellation of *Hydrocotyle al-*

Hydrocotyle Nepalensis

HYDROCOTYLE NEPALENSIS.

Nepal Pennywort.

PENTANDRIA DIGYNIA.—NAT. ORD. *UMBELLIFERÆ.*

TRIB. II. HYDROCOTYLINÆ. *Umbellæ imperfectæ. Involucra obsoleta aut nulla. Folia cum petiolo confluentia subsimplicia.*

GEN. CHAR.—Umbellæ imperfectæ. *Fructus* raphe dorsoque angustis, hoc tricostato, lateribus compressis, subrotundi, cortice plerumque reticulato-venoso. *Folia* subrotunda.—*Spreng.*

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Heads of flowers of two kinds, some almost entirely sessile, and appearing to be constantly abortive, with yellow flowers, destitute of perfect germens, and having even the anthers often abortive; and fertile flowers, which are elevated upon peduncles about $\frac{1}{2}$ or $\frac{3}{4}$ of an inch long, hispid with short reddish hairs. These I have only seen in an advanced state, when the corolla and anthers, if there were any, had fallen away, and the fruit was nearly perfected.

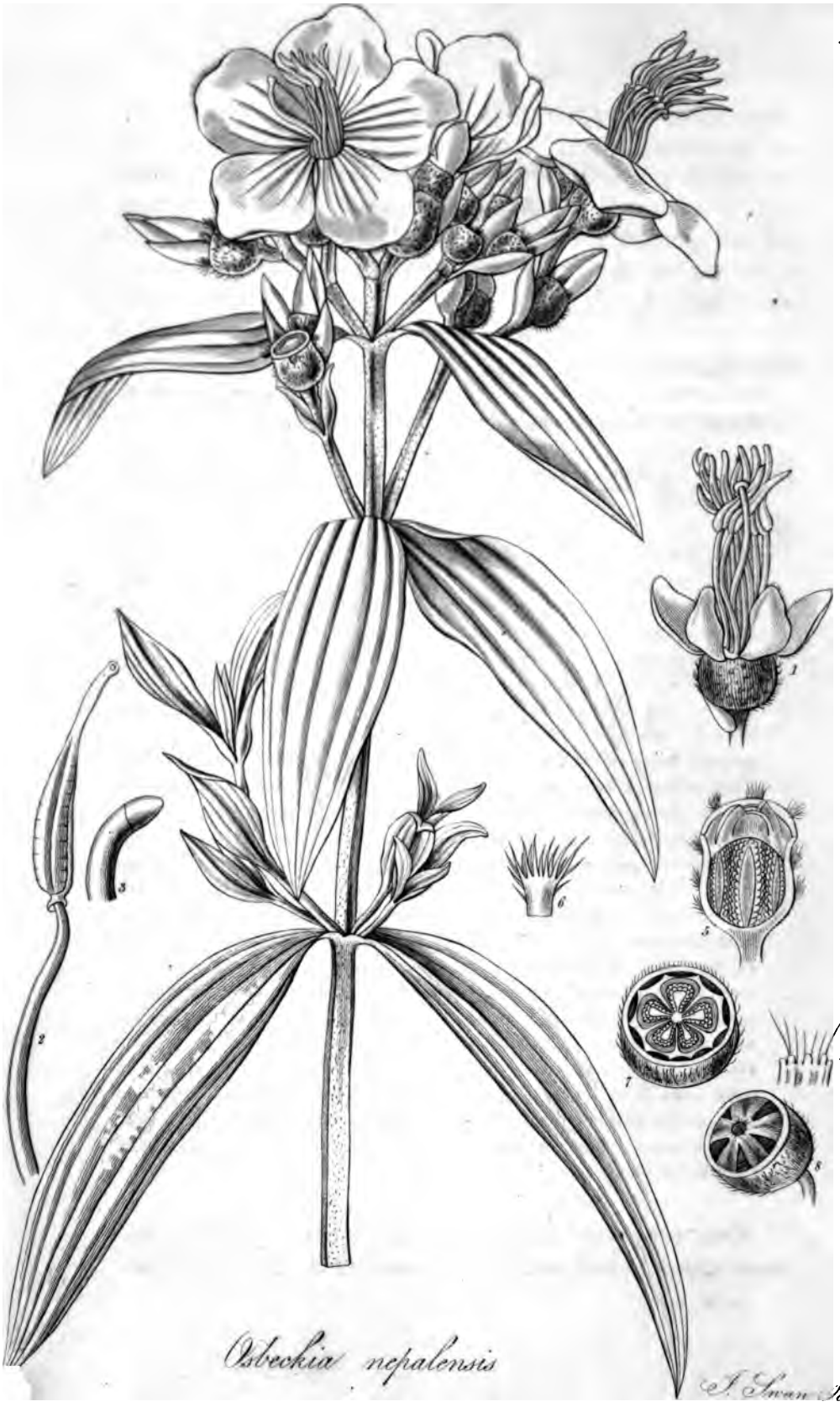
In both, the flowers are numerous, 30 or 40, collected into an exactly spherical, extremely compact head. The abortive flowers are almost all sessile, the fertile ones upon short pedicels. *Fruit* rotundato-cordate, compressed, didymous, with a faint depressed line on each lobe. *Seeds* pendulous, brown, slightly punctated.

Were not the name pre-occupied, I should gladly have applied to the present species the appellation of *Hydrocotyle al-*

chemilloides. The individual to which it approaches the nearest, is, doubtless, the *H. capitata* of PETIT THOUARS, an inhabitant of Tristan d'Acunha; nor do I find any difference, except in the great hispidity of the stem and petioles of this latter; upon the petioles, especially, the hairs standing out horizontally to twice or thrice as great a length as the petiole is broad, whereas in my species, there are only short reddish hairs, giving the plant a rigidly downy appearance. THOUARS even describes his *H. capitata* as having, like the *H. Nepalensis*, "fleurs monoiques par avortement."

Captain CARMICHAEL, in his excellent paper on the *Natural History of Tristan d'Acunha*, published in the 12th volume of the Linnæan Transactions, has likewise given a good description of the *H. capitata*, and mentions a circumstance which equally exists in this plant, namely, the strong carrot-like taste of the leaf.

Fig. 1. Portion of the plants, *natural size.* Fig. 2. Head of abortive flowers. Fig. 3. Single flower. Fig. 4. Head of seed-vessels. Fig. 5. Single seed-vessel. Fig. 6. The same cut open, to shew the seeds. Fig. 7. Single seed.—*All but* Fig. 1. *more or less magnified.*


Osbeckia nepalensis
J. Swan Sculp.

OSBECKIA NEPALENSIS.

Nepal Osbeckia.

OCTANDRIA MONOGYNIA.—Nat. Ord. *MELASTOMACEÆ*, *Br.*—MELASTOMÆ, *Juss.*

Gen. Char.—*Cal.* 4-fidus; lobis squama ciliari interstinctis. *Cor.* 4–5 petala. *Antheræ* rostratæ. *Caps.* 4–5 locularis, calycis tubo truncato cincta. *Recept.* compressum, semiovatum. (Stam. 8–10).—*Pers.*

Osbeckia *nepalensis*; foliis lanceolatis sessilibus, calycis tubo ciliato-squamoso.

Stem 1½ foot high, erect, branched, quadrangular, rough, with short appressed hairs. *Leaves* opposite, sessile, lanceolate, coriaceous, rigid, deflexed, with deep longitudinal nerves, the margin entire, the surface like that of the stem, rough, with appressed hairs, and often marked with brown spots.

Flowers large, handsome, in terminal and lateral axillary panicles or corymbs. *Peduncles* one or two inches long, square, as well as the short pedicels, which latter are furnished with ovate bracteas. *Calyx* composed of 5 caducous segments, tube ovate, green, covered with subquadrate appressed scales, ciliated at the margin, and remarkably so at the extremity. Four or five of these scales terminate the tube, are spreading and deciduous: the segments of the calyx are ovate, patent, yellow-green, smooth, ciliated at the margin. *Corolla* of 5 beautiful purplish rose-coloured, patent, obovato-rounded petals, inserted at the mouth of the tube of the calyx, slightly waved, ciliated at the extremity, having a small erect tooth or scale at the centre of the base of each petal, and another alternating with the petals, (10 in all). *Stamens* 10, inserted likewise at the mouth of the tube. *Filaments* slightly curved, yellowish, rather long. *Anther* long, yellow, curved, articulated with the filament, slightly corrugated transversely. *Cells* two, but united above into one lengthened tube, having a pore at the extremity whence the pollen is discharged. *Pistil: Germen* ovate, immersed in the calyx, and attached to it by 10 longitudinal lines (Fig. 7.), 5-celled, 5-lobed, and hairy at the top. *Style* as long as the filaments, red, caducous. *Stigma* ovate, pubescent, green. *Capsule* opening by 5 longitudinal pores, and remaining inclosed within the tube of the calyx.

Only two species of *Osbeckia* (*O. chinensis* and *O. zeylanica*) appear to have been known, until Sir James Smith de-

scribed five additional species in REES's Cyclopædia, which had been gathered by the celebrated Dr A. AFZELIUS at Sierra Leone. With the characters of none of these will our plant accord, which has been raised from seed, sent from Nepal by Dr WALLICH, both at the Botanic Gardens of Glasgow and of Edinburgh. It first flowered in the magnificent new establishment of the latter city in June 1822, and it was there that the accompanying figure was made.

I possess dried specimens of this handsome plant, from Katmandu in Nepal, which I received both from Dr WALLICH and from Sir JAMES SMITH. The latter gentleman has sent me likewise another species of the genus, from the same country, differing from the present in its shorter leaves, and a calyx entirely concealed by thick bristle-shaped processes. This is the *O. crinita* of SMITH's MS. and should, when published, bear that name.

The stamens vary from 8 to 10 in this genus, which many botanists scarcely consider sufficiently distinct from *Rhexia*, but which SMITH considers may be sufficiently marked by the "permanent simple teeth of the calyx, destitute of intermediate scales." Many plants have, however, according to Mr BROWN, been arranged among the *Rhexiæ* which do not belong to them; and this author even goes so far as to say, that probably no genuine species of *Melastoma*, and certainly none of *Rhexia*, has yet been published in M. BONPLAND's splendid and valuable monographs of these two genera. The original species of the Linnæan genera *Melastoma* and *Rhexia*, the same author, however, believes will be found to possess generic characters sufficiently distinguishing them from the greater part of the plants that have been since added to them by various authors.

As an Order, Mr BROWN assures us that *Melastomaceæ* is only to be distinguished from *Myrtaceæ* by the absence of the pellucid glands of the leaves and other parts, which exist in all the genera really belonging to that extensive family.

Fig. 1. Flower from which the petals have been removed. Fig. 2. Stamen. Fig. 3. Portion of the style and stigma. Fig. 4. Base of a petal. Fig. 5. Germen cut through vertically. Fig. 6. Scale of the calyx. Fig. 7. Germen cut through transversely. Fig. 8. Capsule bursting.—*All more or less magnified.*

J. Swan Sculp.t

Stylidium laricifolium

STYLIDIUM LARICIFOLIUM.

Larch-leaved Stylidium.

GYNANDRIA DIANDRIA.—Nat. Ord. *STYLIDEÆ, Br.*

Gen. Char.—*Calyx* bilabiatus. *Corolla* irregularis, 5-fida, lacinia quinta (labello) dissimili minore, deflexa (raro porrecta) reliquis patentibus (raro geminatim cohærentibus). *Columna* reclinata, duplici flexura; *Antheris* bilobis, lobis divaricatissimis; *stigmate* obtuso indiviso. *Capsula* biloculari, dissepimento superne quandoque incompleto.—*Br. in Prodr. Fl. Nov. Holl.*

Div. I. *Capsula ventricosa, subovata, nunc sphærica vel oblonga.*
Subdiv. E. Caulis suffruticosus, foliis sparsis, crebris.

Stylidium *laricifolium*; foliis setaceo-linearibus sessilibus pilosiusculis (vel glabris) fauce nuda, labello appendiculato.—(Br. sub *S. tenuifolio*).

S. laricifolium, Richard, *in Pers. Syn. Pl.* v. ii. p. 210.—Juss. *in Ann. du Mus. d'Hist. Nat.* v. xviii. p. 19. t. 3.—*Bot. Register*, t. 550.

S. tenuifolium, Brown, *Prodr. Fl. Nov. Holl.* p. 570.—*Bot. Mag.* t. 2249.—Smith, *in Rees's Cycl.*

Stem 8–10 inches to a foot high, erect, simple, or throwing out one or more small branches from the extremities, naked below, above clothed with numerous linear-setaceous dark-green *leaves*, which are patent or reflexed, glabrous in my plants, slightly hairy according to Mr Brown.

From the extremity of the stem springs a much-branched graceful panicle, about equal in length to the stem, everywhere covered with minute pedunculated glands, and, at the base of each ramification, furnished with a small lanceolate bractea.

Flowers upon rather short glandular pedicels. *Germen* inferior, oblongo-ovate, glandular, tapering below, surmounted by an imperfectly 2-lipped calyx, of 5 erect, lanceolate, obtuse, glandular segments. *Corolla* irregular, 5-cleft, 4 of the segments obovate, spreading, 2 larger than the other two, of a fine rose colour, yellowish-white at the base, with an imperfect sanguineous ring or border, the back of which has many pedicellated glands; the 5th segment or *labellum* resembling a small heart-shaped deflexed gland, with a thickened, deep red, minutely tuberculated margin; the disk convex, greenish, smooth, above, at the sides having two spreading red horn-like processes. The *tube*, to the back of which this is fixed, is rather short, white, slit on one side.

Column of fructification about as long as the corolla is broad, reddish-brown, filiform, compressed, with two curvatures, highly elastic, terminated by the 2 large, transverse, deep purple, 2-lobed *anthers*, beset at the back with many pellucid jointed white hairs. The lobes open longitudinally, and after a portion of the *pollen* is discharged, they spread, or even become reflexed in a remarkable manner, exposing, what was before concealed by the approximation of their lobes, namely, the hemispherical glandular *stigma* (Fig. 9.) *Pollen* spherical, yellowish-green.

So admirably have the characters of this genus been illustrated, both by Mr Brown in his incomparable *Prodromus of the Flora of New Holland*, and in the equally excellent *Illustrations* of M. Bauer, that I should hardly have thought it necessary to publish the accompanying figures, were it not that the extreme scarceness of the two works in que-

stion puts it out of the power of naturalists in general to have recourse to them. The necessity for their publication may be considered as still less, now that engravings of this species have appeared in the *Botanical Magazine* and *Botanical Register*. These were given to the world since my drawings had been executed; but these last seem to me to contain more important analyses of the parts of fructification than either of the excellent works now mentioned.

The irritability of the column of fructification, which is perhaps more evident in this individual of the genus than in any other, is a well known circumstance. It is bent, as Mr Brown describes it, "duplici flexura;" or, in the words of Sir James Smith, it is "curved, and recurved;" and if this column be touched ever so slightly, or if any part of it be pressed with the finger, it immediately starts over to the other side of the flower, and is supposed, by this process, to scatter the pollen from the anthers to the stigma.

The genus *Stylidium* was first established by Swartz; but Sir James Smith had the honour of proposing the name, and at the same time communicating specimens to the Swedish Professor and to Labillardiere. It is now universally adopted, although the latter author, in a memoir in the *Annales du Muséum d'Histoire Naturelle*, called the genus *Decandollea;* and Smith himself, in Exotic Botany, published two species, with excellent figures, under the name of *Ventenatia.*

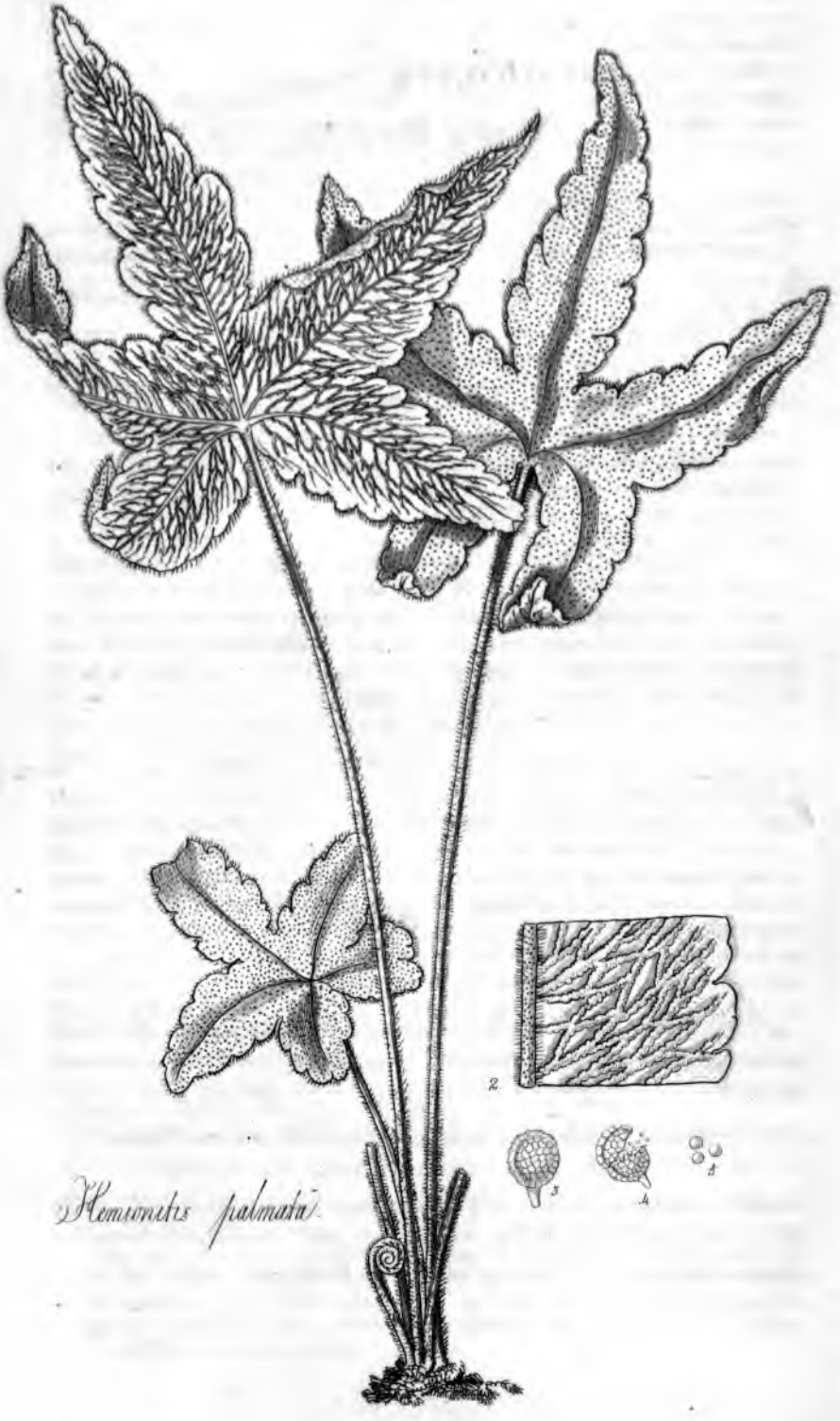
As an order, *Stylideæ* is placed by Mr Brown near *Campanulaceæ*, on the one hand, and *Goodenoviæ* on the other, differing from the former in its "reduced number of stamens, and the remarkable and intimate adhesion of their filaments with the style, through the whole length of both organs;" and from the latter, (as also from *Campanulaceæ*), "in the imbricate æstivation of the corolla, and, where its segments are unequal, in the nature of the irregularity."

It is curious that Richard, and following him Jussieu, should have considered the *labellum* of Brown as the *stigma;* and as such have figured and described it in the 18th volume of the *Annales du Muséum*, both in *Stylidium laricifolium* and *S. Armeria* of Labillardiere. This idea is satisfactorily controverted by our learned countryman, in his *General Remarks* in the Appendix to Captain Flinders' Voyage, which is transcribed by Mr Gawler in the *Botanical Register.*

Among a no less number than 45 species of *Stylidium* described in the *Prodr. Fl. Nov. Holl.* only two approach to the nature of shrubs, one of which is our *S. laricifolium (S. tenuifolium*, Brown). It is, like nearly all the others, an inhabitant of the neighbourhood of Port Jackson, and is readily cultivated in a mixture of loam and peat-earth, increasing by cuttings, and proving a great ornament to the greenhouse, as it flowers in the early part of spring.

Drawn from the collection in the Botanic Garden of Glasgow.

Fig. 1. Portion of a plant, *natural size.* Fig. 2. Front view of a flower. Fig. 3. Side view of ditto. Fig. 4. Back view of the same. Fig. 5. Germen, and column of fructification. Fig. 6. Labellum. Fig. 7. Summit of the column, with the anthers bursting. Fig. 8. Hairs from beneath the anthers. Fig. 9. Summit of the column, with the anthers spread, having discharged their pollen; the stigma protruded. Fig. 10. Pollen. —*All more or less magnified.*



Hemionitis palmata.

HEMIONITIS PALMATA.

Palmated Hemionitis.

CRYPTOGAMIA FILICES.—Nat. Ord. *FILICES, Juss.* Div. I. Gyrata, *Br.*

Gen. Char.—*Capsulæ* venis reticulatis frondis insertæ. *Involucrum* nullum. —*Willd.*

Hemionitis *palmata;* hirsuta, fronde pentagona profunde quinquefida, segmentis lanceolatis crenato-lobatis, stipite elongato.

Hemionitis palmata, Linn. *Sp. Pl.* p. 1535.—Swartz, *Syn. Fil.* p. 20.—Lam. *Illust.* t. 868. f. 2.—Willd. *Sp. Pl.* v. 5. p. 129.—Ait. *Hort. Kew.* ed. 2. v. 5. p. 502.

Root of many long, branching, scarcely hairy, fibres, (Sw.) *Stipes* many from the same root, 4–6 inches long, erect, about as thick as a crow's quill, purplish-brown, covered with ferruginous patent hairs. *Frond* 3–4 inches in length, somewhat cordate in its circumscription, deeply divided into 5 segments which spread out so as to form a pentagon; of these the 3 superior lobes are the longest, all are rather broadly lanceolate, hairy, dark green above, paler beneath, the centre furnished with a strong purplish rib, prominent on the underside, the margins crenato-lobate, the lobes obtuse, fringed.

Fructification confined to the numerous branching anastomosing lateral veins, forming raised lines, and destitute of involucrum. *Capsules* numerous, at length confluent, and covering almost the whole back of the frond, spherical, pedicellated, reticulated, with an incomplete annulus. *Seeds* or sporules minute.

The *Hemionitis palmata* was introduced to our gardens from the West Indies in the year 1793, by Rear-Admiral Bligh, and it deserves a place in every collection of stove-plants, being no less remarkable in the shape of its frond, than in the lines of fructification, which cover the underside of it like a network of a rich brown colour. It is readily kept in a pot of common earth, with a mixture of peat, and with the roots placed between two broken pieces of flower-pot, with the con-

cave sides inwards. All the Ferns love water, and the tropical species flourish best under the shade of the larger stove plants. The present one sheds its seeds freely, from which arise numerous new individuals; thence it is easily propagated.

Fig. 1. Plant, *natural size.* Fig. 2. Portion of the frond, with the lines of fructification. Fig. 3. Capsule; and, Fig. 4. The same burst, and in the act of discharging the seeds. Fig. 5. Seeds, *magnified.*

THIS work is destined to include, under the title of EXOTIC FLORA, figures and descriptions of such plants, not natives of Great Britain, as are cultivated in our gardens, or, in defect of them, of such as can be faithfully represented from well preserved specimens in our Herbaria. In the selection of species, preference will, of course, be given to such as recommend themselves by their beauty, their history, novelty, or some remarkable or little known characters in their flowers and fruit.

The greatest pains will be taken in delineating the different parts of the fructification, so as to exemplify the generic as well as specific characters, and the Natural Order to which the plant belongs; the general neglect of which, in similar works, has caused an obscurity, which renders the ascertainment of a genus very difficult to the student, and which has greatly retarded the progress of the delightful science of Botany. The cultivation, also, and the soil best suited to the individual, will not be omitted, nor the history of the plant, so far as it can be ascertained; so that the utility of the work will not be confined to the botanical student, but extend likewise to the horticulturist and general admirer of plants.

As this is the first publication of the kind to which Scotland has given birth, those unacquainted with the state of Botanical Science in this northern part of the kingdom, may require to know what means the Author possesses of obtaining subjects of sufficient interest to insure the continuance of his work. The chief resource will be derived from the collection of the Royal Botanic Garden at Glasgow,—a collection which, by the munificence of the inhabitants of that City, aided by the University, has, in the short space of five years, attained to a degree of perfection scarcely to be paralleled in the annals of similar establishments, and comprising now scarcely fewer than 9000 species of plants. With a liberality that merits the Author's grateful acknowledgments, the magnificent New Botanic Garden of the sister University of Edinburgh has been thrown open to him by Dr GRAHAM. Dr HOOKER's own Herbarium will likewise afford many materials for publication, particularly among that beautiful tribe of plants, the Ferns, with which, as well as in other departments, it has been greatly enriched by rare East Indian species, and especially from the hitherto almost unknown regions of Nepaul, through the kindness of Dr WALLICH.

The work will be published in Parts, on a royal 8vo size, every three months, each part containing 20 Plates, Price 8s. A few copies coloured, Price 15s.

P. NEILL, Printer.