

CURTIS'S
BOTANICAL MAGAZINE,

ILLUSTRATING AND DESCRIBING

Plants of the Royal Botanic Gardens of Kew,
AND OF OTHER BOTANICAL ESTABLISHMENTS;

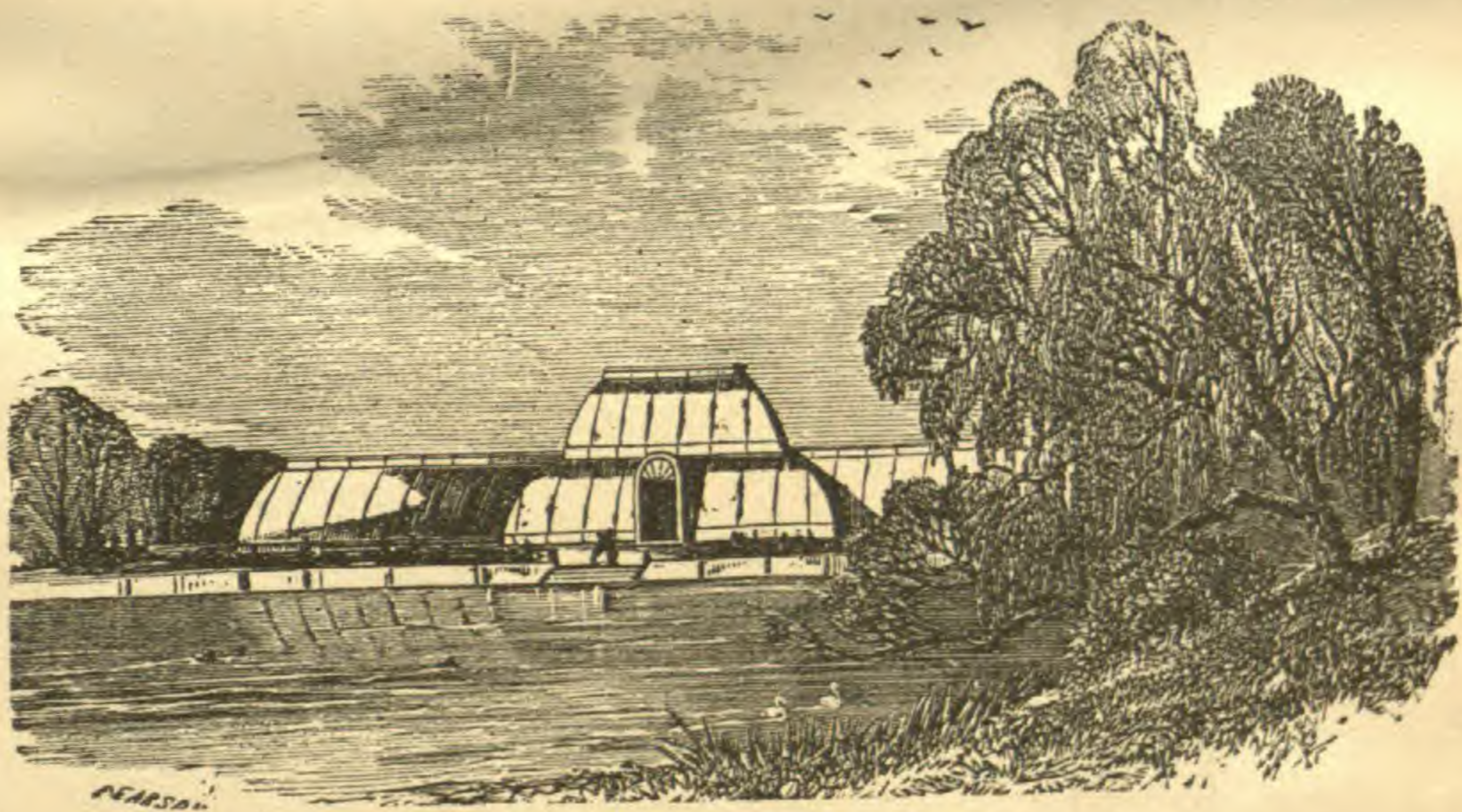
BY

SIR JOSEPH DALTON HOOKER, M.D., C.B., G.C.S.I.,
F.R.S., F.L.S., ETC.,

ASSISTED BY

WILLIAM BOTTING HEMSLEY, F.R.S., F.L.S., ETC.

VOL. LIX.
OF THE THIRD SERIES.
(Or Vol. CXXIX. of the Whole Work.)



“Aye, flowers! The very name of flowers,
That bloom in wood and glen,
Brings Spring to me in Winter's hours,
And childhood's dreams again.
The primrose on the woodland lea
Was more than gold and land to me.”

CLARE.

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Mo. Bot. Garden

1905

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To

GEORGE NICHOLSON, ESQ., F.L.S.,

Late Curator of the Royal Gardens, Kew.

DEAR MR. NICHOLSON,

It gives me great pleasure to dedicate to you a volume (CXXIXth) of the Botanical Magazine, a work in the prosecution of which you for so many years took an active part, especially in selecting for illustration in its pages subjects of botanical interest from amongst the treasures under your supervision in the Royal Gardens.

I would further wish you to regard it as a memorial of our official co-operation in the management of those Gardens for upwards of twelve years, a period to which I look back with unalloyed pleasure; and also as a tribute to the high value of your special labours in dendrology, and as the author of the *Dictionary of Gardening*.

Believe me,

Very sincerely yours,

Jos. D. HOOKER.

THE CAMP, SUNNINGDALE,

December 1st, 1903.

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BY

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And flowers exotic grace our northern clime.

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RUELLIA MACRANTHA.

Native of Brazil.

Nat. Ord. ACANTHACEÆ.—Tribe RUELLIÆ.

Genus RUELLIA, Linn.; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 1077).

RUELLIA *macrantha*; caule 4-6-pedali erecto ramoso, ramulis teretibus glabris v. pubescentibus, foliis 3-5-poll. longis breviter petiolatis ovato- v. oblongo-lanceolatis utrinque angustatis acutis v. acuminatis integerrimis v. repando-dentatis supra sub-strigillosis subtus molliter hispidulis nervis utrinque costæ 7-12 subtus prominulis, floribus axillaribus v. apices versus ramorum confertis v. subspicatum dispositis amplis sessilibus v. brevissime pedicellatis, bracteis 1-1½ poll. longis lineari-oblongis obtusis, sepalis subæqualibus bracteis subæquantibus lineari-lanceolatis acuminatis glabris, corollæ læte roseo-purpureæ tubo 3 poll. longo infra medium gracili curvo subtorto dein infundibulari-campanulato costato, limbi 3-4 poll. diam. lobis 5 subæqualibus patenti-recurvis ciliatis apice emarginatis 3-nerviis, nervulis transversis remotis, filamentis gracilibus subæquilongis inclusis inferne per paria connatis, antheris lineari-oblongis, ovario pilosulo, capsula 1-1½ poll. longa tereti, valvis lignosis, seminibus orbicularibus complanatis anguste alatis.

R. macrantha, Mart. ex Nees in Mart. *Fl. Bras.* vol. ix. p. 37.

R. speciosa, Schott ex Nees in Mart. *l.c.* et in DC. *Prodr.* vol. xi. p. 118 (*non Mart.*).

Dipteracanthus macranthus, Nees in Mart. *l.c.*; in DC. *l.c.* 117.

This magnificent plant appears to have a wide range in Brazil, from the province of Minas to that of St. Paul, growing amongst other shrubs in shady places. Of when and how it was introduced into Europe I can find no trace, nor does it appear in any of the continental garden catalogues that I have referred to. It has been in cultivation in the Royal Gardens, Kew, for many years, where it flowers in midwinter, and is then a very striking object.

A variety of it described by Nees (DC. *Prodr.* vol. xi. p. 118) as *β magnifica* (*Ruellia magnifica*, Mart. *herb.*), differs in being smaller in all its parts, and more glabrous. Nees describes its leaves as being more densely strigose; but in all the specimens in the Kew Herbarium they are almost glabrous.

Descr.—A branching, soft-wooded shrub, four to six feet high; branches rather stout, obtusely quadrangular;

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branchlets glabrous or hairy. *Leaves* alternate, three to five inches long, variable in shape, from ovate to oblong- or elliptic-lanceolate, or narrowed at both ends, to lanceolate, acuminate, quite entire to repand-crenate, more or less strigillose on the dark green upper surface, pale and sub-hispidly pubescent on the under, strongly seven- to nine-nerved, base narrowed into the short, often hairy petiole. *Flowers* very large, solitary, sub-sessile in the uppermost leaf axils, or fascicled, or sub-spicate in an elongate branchlet. *Bracts* two, sessile, linear-oblong, obtuse, acute, or rounded at the tip, an inch to an inch and a half long, green. *Calyx* about as long as the bracts, glabrous; segments erect, linear-lanceolate, finely acuminate, strongly nerved, green. *Corolla* bright rose-purple; tube three inches long, slightly decurved, slender, somewhat twisted in the lower half, above this inflated, between funnel- and bell-shaped, strongly many-ribbed, dilated above into a five-lobed limb three to four inches in diameter; lobes nearly equal, orbicular, spreading, and recurved, emarginate at the tip, strongly three-nerved, cross-nervules distant. *Stamens* four, filaments subequal, very slender, connate in pairs in the lower third; anthers included, small, linear-oblong. *Ovary* narrow, terete, pubescent, narrowed into a very long, slender, glabrous style unequally bifid at the tip.—*J. D. H.*

Fig. 1, bracts, calyx, and style; 2, portion of corolla with stamens; 3 and 4, anthers; 5, ovary:—*all enlarged.*



MUSCARI PARADOXUM.

Native of Persia.

Nat. Ord. LILIACEÆ.—Tribe SCILLEÆ.

Genus MUSCARI, *Mill.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 811.)

MUSCARI (*Bellevalia*) *paradoxum*; bulbo majusculo ovoideo 2–4-foliato, foliis 1–1½-pedalibus 1–1¼ poll. latis lineari-loriformibus obtusiusculis basi vix angustatis scapum vaginantibus coriaceo-carnosis valde concavis dorso rotundatis enerviis marginibus subtiliter erosis, scapo robusto foliis multo brevioribus, racemo oblongo-cylindræo densifloro, pedicellis cernuis flores subæquantibus, perianthio saturate violaceo oblongo-campanulato ½ poll. longo, lobis rotundatis tubo triplo brevioribus concavis dorso incrassatis apicibus demum recurvis intus marginibusque viridibus, staminibus supra medium tubi insertis filamentis brevissimis, antherarum loculis atro-cœruleis, ovario late ovoideo in stylum brevem attenuato, capsulæ ½ poll. latæ erectæ subglobose ovoideæ lobis ovoideis venosis dorso rotundatis 2–3-spermis, seminibus ovoideo-oblongis.

M. paradoxum, *C. Koch in Linnæa*, vol. xxii. (1849) p. 253. *Ledeb. Fl. Ross.* vol. iv. p. 153. *Baker in Journ. Bot.* vol. xii. (1874) p. 6.

M. pycnanthum, *Boiss. et Buhse in Nouv. Mém. Soc. Nat. Mosc.* xii. (1860) p. 213, *ex parte, fide Boissier.*

Bellevalia paradoxa, *Boiss. Fl. Orient.* vol. v. p. 308.

B. pseudo-muscari, *Boiss. et Buhse, Diagn. Plant. Orient.* Ser. II. vol. iv. p. 110.

Hyacinthus paradoxus, *Fisch. et Mey. Ind. Sem. Hort. Petrop.*; (1835) p. 30. *Schlecht. in Linnæa*, vol. x. (1836) *Litt. Ber.* p. 92.

Botryanthus? *paradoxus*, *Kunth Enum. Pl.* vol. iv. p. 312.

The species of the genus *Muscari* are very difficult of discrimination and of recognition from descriptions alone. That here figured is well known under cultivation, and it agrees fairly well with the characters of *Bellevalia paradoxa* given by Boissier, which is founded on the *Muscari paradoxum* of Koch, but I have seen no native specimens wherewith to confirm the identification, and the definition of its author is quite insufficient for that purpose. Mr. Baker, in the Journal of the Linnean Society, vol. xi., p. 432 (not subsequently in the Journal of Botany), unites with it *M. montanum*, Koch (which Boissier refers to another section of *Bellevalia*), and gives as habitats Syria and Palestine; but *M. paradoxum* is not included in Post's Flora of these countries.

Muscari paradoxum was discovered by C. Koch in
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the Russian (transcaucasian) province of Eriwan, which borders Persia on the north, and the Caspian Sea on the east. Boissier adds the province of Asterabad (Buhse), which is in Persia, on the opposite, south-eastern shores of the Caspian.

The specimen figured flowered in the open air, in a south border, in the Royal Gardens, Kew, May, 1898. The species is one of the most handsome in the genus.

Descr.—*Bulb* ovoid. *Leaves* two to four, twelve to eighteen inches long, by one to one and a quarter inches broad, loriform, sub-acute, thickly coriaceous, concave, dorsally rounded, nerveless, bases sheathing the base of the scape, margins minutely erose. *Scape* stout, much shorter than the leaves. *Raceme* oblong, dense-flowered; bracts deltoid. *Pedicels* about as long as the flowers, decurved. *Perianth* about one-third of an inch long, very dark violet-blue, oblong-campanulate; lobes about one-third the length of the tube, orbicular, dorsally thickened, margins green, at length spreading. *Stamens* inserted above the middle of the tube, included; filaments very short; anther-cells oblong, blue-black. *Ovary* broadly ovoid, suddenly contracted into a short style. *Capsule* trigonously globose, lobes dorsally rounded.—*J. D. II.*

Fig. 1, flower; 2, segment of corolla with stamen; 3, stamens; 4, ovary; 5, portion of rachis of raceme with capsules; 6, seed; all but 5, *enlarged*; 7, *reduced* views of two plants.



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CHRYSANTHEMUM INDICUM.

Native of China and Japan.

Nat. Ord. COMPOSITÆ.—Tribe ANTHEMIDÆÆ.

Genus CHRYSANTHEMUM, Linn.; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 425.)

CHRYSANTHEMUM (Pyrethrum) *indicum*; caule gracili foliisque glabris v. pilis albis furcatis laxè sparsis, foliis petiolatis 2-3-poll. longis flaccidis ovatis oblongisve acutis pinnatifido- v. bipinnatifido-lobatis plus minusve irregulariter dentatis dentibus acutis, capitulis 1-2 poll. latis in corymbos terminales oligo- v. polycephalos dispositis, flosculis disci et radii aureis, pedunculis pedicellisque glabris v. pube appressa alba tomentosis, involucri glabri hemispherici bracteis appressis interioribus scariosis medio herbaceis oblongis orbicularibusve apicibus rotundatis exterioribus brevioribus obtusis acutisve, receptaculo hemisphærico, flosculis radii longitudine disco capituli brevioribus v. paullo longioribus.

- C. *indicum*, Linn. *Sp. Pl.* (1753) 889, *excl. syn.* Sabine in *Trans. Hort. Soc.* vol. iv. (1821) p. 326, t. xii. xiii.; in *Trans. Linn. Soc.* vol. xiv. (1823) p. 144. Lindl. *Bot. Reg.* t. 1287. Roxb. *Fl. Ind.* vol. iii. p. 436. Bretschn. *Early Hist. Europ. Res. Fl. China* (1881) p. 158 et *Hist. Europ. Bot. Discov. in China* (1898), pp. 39, 85 et 132. Hemsl. in *Journ. Linn. Soc.* vol. xxiii. (1888) 437; in *Gard. Chron.* 1889, vol. ii. pp. 521, 555, 585, 652. *Masters in Gard. Chron.* 1900, vol. ii. p. 340, fig. 106. Melville in *Proc. Manchest. Liter. & Phil. Soc.* Dec. 16th, 1901, p. xix. Henry in *Gard. Chron.* 1902, vol. i. p. 301, fig. 94.
- C. *maderaspatanum*, &c., Pluk. *Almag. Bot.* 1696, p. 101, t. 160, f. 6.
- C. *procumbens*, Lour. *Fl. Cochinch.* p. 499, *ex Maxim.*
- C. *tripartitum*, Sweet, *Brit. Fl. Gard.* vol. ii. (1827) t. 103.
- C. *Sabini*, Lindl. in *Bot. Reg.* sub t. 1287.
- Dendranthema indica*, Des Moul. in *Act. Soc. Linn. Bordeaux*, vol. xx. (1855), p. 561.
- Matricaria japonica*, flore minore, &c., Breyne, *Prodr. Fasc. Pl. Rar.* (1688) p. 66.
- M. madraspatana*, Petiv. *Mus. Petiv.* (1695) Cent. viii. p. 76, *saltem pro parte.*
- M. Chusan*, &c., Petiv. in *Phil. Trans.* xxiii. (1703) p. 1421, Bretschn. *l.c.* p. 54 et 158.
- M. sinensis* flore minore, &c., Pluk. *Amalth. Bot.* (1705) p. 142, t. 430, f. 3.
- M. sinensis*, &c., Vaillant, *Act.* (1720) p. 285, *ex Linn. et Sabine.*
- M. zeylanica hortensis*, &c., Linn. *Fl. Zeyl.* (1747) p. 198.
- M. indica*, Ramatuelle in *Journ. d'Hist. Nat.* vol. ii. (1792) p. 240.
- Pyrethrum indicum*, Cass. in *Dict. Sc. Nat.* vol. xlv. (1826) p. 149, DC. *Prodr.* vol. vi. p. 62. Maxim. *Mél. Biol.* viii. (1872) p. 516, *excl. β plenum?* Franch. & Sav. *Enum. Pl. Jap.* vol. i. p. 235. Franch. *Pl. David.* vol. i. p. 167, *var. lavandulæfolium.* Honzo *Zufu*, vol. xiii. t. 7 (9). Somoku *Zusetsu*, vol. xvii. t. 22 (29).
- P. lavandulæfolium*, Fisch. *ex Trautv. in Act. Hort. Petrop.* vol. i. (1871-2) p. 181.

Tanacetum indicum, *Schultz. Bip. Tanacet.* p. 50.

Tijetti-pu, *Rheede Hort. Mal.* vol. x. (1690) p. 87, t. 44.

The vegetable kingdom offers few instances of floral disguises more complete than those under which the two plants known to horticulturalists as the Indian Chrysanthemum masquerade.

Until comparatively recently the wild forms of these two plants were not even approximately identified, and now that we have large series of specimens supposed to represent both, from China and Japan, their delimitation appears to me, after some study of them, to baffle description, so variable are they in habit, foliage, inflorescence, and pubescence. In the cultivated forms, on the other hand, there is less variety in habit and foliage, with no limit to vagaries assumed by the flower-heads, due to the suppression of the disk florets in a greater or less degree, and their assuming, with more or less variation of form and colour, the characters of ray florets. On the other hand, it is, in very many cases, impossible to say to which of the two species a given cultivated garden specimen is referable, which may be due, in part, to hybridization. The two recognized species are *C. indicum*, Linn. (partim), of which a very widely spread wild Chinese form is here represented, and *C. morifolium*, Ram. (*C. sinense*, Sabine. Their distinctive characters, as given by Mr. Henry (*Gard. Chron. l.c.*), who has collected the plants in various parts of China, and studied them at Kew, are:—

C. indicum; leaves thin, flaccid, pinnatipartite, serratures acute or mucronate; outer invol. bracts scarious, except the narrow herbaceous nerve; ligules yellow, shorter than the diameter of the disk.—China and Japan.

C. morifolium; leaves thick, coriaceous, entire or slightly incised; outer invol. bracts short, linear, acute, densely albo-tomentose; ligules white, longer than the diameter of the disk.—N. China, Mongolia, Japan.

In a letter, Mr. Henry informs me that he recognized in China two states of *C. indicum*. 1, A graceful, small, delicate plant, growing in coniferous forests, at eight thousand five hundred feet elevation; 2, a large straggling, weedy, very fragrant plant, common in ditches and fields, on the banks of the Yangtze Kiang at Ichang.

“The Chrysanthemum” is the subject of an essay by Mr. W. B. Hemsley, published in the *Gardeners' Chronicle* in 1889 (cited above) which is a model for the treatment of

such a subject. He gives the early and later history of the two plants under their botanical and horticultural aspects, differentiating them much as Mr. Henry has since done, but apparently restricting the wild *C. morifolium* to narrower geographical limits, though these include the Luchu Islands for a typical form. He also gives a very full synonymy and list of references to works in which the species are described, figured, or noticed. This latter appears to me to be so judiciously compiled that I have not hesitated to copy it for *C. indicum*, adding to it a very few later and omitted references.

It is much to be desired that a series of plates illustrating the forms of these Chrysanthemums as contained in the Kew Herbarium should be published, for by no other means could they be recognized. It remains to add that the two figures entitled *C. indicum* on tabs. 327 and 2042 of this work are both referable to *C. morifolium*, Ram., and that *C. indicum* in a wild state is common from Canton and Hong Kong to Peking, and in Manchuria.

The specimen here figured is from a plant raised in a greenhouse of the Royal Gardens, Kew, from seed presented by Col. Birch, of Rickmansworth. They were collected by Mr. Grant Birch in the Yangtze Valley above the rapids. They differ from the specimen of *C. indicum* figured in the *Gardeners' Chronicle*, in having larger flower-heads, and in wanting the orbicular three-lobed stipules.—
J. D. H.

Fig. 1, forked hairs from the stem; 2, ray-floret; 3, disk-floret; 4, stamens:
—all enlarged.



ALLIUM ELLISII.

Native of Khorasan.

Nat. Ord. LILIACEÆ.—Tribe ALLIÆ.

Genus ALLIUM, Linn.; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 802.)

ALLIUM (Melanocrommyon) *Ellisii*; bulbo magno globoso, foliis 4-5 patenti-revolutis pedalis 2½ poll. latis linearibus lineari-oblongisve acutis pallide glauco-viridibus fere planis nervis obscuris, scapo pedali crasso ⅔ poll. diam. viridi basi tantum folioso, spathæ valvis deltoideo-ovatis acuminatis membranaceis ad 1½ poll. longis, floribus 1½ poll. diam. in capitulum 5 poll. diam. oblato-sphæricum dense congestis, pedicellis subæquilongis flore subduplo longioribus, perianthii rosei basi intus albi segmentis ovato-lanceolatis acuminatis fructiferis rigidis erectis, filamentis crassiusculis rubro-purpureis perianthio triente brevioribus basi abrupte dilatatis subgloboso, antheris majusculis oblongis fusco-cœruleis, ovario breviter stipitato globoso, loculis pluriovulatis, stylo filamentis subæquilongo, capsula parva depresso-globosa perianthii segmentis bis-terve brevioribus, loculis dorso rotundatis 1-spermis, seminibus subreniformi-oblongis rotundatisve ad ⅙ poll. longis, testa atra rugosa.

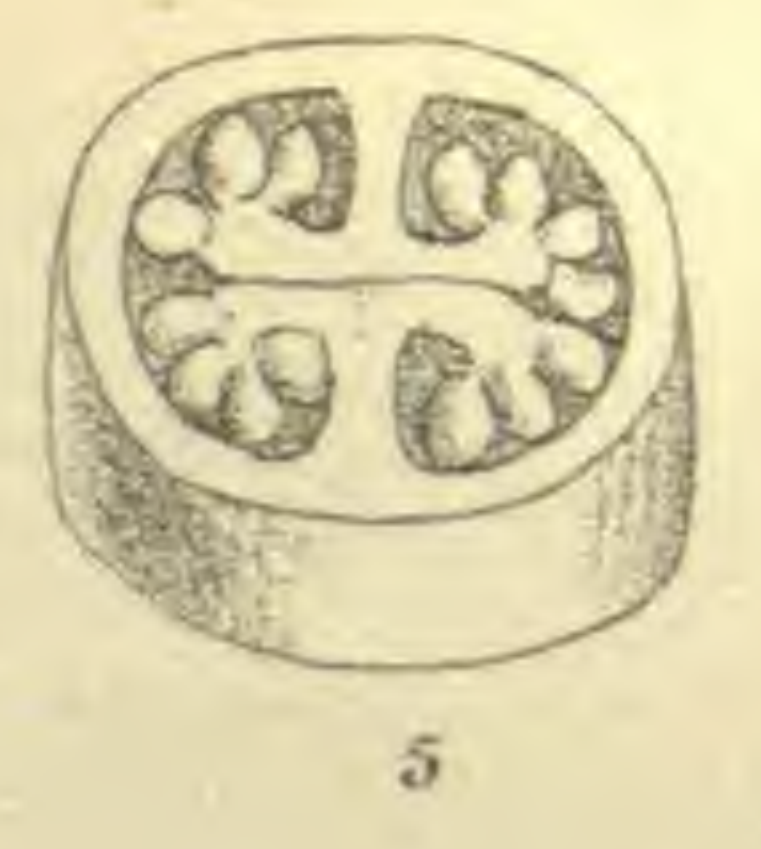
Allium Ellisii is a very handsome species, resembling, in some respects of foliage, stoutness of scape and dense-flowered, globose umbel *A. Karataviense*, Regel, of Turkestan, t. 6451, which is a normally two-leaved species, with much smaller, paler flowers, narrower, flaccid perianth-segments, which are spreading or reflexed in fruit, and a much larger capsule. My friend, Dr. Stapf, whose travels in Persia and knowledge of the Oriental flora are so well known, has carefully examined *A. Ellisii*, and informs me that it belongs to the same group as *A. caspium*, Bieb. t. 4598, *A. brahuicum*, Boiss., *A. Schuberti*, Zucc., t. 7587-8, and *A. Bodeanum*, Regel, all oriental species, with the perianth-segments erect in fruit; and that it is most nearly allied to the last of these. From the first three, the shorter pedicels and dense-fl. umbels at once distinguishes *B. Ellisii*, from which *A. Bodeanum* differs (according to the description in Boissier's "Flora Orientalis") in the much narrower perianth-segments, which are white, with a slender pink midrib, and in the shorter stamens only half the length of the perianth, with the filaments sub-biauricled at the base. In the few capsules of *A. Ellisii* which I have examined, the cells are

one-seeded. The black, rugose seeds closely resemble those of *A. Karataviense*.

A. Ellisii flowered in July, 1900, and again in 1902 in the garden of the Hon. Charles Ellis, of Frensham Hall, Haslemere, who informs me that the bulb came from a collector sent out for him from Meshed, by the late Mr. Ney Elias.

Descr.—*Bulb* globose. *Leaves* four to five, basal, a foot long by two and a half inches broad, spreading and revolute, linear-oblong, acute, nearly flat, glaucous green. *Scape* a foot high, very stout, two-thirds of an inch in diameter, green, bearing a depressed-globose compact head of bright rose-coloured flowers five inches in diameter. *Spathes* an inch and a half long, deltoidly ovate, acuminate, membranous. *Pedicels* nearly equal in length, about an inch and a half long. *Perianth-segments* widely spreading, half an inch long or more, ovate-lanceolate, acuminate, white towards the base, stiff and erect in fruit. *Stamens* one-third shorter than the perianth; filaments red, swollen and sub-globose at the base; anthers linear-oblong, brownish blue. *Capsule* very small, not half the length of the perianth-segments; depressed-globose; cells one-seeded. *Seeds* black, rugose.—*J. D. H.*

Fig. 1, stamen and pistil; 2, pistil; 3, fruiting perianth; 4 and 5, seeds; all except 3 and 4, *enlarged*.



M.S. del, J.N. Fitch lith.

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DIERVILLA MIDDENDORFFIANA.

Native of Mongolia, Manchuria, and Japan.

Nat. Ord. CAPRIFOLIACEÆ.—Tribe LONICERÆ.

Genus DIERVILLA, *Tourn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 6.)

DIERVILLA *Middendorffiana*; frutex ramosus, glabres, ramulis robustis, cortice atro-fusco, foliis breviter petiolatis ovato-lanceolatis acuminatis argute serratis basi rotundatis supra læte viridibus reticulatim rugosis subtus pallidis nervis utrinque costæ 6–8 nervulisque subtus prominulis, cymis, breviter pedunculatis multifloris, floribus confertis subsessilibus, bracteis subulatis, calycis pollicaris tubo glaberrimo, limbi labiis ciliatis recurvis, superiore oblongo 3-fido lobis lanceolatis, inferiore bipartito segmentis linearibus cuspidatis, corollæ primulinæ tubo incurvo basi cylindræo intus hirsuto, limbo campanulato lobis rotundatis antico fauceque punctis aurantiacis consperso, disci glandula rotundata pubescente, antheris coherantibus glanduloso-pilosis, capsula ad $1\frac{1}{4}$ poll. longa anguste oblonga, cylindræa, seminibus lanceolatis basi et apice longe alatis.

D. Middendorffiana, *Carr. in Rev. Hort. Sér. IV.* vol. ii. (1853) p. 306; vol. iii. (1854) p. 261, t. 14. *Van Houtte, Fl. des Serres*, vol. xi. (1856) t. 1137. *Gard. Chron.* 1890, vol. i. p. 581, fig. 94. *Maxim. in Mém. Biol.* vol. xii. p. 482. *S. Moore in Journ. Bot.* vol. xvi. (1878) p. 129. (*var. Maximoviczii*).

Calyptrostigma Middendorffianum, *Trautv. & Mey. in Middend. Reise Fl. Ochot.* (1847) p. 46, tt. 25 a, b. *Regel & Tiling. Fl. Ajan.* p. 100. *Regel, Gartenfl.* 1857, p. 3, t. 183. *Maxim. Prim. Fl. Amur.* p. 135; in *Mém. Biol.* vol. xii. p. 482. *F. Schmidt, Reis. Amurl.* (1868) p. 142.

Wagneria Middendorffiana, *Lemaire in Ill. Hort.* vol. iv. (1857) sub t. 115.

Weigela Middendorffiana, *Hort. ex Carr. in Rev. Hort. Sér. IV.* vol. ii. (1853) p. 306. *Lemaire in Ill. Hort.* vol. iv. (1857) t. 115; vol. xiii. (1866) t. 495 (*var. purpurata*).

Except in the curiously wrinkled leaves and colour of the corolla, *Diervilla Middendorffiana* resembles *D. florida*, *Sieb. & Zucc.* (*Weigela rosea*, *Lindl.* t. 4396), to which species Mr. Hemsley (*Journ. Linn. Soc.* xxiii. 368) rightly, I think, refers *D. amabilis*, *Carr.* (*W. amabilis*, *Hort.* t. 4893). *D. Middendorffiana* is the only Old World yellow-flowered species, in which respect it resembles its two New World congeners, *D. trifida*, *Mœnch.* (t. 1796, *D. humilis*, *Pers.*), and *D. sessilifolia*, *Buckle*, both natives of Eastern N. America. It is named after Alexander Theodor von Middendorff, whose travels in Northern and Eastern Siberia, in 1843–4, were published in St. Petersburg in 1847–56. According to Carrière it was introduced into Europe in 1850, and found to be difficult of

cultivation. More recently it has been found in the Amur district, and in the Island of Saghalien, by the late Mr. Maries in the central mountains of Nippon, at elevations of two thousand feet to seven thousand feet.

The specimen figured is from a plant in the Arboretum of the Royal Gardens, Kew, where it has been for many years, flowering in spring. It was probably introduced from Japan by collectors sent out from Kew upwards of fifty years ago.

Descr.—A glabrous shrub, with black bark and spreading branches. *Leaves* two to three inches long, shortly petioled, spreading and recurved, ovate-lanceolate, sharply serrate, bright green and reticulately rugose on the upper surface, beneath pale, with prominent nerves and nervules, base rounded; nerves six to eight pairs, spreading. *Flowers* in shortly peduncled cymes, crowded, sub-sessile; bracteoles subulate. *Calyx* about an inch long, two-lipped, tube glabrous; lips ciliate, recurved, upper trifid, lower bipartite, with linear, cuspidate segments. *Corolla* pale yellow, speckled with orange in the throat and on the lower lobe, slightly decurved, tube short, narrow, cylindrical at the base, and hairy within, inflated and campanulate above; limb about an inch in diameter; lobes sub-equal, orbicular. *Disk-gland* sub-globose, hairy. *Filaments* hairy towards the base; anthers linear-oblong, glandular-pubescent. *Style* long, stout; stigma large, three-lobed, lobes globose.—*J. D. H.*

Fig. 1, calyx with bracteoles, style, and stigma; 2, base of corolla-tube laid open with stamens and disk-gland; 3, anther; 4, disk-gland; 5, transverse section of ovary:—all enlarged; 6, fruit of the natural size.

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SANSEVIERIA GRANDIS.

Native of Tropical Africa?

Nat. Ord. HÆMODORACEÆ.—Tribe OPHIOPOGONEÆ.

Genus SANSEVIERIA, Thunb.; (*Benth. & Hook. f. Gen. Plant. vol. iii. p. 679.*)

SANSEVIERIA *grandis*; acaulis, radicibus crassis, foliis amplis planis rosulatis inæquilongis sessilibus patulis, majoribus 3-4-pedalibus obovato-oblongis 6 poll. latis rigide coriaceis acutis v. apiculatis utrinque luride viridibus fasciis saturatoribus transversis ornatis, marginibus anguste cartilagineis rubro-brunneis, scapo erecto 2-pedali robusto stricto viridi vaginis paucis lanceolatis coriaceis instructo, panicula spicæformi tripedali erecta stricta dense multiflora, rachi crassiti digiti minoris viridi, bracteis minutis triangularibus acutis scariosis trifloris, floribus sessilibus v. breviter pedicellatis fere 2 poll. longis albis, perianthii tubo limbo paullo brevioribus basi dilatato ovoideo, limbi segmentis pollicaribus linearibus subacutis 1-nerviis, filamentis segmentis perianthii æquilongis filiformibus, antheris lineari-oblongis loculis contiguis, ovario oblongo tereti, stylo staminibus longiore, stigmatibus capitellatis.

S. grandis, Hook. f.

This very noble species of "Bowstring hemp" was presented to the Royal Gardens, Kew, in 1896, by the Royal Botanic Society, Regent's Park, who received it from Dr. Heath, F.L.S., of Ebury Street, London. Referring to that gentleman, he told me that roots of it were given to him by a Cuban merchant, who informed him that the plants had been introduced into Cuba by a company formed to grow it for its fibre, and that the company had failed, owing to the cultivation of the plant not having been carried out in a practical manner. The fibre, he adds, is fine, white, silky, and is of extraordinary strength, far exceeding any other, a few strands of it being sufficient to hang a man.

Referring to the Kew Museum of Economic Botany, I was informed by Mr. Hillier that in the Cuban Catalogue of textile materials in the Paris Exhibition of 1900, there is the following brief allusion to what is, no doubt, *S. grandis*, "Il y a d'autres plantes textiles, comme la Lengua de Vaca, *Sansevieria sp.*" The term, Cow's tongue, appears to be appropriate to the form of the leaf of this species.

Regarding the value of the fibre, a specimen of rope made from it, given me by Dr. Heath, was submitted by the Director of the Royal Gardens, Kew, to Messrs. Ide & Christie, Fibre Brokers, of 72, Mark Lane, E.C., who report that "it is a good class fibre, much liked; its value to-day (September, 1902) is 35*l.* per ton; but that it is not a regular article of commerce, only odd sample bales having been received in this country. The plant thrives in Cuba, but money is wanted to develop the industry."

It remains to add that its native country, though unknown, may be presumed to be tropical Africa, whence ten species have been described, of which six, including the present, have been figured in this Magazine.

S. grandis forms a strong tuft in a bed in the Temperate House, where it flowered for the first time in July, 1901, and again in 1902.

Descr.—*Stem* 0. *Leaves* few, very large, rosulate, sessile, unequal-sized, the largest three to four feet long, by six inches or more broad, spreading, obovate-oblong, acute or mucronate, rigidly coriaceous, flat, dull green, crossed by broad bands of much darker green on both surfaces, margin with a very narrow, red-brown, cartilaginous border. *Scape* about two feet high, stout, green, bearing a few, distant, narrow, lanceolate sheaths. *Panicle* two to three feet high, erect, narrow, spiciform, dense-flowered. *Bracts* minute, ovate, acuminate, scarious, three-flowered. *Flowers* sessile, or very shortly pedicelled, erect, about two inches long, pure white. *Perianth-tube* cylindrical, inflated at the base; segments about as long as the tube, linear, sub-acute, dorsally costate. *Stamens* as long as the perianth-segments. *Anthers* linear-oblong. *Style* slender, stigma minute, capitate.—*J. D. H.*

Fig. 1, flower; 2 and 3, stamens; 4, ovary:—all enlarged.



IMPATIENS BALFOURII.

Native of the North Western Himalaya.

Nat. Ord. GERANIACEÆ.—Tribe BALSAMINEÆ.

Genus IMPATIENS, Linn.; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 277.)

IMPATIENS *Balfourii*; herbacea, glaberrima, caule ramoso ramis obtuse 4-gonis, foliis 3-5-pollicaribus breviter petiolatis ovato-lanceolatis longe acuminatis argute serrulatis dentibus recurvis minutis basin versus folii majoribus pallide viridibus, nervis utrinque costæ ad 8-10 nervulis transversis striolatis, petiolo eglanduloso, glandulis stipularibus pulvinatis, pedunculis apices versus ramulorum subumbellatim laxè confertis gracilibus 3-4-pollicaribus roseis, racemis brevibus terminalibus simplicibus 6-8-floris, bracteis $\frac{1}{6}$ - $\frac{1}{5}$ poll. longis ovato-lanceolatis caducis, pedicellis alternis gracillimis $\frac{1}{2}$ -1 poll. longis, floribus majusculis pallide roseis, sepalis 2 orbiculari-ovatis mucronatis $\frac{1}{4}$ - $\frac{1}{3}$ in. diam., vexillo orbiculari $\frac{1}{2}$ - $\frac{2}{3}$ in. diam. reflexo pallido, carina paullo incrassata rosea, alis patulis $\frac{3}{4}$ -1 $\frac{1}{4}$ poll. longis lobo basilari oblongo pallide aureo, terminali multo majore late dolabri-formi apice rotundato læte roseo, labello 1-1 $\frac{1}{4}$ -pollicari campanulato in cornu lento incurvum apice obtusum sensim attenuato, capsulis erectis 1-1 $\frac{1}{2}$ poll. longis linearibus pentagonis viridibus angulis rubris oligospermis, seminibus oblongis $\frac{1}{7}$ - $\frac{1}{6}$ poll. longis, testa crassiuscula striolato-punctulata.

I. *Balfourii*, *Hook. f.*

The beautiful Balsam here figured was raised from seed sent by Mr. Duthie, F.L.S., Director of the Botanical Department, Northern India, to the Royal Botanic Gardens of Edinburgh, with no precise habitat attached, but no doubt collected in the Western Himalaya, the forests of which swarm with its congeners. It is referable to Series B in the tentative arrangement of Indian Balsams adopted in the "Flora of British India," but does not fit into any of the five groups of that Series. As, however, these will all undergo great modifications in a further study of the genus upon which I am now engaged, it would be premature to do more than indicate the salient characters of *I. Balfourii*. These are the alternate, never whorled or opposite leaves, their very minute, recurved marginal teeth, short, naked petioles, the large flowers in very short, terminal racemes, the very slender pedicels of which are never interruptedly placed, or clustered whorled or umbellate, and the erect capsules. Of the flower the most marked character is the large, horn-like curved spur of the lip. This would be regarded as a distinguishing

character, had it not been that with the specimen sent me by Dr. Balfour, there came raised from the same packet of seeds an altogether similar plant, except that the lip is suddenly produced into an incurved spur of a totally different character, and so slender that I at once named it (whether specifically or as a variety) *leptokentron*. Further materials are required before deciding which alternative should be adopted. *I. Balfourii* flowered in the Royal Gardens, Edinburgh, in September and October, 1901.

Descr.—A perfectly glabrous, branching herb, two to three feet high; branches obtusely angled. *Leaves* three to five inches long, shortly petioled, ovate-lanceolate, almost caudate-acuminate, minutely serrulate with recurved teeth, basal serratures longer and straighter, but eglandular, base rounded or cuneate, pale green above, with eight to ten nerves on each side of the midrib, striolate by transverse close-set nervules; petiole eglandular; stipular glands pulvinate. *Peduncles* loosely crowded in the uppermost leaf-axils, forming a subumbelliform cluster, three to four inches long, very slender. *Racemes* very short, at the end of the peduncles, simple, six to eight fld. *Bracts* about a fifth of an inch long, ovate-lanceolate. *Pedicels* very slender, one half to one inch long. *Sepals* 2, nearly orbicular, mucronate, about one-fifth of an inch broad. *Standard* orbicular, reflexed, white, suffused with rose; keel red, slightly thickened. *Wings* one to one and a quarter inch long, basal lobe oblong, pale yellow; terminal much larger, broadly hatchet-shaped, bright rose, tip rounded. *Lip* an inch to an inch and a quarter long, campanulate, gradually narrowed into a horn-like, somewhat incurved, obtuse horn, with a thickened tip. *Capsules* erect, linear, one to one and a half inch long, five-angled, the angles red, few-seeded. *Seeds* oblong, testa thick, punctulate.—*J. D. H.*

Fig. 1, portion of stem and stipulary glands; 2, serratures of leaf; 3, sepal; 4, lip; 5, wing; 6, seed:—*all enlarged.*



ACIDANTHERA CANDIDA.

Native of East Tropical Africa.

Nat. Ord. IRIDEÆ.—Tribe IXIÆÆ.

Genus ACIDANTHERA, Hochst.; (*Benth & Hook. f. Gen. Plant.* vol. iii. p. 706.)

ACIDANTHERA *candida*; herba gracilis, glaberrima, cormo globoso, caule simplici 2-3-foliato 2-4-floro basi vaginato, foliis linearibus acuminatis 1-1½ pedibus ½ poll. latis rigidis costa prominula nervis obscuris, spatha exteriora 2½ poll. longa lanceolata herbacea, floribus albis odoriferis, perianthii tubo fere recto gracili 3½-pollicari, limbi 2 poll. diam. segmentis 1¼ poll. longis, ovato-rotundatis subacutis obtusisve, filamentis brevibus, antheris ½ poll. longis rectis, connectivo dorso ruguloso in appendicem validam puberulam conico-subulatam producto, stigmatis ramis magnis spathulatis fimbriatis patenti-recurvis.

A. candida, Rendle in *Journ. Linn. Soc. Bot.* vol. xxx. (1895) p. 404.

Acidanthera candida is described by Dr. Rendle, F.L.S., as a native of woodless, undulating grassy steppes at Lanjoro, in the Athi plains, Eastern tropical Africa, where it was discovered in 1893 by Prof. J. W. Gregory, F.R.S., of the Geological Department of the British Museum (now of Melbourne University). Its nearest affinity is, he says, with *A. laxiflora*, Baker ("Handbook of Irideæ," p. 188) a native of the slopes of Kilimanjaro, from which it differs in its more robust habit, firm, narrow, linear leaves, its more linear outer spathe-valve, and broad, pure white perianth-segments.

The genus *Acidanthera* consists of about eighteen species, chiefly natives of the hilly regions of tropical Eastern Africa. It is almost too closely allied to *Tritonia*, through *A. capensis*, Benth. Two species only have previously been figured in this work: *A. æquinoctialis*, Baker, of Abyssinia, t. 7393, and *A. capensis*, Benth., of the Cape Colony (*Tritonia capensis*, Ker), t. 618 and 1531.

The Royal Gardens, Kew, are indebted to J. T. Bennett Poë, Esq., of Ashley Place, London, for the plant of *A. candida* here figured, which flowered in the Cape House in April, 1902.

Descr.—A slender, erect, glabrous, leafy herb. *Corm* globose. *Stem* a foot to a foot and a half high, slender,

FEBRUARY 1ST, 1903.

green, two- to three-leaved, sheathed at the base, three- to four-flowered. *Leaves* sheathing at the base, a foot to a foot and a half long by half an inch broad, linear, acuminate, rigid, bright green, midrib prominent on both surfaces, lateral nerves none or very obscure. *Outer spathe* two and a half inches long, lanceolate, acuminate, convolute, herbaceous. *Flowers* white, very sweet-scented. *Perianth-tube* three and a half inches long, slender, nearly straight; segments of limb orbicular-ovate, obtuse or sub-acute. *Filaments* short; anthers half an inch long, linear, connective dorsally thickened, rugose, produced into an erect, stout, subulate, puberulous appendage. *Stigmatic arms* large, spatulate, fimbriate, spreading, and recurved.—
J. D. H.

Figs. 1 and 2, stamens; 3, stigma :—*both enlarged.*



M.S. del. J.H. Fitch. h.v.

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ASTILBE DAVIDII.

Native of China, &c.

Nat. Ord. SAXIFRAGACEÆ.—Tribe SAXIFRAGEÆ.

Genus ASTILBE, *Buch.-Ham.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 634.)

ASTILBE *Davidii*; herba elata, caule tereti lævi paucifoliato, foliis radicalibus rosulatis stipulatis, caulinis distantibus longe graciliterque petiolatis ternatim pinnatis, pinnis lateralibus oppositis longe petiolulatis 3-5-foliolatis, pinnulis lateralibus oppositis sessilibus papyraceis $1\frac{1}{2}$ poll. longis ovatis oblongisve acutis grosse sæpe inæqualiter argute serratis dentibus cuspidatis supra læte viridibus, terminali petiolulata duplo majore basi acuta v. rotundata simplici v. triloba, panicula terminali valde elongata angusta, rachi ramisque fusco-tomentosis, ramis simplicibus 2-4 poll. longis erecto-patentibus spiciformibus fere a basi densifloris, bracteis ad basin ramorum $\frac{1}{4}$ - $\frac{1}{2}$ poll. longis lanceolatis membranaceis, floribus parvis læte roseis secus rachin ramorum in glomerulos parvos dispositis sessilibus bracteolis 2 subulatis, calycis puberuli turbinati lobis ovato-oblongis obtusis, petalis loriformibus obtusis calycis lobis 4-plo longioribus apicibus neutiquam dilatatis, staminibus 10 petalis brevioribus, filamentis violaceis, antheris subglobosis atro-violaceis, ovarii conici carpellis basi connatis in stylos subulatos attenuatis.

A. *Davidii*, *Henry in Gard. Chron.* 1902, vol. ii. p. 95, fig. 34.A. *chinensis*, var. *Davidi*, *Franch. Pl. David.* p. 121. *Henry l.c. The Garden*, vol. lxii. p. 179, cum ic.

This beautiful plant has been referred by that excellent botanist, the late Mr. Franchet, to a variety, *Davidi*, of *Astilbe chinensis*, Maximowicz, a species described as having a yellowish calyx, with acute lobes and white petals dilated at the apex, founding the variety on the vinous colour of the inflorescence, and uniformly linear petals. In so doing he has overlooked the very long, narrow panicle, with long, sub-erect branches regularly diminishing in length upwards, which is a marked character of this plant. Taken together, these differences induced Mr. Henry, when describing and figuring it in the *Gardeners' Chronicle*, under the name given by Franchet, to adopt that of *Davidii* as the specific name.

A. Davidii appears to have a wide range in China, growing in shaded places and by water-courses. There are specimens in the Kew Herbarium collected in Manchuria by Wilford in Mongolia, by Père David, near Peking,

by Bretschneider, in Kansu by Potanin, and a fine series in Hupeh, by Henry. The specimen figured, which was six feet in height, was communicated by Messrs. J. Veitch & Sons from their garden at Coombe Wood in August, 1902. It was raised from seed sent home by their collector, Mr. E. H. Wilson.

Descr.—*Stem* with inflorescence four to six feet high, stout, terete, smooth, glabrous. *Leaves* ternately pinnate or bipinnate, radical rosulate, petioles long, very slender, lower pinnæ opposite, petiolulate, bearing one or two rather distant pairs of pinnules, and a petiolulate simple or three-lobed terminal one; pinnules an inch to an inch and a half long, opposite, sessile, oblong or ovate, acute, coarsely unequally acutely serrate, papyraceous, bright green above, paler beneath, base acute or rounded, terminal pinnule usually twice as large as the lateral, and more deeply toothed, base acute. *Panicle* two feet long, narrow, inclined; rachis brown, tomentose; branches very many, alternate, sub-erect, spiciform, lower four to five inches long, upper gradually shorter, clothed nearly to the base with crowded globose fascicles of minute, bright rose-pink, sessile flowers, rachis tomentose; bracts at the base of the branches membranous, lanceolate, acuminate, half an inch long; bracteoles at the base of the flowers minute, subulate. *Calyx* one-sixth of an inch long and broad, turbinate, puberulous, lobes oblong-ovate, obtuse. *Petals* four times as long as the calyx-lobes, exactly linear, very slender, one-nerved. *Stamens* shorter than the petals, minute, filaments violet-blue; anthers dark blue. *Pistil* of two conical, carpels connate at the base, each narrowed into an erect style.—*J. D. H.*

Fig. 1, Flower and bracteoles; 2, stamen; 3, pistil:—*all enlarged.*



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RHODODENDRON BRACHYCARPUM.

Native of Japan.

Nat. Ord. ERICÆÆ.—RHODOREÆÆ.

Genus RHODODENDRON, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 592.)

RHODODENDRON (*Eurhododendron*) *brachycarpum*; frutex 8-10-pedalis eglandulosus, ramis ramulisque robustis glabris novellis pubescentibus, foliis 4-6 poll. longis coriaceis oblongis lineari-oblongisve obtusis apiculatisve basi cuneatis v. rotundatis supra glabris saturate viridibus subtus glabris v. tomento brunneo appresso laxo v. dense stellatim-pubescentibus, nervis 10-15 utrinque costæ tenuibus, petiolo robusto brevi, corymbo terminali globoso sessili multi-densifloro, bracteis ovato-rotundatis acuminatis crasse coriaceis glabris, pedicellis 1-2-pollicaribus, calyce brevissimo cupulari puberulo obtuse 5-dentato, corolla infundibulari-campanulata 5-loba, tubo brevi, limbo ad 2 poll. lato, lobis orbicularibus patenti-recurvis apicibus retusis medio roseo-tinctis, 3 superioribus infra medium punctis majusculis fulvis conspersis, staminibus 10 filamentis basi pilosis, antheris parvis brevibus flavis, ovario 5-loculari pubescente, stylo staminibus brevioribus crassiusculo apice truncato cavo stigmatoso, capsula $\frac{1}{2}$ -2 poll. longa tereti lignosa, seminibus $\frac{1}{2}$ poll. longis testa utrinque inæqualiter producta.

R. brachycarpum, *D. Don, ex G. Don, Gen. Syst. Gard.* vol. iii. p. 843. *DC. Prodr.* vol. vii. p. 723. *A. Gray in Mem. Am. Acad. Arts & Sc. Bost.* vol. vi. (1859) p. 400. *Franch. & Sav. Enum. Pl. Jap.* vol. i. p. 288. *Maxim. Rhod. As. Or.* p. 22.

Though apparently unknown to Kæmpfer and Thunberg, *Rhododendron brachycarpum* is a widely distributed shrub in the mountain districts of Northern and Central Japan, covering, according to Franchet, vast tracts of Fusiyama, above the forest region. It varies greatly in the amount of brown tomentum on the under-surface of the leaves, which are sometimes perfectly glabrous. Probably the colour of the corolla also varies; the bright rose-pink blush in the middle line of the lobes, becoming deeper towards the tip, may spread over the whole corolla, as it does in a Japanese figure of a plant that may be a variety of this. The name *brachycarpum* is an unfortunate one, as the figure (6) representing the normal size of the capsule shows; there are, however, specimens in the Kew Herbarium with the capsule less than half an inch in length.

Seed of *R. brachycarpum*, sent by the Imperial Botanic Gardens of St. Petersburg in 1895, to the Royal Gardens, Kew, produced plants which flowered in the Arboretum at

FEBRUARY 1ST, 1903.

Kew in June, 1902, from which the accompanying plate was made.

Descr.—A large, very robust shrub, six to ten feet high; branches and branchlets glabrous, or pubescent when young. *Leaves* four to six inches long, shortly petioled, oblong or linear-oblong, obtuse or apiculate, base cuneate or rounded, dark green and glabrous above, with a stout midrib and ten to fifteen pairs of very slender, arched nerves, beneath glabrous, or clothed laxly or densely with a closely appressed brown tomentum of stellate hairs; petiole very stout. *Flowers* in a globose, terminal, sessile corymb four to six inches in diameter; bracts orbicular-ovate, acuminate, very coriaceous, glabrous; pedicels one to two inches long. *Calyx* very small, cupular, obtusely five-lobed. *Corolla* between funnel- and bell-shaped, tube short, limb two inches in diameter; lobes large, spreading, orbicular, retuse, white, with a faint rose-pink blush in the mesial line reddening towards the tip; throat and three upper lobes closely sprinkled from the base to the middle with fulvous spots. *Stamens* ten, filaments slender, hairy towards the base; anthers small, yellow. *Ovary* five-celled, pubescent. *Capsule* half an inch to one inch in length.—*J. D. H.*

Fig. 1, portion of leaf, under-surface; 2, calyx and pistil; 3, stamen; 4, summit of style; 5, branched hair of leaf:—all enlarged; 6, capsule of nat. size.

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TAB. 7882.

ALOE RUBROVIOLACEA.

Native of Southern Arabia.

Nat. Ord. LILIACEÆ.—Tribe ALOINEÆ.

Genus ALOE, Linn.; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 776.)

ALOE (Eualoe) *rubroviolacea*; caule crasso monocephalo, foliis dense rosulatis bipedalibus patenti-recurvis subfalcatis late lanceolato-ensiformibus ad $\frac{3}{4}$ poll. crassis glauco-viridibus pruinoso-violacea supra planiusculis subtus convexis marginibus corneis rubris remote spinoso-dentatis dentibus $\frac{1}{6}$ poll. longis incurvis rubris apicem versus folii evanidis, scapo valido basi compresso adscendente parce ramoso, spicis binis 2-3-pedalibus 4 poll. diam. cylindræis densifloris, bracteis 1-1 $\frac{1}{2}$ poll. longis lanceolatis siccis infra racemum vacuis, floralibus striatis albo late marginatis, floribus brevissime pedicellatis pendulis deorsum imbricatis, perianthio 1 $\frac{1}{2}$ poll. longo cylindræo $\frac{1}{3}$ poll. diam. pallide rubro, segmentis infra medium connatis apicibus deltoideo-recurvis pallidis, staminibus longe exsertis, antheris ochroleucis demum atro-brunneis.

A. *rubroviolacea*, Schweinf. in *Bull. Herb. Boiss.* vol. ii. App. II. (1894) p. 71. *Notizblatt. Berl. Bot. Gart.* vol. i. p. 5 (1897).

For the opportunity of figuring this noble plant I am indebted to my friend, Sir Thomas Hanbury, F.L.S., of La Mortola, who sent to the Royal Gardens, Kew, in March, 1902, a flowering raceme, a leaf, a photograph of the whole plant made by Sir Edmund Loder, Bart., and an excellent detailed description, with notes on its affinities, &c., by Sir Thomas's able Curator, Mr. Alwin Berger, of which I have largely availed myself. Mr. Berger says, "The plant was received from the Berlin Botanic Gardens. It flowered for the first time at the Palazzo Orenco in the spring of 1900, and produced a few capsules with good seed, from which a stock of seedlings has been raised. In the severe winter of last year the flowering scape was injured by the frost." Mr. Berger adds, "The inflorescence is composed at present of two spikes only, but it may become more branched in future. Concerning its allies I think there can be no doubt it belongs to the group with *A. Salm-Dyckiana*, Schult. fil., *A. drepanophylla*, Baker, and *A. chloroleuca*, Baker. It cannot be grouped under *Pachidendron*, for the perianth is not at all clavate, its

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segments are much longer than the tube, and the bracts are much larger than in that group. None of its allies are found near its habitat, all being South African. It is therefore of high interest in point of view of geographical distribution. A further exploration of Arabia may bring other allies to our knowledge."

Dr. Schweinfurth discovered this species on Mt. Schibam above Menacha in Southern Arabia, near the old castle, at about nine thousand five hundred feet (two thousand nine hundred met.) above the sea.

Descr.—*Stem* very stout, twenty inches high by four in diameter, with a single declinate head of leaves. *Leaves* about two feet long, by six inches broad, densely rosulate, sub-falcate, spreading and recurved, ensiformly lanceolate, about three-fourths of an inch thick, narrowed into a rather obtuse point, pale green, with a faint, violet bloom, nearly flat above; convex beneath, margins horny, red, armed, except towards the tip, with rather distant, shortly incurved, red spines. *Scape* ascending, bearing two branches terminated by large cylindric spikes, each two to three feet long, densely clothed with imbricating, pendulous, pale red flowers. *Perianth* an inch and a half long, cylindric, one-third of an inch diameter. *Segments* connate for one-third of their length, tips spreading, pale, outer with three darker greenish lines, inner with a broader, central, red band. *Filaments* exerted for about one-fourth of their length; anthers oblong, dark ochroleucous, at length brownish black.—*J. D. H.*

Fig. 1, bracts; 2, stamen and pistil; 3, pistil:—all except 1 *enlarged*.



TAB. 7883.

SOPHORA VICIIFOLIA.

Native of China.

Nat. Ord. LEGUMINOSÆ.—Tribe SOPHOREÆ.

Genus SOPHORA, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 555).

SOPHORA (*Eusophora*) *viciifolia*; suffruticosa, spinosa, ramis glabris ramulis petiolisque appresse tomentellis, foliolis 6-7-jugis cum impari sessilibus $\frac{1}{4}$ poll. longis ellipticis v. oblongo-obovatis obtusis apiculatis supra glaberrimis subtus parce hirtellis, stipulis minutis tomentosius callosomucronatis, racemis ramulos terminantibus erectis recurvisve breviter pedunculatis foliis subæquilongis laxè 6-12-floris, floribus $\frac{1}{2}$ poll. longis, calyce violaceo pedicello æquilongo, cupulari subæqualiter 5-dentato pubescente albis, bracteis minutis, petalis subæquilongis, vexillo spathulato reflexo, carinæ petalis basi auriculatis filamentorum 9, alte connatis, carpellis nunc binis hirtellis, legumine aptero 1-2-pollicari gracili moniliformi rostrato glaberrimo, articulis 3-5 interstitiis elongatis valde constrictis, valvis membranaceis demum liberis, seminibus $\frac{1}{7}$ poll. longis oblongis flavo-brunneis.

S. viciifolia, *Hance in Journ. Bot.* vol. xix. (1881) p. 209. *Hemsl. in Journ. Linn. Soc. Bot.* vol. xxiii. (1887) p. 203.

S. Moorcroftiana, *Benth. var. Davidi, Franch. Pl. David.* p. 101, t. 14.

Sophora viciifolia is so very closely allied to *S. Moorcroftiana*, *Benth.*, a native of the dry Tibetan Western Himalaya, at elevations of ten thousand to twelve thousand feet, that it was referred by Franchet, as a variety, to that species. It is, however, specifically very different. *S. Moorcroftiana* having eleven to seventeen larger, more tomentose and more obovate leaflets, terminated with a long, stiff, awn-like mucro, a longer, narrower calyx, a shorter, yellow corolla, and densely pubescent pods, with seeds twice as large as those of *S. viciifolia*. The Chinese plant was first described by the late Mr. Hance from specimens collected in 1880 by Mr. T. Watters in the Province of Hupeh, in the mountains of which province it has since been found by Mr. Henry; it is also a native of Shensi, Yunnan, and Szechuen, where it appears to be common on the Tibet frontier, forming, according to Mr. Pratt, large heaths, two to four feet high, in barren soils, at an elevation of nine thousand to thirteen thousand five hundred feet.

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The specimen figured was from a plant raised from seed sent by Mr. Henry to the Royal Gardens, Kew, in 1898, which flowered in the open air against a wall in July, 1902. The violet calyces contrasting with the milk-white corolla make a very effective and attractive contrast.

Descr.—A low, much-branched, spinescent shrub, two to four feet high, with pubescent branchlets, petioles, pedicels, and calyx. *Leaves* an inch to an inch and a half long, shortly petioled; leaflets six to seven pairs, with a terminal one, rather close-set, sessile, a quarter of an inch long, elliptic, obtuse, mucronate, pubescent beneath. *Flowers* white, in shortly peduncled, terminal, erect, or recurved, six- to twelve-flowered racemes. *Calyx* small, cup-shaped, shortly five-toothed, violet blue. *Petals* about half an inch long, sub-equal in length. *Standard* obovate-spathulate, reflexed. *Keel-petals* obtusely auricled at the base. *Carpels* one or two, very slender, hairy. *Pod* one to two inches long, slender, moniliform, long-beaked, smooth, glabrous, joints three to five, ellipsoid, interstices long, much constricted; valves free, membranous. *Seeds* about one-seventh of an inch long, ellipsoid.—*J. D. H.*

Fig. 1, calyx laid open and stamens; 2, standard; 3, wing-petal; 4, keel-petal; 5, single, and 6, twin carpels; 7, pod; 8, seed: all except 7 *enlarged*; 7 and 8 from herbarium specimens.



TAB. 7884.

HAMAMELIS MOLLIS.

Native of China.

Nat. Ord. HAMAMELIDÆ.

Genus HAMAMELIS, Gronov.; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 667.)

HAMAMELIS *mollis*; frutex v. arbor 10-30-pedalis, cortice atro-fusco, ramulis foliisque subtus stellato-tomentosis, foliis breviter petiolatis 4-5 poll. longis obovato-rotundatis oblongisve cuspidatis sinuato-dentatis basi inæqualiter cordatis sinu acuto supra minute subscabride stellato-pubescentibus, stipulis $\frac{3}{4}$ poll. longis lineari-lanceolatis extus tomentosus intus glabris caducis, floribus in pedunculis glomeratis, calycis pubescentis lobis ovato-rundatis rubris, petalis ad $\frac{1}{3}$ poll. longis loriformibus aureis, filamentis brevibus crassis glabris, antheris reniformi-rotundatis ovario villosa, stylis brevibus recurvis, capsula tomentosa.

H. mollis, Oliv. in *Hook. Ic. Pl.* vol. xviii. t. 1742. *Hemsl. in Journ. Linn. Soc. Bot.* vol. xxiii. (1887) p. 290.

Of *Hamamelis* only three species are as yet known. *H. virginiana*, Linn. t. 6684, of the Eastern United States. *H. japonica*, Sieb. & Zucc. t. 6659 (*H. Zuccariniana*, *Ottol. in Gard. Chron.* 1874, vol. i. p. 187), and *H. mollis*, which extends the distribution of the genus into Western China. Though so widely apart geographically, the three species hardly differ in any essential characters of habit, inflorescence, or floral structure, but the Japanese and Chinese are more akin than either is to the American, which is nearly glabrous, and has smaller flowers, with the calyx-lobes green within. *H. mollis* differs from its two congeners in the stellate tomentum of the leaves beneath, which are rather deeply cordate at the base, and in the broader petals. Its calyx-lobes are, as in *H. japonica*, purplish-red. All three flower in winter, and leaf and fruit in summer or autumn, the foliage colouring before it falls.

H. mollis was first described and figured in Hooker's "Icones Plantarum," from specimens collected by Mr. Henry in the Patung district of the Province of Hupeh. It has since been found in Kiangsu, in the district of Kiukiang by Mr. Maries, who sent seeds to Messrs. Veitch, by whom plants were raised and presented to the Royal

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Gardens, Kew, in 1902. It is, no doubt, a mountain plant in China, being hardy in England.

Descr.—A large bush or small tree, sometimes thirty feet high, with straggling branches and nearly black bark. *Leaves* four to five inches long, shortly petioled, orbicular-obovate or -oblong, cuspidate, toothed, scaberulous above, stellate-tomentose beneath, base obliquely cordate, basal lobes more or less unequal, sinus acute, nerves eight or ten pair; stipules three-fourths of an inch long, linear-lanceolate, externally tomentose, glabrous within, caducous. *Flower-heads* sessile or very shortly peduncled. *Calyx* tomentose; lobes broadly ovate, glabrous, purplish-red within, about a tenth of an inch long. *Petals* a third of an inch long by less than one-tenth of an inch broad, golden-yellow. *Filaments* short, stout. *Ovary* hirsute.—*J. D. H.*

Fig. 1, flower; 2, section of ditto, showing bases of petals, stamens, and pistil; 3, stamen:—*all enlarged.*



PHALÆNOPSIS KUNSTLERI.

Native of the Malayan Peninsula.

Nat. Ord. ORCHIDÆ.—Tribe VANDEÆ.

Genus PHALÆNOPSIS, Bl.; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 573.)

PHALÆNOPSIS (Stauroglottis) *Kunstleri*; subcaulis, foliis 1-3 sessilibus oblongis obovato-oblongisve apice acutis v. rotundatis et mucronatis 3-5 poll. longis basi angustatis læte viridibus, pedunculo 4-6 poll. longo decurvo v. pendulo crassitie pennæ corvinæ vaginis 1-2 brevibus crassis obtusis instructo, racemo terminali 3-6-floro rachi angulatim flexuoso, bracteis minutis ovatis obtusis, pedicellis cum ovariiis 1-1½ pollicaribus ascendentibus flexuosis, floribus 1½ poll. latis, sepalis petalisque consimilibus lineari-oblongis oblongo-obovatisve apice rotundatis supra convexis lateribus recurvis rufo-brunneis apice et basi late aureis, labelli parvi lobis lateribus incurvis auriculæformibus albis sanguineo striatis, terminali ovato-rotundato obtuso medio alte carinato basi appendice brevi furcata instructo, disco inter lobos laterales crasse bicarinato, columna brevi superne dilatata anthera biloba multo latiore.

P. Kunstleri, *Hook. fil. in Fl. Brit. Ind.* vol. vi. p. 30; *et in Ann. Roy. Bot Gard. Calcutta*, vol. v. p. 38, t. 58.

I accept Mr. Rolfe's determination of the plant here figured being the *Phalænopsis Kunstleri* described by me in 1895, from dried flowers of a specimen collected in Perak by Dr. Kunstler, and a drawing of the whole plant made by a native artist in the Royal Botanic Gardens of Calcutta. A comparison of that drawing, subsequently published in "The Annals of the Royal Gardens," with Miss Smith's here produced, shows that, if Mr. Rolfe's identification is correct, the species must be a variable one, for the Calcutta drawing represents the roots as much more slender and terete, the leaves lanceolate, acute, without a terminal mucro, and of a very pale green, suffused with yellow towards the base, a two-flowered raceme, and obovate, nearly flat sepals and petals.

I am indebted to Sir Trevor Lawrence for the specimen here figured, which he informs me he procured in 1899 from Mr. Curtis, F.L.S., Superintendent of Gardens and Forests in Penang, without any definite locality. It flowered in a stove at Burford Lodge in April, 1902.

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Descr.—*Roots* broad, flattened. *Leaves* few, variable, the longer four inches long by nearly one broad, oblong, sessile, tip rounded with a strong mucro, the shorter sometimes nearly orbicular, bright green. *Peduncle* a foot long, rather slender, green. *Raceme* terminal, loosely seven-flowered, pendulous, rhachis rather stouter than the peduncle, zigzag. *Bracts* very small, broadly ovate. *Pedicels* with ovary, one to one and a half inches long, recurved. *Perianth* nearly two inches broad. *Sepals* and *petals* equal and similar, spreading and incurved, linear- or obovate-oblong, lips rounded, very convex, margins strongly recurved, red brown above, with broad, golden-yellow tips and bases, dorsally pale yellow. *Lip* very much smaller than the sepals; side-lobes ear-shaped, incurved, white, streaked with blood-red, disk between the side-lobes strongly two-ribbed; midlobe orbicular-ovate, obtuse, strongly keeled in the middle, and with a small forked appendage at the base, white, streaked with red. *Column* very short and broad, much broader than the small, hemispheric anther.—*J. D. H.*

Fig. 1, flower with sepals and petals removed; 2, lip with one side lobe removed; 3, anther; 4 and 5, pollinia:—*all enlarged.*



M. S. del. J. N. Fitch lith.

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CHRYSANTHEMUM GRANDE.

Native of Algeria.

Nat. Ord. COMPOSITÆ.—Tribe ANTHEMIDÆÆ.

Genus CHRYSANTHEMUM, Linn.; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 424.)

CHRYSANTHEMUM (*Plagius*) *grande*; herba 2-3-pedalis, perennis, erecta, robusta, foliosa, hispido-pilosa v. glabrescens, caule subsimplici, foliis 6-8 pollicaribus radicalibus longe petiolatis caulinis sessilibus lyratis lineari-oblongis-obovatisve obtusis repando-crenatis inferioribus basi longe angustatis et in petiolum alatum remote dentatum basi late auriculatum productis, auriculis profunde pinnatifidim dentatis dentibus incurvis acutis, capitulis terminalibus solitariis $1\frac{1}{2}$ - $2\frac{1}{2}$ poll. latis valde depressis disciformibus homogamis, pedunculo valido elongato foliis parvis deformatis instructo, involucri crateriformis bracteis numerosissimis 3-seriatis appressis $\frac{1}{3}$ poll. longis subulato-lanceolatis extimis herbaceis intimis apice membranaceis brunneis, receptaculo lato plano granulato, flosculis innumeris (radii 0) dense compactis bracteis æquilongis aureis, corolla tubuloso-campanulata 5-fida lobis ovatis acutis sparse tuberculatis, achæniis crasse stipitatis subcylindræis lente curvis sulcatis basi oblique truncatis apice in squamam unguiformem unilateralem coriæeam concavam corollæ ter breviorē persistentem producto.

C. grande, Hook. f.*C. grandiflorum*, Battand. *Flore d'Alger*. 1890, p. 464, non Willd.*Plagius grandiflorus*, L'Hér. ex DC. *Prodr.* vol. vi. p. 135. Munby, *Cat. Pl. Alger*. Ed. 2 (1866), p. 19.*Balsamita grandiflora*, Desf. in *Act. Soc. Hist. Nat. Par.* vol. i. (1792) p. 1; *Fl. Atlant.* vol. ii. p. 262. Willd. *Sp. Pl.* vol. iii. p. 1800.*Matricaria grandis*, Desrouss. in *Lam. Encycl.* vol. iii. p. 738.*Tanacetum grandiflorum*, Poir. *Encycl.* vol. vii. p. 574.*Cotula grandis*, Linn. *Sp. Pl.* Ed. II. p. 1257.

The specific name of *grandiflorum* adopted for this plant by Battandier and Trabut, being preoccupied by Willdenow for the Canarian congener, I have replaced it by that of *grande*, under which, as *Cotula grandis*, it was first described by Linnæus. It is confined to Algiers, where it is not uncommon in the Mitidja range, and in the Tell (the cultivated districts between that range and the sea), growing on roadsides and amongst brushwood. The genus *Plagius*, Desf., to which, as a section, it is referable, is founded on the absence of ray-flowers, a very exceptional character in the genus *Chrysanthemum*, there being only

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two or three species, all Mediterranean, that are referable to it.

C. grande is not a common garden plant, the specimen here figured was obtained by the Royal Gardens, Kew, from Mr. T. Smith, Nurseryman, Newry, in August, 1902. By a curious coincidence only a few days previously it was sent to me by a friend in Norfolk, procured from the garden of Mr. James H. Reeve, of North Walsham. It is perfectly hardy, flowers in autumn, and is a striking accession to the herbaceous garden.

Descr.—A very stout, erect, simple or sparingly branched, hispidly hairy or nearly glabrous perennial herb, two to three feet high. *Stem* leafy. *Leaves* six to eight inches long, sessile, lyrate-oblong or linear-oblong, obtuse, coarsely crenate, contracted in the middle sometimes for four or five inches, and dilated at the very base into broad, pinnatifidly-lobed, spreading auricles. *Flower-heads* terminal, solitary, long-peduncled, very large, one and a half to two inches broad, and so depressed as to be disciform, and only one-third or one-fourth as thick as broad; peduncle very stout, carrying a few small, deformed leaves. *Involucre* saucer-shaped; bracts innumerable, subulate-lanceolate, herbaceous below the middle, thin and brown above it. *Receptacle* very broad, flat, granulate. *Florets* forming a compact, slightly convex head, most densely packed, as long as the invol. bracts, golden-yellow, all tubular and bisexual. *Corolla* almost campanulate above the middle, lobes five, acute. *Achenes* stout, sub-cylindric, curved, sulcate, obliquely truncate at the base, produced above into a unilateral coriaceous concave, persistent scale, about one-third as long as the corolla.—*J. D. H.*

Fig. 1, flower; 2, stamens; 3, style-arms:—all enlarged.

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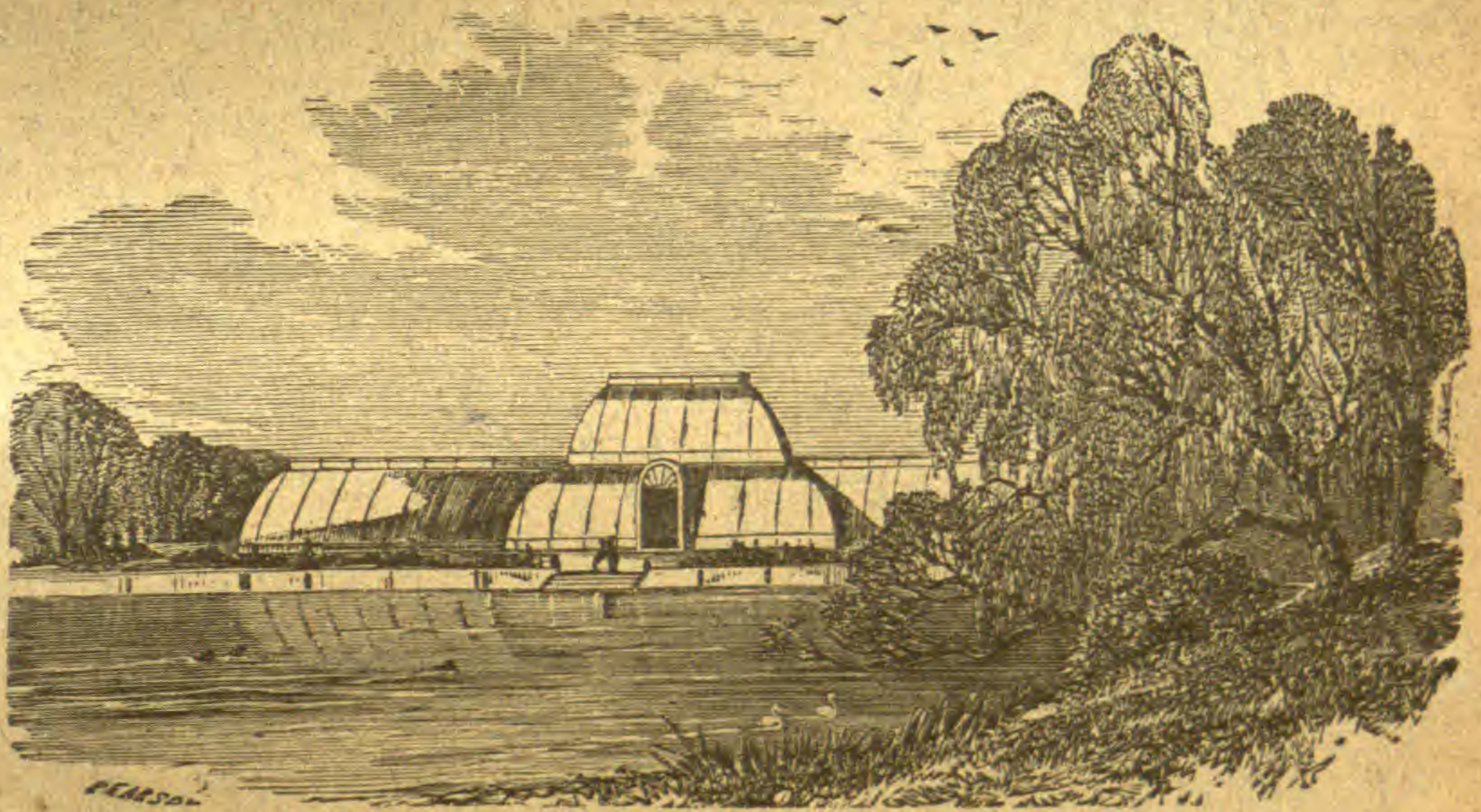
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SIR JOSEPH DALTON HOOKER, M.D., G.C.S.I., C.B., F.R.S., F.L.S.

Late Director of the Royal Botanic Gardens of Kew.



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TAB. 7887.

CLERODENDRON MYRMECOPHILA.

Native of Singapore.

Nat. Ord. VERBENACEÆ.—Tribe VITICEÆ.

Genus CLERODENDRON, Linn.; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 1155.)

CLERODENDRON (*Euclerodendron*) *myrmecophila*; suffrutex 3-pedalis, parce ramosa, caule crasso tereti fistuloso glabro internodiis tumidis, cortice albo, foliis oppositis vel alternis pedalis linearis-oblongis obtusis acutisve herbaceis glabris saturate viridibus politis basi acutis obtusis vel cordatis, nervis utrinque costæ ad 12, petiolo 1-3-pollicari fistuloso, panicula pedali terminali erecta pyramidalis pubescente multiflora, rachi viridi, ramis ramulis bracteolis pedicellisque fusco-purpureis, bracteolis subulatis, pedicellis brevibus, calycis puberuli $\frac{1}{3}$ poll. longi tubo viridi lobis lanceolatis acutis fusco-purpureis, corollæ rubro-aurantiæ tubo calyce paullo longiore lobis $\frac{1}{2}$ poll. longis obovato-oblongis apice rotundatis superioribus paullo longioribus, filamentis styloque pollicaribus ascendentibus gracillimis rubris, antheris parvis, ovario globoso, styli ramis gracilibus, bacca globosa $\frac{1}{4}$ poll. diam. nigra.

C. myrmecophila, *Ridl. in Journ. Bot.* vol. xxxiii. (1895) p. 42.

This very handsome species of the large tropical genus *Clerodendron* was discovered in dense forests of Singapore by Mr. H. N. Ridley, M.A., F.L.S., Director of the Gardens and Forest Department of the Straits Settlements, who describes it as approaching in habit *C. fistulosum*, Beccari (*Malesia* ii. 48) of Borneo, a species with capitate inflorescence, but as being nearer to *C. paniculatum*, Linn. (tab. 7141), a common tropical Asiatic species, with broad-lobed leaves, an angular stem, and a very different calyx. In both *C. myrmecophila* and *fistulosum* the hollow stems are swollen at the internodes, and there form nests for ants, those of the Singapore plant belonging to the genus *Pheidole*, Fabricius, those of the Bornean to *Colobopsis*. Another ant-fostering species is *C. formicarum*, Gürke (*Engler, Bot. Jahrb.* xviii. 179) a native of tropical Africa.

A living plant of *C. myrmecophila* was received at the Royal Gardens, Kew, from Mr. Ridley in 1896, which flowered in a stove in April, 1902, when three feet high. There are specimens in the Kew Herbarium, of a very closely allied species from Borneo, and from the Royal Gardens, under the mss. name of *C. macrophyllum*, Hook.

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(from Java?), which differs only in the rather longer corolla tube.

Descr.—A sparingly branched shrub, about three feet high, with very stout, terete, glabrous, fistular stems, and white bark; internodes swollen, hollow. *Leaves* opposite and alternate, a foot long, linear-oblong, acute or obtuse, dark green polished, base acute, obtuse or cordate, costa stout, with about twelve pairs of nerves; petiole short, stout, fistular. *Panicle* terminal, shortly peduncled, a foot high, pyramidal, very many-flowered, pubescent; rachis green, strict; branches very many, many-flowered, slender, spreading, red-brown, as are the small, subulate bracteoles, short pedicels, and lobes of the calyx. *Calyx* puberulous, about one-third of an inch long; tube short, green; lobes lanceolate, acuminate, erect. *Corolla* ochreous-red; tube about one-third longer than the calyx; lobes half an inch long, obovate-oblong, tips rounded. *Filaments* an inch long, very slender, ascending, red; anthers very small. *Ovary* globose; style as long as the stamens, red, arms slender. *Berry* globose, a quarter of an inch in diameter. black.—*J. D. H.*

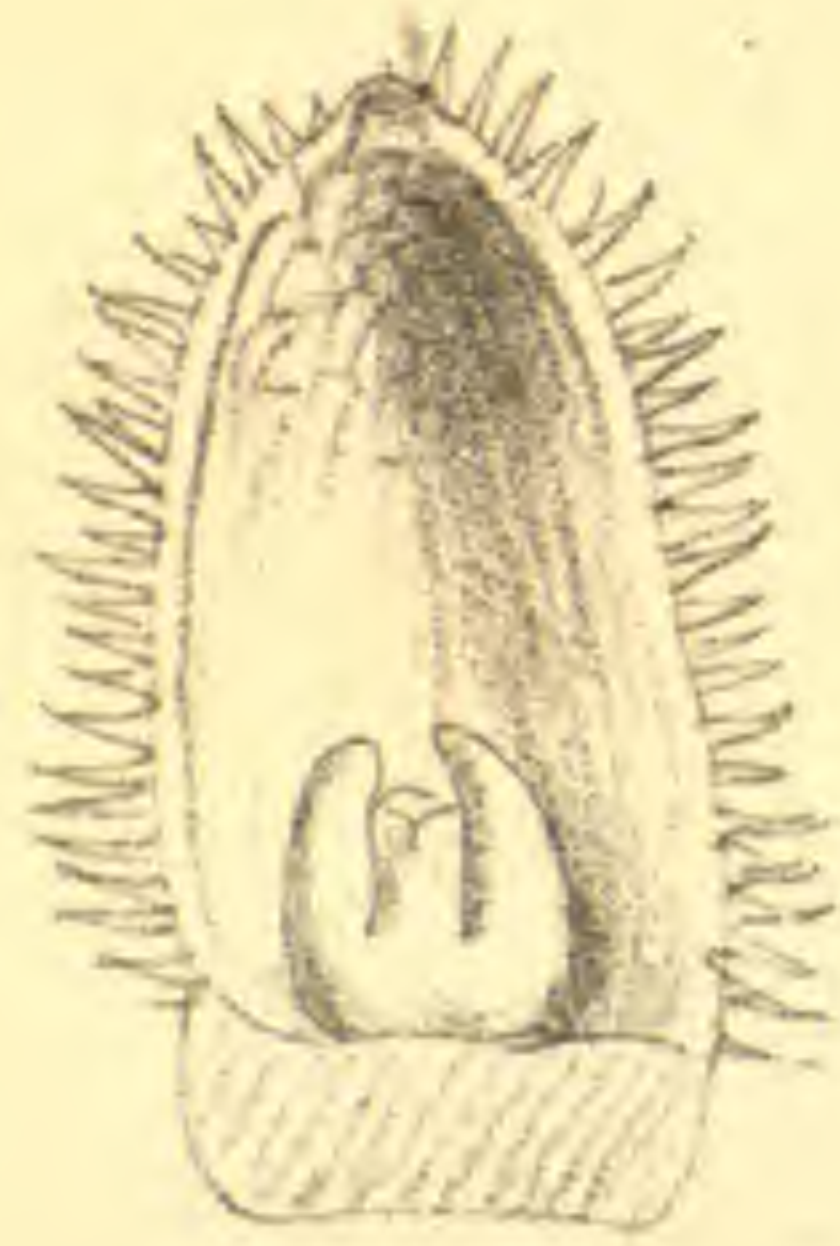
Fig. 1, section of calyx and ovary; 2 and 3, anthers; 4, arms of style:—*all enlarged.*



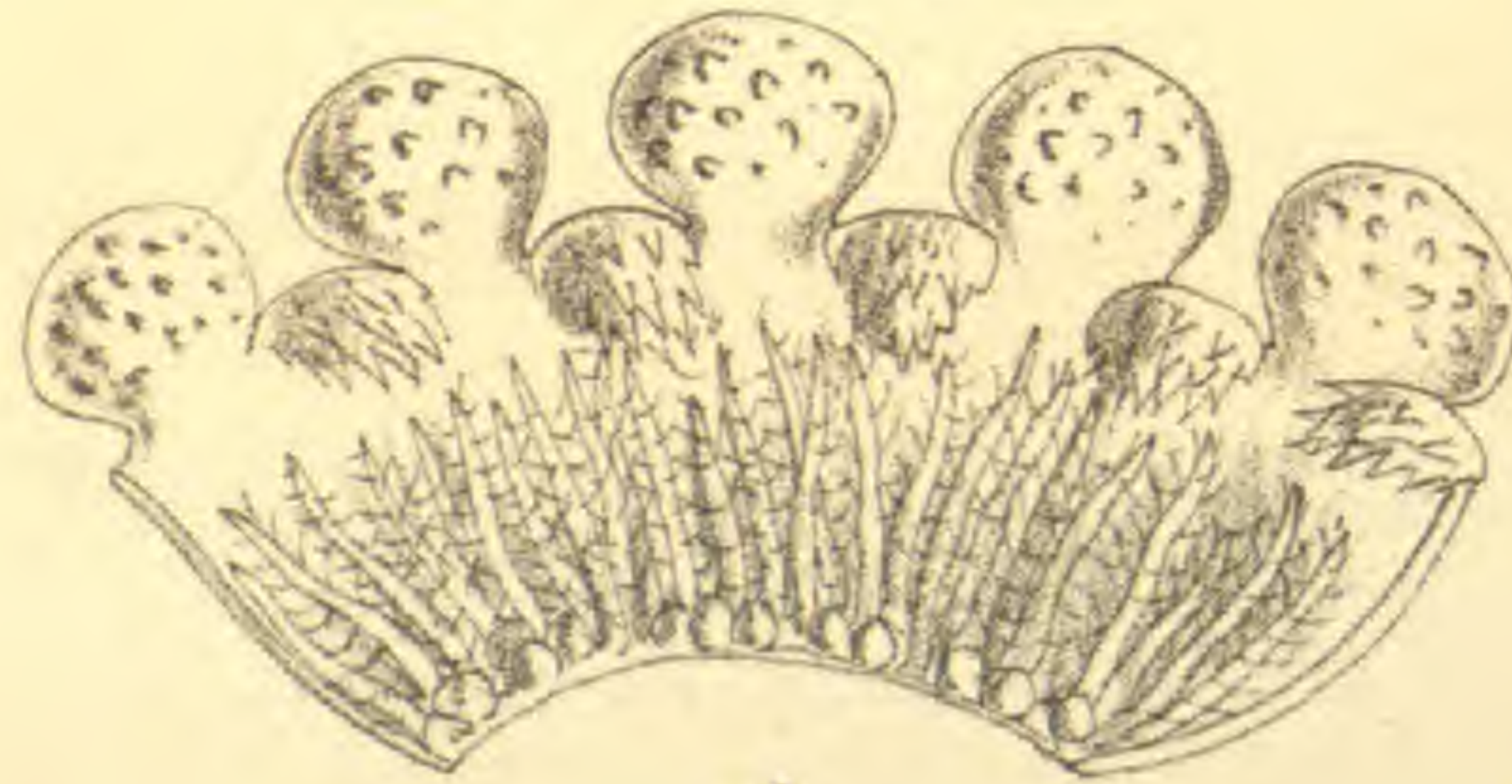
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1

EUPHORBIA OBESA.

Native of South Africa.

Nat. Ord. EUPHORBIACEÆ.—Tribe EUPHORBIÆ.

Genus EUPHORBIA, Linn.; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 258.)

EUPHORBIA (*Euphorbium*) *obesa*; aphylla, caule simplici erecto 5 poll. alto oblongo-ovoideo 8-costato apice et basi rotundato pallide viridi striis transversis pallide purpureis creberrime fasciato, sulcis verticalibus ad $1\frac{1}{2}$ poll. latis haud profundis sinibus acutis, costis acutis a basi creberrime tuberculatis, tuberculis uniseriatis rugulosis brunneis supremis solo florentibus, pedunculis vix $\frac{1}{10}$ poll. longis simplicibus monocephalis bracteis 5-6 arcte imbricatis obtusis carnosis tectis infimis ovatis 3 supremis (foliis floralibus) longioribus involucri tubum æquantibus ciliolatis, involucre sessili ad $\frac{1}{10}$ poll. longo campanulato fundo glandulis numerosis minimis instructo, lobis 5 minutis brevibus latis incurvis hispidulis, glandulis interpositis lobis triplo majoribus orbicularibus carnosis integerrimis punctatis, filamentis anantheris hirsutis, ovario breviter stipitato, stylo breviusculo robusto, stigmatibus spathulatis revolutis.

E. obesa, *Hook. fil.*

The very remarkable plant here figured was sent to the Royal Gardens, Kew, in 1897, by Professor MacOwan, D.Sc., F.L.S., Government Botanist, Cape Colony, under the name of *Euphorbia meloformis*, Ait., which is its nearest but very different ally. It flowered for the first time in July in the Succulent House in 1899, when the accompanying figure was made, and the ovary was pollinated from *E. meloformis*. Subsequently this unique plant disappeared from the Kew Collection, and I am consequently unable to check the description given above, which was, for the most part, drawn up shortly after the drawing was finished. Possibly its illustration in this Magazine may lead to the discovery of its whereabouts.

A reference to any of the six published figures of the well-known *E. meloformis*, which was introduced in 1774, shows that it differs greatly in inflorescence from *E. obesa*, bearing its involucre on long, simple, or branched peduncles.

Descr.—Whole plant five inches high, obovoid-oblong, simple, erect, rounded at both ends, pale green, crossed with bands of innumerable pale purple striæ, eight-ribbed;

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ribs vertical, straight, sub-acute, an inch and a half apart at about the middle of the stem, closely covered with minute, brown, rugulose tubercles in a single series; sinus between the ribs shallow, acute at the base. *Involucres* solitary on the tubercles at the crown of the plant, very shortly peduncled; peduncle about one-tenth of an inch long, covered with obtuse, imbricating, fleshy, ciliolate bracts, the three upper longest. *Involucre* about as long as the peduncle, campanulate; lobes five, minute, short, broad, incurved, hispid; interposed glands three times as large, orbicular, fleshy, quite entire, punctate. *Filaments* anantherous, hirsute. *Ovary* nearly sessile. *Style* rather short, stout; stigmas large, revolute.—*J. D. H.*

Fig. 1, inflorescence; 2, involucre laid open with the ovary removed; 3, filaments and glands from the base of the tube of the involucre; 4, filaments and glands at the bottom of the involucre; 5, ovary:—*all enlarged.*



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IRIS COLLETTII.

Native of Burma.

Nat. Ord. IRIDEÆ.—Tribe MORÆÆ.

Genus IRIS, Linn.; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 686.)

IRIS (Evansia) *Collettii*; dense cæspitosa, radicibus crassis vermiformibus annulatis, vaginis infimis fibrosis, foliis lineari-ensiformibus caule demum multo longioribus rigidis alte 5-costatis acuminatis saturate viridibus, caulibus 3-4-pollicaribus nudis 1-2-cephalis, spathis $1\frac{1}{2}$ -2-pollicaribus anguste lineari-lanceolatis acuminatis unifloris viridibus, pedunculo spathis paullo longiore, perianthii tubo brevi, limbi ad $1\frac{1}{2}$ poll. lati segmentis omnibus recurvis obovato-spathulatis violaceis basin versus albo striatis apice retusis exterioribus paullo majoribus crista imberbi angusta ochroleuca instructis, styli ramis erectis crista ampla fere orbiculari bipartita, segmentis dimidiato-ovatis acutis integerrimis.

I. *Collettii*, *Hook. f.*I. *nepalensis*, *D. Don*, forma depauperata, *Collett & Hemsl. in Journ. Linn. Soc.* vol. xxviii. (1890) p. 136.I. *nepalensis*, *D. Don*, var. *Letha*, *Fost. in Gard. Chron.* 1892, vol. ii. p. 458.

Iris Collettii was discovered, at an elevation of four thousand feet, in the Southern Shan hills of Upper Burma, by the late Col. Sir Henry Collett, K.C.B., who, in 1888, sent herbarium specimens of it to Sir George King at the Calcutta Botanic Gardens, some of which were transmitted to Kew. From these it was first published in 1890, by Sir Henry Collett and Mr. Hemsley, in the Journal of the Linnean Society, as a depauperate form of *I. nepalensis*. In 1891 Messrs. Barr received living plants of it from Lieut.-Col. Stone, collected near Fort White, also in the Shan hills, at an elevation of seven thousand feet.

Of these latter Sir Michael Foster published a description in the *Gardeners' Chronicle*, where, unaware of the earlier notice, he gave it the name of *I. nepalensis*, var. *Letha*, from that of the mountain on which it was found. With regard to the discrepancy between the elevations at which the plant is stated to have been collected, I think that the higher, seven thousand feet, is perhaps an error, for Sir Henry Collett, in his preface to the account of his plants in the "Linnean Journal" (p. 14) emphasizes the fact, that though the Shan hills are actually within the tropics,

between 19° and 22° N. Lat., temperate types appear in abundance at four thousand feet.

The resemblance of *I. Collettii* to *I. nepalensis* is so strong that I can well understand it being regarded as a variety of that plant. Its distinguishing characters are the dwarf habit (persistent under cultivation), earlier leafing, small flowers, very short perianth-tube, sub-equal segments all spreading and recurved, beardless crest, and comparatively large stigmatic crests, which are bipartite, with dimidiate-ovate, quite entire segments. The specimen figured was sent to the Royal Gardens, Kew, by Mr. Hildebrand, C.I.E., Superintendent of the Shan States in Burma, where it flowered in a greenhouse in April, 1902. The flowers were faintly fragrant. Plants of it were subsequently planted in a border in the open air, where they all died.

Descr.—*Roots* of very many, crowded, large, equal, vermiform, brown tubers several inches long, and a quarter of an inch in diameter. *Leaves* narrowly ensiform, strongly nerved, dark green, bases surrounded with rigid brown fibres. *Flowering stems* about six inches high, one- to two-flowered. *Spathes* one and a half to two inches long, narrow, acuminate, herbaceous, green. *Perianth-tube* short; limb an inch and a half in diameter; segments sub-equal, spreading, and revolute, violet-blue, streaked with white towards the base; crest of outer bright orange-yellow, not bearded. *Stigmatic crests* large, erect, bipartite; segments dimidiate-ovate, acute, quite entire.—
J. D. H.

Figs. 1 and 2, anthers; 3, stigmatic crest:—*all enlarged.*



TAB. 7890.

AGAVE BAKERI.

Native of Mexico?

Nat. Ord. AMARYLLIDÆ.—Tribe AGAVÆ.

Genus AGAVE, Linn.; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 738.)

AGAVE (Littæa) *Bakeri*; trunco 4-pedali, basi nudo coma 6 ped. diam. e foliis perplurimis densissime confertis confecta, foliis 3 ped. longis undique patenti-revolutis medio 5 poll. latis loriformi-lanceolatis haud crassis basi angustatis supra planiusculis subtus leviter convexis spina pollicari terminatis, marginibus lævibus purpureis, pedunculo brevi crasso foliis junioribus brevibus erectis cincto, racemo 8-9-pedali stricto erecto cylindræo, floribus densissime confertis, bracteis floribus æquilongis e basi ovata rubro striata anguste linearibus, bracteolis triangularibus membranaceis rubro striatis pedicellos crassos $\frac{1}{2}$ -pollicares æquantibus, ovariis pollicaribus lineari-oblongis teretibus, perianthii tubo ovario æquilongo obconico 6-sulcato, lobis pollicaribus lineari-oblongis obtusis revolutis extus viridibus intus albo-viridibus fascia media saturatiore pictis, filamentis 2-pollicaribus albis, antheris pollicaribus anguste linearibus aureis, stylo filamentis brevioribus apice subclavellato 3-lobulato.

A. *Bakeri*, *Hook. f.*, ex *W. Watson in Garden*, 1902, vol. i. p. 240, *cum ic. reduct.*

A very distinct species of *Agave*, purchased for the Royal Gardens, Kew, at the sale of the late Mr. Peacock's noble collection of Cactuses, Aloes, and Agaves in 1889, with no indication of its native country or collector. It flowered in the Mexican division of the Temperate House in January to March, 1902. I have named it after my friend, J. G. Baker, Esq., F.R.S., F.L.S., late Keeper of the Herbarium of the Royal Gardens, Kew, author of the Handbooks of the Amaryllidæ, Iridæ, Bromeliaceæ, and of other works that have been of signal service to Botanists and Horticulturalists.

Descr.—*Trunk* about four feet high, stout, erect, bearing an elongated crown six feet in diameter, of very numerous, spreading and recurved leaves, and a very shortly peduncled, dense-flowered cylindrical raceme of nearly nine feet high. *Leaves* three feet long by five inches broad at the middle, narrowed towards the base, terminated by a spine an inch long, glaucous-green, with a quite entire, narrow, purple margin, coriaceous, slightly concave above, and convex beneath; young leaves erect, crowded round,

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and concealing the peduncle and base of the raceme. *Raceme* strict, columnar, golden-yellow from the number and size of the anthers. *Bracts* as long as the flowers, tapering from a broad, pale green, striate base to a very slender, almost filiform tip; bracteoles half an inch long, triangular-ovate, about as long as the very stout pedicels, membranous, white, streaked with red. *Ovary* an inch long, narrowly oblong. *Perianth-tube* as long as the ovary, infundibular, six-grooved; segments an inch long, linear-oblong, revolute, tip rounded, dorsally green, very pale, almost white within, with a median, darker green band down the middle. *Filaments* two inches long; anthers an inch long, very narrowly linear, bright yellow. *Style* shorter than the filaments, tip obscurely three-lobed.—
J. D. H.

Figs. 1 and 2, flowers of the *natural size*, with bracts and bracteoles; 3 and 4, anthers; 5, apex of style:—*enlarged*.



LATHYRUS PUBESCENS.

Native of Temperate S. America.

Nat. Ord. LEGUMINOSÆ.—Tribe VICIÆ.

Genus LATHYRUS, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 526.)

LATHYRUS pubescens; frutex molliter pilosus, 3-5-pedalis, diffuse ramosus, ramis ramulis pedunculisque alte 4-costatis, foliis bi-rarius 4-foliolatis, foliolis 1-2½ pollicaribus ellipticis oblongis v. oblongo-lanceolatis acutis subtus 3-5-costatis, petiolo brevi v. elongato, stipulis latis foliaceis semi-sagittatis, cirrhis elongatis trifidis, pedunculo valido 4-6-poll. longo rigido, racemo multi-laxe- v. densifloro, floribus 1-1¼ poll. latis breviter pedicellatis, calycis ¼ poll. longi tubo late campanulato, basi postice gibbo, dentibus 2 superioribus acutis 3 inferioribus longioribus longe acuminatis, vexillo orbiculari emarginato violaceo, lateribus recurvis, alis late oblique falcatis patulis fere albis, carinæ parvæ incurvæ petalis apices versus rubris, stylo apice incrassato ad medium puberulo, legumine 2-2½-pollicari lineari ¼ poll. lato acuto pubescente, seminibus parvis ellipsoideis ad ¼ poll. longis.

L. pubescens, *Hook. & Arn. Bot. Beech. Voy.* p. 21, et in *Hook. Bot. Misc.* vol. iii. p. 198 (*non tab. nostr. 3996*). *Hook. f. Fl. Antarct.* vol. ii. p. 259 (*excl. cit. Bot. Mag.*). *C. Gay, Fl. Chil.* vol. ii. p. 148. *Benth. in Mart. Fl. Bras.* vol. xv. pars I. p. 114. *André in Rev. Hortie.* vol. lxxvii. (1895) p. 40, cum ic. col.

L. acutifolius, et *L. petiolaris*, *Vogel, in Linnæa*, vol. xiii. (1839) pp. 27, 29.

L. macropus, *Gillies, ex Hook. et Arn. in Hook. Bot. Misc. l.c.*

Orobus pubescens, *Alef. in Bonplandia*, vol. ix. (1861) p. 143.

Lathyrus pubescens is very closely allied to *L. tomentosus*, Lamk., a native of S. Brazil and Buenos Ayres, which was figured under this name (*pubescens*) tab. 3996 of this work. According to Bentham, l.c., *L. tomentosus* differs from *L. pubescens* in being taller, and having broader leaflets and stipules, and fewer, rather smaller flowers; differences which are difficult of recognition in herbarium specimens. A far more marked distinction between these species, as shown by the two plates in this work, is the glaucous blue colouring of tab. 3996 (*tomentosus*), and the dark green of 7891 (*pubescens*). Both appear to be very variable plants in the size of the leaflets, and number and size of the flowers and stipules. It is further to be observed, that Mr. André describes his plant as having glaucescent foliage.

Lathyrus pubescens has rather a wide distribution in extra-tropical South America, from Valparaiso to Chiloe in Chili, and from Monte Video to Banda Oriental and Parana in the east. Mr. André, who was the first to cultivate it in Europe, in his garden at La Croix, in Touraine, from seeds sent by Mr. Cantana from Uruguay, describes it as forming festoons of glaucescent leaves and lilac flowers covering the branches of shrubs three to five feet high. C. Gay, in his "Flora of Chili," described the corolla as yellow (*aurea*), but this must be an oversight.

The specimen here figured was from a plant presented in 1900 to the Royal Gardens, Kew, by W. Gumbleton, Esq., of Belgrove, Queenstown, which flowered in a cool house in April, 1902.

Descr.—A softly hairy, diffusely branching shrub. *Stem* and branches and peduncles four-angled, the angles forming stout ribs. *Leaves* with one, rarely two pairs of leaflets; petiole produced into a stout, trifid tendril; leaflets sessile, one to two and a half inches long, elliptic, oblong, or oblong-lanceolate, acute, dark green, strongly ribbed beneath; stipules semisagittate, very variable in size and breadth. *Peduncle* long or short, stout, stiff, bearing a short, lax- or dense-flowered raceme of large, shortly pedicelled flowers, variable in size, sometimes an inch and a quarter broad. *Calyx-tube* broadly campanulate, five-toothed; two upper teeth short, deltoid, three lower much longer, narrowed into subulate points. *Standard* orbicular, notched at the tip, violet-blue, margins recurved. *Wing-petals* broad, spreading, pale lilac dorsally, nearly white in front. *Keel* much smaller, petals falcately curved, white, with red tips. *Pod* two to two and a half inches long, linear, about one-third of an inch broad; acute; valves hairy, flat. *Seeds* very small, ellipsoid.—*J. D. H.*

Fig. 1, calyx laid open and stamens; 2, keel petal; 3 and 4, anthers; 5, pistil; 6, legumes; 7 and 8, seeds:—*all enlarged, except figs. 6 and 7.*

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BOTANICAL MAGAZINE.

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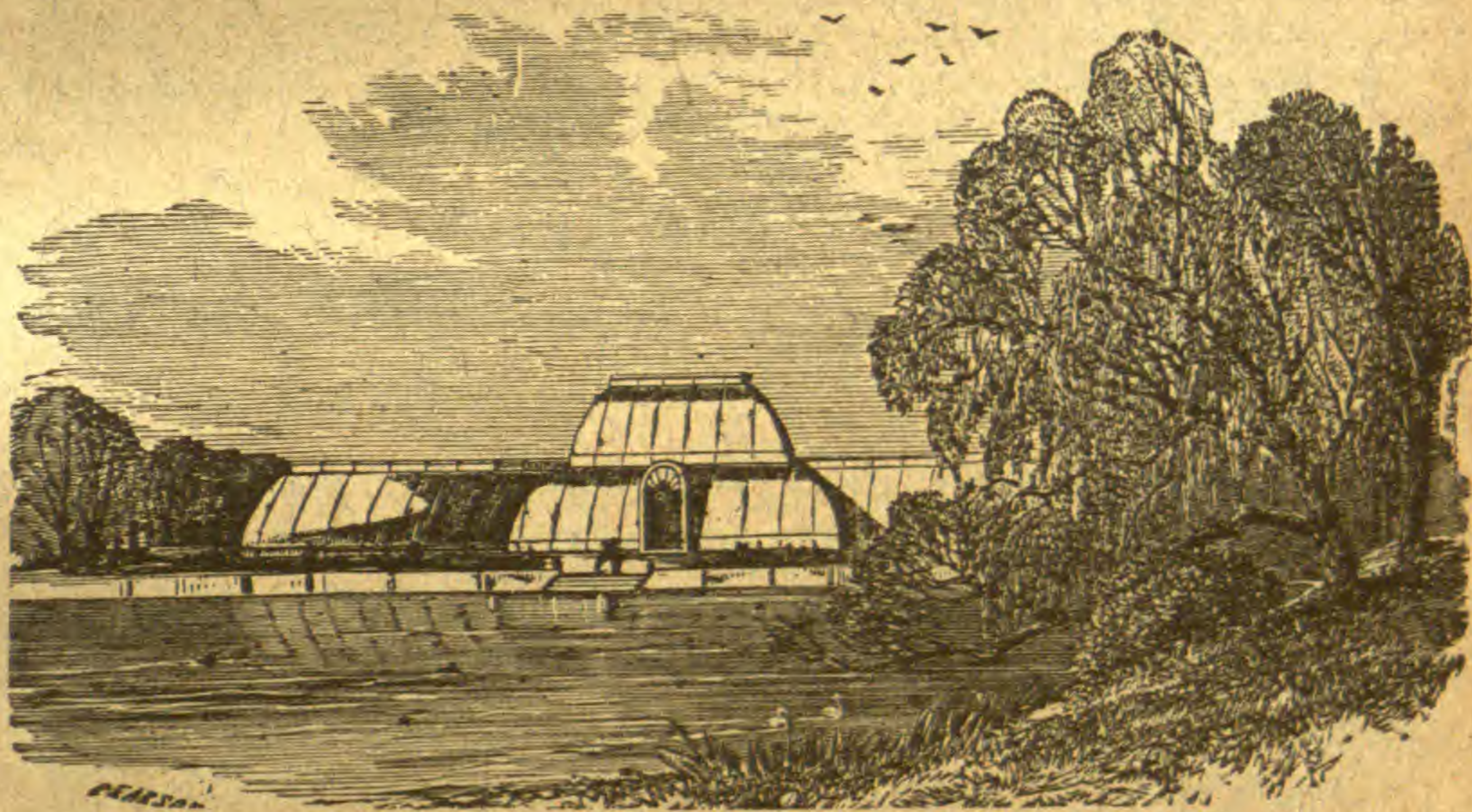
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TAB. 7892.

RODGERSIA PINNATA.

Native of China.

Nat. Ord. SAXIFRAGACEÆ.—Tribe SAXIFRAGÆÆ.

Genus RODGERSIA, A. Gray; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 635.)

RODGERSIA *pinnata*; herba elata, 6-pedalis, rhizomate crassissimo brevi, caule ascendente simplici fistuloso, collo nodisque sericeo-pilosis, foliis digitatim impari-pinnatis radicalibus longe petiolatis, foliolis bi-tri-jugis amplis 6-8-pollicaribus obovato-lanceolatis acuminatis inæqualiter argute dentatis multinerviis basi angustatis foliis superioribus digitatim 3-5-foliolatis, foliolis basi angustioribus, inflorescentia terminali 1-2-pedali erecta cymoso-paniculata ramosissima, ramis ramulisque hirtellis roseis, floribus breviter pedicellatis $\frac{1}{2}$ poll. diam. odoratis, calycis lobis ovatis subacutis extus roseis intus albis, staminibus 10 sepalis subæquilongis, antheris ovoideis purpureis connectivo breviter producto obtuso, ovarii carpellis conicis in stylos crassos attenuatis basi connatis.

R. *pinnata*, Franch. *Pl. David.* vol. ii. p. 214, in nota. Henry in *Gard. Chron.* 1902, vol. ii. p. 132, fig. 44.

ASTILBE *pinnata*, Franch. *Pl. Delav.* p. 231.

The genus *Rodgersia* is very closely allied to *Astilbe*, differing chiefly, if not wholly, in the foliage, its leaves being digitately pinnate, those of *Astilbe* ternately bipinnate. One species has been already figured in this work, *R. podophylla*, A. Gray, t. 6691, a native of Japan, upon which the genus was founded; it has digitately five-foliolate leaves, very small, yellowish-white flowers, slender filaments, didymous anthers, and a depressed, orbicular ovary. In an excellent article upon *Rodgersia*, by Mr. Henry, in the *Gardeners' Chronicle*, the genus is described as consisting of four species, *R. podophylla*, A. Gray, *R. pinnata*, Franch., *R. æsculifolia*, Batal. in *Act. Hort. Petrop.* vol. xiii. p. 96, a native of China, and *R. Henrici*, Franch. in *Rev. Hort.* 1897, p. 174, a species brought by Prince Henry of Orleans from Western Yunnan. In that article Mr. Henry describes the leaves of *R. pinnata* as quasi digitate, consisting of three leaflets ternately disposed, then two pairs of opposite leaflets, and a terminal solitary petiolulate leaflet; when only six leaflets are present they are disposed in two ternate clusters.

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The upper leaves on the plant are simply ternate or digitately five-foliolate.

R. pinnata appears to be a common plant in the mountain region of Yunnan, at elevation of seven thousand to eight thousand feet, growing in shaded places by water courses, where it was first found by the Abbé Delavay in 1883. Seeds of it were sent to the Royal Gardens, Kew, by Mr. Henry, in 1898, from which plants were raised that flowered in the Rock Garden in July, 1902. The flowers have a delicate, angelica-like odour (Henry).

Descr.—A tall, unbranched herb, with a large horizontal rootstock. *Stem* hollow, silkily hairy at the leaf axils. *Leaves* long-petioled, digitately pinnate; petiole stout; leaflets five to nine, towards the apex of the petiole, six to eight inches long, obovate or oblanceolate, acute, coarsely unequally toothed, narrowed to the base, very many-nerved; lateral leaflets usually four to six in opposite pairs or threes, terminal usually three, digitate, leaf-like. *Flowers* in a large, sparsely hirsute, much-branched panicle; rachis and branches rose-red, pedicels very short. *Calyx* puberulous, lobes ovate, sub-acute, externally red, white within. *Petals* 0. *Stamens* ten, about as long as the calyx-lobes; anthers ovoid, purple.—*J. D. H.*

Fig. 1, flower; 2 and 3, stamens; 4, ovary:—*all enlarged.*



SEMPERVIVUM URBICUM.

Native of the Canary Islands.

Nat. Ord. CRASSULACEÆ.

Genus SEMPERVIVUM, Linn.; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 660.)

SEMPERVIVUM (*Æonium*) *urbicum*; fruticosum, caule erecto-1-3-pedali robusto cylindraco inferne nudo, cortice cinereo, cicatricibus rhomboideis tessellato, foliis apicem versus caulis dense rosulatis 4-6 poll. longis 1-1½ poll. latis anguste spathulatis cuspidatis crassis glabris ciliato-serrulatis sessilibus, v. basi in petiolum tetragonum angustatis pallide viridibus, subtus costa lata percursis, panicula magna pyramidali 2-3-ped. alta, ramis patenti-decurvis gracilibus basi foliaceo-bracteatis longe nudis apices versus ramulosis et foliis paucis parvis ovatis instructis viridibus multifloris, floribus ¾ poll. diam. breviter pedicellatis pallide aureis, calyce cupulari breviter 8-10-dentato glaberrimo, petalis 8-10 oblongo-lanceolatis acutis, filamentis glabris filiformibus ima basi dilatatis, antheris oblongis apiculatis, disci glandulis quadratis, carpellis ad 10 erectis oblongis viridibus in stylos graciles ovario æquilongis attenuatis.

S. urbicum, *Chr. Smith, ex Hornem. Suppl. Hort. Hafn.* p. 60 (non Lindl.) *Haw. in Phil. Mag.* 1827, p. 125. *Buch, Phys. Besch. Canar. Ins.* p. 177. *DC. Prodr.* vol. iii. p. 411.

Æonium urbicum, *Webb & Berth. Phytogr. Canar.* vol. i. p. 194, t. 29.

The Atlantic Islands are remarkable for the number of indigenous species of *Sempervivum* which they contain, upwards of forty being enumerated in the "Index Kewensis" as natives of Madeira and the Canary Islands; a singular fact when it is considered that only one species has hitherto been collected in the adjacent territory of Morocco, and that a very different plant from any Canarian. On the other hand, nine species of *Sedum* are recorded from Morocco, and only one, the Mediterranean *S. rubens*, DC., from the Canary Islands.

Sempervivum urbicum is described by Webb as inhabiting rocks, walls, and roofs in the sylvan region of Teneriffe. The specimen here figured was presented to the Royal Gardens, Kew, by Mr. Van den Bosche, of Tirlemont, Belgium, in 1901. It flowered in the Succulent House in May, 1902.

Descr.—*Stem* erect, three feet high, simple, stout, cylindric, covered with rhomboidal leaf-scars. *Leaves*

many, rosulate on the top of the stem, four to six inches long by one and a half broad, narrowly spatulate, cuspidate, very thick, fleshy, smooth, pale green, nerveless, margins erosely serrulate, sessile, or base contracted into a short, stout petiole. *Panicle* very large, pyramidal, three feet high, and nearly as broad; branches very many, close-set, spreading and decurved, with fleshy, oblong bracts at the base, naked below, bearing towards the terminal cymosely branched inflorescence a few small, ovate, sessile, fleshy leaves. *Flowers* shortly pedicelled, three-quarters of an inch broad. *Calyx* cupular, shortly eight- to many-toothed, glabrous, green. *Petals* lanceolate, acute, pale yellow. *Filaments* slender, dilated at the base; anthers small, oblong, apiculate. *Disk-glands* quadrate. *Carpels* ten; styles slender, erect, as long as the narrowly oblong ovary. —J. D. H.

Fig. 1, flower with the petals removed; 2, petals and stamens; 3, carpel:—*all enlarged*; 4, reduced view of whole plant.



M.S. del, J.N. Fitch lith.

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SPHEDAMNOCARPUS PRURIENS.

Native of South Africa.

Nat. Ord. MALPIGHIACEÆ.—Tribe BANNISTERIÆ.

Genus SPHEDAMNOCARPUS (*Planch. ex Benth. & Hook. f. Gen. Plant. vol. i. p. 256*).

SPHEDAMNOCARPUS *pruriens*; frutex alte scandens, ramulis tomentellis, foliis oppositis 1-4 poll. longis breviter petiolatis ovato-oblongis supra glabris subtus marginibusque tomento sericeo argenteis apice rotundatis mucronatis basi rotundatis cordatisve, petiolo supra medium biglanduloso, floribus subcorymbosis 1-1½ poll. latis, pedunculis 1-1½-pollicaribus sericeis supra medium articulatis et bibracteolatis, calycis segmentis ad ½ poll. longis oblongis apice rotundatis dorso sericeis fructu paulo auctis, petalis subæqualibus ad ½ poll. longis breviter unguiculatis orbicularibus aureis marginibus crispatis, filamentis calyce æquilongis basi connatis, antheris majusculis connectivo rubente, ovario 3-lobo hirsuto, stylis elongatis divaricatis, samaris 2-3 sericeis facie interiore plana receptaculo applicata lateralibus inflatis, ala ad ½ poll. longa.

S. pruriens, Szyszyl. *Polypet. Rehm. Enum.* (1888) p. 2.

Acridocarpus pruriens, A. Juss. in *Arch. Mus. Paris*, vol. iii. (1843), p. 492.
Harv. & Sond. Fl. Cap. vol. i. p. 232. *Walp. Rep.* vol. v. p. 289.

It is remarkable that of the great Natural Order of *Malpighiaceæ*, which consists of about 50 genera and 600 species, many of them of great beauty, only eight, including that here figured, should have found their way into the *Botanical Magazine*. The others are *Malpighia glabra*, Linn. t. 813, *Hiræa Simsiana*, A. Juss. (*M. volubilis*, Sims, t. 809), *Byrsonima lucida*, DC. (*M. lucida*, Sw., t. 2462), *Heteropteris chrysophylla*, H. R. t. 3237, *Acridocarpus natalitius*, A. Juss. t. 5738, *Stigmatophyllum heterophyllum*, Hook. t. 4104, and *S. littorale*, A. Juss. t. 6632. The reason for their being seldom cultivated, and hence rarely figured from living plants, is that they are for the most part tropical, rambling, woody climbers, unsuitable for cultivation in an ordinary stove.

The genus *Sphedamnocarpus* is a considerable one. There are as many as ten species of it in the Kew Herbarium, including several undescribed ones. With the exception of one Madagascar species, and *S. pruriens*, all are from tropical Africa. *S. pruriens* is a native of Natal,

the Transvaal, Rhodesia, and Matabeleland, and of Uitenhage, in the Cape Colony; seeds of it were sent from the latter district to the Royal Gardens, Kew, in 1899, by Mr. Charles Howlett, now Curator of the Botanic Gardens of Graaf Reinet, formerly of the Royal Gardens, Kew, a plant raised from which flowered in the Temperate House in October, 1902.

Descr.—A lofty, climbing shrub, with silkily tomentose branches, leaves beneath, peduncles, pedicels, and calyces. *Leaves* one to four inches long, opposite, shortly petioled, ovate-oblong, obtuse, tip mucronate, base rounded or cordate; petiole short, biglandular above the middle. *Flowers* sub-corymbosely clustered at the ends of the branches, an inch to an inch and a half broad, golden-yellow; peduncles an inch long or more, bibracteolate above the middle. *Sepals* oblong, tips rounded, enlarged in fruit. *Petals* sub-equal, shortly clawed, orbicular, margins crisped. *Filaments* as long as the sepals, connate at the base. *Ovary* hirsute, styles divaricate. *Fruit* of two or three dry, broadly winged, indehiscent carpels; wings about half an inch long, obliquely obovoid, coriaceous.—*J. D. H.*

Fig. 1, peduncle, bracteoles, and bract; 2, flower with the petals removed; 3 and 4, anthers; 5, pistil; 6, vertical section of ovary; 7, forked hairs of tomentum; 8, fruit from herbarium specimen:—all but fig. 1 *enlarged*.



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HEBENSTRETIA COMOSA.

Native of S. Africa.

Nat. Ord. SELAGINEÆ.

Genus HEBENSTRETIA, Linn.; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 1127.)

HEBENSTRETIA (*Euhebenstretia*) *comosa*; perennis, erecta, fere glaberrima, ramosa, caule robusto tereti folioso, ramulis puberulis, foliis $\frac{1}{2}$ -2-pollicaribus sessilibus lineari-oblongis-lanceolatisve subacutis acuminatisve grosse acute serratis, spicis elongatis 2-6 poll. longis densifloris, bracteis ovato-lanceolatis corollæ tubum subæquantibus herbaceis glabris, calyce oblongo-ovoideo ad $\frac{1}{6}$ poll. longo 2-nervi costam versus herbaceo, corolla $\frac{1}{3}$ poll. longa, alba v. pallide flava, fauce rubro, lobis subæquilongis 2 interioribus angustioribus.

H. comosa, Hochst. in *Flora*, vol. xxviii. pars I. (1845) p. 70; *Beitr. Fl. Cap. und Natal*, p. 134. Choisy in DC. *Prodr.* vol. xii. p. 5. Rolfe in *Dyer Flor. Cap.* vol. v. p. 99.

H. comosa, var. *serratifolia*, Rolfe in *Gard. Chron.* 1892, vol. ii. pp. 34, 188.

Hebenstretia is a large African genus, of which thirty species have been described in the *Flora Capensis*, and there are others in tropical Africa, some from as far north as Abyssinia. Two have been previously figured in this work. *H. dentata*, L., t. 483, and *H. fruticosa*, Thunb. t. 1970. *H. comosa* has an extended S. African range, from Port Natal, where it is found on the plains near Durban, at the level of the sea, extending to Pilgrim's rest, in the Transvaal, and Griqualand, at elevations of four thousand feet.

The genus was named by Linnæus in honour of Professor John Ernst Hebenstreit, Professor of Botany in Leipzig, who in 1740 proposed a classification of plants according to their fruit.

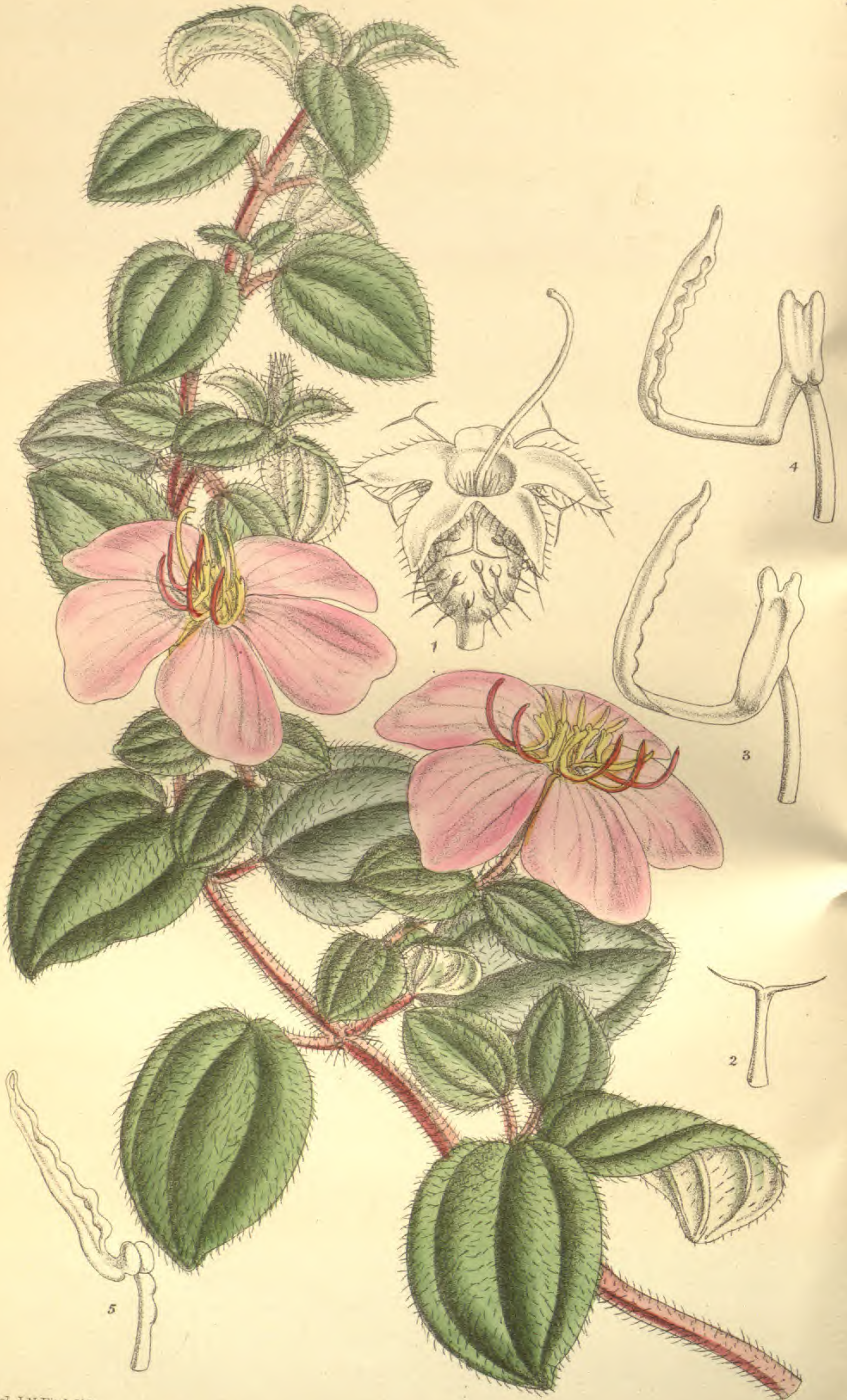
H. comosa was, according to a statement in the *Gardeners' Chronicle*, by Messrs. Dammann, of San Giovanni, Teduccio, Italy, introduced by their firm into Europe in 1889, and is entered in their catalogue of plants for that year. It was flowered by Mr. Gumbleton at Belgrove, Queenstown, in 1892. The specimen here figured was communicated by Messrs. Sutton, of Reading, in September, 1902,

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when specimens were also flowering in the Royal Gardens, Kew.

Descr.—An erect, branching, nearly glabrous herb, two to three feet high. *Stem* rather stout, angular, leafy; branchlets puberulous. *Leaves* half an inch to two inches long, alternate, sessile, linear-oblong or -lanceolate, obtuse, acute or acuminate, coarsely serrate, rather thick in texture, midrib very stout beneath. *Flowers* small, in erect, dense, cylindric spikes, two to six inches long, terminating the stem and branches, about one-third of an inch long; bracts as long as the corolla-tube, ovate-lanceolate, acuminate, herbaceous, green, persistent. *Calyx* about one-sixth of an inch long, of two very unequal lobes, unilaterally connate, the larger boat-shaped, finely acuminate. *Corolla-tube* very slender, open for two-thirds of its length; limb yellow, with a large, red, thickened area in the throat, four-lobed; lobes oblong, tips rounded, the two inner the narrower. *Anthers* large, linear-oblong. *Ovary* oblong, with a small disk-gland at the base; style slender.—*J. D. H.*

Fig. 1, calyx; 2, corolla and stamens; 3 and 4, anthers; 5, ovary and disk-gland; 6, ovary; 7, transverse, and 8, vertical section of the same:—*all enlarged.*



TAB. 7896.

DISSOTIS MAHONI.

Native of Uganda.

Nat. Ord. MELASTOMACEÆ.—Tribe OSBECKIÆ.

Genus DISSOTIS, *Benth.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 746.)

DISSOTIS (Heterotis) *Mahoni*; tota hispido-pilosa, caule prostrato ramoso, foliis 1-1½ poll. longis oppositis rotundatis ovato-rotundatisve obtusis, petiolis ¼-⅓ poll. longis, floribus ad apices ramulorum solitariis 2 poll. latis, pedicellis foliis brevioribus, calycis hemisphærici non plumosi tubo setis rigidis simplicibus basi bulbosis instructo lobis 5 ovato-oblongis subacutis, sinu inter lobos appendice filiformi apice bifurcato ramis divaricatis instructo, petalis oblique obovatis roseo-purpureis, staminorum majorum connectivo antice in appendicem elongatum bituberculatum antice concavum producto, minorum appendice simpliciter didymo, ovario hispido tubo calycis profunde immerso.

D. Mahoni, *Hook. f.*

The *Dissotis* here figured so closely resembles the widely distributed tropical African *D. plumosa*, *Hook. f.* (in *Oliv. Fl. Trop. Afr.* vol. ii. 452), in habit, hairiness, foliage and flowers, that I long hesitated before giving it a new specific name. I find, however, in all the specimens of that plant which I have examined, whether from East, West, or Central Africa, that the bristles of the calyx-tube, and the arms of the processes between the calyx-lobes are plumose with stellate hairs (whence its specific name) of which there are no traces in *D. Mahoni*.

The genus *Dissotis* is a large one, upwards of fifty species having been described, all tropical African, except one, which is a native of Natal. Two have been previously figured in this Magazine, *D. incana*, Triana (*Osbeckia canescens*, *Grah.*), t. 3790, and *D. Irvingiana*, *Hook.* t. 5149.

Seeds of *D. Mahoni* were sent to the Royal Gardens, Kew, in 1901, from Uganda, by Mr. John Mahon, plants raised from which flowered in a stove in September, 1902. I have the pleasure of naming it after its discoverer, formerly at Kew, now Curator of the Botanic Station at Uganda.

Descr.—Whole plant, except the flowers, hispidly hairy.

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Stems six to eight inches long, prostrate, rather stout, obscurely tetragonous, branching, leafy. *Leaves* opposite, shortly petioled, one to one and a half inches long, orbicular or orbicular-ovate, sub-acute, base rounded; nerves deeply impressed above, stout beneath. *Flowers* solitary on the ends of the branches, shortly pedicelled, two inches broad. *Calyx-tube* hemispheric, armed with rigid, bulbous-based bristles; lobes ovate, acute; sinus between the lobes armed with a rigid, forked appendage, arms of the fork divaricate. *Petals* obliquely obovate, rose-purple. *Connective* of the larger stamens elongate, bifid or two-lobed at the base; of the smaller reduced to two tubercles. *Ovary* hispid, sunk deep in the calyx-tube.
—*J. D. H.*

Fig. 1, calyx and style; 2, process from between the calyx-lobes; 3 and 4, larger stamens; 5, smaller stamen:—*all enlarged.*

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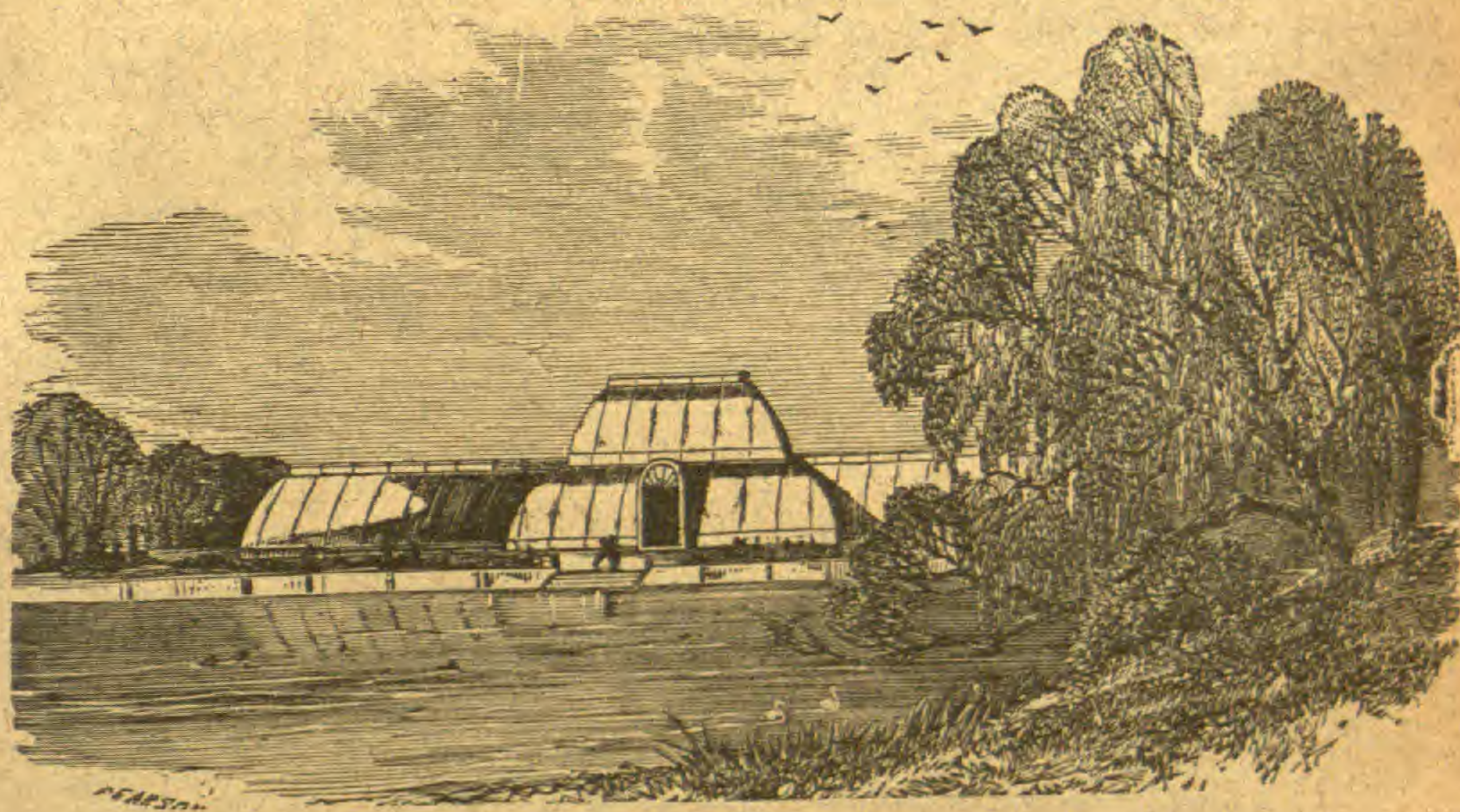
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TAB. 7897.

CLEMATIS MEYENIANA.

Native of China.

Nat. Ord. RANUNCULACEÆ.—Tribe CLEMATIDÆÆ.

Genus CLEMATIS, Linn.; (*Benth. & Hook. f. Gen. Plant. vol. i. p. 3.*)

CLEMATIS (Flammula) *Meyeniana*; frutex alte scandens, sempervirens, glaber v. parce pubescens, cortice fusco-purpureo, foliis 3-foliolatis, foliolis petiolulatis 2-4½ poll. longis coriaceis ellipticis ovatis oblongis lanceolatisve integerrimis obtusis acutis acuminatisve 3-nerviis supra nitidis saturate viridibus subtus glabris puberulisve basi rotundatis v. cordatis, paniculæ effusæ laxifloræ ramulis trichotomis basi nudis v. bracteis 1-3 coriaceis integris lobatisve auctis, alabastris oblongis pallide flavis, floribus 1½ poll. diam., sepalis lineari-oblongis apice bidentatis albis marginibus tomentellis, staminibus sepalis duplo brevioribus, antheris linearibus aureis filamenta glabra subæquantibus, achæniis ¼ poll. longis obovoideis compressis villosis flavo-brunneis, cauda plumosa 1½-pollicari.

C. Meyeniana, Walp. in *Nov. Act. Nat. Cur. Misc. vol. xix. Suppl. i. (1843) p. 297*; *Repert. Bot. vol. v. p. 3.* Benth. in *Hook. Kew Gard. Misc. vol. iii. (1851) p. 256*; *Fl. Hongk. p. 6.* Maxim. in *Mel. Biol. vol. ix. p. 597.* Hemsl. in *Journ. Linn. Soc. Bot. vol. xxiii. (1886) p. 5.* Seem. *Bot. Voy. Herald, p. 361.*

C. Armandi, Franch. *Pl. David. vol. ii. p. 2, t. 2.*

C. oreophila, Hance in *Walp. Ann. vol. ii. p. 3.*

C. hedysarifolia, *Bot. Reg. t. 599, non DC.*

C. hedysarifolia, DC. var. α , β , δ , Kuntze, *Monogr. Gatt. Clem. p. 152.*

Clematis Meyeniana is a very variable plant, and it is not surprising that so excellent a Chinese botanist as Mr. Hance should have described it under another name (*C. oreophila*), when, according to Walpers, the founder of the species, the panicles are said to be shorter than the leaves and few-flowered, and the sepals rufous externally. The figure in the *Botanical Register*, under the erroneous name of *C. hedysarifolia*, DC., an Indian species, is very good, but represents a form with flowers only an inch in diameter, with very pale anthers; it shows the bidentate tips of the sepals, which is overlooked by all other authors, who describe them as being acute. It appears to be a very common plant in S.E. China, from the province of Chekiang to Kwantung, and is found also in Cochin China, Formosa, and the Luchu Islands. In Hongkong it occurs in great abundance in almost every ravine, flowering in

JUNE 1ST, 1903.

May, and occasionally again in autumn, even so late as December. *C. Armandi*, Franch., from Moupine, is certainly only a form of *C. Meyeniana*, with small flowers and large bracts at the bases of the lower branches of the panicle.

C. Meyeniana was cultivated in the Nursery of Messrs. Colvile, in the King's Road, Chelsea, in 1822, whence procured was not then known. The specimen figured was from a plant received from Mr. C. Ford, Superintendent of the Hongkong Botanic Garden, in 1885. It flowers annually in the Temperate House.

Descr.—A tall, evergreen, glabrous or sparsely puberulous climber, with a purplish-brown bark. *Leaves* trifoliolate; leaflets two to three inches long, petiolulate, elliptic- or ovate-oblong or lanceolate, obtuse, acute or acuminate, quite entire, coriaceous, base rounded or cordate, three-nerved, dark green and glabrous above, pale and puberulous beneath. *Panicles* large, effuse, trichotomously branched, lax-flowered; bracts at the bases of the branches minute, rarely enlarged, coriaceous, entire or lobed. *Buds* oblong, pale yellow. *Flowers* an inch to an inch and a half across. *Sepals* linear-oblong, spreading, white, margins tomentose, tips two-toothed. *Stamens* about half as long as the sepals; anthers as long as the filaments. *Achenes* one-fourth of an inch long, obovate, flat, villous; style an inch and a half long, feathery.—*J. D. H.*

Fig. 1, flower; 2 and 3, stamens; 4, pistil; 5, achene:—*all enlarged*; 6, achene of *nat. size*.



LABURNUM CARAMANICUM.

Native of Greece and Asia Minor.

Nat. Ord. LEGUMINOSÆ.—Tribe GENISTEÆ.

Genus LABURNUM, Griseb.; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 481.)

LABURNUM (*Podocytisus*) *caramanicum*; frutex inermis, ramosus, glaberrimus, glauco-virens, ramulis erectis virgatis, foliis digitatim 3-foliolatis breviuscule petiolatis, foliolis breviter petiolulatis obovatis apice rotundatis apiculatis saturate viridibus basi acutis lateralibus $\frac{1}{2}$ -pollicaribus terminali fere duplo majore, racemis terminalibus elongatis erectis sæpius pyramidatim paniculatis laxifloris, floribus nutantibus, pedicellis $\frac{1}{4}$ poll. longis, bracteolis minutis subulatis, calyce pedicellis subæquilongis cupulari breviter bilabiato fusco-rubro, labio superiore 2- inferiore 3-dentato, petalis unguiculatis aureis subæquilongis, vexillo orbiculari ad $\frac{1}{2}$ poll. diam. ima basi cordato, alis oblongis obtusis, carinæ petalis incurvis acutis, filamentis omnibus connatis, legumine breviter stipitato lineari-oblongo plano papyraceo falcato apice rotundato 3-6-spermo subindehiscente marginibus undulatis superiore alato, seminibus parvis reniformibus estrophiolatis.

L. caramanicum, *Benth. & Hook. f. Gen. Plant.* l.c.*Cytisus caramanicus*, *Nym. Conspect. Fl. Europ.* p. 155. *Lavall. Arboret. Segrez.* p. 59.*PODOCYTISUS caramanicus*, *Boiss. & Heldr. Diagn. Pl. Or. Ser. I. pars ix.* p. 7. *Boiss. Fl. Orient.* vol. ii. p. 35.

The plant here figured was regarded by Boissier as generically distinct from the common Laburnum of our gardens and plantations, because of its erect branchlets and racemes, and membranous, sub-indehiscent, more broadly winged pods; to which might have been added the rounded apex of the latter and the very small seeds; but Mr. Bentham, the greatest authority on *Leguminosæ*, attached less value to these distinctions, and Boissier himself says of *Podocytisus*, "forsan non immerito a cl. Benth. & Hook., *Laburno* conjungitur, sed præter legumen papyraceum subindehiscens facies et inflorescentia ab eo abhorrent."

L. caramanicum has a wide range of distribution in the hilly region of the Balkan Peninsula, from Thessaly and Albania to Southern Greece; and is also a native of the Cilician Taurus. Plants of it were procured for the

Royal Gardens, Kew, from Mr. Transon in 1899, where it flowered in the Arboretum in October, 1902.

Descr.—A small tree, with subglaucous, green foliage, glabrous in all its parts; branchlets erect. *Leaves* shortly petioled, trifoliolate; leaflets very shortly petiolulate, obovate, apiculate; lateral half an inch long, terminal twice as large. *Racemes* shortly peduncled, erect, three to five inches long, many-flowered. *Flowers* three-quarters of an inch long, golden-yellow, nodding; pedicels a quarter of an inch long, bracteolate about the middle. *Calyx* cup-shaped, red-brown, two-lipped; upper lip two-toothed, lower three-toothed. *Petals* all clawed, about equal in length. *Standard* orbicular, half an inch in diameter, base cordate. *Wings* oblong, obtuse. *Keel-petals* acute. *Filaments* all united. *Pod* shortly stipitate, two to three inches long, by half an inch broad, flat, papyraceous, tip rounded, upper margin narrowly winged. *Seeds* few, about one-fifth of an inch long, reniform.—*J. D. H.*

Fig. 1, calyx laid open and stamens; 2, standard; 3, wing petal; 4, keel petal; 5, pistil; 6, pod; 7 and 8, seed:—*all enlarged, except 6 and 7.*—Nos. 6, 7 and 8 from Herbarium specimens.



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MIMOSA SPEGAZZINII.

Native of Argentina.

Nat. Ord. LEGUMINOSÆ.—Tribe EUMIMOSÆ.

Genus MIMOSA, Linn.; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 593.)

MIMOSA (Eumimosa) *Spegazzinii*; frutex gracilis, scandens, ramosus, 6-10-pedalis, spinis infra-foliaceis brevibus oppositis recurvis horridus, ramis ramulis petiolis pedunculisque strigillosis, foliis sensitivis bipinnatis, pinnis 2-pollicaribus breviter petiolulatis basi stipellatis, pinnulis 25-35-jugis ad $\frac{1}{3}$ poll. longis sessilibus contiguis lineari-oblongis obtusis acutisve apice mucronulatis 3-nerviis supra glabris subtus apicem versus adpresse pilosis marginibus setulis rigidis appressis instructis, stipulis ovato-lanceolatis acutis striatis ciliatis, capitulis 1 poll. diam. solitariis v. binis axillaribus v. in racemum terminalem dispositis, pedunculis brevibus v. elongatis, bracteolis cuneiformibus apice truncatis setosis, seta media elongata, corolla 4-loba, filamentis roseis, antheris aureis, legumine immaturo pollicari lineari valvis articulatis marginibus spinuloso-setosis.

M. *Spegazzinii*, *Pirotta in Ann. Inst. Bot. Rom.* vol. iii. (1887-8) p. 132, t. xiii.

The sensitive plant here figured is a native of Misiones, Argentine Republic. It was discovered there by the naturalist whose name it bears, who sent seeds to Professor R. Pirotta, of Rome, by whom it was described.

Seeds of it were obtained for the Royal Gardens, Kew, in 1900 from Dr. Hans Schinz, Director of the Botanic Garden, Zurich, a plant raised from which flowered freely in a stove in October, 1902. The leaves are sensitive, as in its ally, *M. pudica*, L., to which it is nearly allied. In Prof. Pirotta's description the stem is described as erect, and the filaments as pale violet.

Descr.—A scandent, much-branched, pubescent bush, six to ten feet high, with short, stout, opposite branches armed with recurved spines at the base of the petioles. *Leaves* bipinnate, sensitive; petiole about an inch long, bearing two pinnæ, each two to three inches long; pinnules very numerous, sessile, close set, about one-third of an inch long, oblong or linear-oblong, acute or acuminate, three-nerved, glabrous beneath, margins ciliolate with long bristles; stipules a quarter of an inch long, oblong-lanceolate, acute; stipellæ subulate. *Heads*

peduncled, an inch and a quarter in diameter, solitary or binate, rose-purple, axillary or arranged in a terminal, sessile, armed raceme six inches long; peduncles opposite, stout, half an inch long or longer. *Bracts* cuneiform, truncate, upper margin spinulosely lacerate. *Corolla* four-lobed. *Filaments* rose-red; anthers yellow. *Pods* an inch long, linear; valves jointed, spinulose.—
J. D. H.

Fig. 1, portion of branch with spines, stipules, and portion of a leaf; 2, bracteole; 3, corolla and stamens; 4, pistil:—*all enlarged*; 5, immature fruit from Prof. Pirotta's figure, of the *natural size*.



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DENDROBIUM MADONNÆ.

Native of New Guinea.

Nat. Ord. ORCHIDÆÆ.—Tribe DENDROBIEÆ.

Genus DENDROBIUM, *Ser.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 488.)

DENDROBIUM (Stachyobium) *Madonnæ*; pseudobulbis confertis 6-9 poll. longis inferne stipitiformibus, articulis inferioribus gracilibus vaginatis, basilari tuberoso, terminali elongato incrassato 2-4 poll. longo fusiformi sulcato 2-3-phyllo, foliis $1\frac{1}{2}$ -2 poll. longis sessilibus oblongis subcoriaceis obtusis, pedunculis terminalibus 1-2 poll. longis trifloris, pedicellis cum ovario pollicaribus, bracteis parvis oblongis subacutis, floribus nutantibus $2\frac{1}{2}$ poll. latis albis, sepalis $1-1\frac{1}{4}$ poll. longis oblongis acuminatis, lateralibus subfalcatis basi latioribus, petalis sepalis multo majoribus ad $1\frac{1}{2}$ poll. longis $\frac{3}{4}$ poll. latis obovato-spathulatis apiculatis, labello $\frac{3}{4}$ poll. longo, concavo explanato oblato obscure 3-lobo acuminato, lobis lateralibus juxta margines purpureo maculatis, disco basin versus virescente callo elongato bicarinato apice rotundato aucto.

D. (Stachyobium) *Madonnæ*, *Rolfe in Kew Bulletin, ined.*

The nearest ally, and it is a very near one, of *D. Madonnæ* is, as Mr. Rolfe points out, *D. Fairfaxii*, Rolfe (in *Gard. Chron.* 1889, i. 798) non F. Muell., a native of the New Hebrides, which differs in the narrower petals and lip. *D. Madonnæ*, on the other hand, is a native of New Guinea, whence it was introduced by Messrs. Sanders & Co., who flowered it in their Nursery in December, 1899, and to whom the Royal Gardens are indebted for the plant here figured.

Descr.—*Pseudobulbs* crowded, six to nine inches high, the lower internodes cylindric, slender, forming a stipes to the terminal, which is two to four inches long, fusiform and grooved; lowest internode tuberosus, obpyriform, one half to three-quarters of an inch long, smooth. *Leaves* two to three at the apex of the pseudobulb, one and a half to two inches long, sessile, oblong, obtuse, coriaceous. *Peduncles* terminal, one to two inches long, slender, three-flowered; pedicels with the ovary an inch long; bracts very small, acute. *Flowers* two and a half inches broad, nodding, white, with a few purple spots near the margins of the lateral lobes of the lip. *Sepals* one to one and a half inch long, oblong, acuminate; lateral broad at the

base, sub-falcate. *Petals* much larger than the sepals, obovate-spathulate, tip apiculate. *Lip* shorter than the sepals, concave, when spread out oblate, obscurely three-lobed, the midlobe cuspidate; disk suffused with green, and bearing towards its base an elongate grooved callus ending in a nob.—*J. D. H.*

Fig. 1, section of lip and column; 2, front view of column; 3, anther; 4, pollinia:—*all enlarged.*



PRIMULA MEGASEÆFOLIA.

Native of Asia Minor.

Nat. Ord. PRIMULACEÆ.—Tribe PRIMULÆÆ.

Genus PRIMULA, Linn.; (*Benth. & Hook. f. Gen. Plant. vol. ii. p. 631.*)

PRIMULA (*Aleuritia*) *megaseæfolia*; rhizomate crasso, foliis amplis 3-5 poll. longis 2-4 latis ovatis ovato-oblongis rotundatisve subcordatis obtusis integerrimis v. remote denticulatis convexis glaberrimis læte viridibus, marginibus nervisque subtus papilloso-hirtis, nervis nervulisque reticulatis supra impressis subtus elevatis, petiolis 2-3-pollicaribus scapisque 2-5-pollicaribus robustis hirtis, umbella multiflora 3 poll. diam., involucri foliis $\frac{1}{4}$ - $\frac{1}{3}$ poll. longis lanceolatis acuminatis pedicellisque $\frac{1}{2}$ - $1\frac{1}{4}$ poll. longis glaberrimis, calyce $\frac{1}{2}$ poll. longo paullo inflato teretiusculo 5-costato breviter acute 5-dentato, corollæ roseo-purpureæ tubo calyce longiore ore nudo, limbi $\frac{2}{3}$ poll. lati lobis obcordatis, capsula calyce paullo longiore, seminibus glabris angulatis minute tuberculatis.

P. megaseæfolia, Boiss. et Bal. in Bal. Pl. Pont. Exs. 1866. Boiss. Fl. Orient. vol. iv. p. 26. Gard. Chron. 1901, vol. i. p. 223, fig. 84.

The very remarkable Primrose here figured has hitherto been found only near Rizeh (or Rhizé) in Lazistan, a town on the S.E. shore of the Black Sea, forty miles east of Trebizond, where it was discovered by the famous collector, Balansa, growing in gullies at about one thousand feet above the sea. It is referable to the large section *Aleuritia*, Duby, characterized by the sides of the leaves being revolute in vernation, and it is placed by Boissier, "Flora Orientalis," next to *P. grandis*, Trautv., an imperfectly known Transcaucasian species, described as having leaves four inches long and three broad, a scape nearly a foot high, a very large, many-flowered umbel and linear-oblong corolla-lobes.

The specific name *megaseæfolia* refers to the resemblance in the foliage to the species of *Saxifraga* (*S. crassifolia*, L., *S. ligulata*, Wall., &c.), to which Haworth gave the generic name of *Megasea*.

The Royal Gardens, Kew, are indebted to Miss Willmott, of Warley Place, Great Warley, Essex, for the specimen figured, which flowered in a cool house in February of the present year.

Descr.—*Rootstock* stout, oblique, fibrilliferous. *Leaves*
JUNE 1st, 1903.

variable in form, ovate, ovate-oblong or orbicular, three to five inches long by four broad, glabrous, dark green above with deeply sunk nerves and nervules, pale beneath with strong papillose nerves, margin entire or remotely denticulate, papillose, base cordate; petiole two to three inches long, and scapes two to five inches long, both very stout, hairy. *Umbel* (sometimes two superposed) very many-flowered, three inches in diameter. *Bracts* one-third of an inch long, linear-lanceolate, acuminate, green, glabrous. *Pedicels* one half to one inch and a quarter long, slender, glabrous. *Calyx* half an inch long, terete, somewhat inflated, strongly five-ribbed; teeth short, acute. *Corolla-tube* longer than the calyx, mouth naked; limb two-thirds of an inch broad, varying from rose-red to crimson-purple; lobes obcordate. *Stamens* inserted about one-third way down the tube. *Style* extending nearly to the base of the anthers. *Capsule* rather longer than the capsule; valves revolute.—*J. D. H.*

Fig. 1, section of the corolla with stamens and pistil; 2, ovary; 3, calyx and capsule:—*all enlarged.*

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TAB. 7902.

SENECIO CLIVORUM.

Native of China and Japan.

Nat. Ord. COMPOSITÆ.—Tribe SENECTIONIDÆ.

Genus SENECIO, *Linn. (Benth. & Hook. f. Gen. Plant. vol. ii. p. 446.)*

SENECIO (*Ligularia*) *clivorum*; herba 4-5-pedalis, robusta, glabra v. inflorescentia plus minusve araneoso-tomentosa, foliis radicalibus longe petiolatis amplis 12-16 poll. latis reniformibus rotundato-cordatisve argute mucronulato-dentatis 3-5-plinerviis, nervis nervisque supra impressis subtus validis, caulinis paucis parvis petiolo late vaginante inflato, panicula maxima 6-8 poll. lata subcorymbosa, rachi ramis pedunculisque robustis ebracteata v. ramis inferioribus foliaceo-bracteolatis, capitalis 3-4 poll. latis, crasse pedunculatis, involucri ecalyculati basi rotundati subintrusi phyllis 8-10, $\frac{1}{2}$ poll. longis roseis linearibus crassis acutis obtusisve marginibus scariosis, receptaculo plano, ligulis 12-14 lineari-oblongis 1-1 $\frac{1}{2}$ poll. longis apice 2-3-dentatis aurantiacis, tubi fauce filamentis 5 anantheris instructis, disci floribus 5-lobis aurantiacis lobis revolutis, achæniis linearibus compressis levibus glabris, pappi setis rigidis scaberulis rufo-purpureis.

S. clivorum, *Maxim. in Bull. Acad. Pétersb. xv. (1871), p. 374, et Mél. Biol. vol. viii. p. 12. Franch. & Sav. Enum. Pl. Japon. vol. i. p. 247. Hemsl. in Journ. Linn. Soc. Bot. vol. xxiii. (1888) p. 451. Henry in Gard. Chron. 1902, vol. ii. p. 217 cum tabula sine numero.*

Ligularia clivorum, *Maxim. Mél. Biol. vol. vii. p. 555.*

Senecio clivorum is certainly the handsomest of all the herbaceous species of the genus, and will no doubt become a very conspicuous feature in the hardy herbaceous garden. It is referable to the section or subgenus *Ligularia*, and its nearest affinity is to the Japanese *L. Hodgsoni*, Hook. (*Bot. Mag. t. 5417*), which differs in having lobed, coarsely toothed leaves, and more numerous, pale yellow ray-florets. Both are remarkable for their very rigid red-purple pappus, of a totally different character from the soft, white pappus of typical *Senecio*.

Senecio clivorum varies much in the size of the flower-heads and ray-flowers, in the amount of pubescence on the inflorescence, and in the bracts of the involucre, which are obtuse, acute or acuminate. In the Chinese specimens, but not in the Japanese, I find the ray-corollas bearing five filaments (see fig. 1), representing the stamens of the disk-flowers, a character which has been observed in other species of the section. The species was dis-

covered in Japan by the late Prof. Maximovicz, growing in mountain meadows of Hakodate, at two thousand to seven thousand feet elevation, and has more recently been found in the Chinese provinces of Hupeh, Kansu and Szechuen. In 1900 plants of it were sent to Messrs. James Veitch & Sons from the mountains of Western Hupeh by their traveller, Mr. E. H. Wilson. In 1902 a plant of it was exhibited at the Royal Horticultural Society by Messrs. Veitch, who kindly supplied the specimen here figured.

Descr.—A robust herb four to five feet high, glabrous or the inflorescence more or less clothed with a cobweb-like tomentum. *Radical leaves* on long, stout petioles; blade reniform or orbicular-cordate, twelve to sixteen inches across, coarsely callous-toothed, three- or five-nerved from the base; nerves depressed in the upper surface, and raised on the lower. *Stem-leaves* few and relatively small; petiole with a large, inflated, stem-clasping sheath. *Inflorescence* loosely corymbose-paniculate, six to eight inches across; branches and peduncles thick, bractless or the lower branches with leafy bracts at the base. *Flower-heads* erect, three to four inches across. *Involucre* rounded, and broader at the base; bracts eight to ten, thick, red, linear, half an inch long, acute or obtuse, margin scarious. *Receptacle* flat. *Ray-flowers* twelve to fourteen, linear-lanceolate, one to one and a half inch long, minutely two- or three-toothed at the tip, orange-coloured. *Disk-flowers* orange, with exserted, dark brown anthers. *Achenes* linear, compressed, glabrous; bristles of the pappus rigid, rough, purple-red.—*J. D. H.*

Fig. 1, ray-flower with most of the ligule removed; 2, the same with the tube laid open showing the attachment of the barren stamens; 3, disk-flower; 4, hair of pappus; 5, anthers; 6, arms of style:—*all enlarged.*



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HELLEBORUS LIVIDUS.

Native of Majorca.

Nat. Ord. RANUNCULACEÆ.—Tribe HELLEBOREÆ.

Genus HELLEBORUS, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 7.)

HELLEBORUS (caulescentes) *lividus*; erectus, robustus, caule foliisque subtus pallide rubescentibus, foliis radicalibus simplicibus cordatis, caulinis trifoliolatis, foliolis ad 6 poll. longis sessilibus crasse coriaceis ovato-oblongis vel oblongo-lanceolatis integris lateralibus basi oblique semicordatis, terminali basi cuneato petiolulato, supra læte viridibus nervis subtus reticulatis, petiolo crasso, panicula ramosa pauciflora, bracteis ovato-oblongis majusculis serratis, floribus cernuis ad 2 poll. latis, sepalis rotundatis concavis intus pallide griseo-viridibus, petalis tubulosis, ore obliquo, viridibus, filamentis viridibus, antheris aureis, carpellis 4-6 coriaceis.

H. lividus, *Ait. ex Curt. Bot. Mag.* t. 72; *Ait. Hort. Kew.* ed. I. vol. ii. p. 272, ed. II. vol. iii. p. 361. *Willk. & Lange, Prodr. Fl. Hisp.* vol. iii. p. 974. *Trattin. Archiv.* tt. 205, 205a. *Colm. Enum. Pl. Penins. Hisp. Lusit.* vol. i. p. 69, excl. syn. *H. argutifolius*. *Schiff. Monogr. Helleb.* p. 63 (subspecies.)

H. lividus, var. *integrilobus*, *DC. Prodr.* vol. i. p. 47. *H. trifolius*, *Mill. Gard. Dict.* ed. VIII. n. 4 (non *Linn.*).

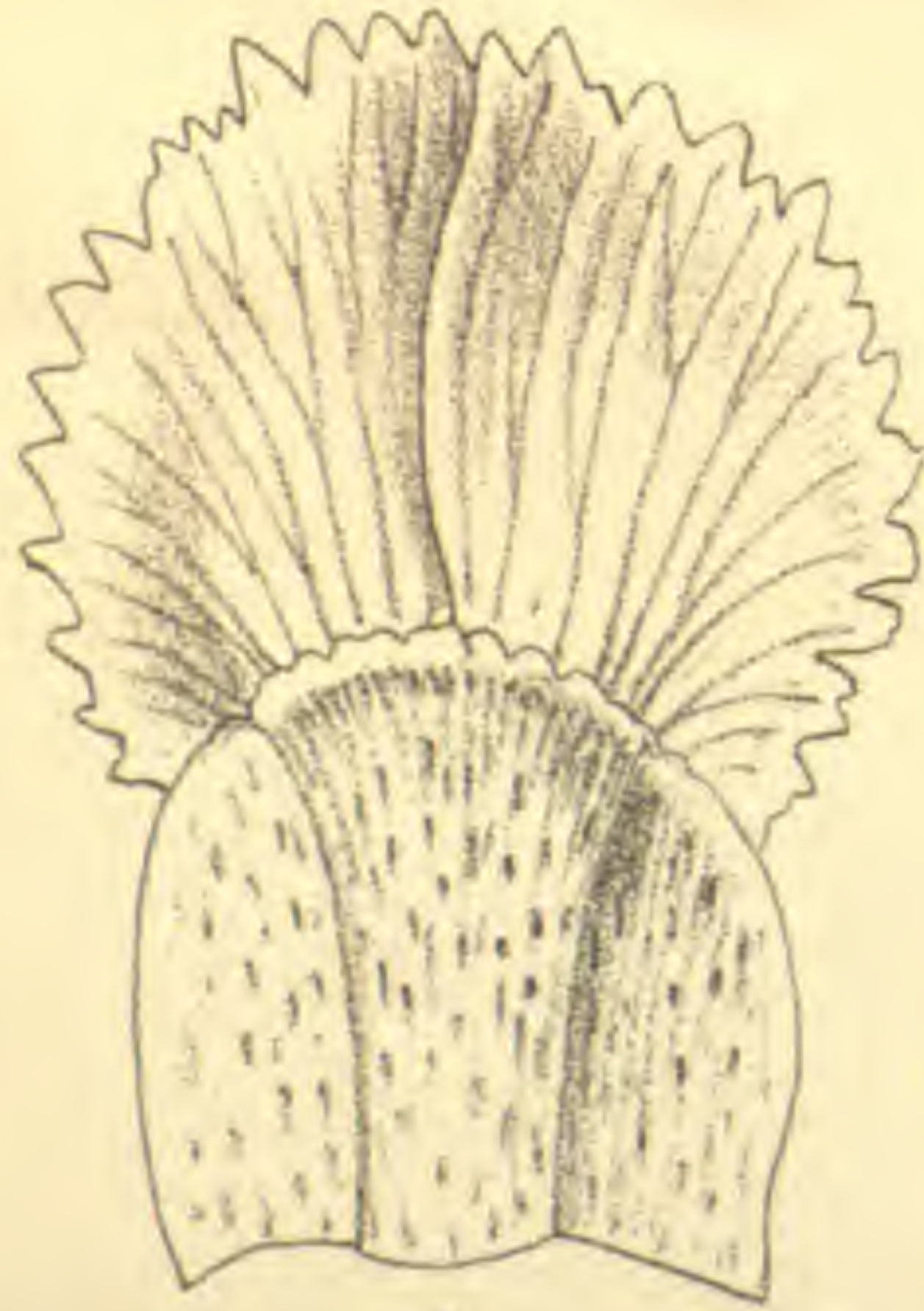
Helleborus lividus was first published and figured by Curtis in the *Botanical Magazine* in 1789, and he cites for it Aiton's "Hort. Kewensis," *ined.*, which work appeared in the same year. That figure is so unsatisfactory, and indeed inaccurate, representing the sepals as acute, that I have deemed it right to introduce a better, together with the full synonymy of the species as here restricted. When first published its native country was unknown, and remained so till after the date of the second edition of the "Hortus Kewensis" (1811). The plant had, however, been in cultivation in England since 1710, according to Aiton, who cites for it the "Philosophical Transactions of the Royal Society," n. 325, p. 48, implying that it was one of a selection of plants sent annually to that Society from the gardens of the Apothecaries' Company at Chelsea.

Botanically *H. lividus*, *Ait.*, is hardly separable from *H. corsicus*, *Willd.* (*H. argutifolius*, *Viv.*), and it has been included under that species by many authors, including Lindley (*Bot. Reg.* xxiv. t. 54); but from a horticultural standpoint they are quite distinct, as may be proved by a

comparison of our figure with Lindley's. The sharply, coarsely, prickly-toothed leaflets and yellowish green flowers characterize typical *H. corsicus*. Schiffner, the most recent (1890) monographer of the genus, says of *H. lividus*, Ait., that it was only known to him, in a wild state, from Majorca, Balearic Islands, but that it might possibly occur in Corsica and Sardinia, though he believed the records for those islands referred to typical *H. corsicus*. The specimen figured is from a plant brought by Miss Fanny Geoghegan to Dublin from Majorca in 1900. It flowered in February, 1902, and again this year, in the Botanic Garden of Trinity College, and I am indebted to Mr. F. W. Burbidge, the Curator, for excellent specimens sent both seasons.

Descr.—Under cultivation this is a robust plant, with thick, fleshy stems, more or less deeply tinged and mottled with red, as is also the under surface of the leaves. *Radical leaves* simple, cordate; *cauline* trifoliolate; leaflets thick, coriaceous, pale green above, ovate-oblong or oblong-lanceolate, about six inches long, entire or sometimes obscurely toothed, lateral sessile and semi-cordate at the base, terminal shortly petiolulate and cuneate at the base. *Flowers* about two and a half inches across, dull purple-grey, tinged with green, nodding, in panicles of about six to eight, overtopping the leaves. *Sepals* orbicular, concave, paler within. *Petals* tubular, with an oblique mouth, green. *Anthers* yellow. *Carpels* four to seven, coriaceous, tipped with the long, persistent style.—*J. D. H.*

Figs. 1 and 2, petals; 3, an anther; 4, gynæceum:—*all enlarged.*



2



1

TAB. 7904.

IRIS LUPINA.

Native of Armenia.

Nat. Ord. IRIDEÆ.—Tribe MORÆÆ.

Genus IRIS, Linn.; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 686.)

IRIS (*Oncocyclus*) *lupina*; rhizomate carnosio breviter repente, foliis 5-6 linearibus suberectis pallide viridibus, pedunculo monocephalo foliis brevioribus, spathæ valvis magnis lanceolatis acuminatis, perianthii tubo elongato, segmentis exterioribus reflexis obovato-cuneatis sordide flavo-viridibus, venis copiosis lilacino-brunneis percursis, in limbi medio maculâ pilosa fusca decoratis, segmentis interioribus majoribus, arcuatis obovato-unguiculatis, styli cristis latis magnis, fructu oblongo-trigono, seminibus rubro-brunneis conspicue strophiolatis.

I. lupina, Foster in *Gard. Chron.* 1887, p. 738.

This very interesting new *Iris* was sent to Professor (Sir Michael) Foster about 1886, from the mountains a few miles south of Kharput, in Turkish Armenia, by Mrs. Barnum, of the American Mission, who also discovered the *Iris*, which has been named after her, as well as other novelties. It was also gathered by Sintenis, and distributed in his sets of herbarium specimens. It belongs to the section *Oncocyclus*, and is nearly allied to the old, well-known *Iris susiana* (*Bot. Mag.* t. 91). The Armenians call it the "Wolf's Ear," from the tawny tips of the outer segments as they emerge from the opening bud, and this suggested to Professor Foster its specific name. Our drawing was made from plants presented by him to the Royal Gardens, Kew, which flowered for the first time in June, 1887.

Descr.—*Rootstock* fleshy, short, creeping. *Leaves* about six in a tuft, linear, weak, sub-erect, pale green, channelled down the face, six inches to a foot long at the flowering time. *Peduncle* erect, one-headed, shorter than the leaves. *Spathe-valves* two, lanceolate, acuminate, pale green, the outer three inches long. *Perianth-tube* about two inches long; outer segments obovate-cuneate, reflexing, three inches long, marked with copious, fine, lilac-brown, anastomosing veins on a dull, yellowish-brown ground-work, and in the centre with a large pilose spot of dark brown;

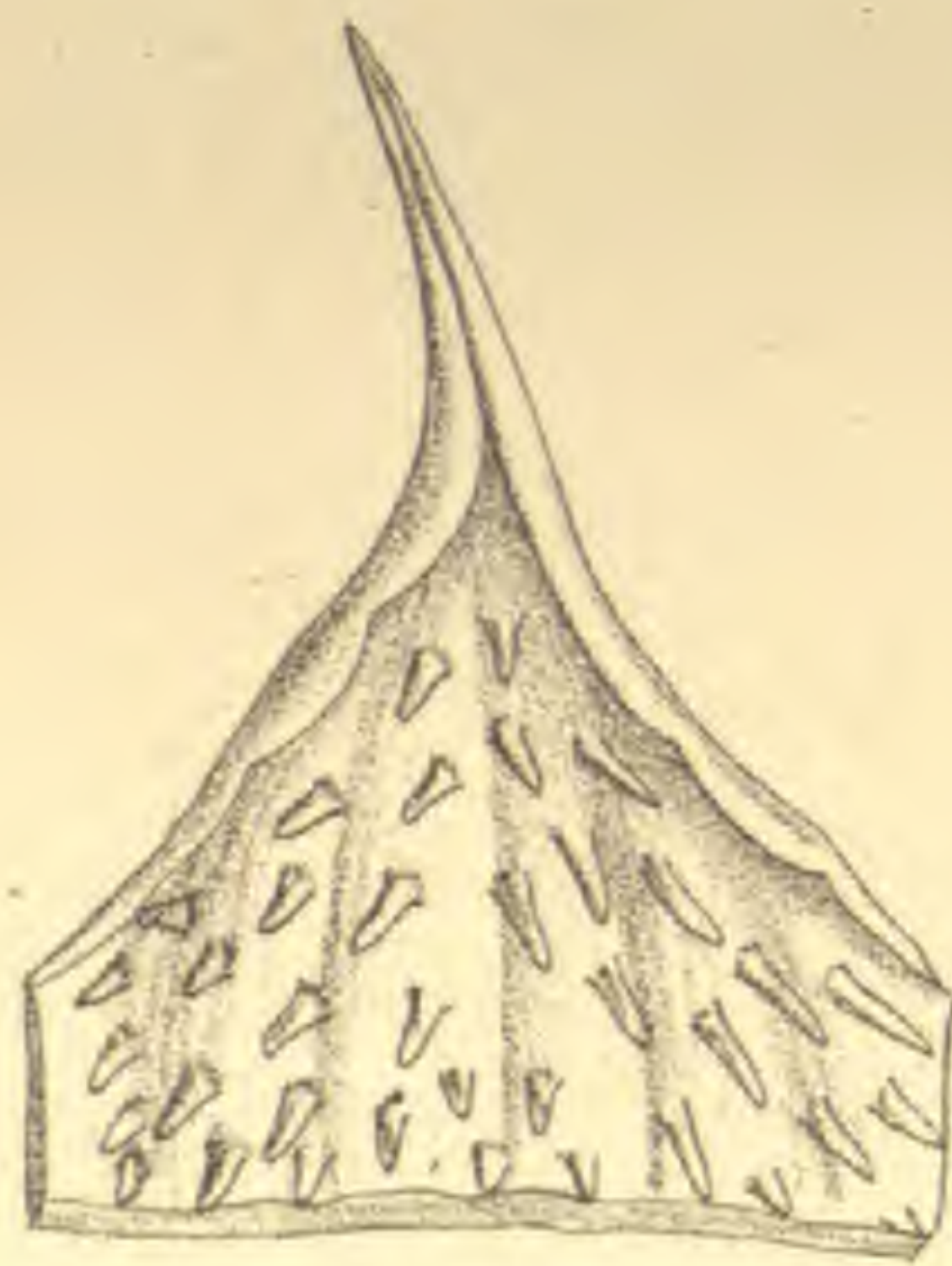
JULY 1ST, 1903.

inner segments larger, ascending, obovate, unguiculate, without a dark spot in the centre of the blade. *Styles* above an inch long; crests large, broad. *Capsule* oblong-trigonous, dehiscing in the upper half. *Seeds* large, reddish-brown, with a wrinkled testa, and a conspicuous white strophiole.—*J. G. Baker.*

Fig. 1, stamen; 2, apex of style-branch with crest and stigma:—*both enlarged.*



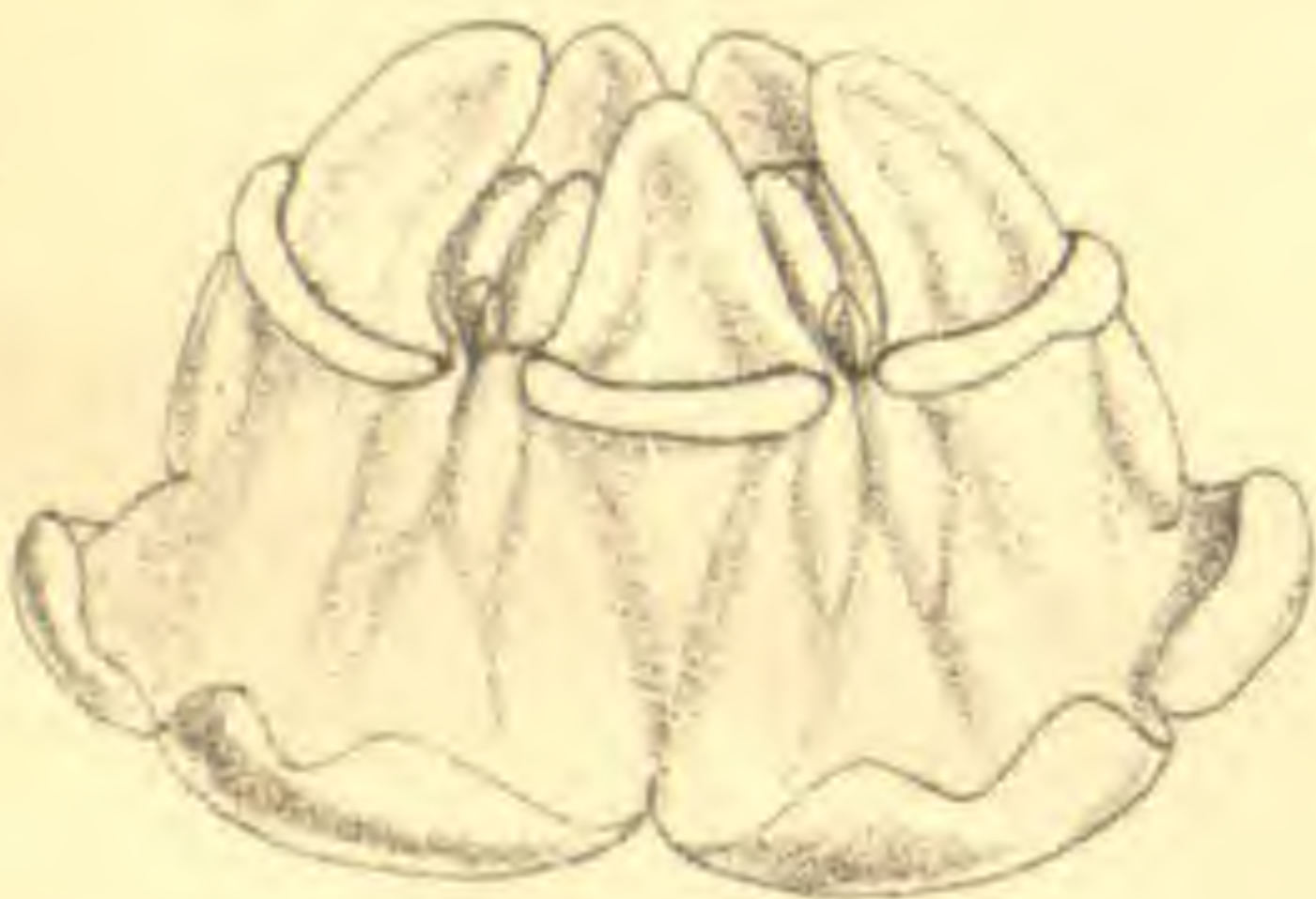
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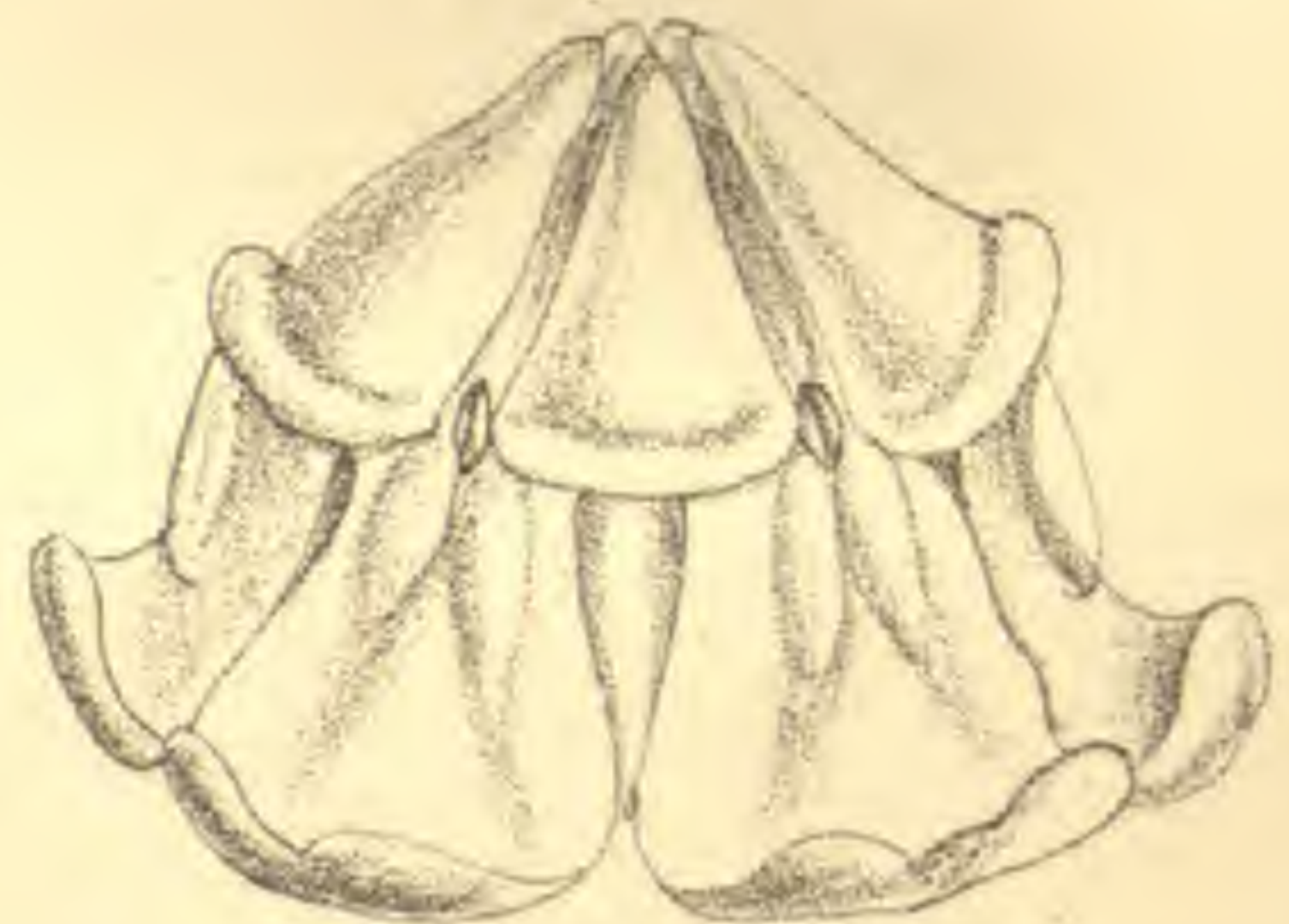
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5



3



2

HUERNIA CONCINNA.

Native of Somaliland.

Nat. Ord. ASCLEPIADACEÆ.—Tribe STAPELIEÆ.

Genus HUERNIA, R. Br.; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 784.)

HUERNIA *concinna*; caulibus 1–2½ poll. longis cæspitosis 5-gonis, spinis ad ¼ poll. longis subulatis, floribus solitariis binisve, pedicellis brevibus glabris, corolla late campanulata extus glabra alba intus ubique processibus subulatis conspersa pallide sulphurea punctis rubro-purpureis maculata, lobis ½ poll. longis deltoideis acuminatis purpureo-marginatis, sinibus latis fundo apiculatis, coronæ exterioris breviter 5-lobæ velutinæ purpureæ lobis transverse oblongis emarginatis, coronæ interioris lobis late ovatis conniventibus flavis purpureo punctatis et marginatis.

H. concinna, N.E. Br. in *Dyer, Fl. Trop. Afr.* vol. iv. p. 497.

H. macrocarpa, Taubert in *Gartenfl.* 1895, p. 353, t. 1416, non alior.

The genus *Huernia*, estimated in the "Genera Plantarum" in 1886 to contain eleven species, all South African, has been largely increased by recent discoveries in tropical Africa, whence eight additional species have been described by Mr. N. E. Brown in the very recently issued Flora of that region; and an Arabian congener, *H. arabica*, N. E. Br., has added Asia to the geographical range of the genus. *H. concinna* was, together with another new species (*H. Somalica*, N. E. Br.) brought from Somaliland by Mrs. Lort Phillips, and presented to the Cambridge Botanic Garden, where it flowered in the midsummer of 1900, and was described by Mr. N. E. Brown, whose description I have followed above. The individual specimen is that here figured, which was forwarded by Mr. Lynch to the Royal Gardens, Kew, in June, 1900.

Descr.—*Stems* clustered, one to two and a half inches long, five-angled, spiny; spines about a quarter of an inch long, subulate. *Flowers* solitary or in pairs, on short, glabrous pedicels. *Sepals* a quarter of an inch long, gradually tapering from a broad base to fine hair-like points, glabrous. *Corolla* broadly campanulate, about one inch across, glabrous outside, smooth, yellowish white, covered everywhere inside with bristle-like appendages, pale yellow, dotted with purple-brown; lobes about one-

third of an inch long, deltoid, acuminate, not fringed, alternating with as many teeth. *Outer corona* very shortly five-lobed; lobes transversely oblong, emarginate, velvety, purple-brown. *Inner coronal-lobes* broadly ovate, connivent in a cone over the tips of the anthers, yellow, edged and speckled with purple-brown.—*J. D. H.*

Fig. 1, portion of inner surface of corolla; 2, corona; 3, the same with the inner lobes removed; 4 and 5, pollinia:—*all enlarged.*



CALOTHAMNUS RUPESTRIS.

Native of Western Australia.

Nat. Ord. MYRTACEÆ.—Tribe LEPTOSPERMEÆ.

Genus CALOTHAMNUS, Labill.; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 706.)

CALOTHAMNUS *rupestris*; frutex sempervirens, robustus cortice brunneo primum pubescente simul pilis paucis longis tenuissimis instructo, foliis confertis spiraliter dispositis pollicaribus acicularibus strictis v. incurvis rigidis teretibus primum pilis longis ut in ramis parce instructis cito glabrescentibus glaberrimis pungentibus, floribus in ramulis sessilibus fasciculatis v. breviter spicatis, calycis $\frac{1}{2}$ poll. longi albo-villosi hemispherici crassi tubo brevi basi libero rotundato ramo non immerso, lobis 4 ovatis obtusis coriaceis, petalis 1-4, $\frac{1}{8}$ poll. longis fere orbicularibus concavis subtrilobis, disco intus papilloso, staminum, phalangibus $1\frac{1}{2}$ pollicaribus filamentis per plurimos infra medium in laminam late linearum coccineam confluentibus, antheris lineari-oblongis aureis, capsula glabrescente fere globosa vel ellipsoidea $\frac{1}{2}$ - $\frac{3}{4}$ poll. longa lignosa haud immersa, calysis lobis 2 oppositis tantum auctis incurvis more psittaci rostrum.

C. rupestris, Schauer in *Nov. Act. Nat. Cur.* vol. xxi. p. 26; *Lehm. Plant. Preiss.* vol. i. p. 152. *Benth. Flor. Austral.* vol. iii. p. 179.

Of the genus *Calothamnus*, which consists of twenty-two species, all restricted to S. Western Australia, only one has been previously figured in this work, namely, *C. quadrifidus*, R. Br. (*Bot. Mag.* t. 1506), which appeared in 1812. One other species, *C. villosus*, R. Br., is known to have flowered in Europe, and it is figured in the *Botanical Register*, t. 1099. Five are cultivated in the Royal Gardens, Kew, including *rupestris* and *quadrifidus*. I am indebted to Mr. R. I. Lynch for the specimen of *C. rupestris* here figured, which flowered in the Cambridge Botanical Gardens in March of the present year. The plant from which it was taken was obtained from Berlin in 1896, and is about four feet high, and as broad across the branches. Its brilliantly coloured stamens are a conspicuous feature, and Mr. Lynch informs me that they retain their beauty for nearly, if not quite, three weeks. James Drummond first discovered this, and several other species of the genus, in the Swan River district. It is very doubtful whether *C. pinifolius*, F. Muell., can be accepted as a distinct species, because the characters relied upon are inconstant. *C. rupestris* is generally described as

having glabrous leaves, but on close examination they are found to be more or less furnished with long, exceedingly fine hairs, which sometimes persist a season or more, sometimes fall very soon.

Descr.—A robust, evergreen shrub, sometimes attaining a height of seven or eight feet, but usually less. *Branches* thick, at first pubescent, and at the same time furnished with long, thin, deciduous hairs, and densely clothed with needle-like leaves, resembling those of a small *Pinus*. *Leaves* spirally arranged, one to one and a half inch long, rigid, straight or curved, sharp-pointed, at first more or less furnished with long, very thin, almost invisible hairs, but soon quite glabrous. *Flowers* crimson, one and a third to one and a half of an inch long, sessile, in small clusters on the previous year's branches. *Calyx* densely woolly, four-lobed; lobes ovate. *Petals* one to four, small and scale-like. *Stamens* forming the most conspicuous part of the flower, numerous; filaments crimson, connate the greater part of their length in four flattened clusters; anthers yellow. *Capsule* sessile but not immersed in the branch, persistent long after the seeds have fallen out, becoming quite glabrous, nearly globose or elliptical, one half to three-quarters of an inch long, woody and very hard; two opposite calyx-lobes grow out and are incurved, giving them the appearance of a parrot's beak.—*J. D. H.*

Fig. 1, a leaf; 2, section of calyx with gynæceum; 3, a petal; 4, a cluster of stamens in bud; 5, the same fully developed:—*all enlarged.*

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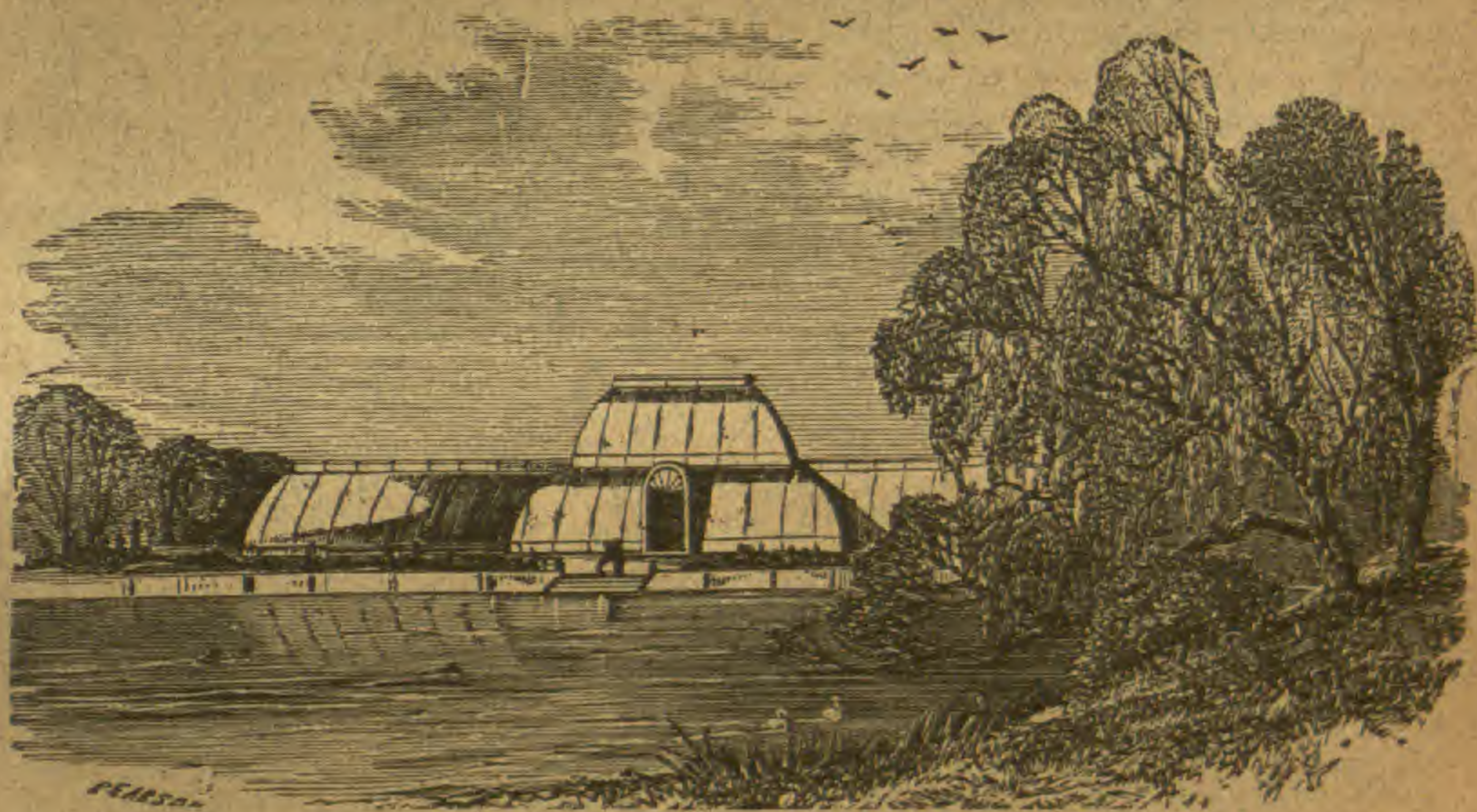
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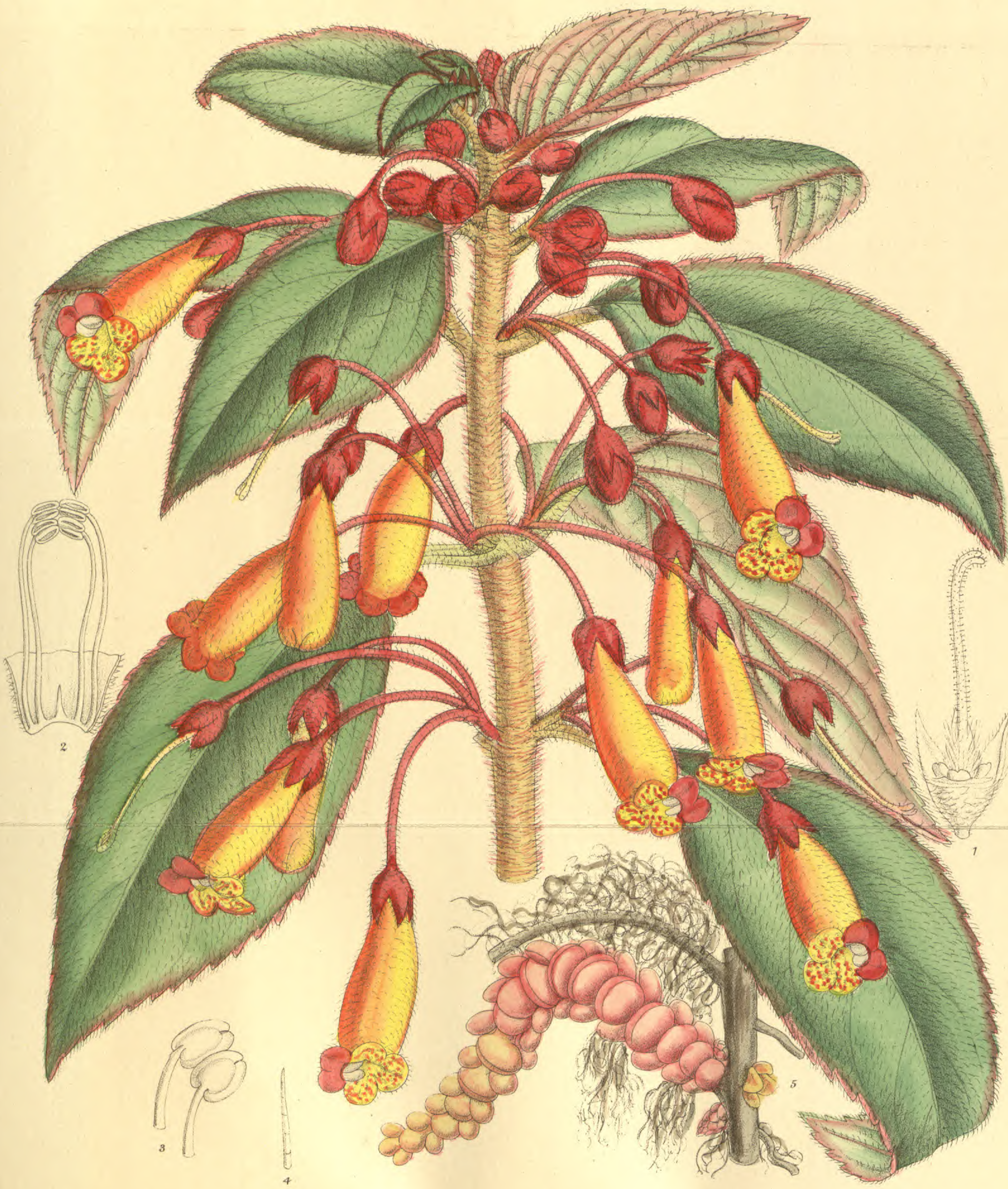
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ISOLOMA ERIANTHUM.

Native of Colombia.

Nat. Ord. GESNERACEÆ.—Tribe GESNEREÆ.

Genus ISOLOMA, *Decne.*; (*Benth. et Hook. f. Gen. Plant.* vol. ii. p. 1001.)

ISOLOMA erianthum; fruticulus 4-pedalis (Hartweg) sed forsan herba perennis rhizomatibus hypogæis squamosis, squamis confertis carnosis orbicularibus compressis sanguineis, caulibus erectis simplicibus crassis subcarnosis dense fulvo-lanatis, foliis oppositis crassis longe petiolatis ovato-lanceolatis cum petiolo 4--6 poll. longis acutis basi cuneatis interdum leviter obliquis crenato-dentatis supra hispidulis subtus lanatis costa atque venis primariis crassiusculis subtus conspicuis, floribus $1\frac{1}{2}$ -2 poll. longis velutinis cinnabarinis in axillis foliorum superiorum fasciculatis pendulis, pedicellis ebracteatis flores æquantibus vel longioribus, calycis parvi atrorubri lobis ovatis acutis tubo vix longioribus, corollæ tubo leviter curvato ventricoso apice leviter constricto, limbi lobis parvis rotundatis subæqualibus planis divaricatis 3 inferioribus maculatis, staminibus 4 didynamis inclusis ima basi corollæ affixis filamentis filiformibus glabris antheris glabris per paria cohærentibus vel conniventibus, staminodio minuto subulato, disci glandulis 5 reniformibus, ovario apice villosissimo, stylo pubescente apice leviter recurvo, stigmatate parvo bilamellato.

Isoloma erianthum, *Decne. in Rev. Hort.* 1848, p. 465 (*nomen tantum*).

Gesneria eriantha, *Benth. Pl. Hartw.* (1846), p. 228.

Brachyloma erianthum, *Hanst. in Linnæa*, vol. xxix. p. 573.

Kohleria eriantha, *Hanst. in Linnæa*, vol. xxxiv. p. 442.

The genera of the Gesneraceæ have been so diversely defined and limited by different botanists at different periods that it is difficult to understand what really constitutes a genus in this natural order. Bentham first used the name *Isoloma* (*Pl. Hartw.* p. 229) to designate a section of *Gesneria* (sic), in which, however, he did not include the species here figured. Decaisne (*in loco supra citato*) raised it to generic rank, and enumerated the species, previously referred to various genera, which he considered to belong to it. Bentham and Hooker adopted it, with some modifications in the "Genera Plantarum" (vol. ii. p. 1001), and as there constituted it comprises between sixty and seventy species, all native of Central and South America, ranging from Mexico to Bolivia and Peru, and mostly growing at considerable elevations.

Isoloma is technically distinguished from the neighbouring genera *Diastema* and *Houttea* by the open æstivation of

the small calyx and large anthers. *I. erianthum*, Decne., was first discovered by Hartweg between the villages of Villeta and Guaduas, in the Province of Bogota, and the species was described from dried specimens sent by him to the Royal Horticultural Society of London. There are also specimens in the Kew Herbarium collected by the late Dr. J. Triana in the same Province, at an elevation of two thousand four hundred metres, or nearly eight thousand feet. It is a handsome, free-growing plant, and the specimen from which the plate was prepared was cultivated and presented to Kew by Mr. R. I. Lynch, the Curator of the Cambridge Botanic Garden. It flowered in March of the present year.

Descr.—A robust, erect, herbaceous plant, two to four feet high, with underground scaly rhizomes, and thick, more or less fleshy stems and leaves, more or less clothed with soft, fulvous hairs. *Scales* of the rhizomes crowded, fleshy, orbicular, compressed, crimson. *Leaves* opposite, on long petioles, ovate-lanceolate, including the petioles four to six inches long, acute, cuneate at the base, sometimes slightly rough on the upper surface and woolly beneath; midrib and primary nerves thick and conspicuous. *Flowers* one and a half to two inches long, velvety, orange-red or cinnabar, clustered at the axils of the upper leaves, pendulous on bractless pedicels of about the same length. *Calyx* small, dark red, equally five-lobed; lobes ovate, acute. *Corolla* slightly curved and ventricose; limb almost equally five-lobed; lobes flat, rotundate, about a quarter of an inch across, the three lower spotted. *Stamens* four, didynamous, included in the corolla; filaments filiform, glabrous, attached near the base of the corolla; anthers glabrous, connivent in pairs. *Staminode* minute, subulate. *Disk* of five reniform glands. *Ovary* densely villous at the top; style pubescent, slightly recurved at the tip; stigma small, bilamellate.—*W. B. H.*

Fig. 1, portion of calyx, disk and gynæceum; 2, portion of corolla-tube showing insertion of stamens and staminode; 3, dorsal-view of anthers; 4, a hair from the corolla:—*all enlarged.*



SEDUM STAHLII.

Native of Mexico.

Nat. Ord. CRASSULACEÆ.

Genus SEDUM, Linn.; (*Benth. et Hook. f. Gen. Plant. vol. i. p. 659.*)

SEDUM *Stahlii*; herba perennis, multicaulis, dense ramosa, caulibus vel ramis florigeris erectis vel adscendentibus graciliusculis foliisque primum minutissime puberulis 4-6 poll. longis, foliis oppositis vel suboppositis sessilibus crassis carnosis oblongo-ovoideis ellipticisve $\frac{1}{4}$ - $\frac{1}{2}$ poll. longis ambitu circiter $\frac{3}{4}$ poll. rubescentibus vel rubiginosis, floribus pentameris luteis 7-9 lin. diametro in cymas terminales pauciramosas dispositis, cymæ ramulis recurvis, pedicellis brevissimis, sepalis puberulis subcarnosis erectis lineari-oblongis obtusis petalis saltem dimidio brevioribus, petalis lanceolatis dorso infra apicem corniculatis divaricatis, staminibus 10 erectis petalis brevioribus, disci squamis truncatis, carpellis 5 clavatis glabris.

S. *Stahlii*, Solms; *Rehnelt in Gartenwelt*, 1902, p. 316, ex *Wiener Illustrierte Gartenzeitung*, 1902, p. 220.

This *Sedum* was sent by Professor Count H. von Solms Laubach to the Royal Botanic Gardens, Kew, in May, 1900, for identification, with the information that it had been collected in Mexico by a Mr. Stahl, of Jena, and had been in cultivation several years without producing flowers. He was informed that it was different from anything at Kew, either in the herbarium or garden. Thereupon he sent a living plant to Kew, with the name *S. Stahlii*; yet he does not appear to have published a description of the plant. In an editorial paragraph in the *Wiener Gartenzeitung*, cited above, it is stated that a Mr. Rehnelt had described it in the *Gartenwelt* (1902, p. 316), a publication to which I have not access at the present time; therefore the description has been wholly drawn up from the plant that flowered at Kew. Count Solms states, in his original communication concerning this species, that the leaves readily fall off, when a bud is soon formed at the base and develops into an independent plant. I have not been able to ascertain whether the foundation of this bud is formed before the leaf falls, but I think it is quite probable that it is. *S. Stahlii* is a very rapid growing species, speedily forming a carpet, planted out or in

shallow pans, and is suitable for a greenhouse. The genus *Sedum* comprises about 150 species, spread all round the northern hemisphere, and about thirty are known to inhabit Mexico. They present great variety in habit and aspect, from the lowly *S. cupressoides* to *S. dendroideum*, an erect, branching shrub.

Descr.—A trailing, much-branched, succulent, obscurely puberulous, perennial herb, with erect or ascending flowering-stems, four to six inches high. *Leaves* opposite, or sub-opposite, sessile, slightly flattened at the point of attachment, longer than the internodes, thick, fleshy, ovoid or ellipsoid in shape, a quarter of an inch to half an inch long, and about three-quarters of an inch in girth, becoming red-brown. *Flowers* yellow, pentamerous, seven to nine lines in diameter, arranged in few-branched, terminal cymes; branches of the cymes recurved; pedicels very short. *Sepals* puberulous, somewhat fleshy, erect, linear-oblong, obtuse, scarcely half as long as the petals. *Petals* lanceolate, with a short, dorsal, horn-like appendage just below the apex, spreading horizontally from below the middle. *Stamens* ten, erect, shorter than the petals. *Carpels* clavate, glabrous.—*W. B. H.*

Fig. 1, a leaf; 2, a flower-bud; 3, an expanded flower; 4 and 5, stamens; 6, disk and gynæceum:—*all enlarged.*



CHLORÆA LONGIBRACTEATA.

Native of Chili.

Nat. Ord. ORCHIDÆÆ.—Tribe NEOTTIÆÆ.

Genus CHLORÆA, Lindl.; (*Benth. et Hook. f. Gen. Plant.* vol. iii. p. 618.)

CHLORÆA longibracteata; herba terrestris, glaberrima, tuberosa, 12–18 poll. alta, tuberibus cylindricis elongatis $\frac{1}{4}$ –1 poll. crassis usque ad 6–8 poll. longis, caule simplici crasso carnosio infra flores per totam longitudinem foliis spathaceis acutis arcte appressis vestito, foliis radicalibus subrosulatis subcarnosis late obovato-rotundatis 3–5 poll. longis 2–2 $\frac{1}{2}$ poll. latis apice recurvis pluricostatis inter costas reticulato-venosis, floribus 1 $\frac{1}{2}$ –1 $\frac{3}{4}$ poll. diametro albido-aurantiacis demum laxiuscule spicatis, spicis 4–8 poll. longis, bracteis lineari-lanceolatis acuminatis floribus paulo brevioribus vel in speciminibus agrestibus paulo longioribus, sepalis albis dissimilibus, 2 lateralibus majoribus longe cornutis cornu tereti carnosio viridi, terminali petalis simili, petalis oblique ovato-oblongis, labelli aurantiaci sessilis basi cordati supra cristati lobis lateralibus brevibus rotundatis lobo terminali sinuato apice incrassato, columna labello dimidio brevior.

Chloræa longibracteata, Lindl. in *Brand Quart. Journ. Roy. Inst.* n.s. vol. i. (1827) p. 48; *Benth. in Maund Bot.* vol. ii. t. 94.

Asarca sinuata, Lindl. *Gen. & Sp. Orch.* p. 408; *C. Gay, Fl. Chil.* vol. i. p. 468.

Chloræa is the characteristic genus of ground orchids in extratropical South America, especially on the western side. Altogether about eighty species have been described; but many of them are only very imperfectly known from dried specimens. Since the drawing of the present species was made several other species have flowered at Kew from tubers collected and presented by H. J. Elwes, Esq., and drawings having been made it is probable that some of them may appear in this publication. *Chloræa* differs from most of the allied genera in having no spur. Our drawing of *C. longibracteata* was made from a plant presented to the Royal Botanic Gardens, Kew, by Mr. F. W. Burbidge, the enthusiastic Curator of Trinity College Botanic Gardens, Dublin. It was presented to Trinity by Mr. Thornhill, whose father-in-law, Mr. J. W. Warburton, formerly H.M. Consul-General at Valparaiso, introduced it from Chili. Incidentally it may be mentioned that Kew was indebted to the latter gentleman for several interesting

plants during his tenure of office, amongst them the diminutive, leafless *Viscum* that grows parasitically on a columnar species of *Cereus*. At Mr. Burbidge's request, Mr. Warburton furnished the following particulars of the conditions under which *Chloræa longibracteata* grows wild:—"Unless I confuse two kinds of orchids, it is the commonest I found. The ground rises very rapidly from the sea-shore, much broken into glens (*quebrada*) full of scrub, and very rocky. The rock is all granite or granitic, and the surface much decomposed. Here and there you come across little plateaux among the rough slopes and rising ground, with very little soil on them formed of disintegrated granite, clay and gravel. These plateaux usually have a very sparse vegetation, consisting of bulbous plants, orchids, a little grass, &c. Near the tops and on the tops grew what my friends and I called the green orchis, in hundreds. It always seemed to us that they grew in what were about the driest places possible, where the ground was so hard that it was difficult to dig them up with a garden trowel." Mr. Warburton goes on to say that this orchid, and other less abundant species, were usually of stunted, dwarf growth, owing to the great dryness of the soil, and the cultivated plants were much more vigorous. Evidently, then, this is one of the numerous instances in which plants are not found growing naturally where the conditions are most favourable to full development.

Descr.—A terrestrial, glabrous, tuberous-rooted herb, twelve to eighteen inches high. *Tubers* cylindrical, a quarter of an inch to one inch thick, the longest six to eight inches long. *Stem* simple, thick, fleshy, clothed throughout below the flowers with spathaceous, acute, closely appressed leaves. *Radical leaves* somewhat rosulate, rather fleshy, broadly obovate-rotundate, three to five inches long, two to two and a half inches broad, recurved at the tip, longitudinally ribbed, with reticulated venation between the ribs. *Flowers* one and a half to one and one-third of an inch in diameter, becoming loosely spicate; spikes four to eight inches long; bracts linear-lanceolate, acuminate, somewhat shorter than the flowers in cultivated specimens, somewhat longer in wild specimens. *Sepals* white, dissimilar, the two lateral larger, terminating in cylindrical, solid, fleshy, green, horn-like

tips; terminal one similar to the petals. *Petals* obliquely ovate-oblong. *Labellum* orange-coloured, sessile, cordate at the base, crested above; lateral lobes short, rounded; terminal one sinuate, thickened at the tip. *Column* half as long as the labellum.—*W. B. H.*

Fig. 1, side view of labellum and column; 2, front view of labellum; 3, front view of column; 4, anther; 5, pollinia:—*all enlarged.*



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ARISÆMA JAPONICUM, ♂.

Native of China and Japan.

Nat. Ord. AROIDEÆ.—Tribe ARINEÆ.

Genus ARISÆMA, Mart.; (*Benth. et Hook. f. Gen. Plant.* vol. iii. p. 965.)

ARISÆMA *japonicum*; herba dioica, tuberosa, tubere globoso, glaberrima, 1-2-pedalis, caulibus sæpissime bifoliatis inflorescentia terminatis, foliis pedatisectis longe petiolatis, petiolis ultra medium vaginatis, laminæ tenuis segmentis 5-11 sessilibus vel intermedio interdum ansato oblongis vel lanceolatis $1\frac{1}{2}$ -6 poll. longis sed plerumque 3-5 poll. longis acutis vel caudato-acuminatis basi cuneatis integris, spatha pedunculata folia æquante vel sæpius superante, spathæ 4-pollicaris viridis longitudinaliter albo-striatæ tubo cylindrico sursum leviter ampliata, fauce aperto, limbo recurvo, lamina ovata acuta vel acuminata fornicato-incurva, spadix unisexualis ♂ appendice stipitata (i.e. paulo supra flores incrassata) clavata spathæ tubum paulo superante, floribus masculis achlamydeis breviter stipitatis 2-4-andris.

Arisæma japonicum, Blume, *Rumphia*, vol. i. p. 106; Schott, *Synops.* p. 29, et *Prodr.* p. 40; Engler in *DC. Monogr. Phaner.* vol. ii. p. 549; Franch. et Savat. *Enum. Pl. Jap.* vol. ii. p. 5; *Somoku Zusetsu*, vol. xix. t. 16 (12); *Honzo Zufu*, vol. xxii. t. 19.

Arum Dracunculus, Thunb. *Fl. Jap.* p. 233, *haud* Linn.

Arisæma latisectum, Blume, *loc. cit.* p. 110, *fide* Engler, *loc. cit.*

The genus *Arisæma* comprises between fifty and sixty described species, chiefly inhabiting temperate and sub-tropical Asia. One occurs in Abyssinia, and a few are natives of North America, southward to Mexico. Some of the species are amongst the most graceful and elegant members of the order, presenting great variety in the foliage, and more especially in the form and shape of the spathe and spadix, and several have been figured in this work. In some species, *A. concinnum* (tab. 5914), for example, the spathe is prolonged into a long slender tail; in *A. curvatum* (tab. 5931) the spadix is elongated; in *A. fimbriatum* (tab. 7150) it is plumose. *A. costatum* has both spathe and spadix elongated. *A. Griffithii* (tab. 6491) and *A. speciosum* (tab. 5964) may be mentioned as representatives of the more showy, ornamental species.

A. japonicum is apparently very common in Japan, as it is represented in almost every collection of dried plants from that country. It also occurs in Formosa, and Dr. A.

Henry collected it abundantly in the Chinese Provinces of Hupeh and Szechuen. This species represents a group in which neither the spathe nor the spadix is elongated. The plant figured was raised at Kew from seeds received in 1899 from the Botanic Garden, Imperial University, Tokyo, Japan. It flowered in the Alpine House in March, 1903.

Descr.—A tuberous-rooted, perennial, dioecious, glabrous herb. *Tuber* globose. *Stems* one to two feet high, two-leaved, terminating in a single inflorescence. *Leaves* pedately compound, on long petioles; petioles sheathing to above the middle, thence free and terete; leaflets or leaf-segments five to eleven, thin, sessile or the intermediate sometimes stalked, oblong or lanceolate, one and a half to six, but usually three to five inches long, acute or caudate-acuminate, cuneate at the base, entire. *Spathe* pedunculate, equalling or overtopping the leaves, green with longitudinal white stripes; tube cylindrical, slightly widening upwards; limb ovate, acute or acuminate, incurved, margin recurved below the middle. *Male spadix* with a stalked, clavate appendage, longer than the tube of the spathe. *Male flowers* without a perianth; stamens two to four; filaments confluent.—*W. B. H.*

Fig. 1, a male spadix; 2 and 3, male flowers:—*all enlarged.*



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CISTANCHE VIOLACEA.

Native of Marocco and Algeria.

Nat. Ord. OROBANCHACEÆ.

Genus CISTANCHE, *Hoffmg. et Link*; (*Benth. et Hook. f. Gen. Plant.* vol. ii. p. 893.)

CISTANCHE *violacea*; herba crassa, carnosâ, in radicibus *Chenopodiacearum* frutescentium, *Gypsophilæ albæ*, *Staticis monopetalæ*, etc., parasitica, caule 6-15 poll. alto (forsan interdum altiore) simplici vel rarius ramoso carnosâ sæpius 1-2 poll. crasso "sed interdum crassitie brachii," squamis carnosâ latis deltoideis vel rotundatis densissime imbricatis, superioribus interdum laxioribus longioribus tenuioribus ovatis lanceolatis linearibusve fere foliaceis, omnibus demum exsiccatis marcidisque, floribus purpureis vel purpureo-violaceis circiter 1 poll. diametro $1\frac{1}{2}$ poll. longis primum densissime congestis, spicis demum elongatis interdum 6-8 poll. longis, bracteis coloratis ovato-oblongis obtusis calycem æquantibus, calycis scariosi quinquefidi lobis fere æqualibus oblongis rotundatis, corolla arcuata, ore obliquo, limbi lobis fere æqualibus rotundatis recurvis plicis 2 longitudinalibus cristatis aureis inter lobos laterales et lobum inferiorem ornatis, staminibus vix exsertis, filamentis basi barbatis apice incurvis, antheris approximatis barbatis, ovario glabro, stylo staminibus paulo longiore apice recurvo, stigmatate lato obscure bilobo, capsula ovoidea obtusa compressa, seminibus numerosissimis minutis.

Phelipæa violacea, *Desf. Flor. Atlant.* vol. ii. p. 60, t. 145; *Battand. et Trab. Flor. de l'Algérie*, p. 656; *Reut. in DC. Prodr.* vol. xi. p. 12; *Viviani, Flor. Lyb. Specim.* p. 34.

Orobanche *Phelypæa*, *Willd. Sp. Pl.* vol. iii. p. 352.

The genus *Cistanche*, regarded by most authors as a section of *Phelipæa*, is retained in the "Genera Plantarum," because of the peculiar habit of the species, the sub-equal, obtuse lobes of the calyx, and the dense inflorescence. It consists of about a dozen species inhabiting the Mediterranean region and the Orient, from Portugal and Marocco eastward to the Punjab. *C. violacea* is a rather common plant in North Africa, from Marocco through Algeria to Tunis, growing both on the sea-shore and in the saline districts of the interior. The plant figured here was sent to Kew, in March of the present year, to be named by Mrs. R. W. Dent, of Flass, Crosby Ravensworth, Shap, Westmoreland, who received it from a friend staying at Biskra, Algeria, who found it "in the desert growing straight out of the sand, where it is brackish." The plant reached Kew in fairly good condition, except that

AUGUST 1ST, 1893.

the flowers were partly decayed and discoloured in consequence of having been packed in wet moss. Otherwise it might have gone on growing, and attained complete development, as there was a great store of reserve food in the thickened caudex. The whole plant weighed ten ounces, and the fleshy caudex or stem was eight inches in its greatest circumference. From the specimens in the Kew Herbarium and Desfontaine's description in the work cited above, it would appear that *Cistanche violacea* sometimes flowers the first season, when the stem grows relatively tall, and only about an inch thick at the base; and sometimes it forms a very thick caudex the first season, and flowers the second, after the disappearance of the host-plant from which it derived its great store of food. The plants that flower the first season have altogether the habit and aspect of an ordinary broom-rape; and a very careful examination is necessary to establish the specific identity of the two conditions. Mrs. Dent's friend, who sent the specimen, states that the people of Biskra scrape the root, and take it as a remedy for colic. At the request of Kew, with a view to cultivation, a second consignment was made, but unfortunately the specimens were cut off at the base of the inflorescence. It should be added that the colour of the flowers in the plate is perhaps not quite exact, in consequence of deterioration in transit.

Descr.—A fleshy, leafless herb, destitute of chlorophyll, and parasitic on the roots of various *Chenopodiaceæ*, *Gypsophila alba*, *Statice monopetala*, &c. Stem six to fifteen inches high, simple or rarely branched, usually about one inch thick, but sometimes as much as six to eight in girth, densely clothed with fleshy, imbricating scales, the lower deltoid or rounded, the upper gradually thinner, longer, narrower and less crowded, uppermost free and bract-like; at length all dry and shrivelled. Flowers purple or violet-purple, about an inch in diameter, and one and a half inch long, at first very densely crowded. Spikes elongating in development, and sometimes as much as six to eight inches long. Bracts ovate-oblong, obtuse, equaling the calyx. Calyx scarious, five-lobed; lobes nearly equal, oblong, rotundate. Corolla curved with an oblique limb; lobes of the limb nearly equal, rotundate, recurved,

with two longitudinal, crested, yellow folds between the two lateral and lowermost ones. *Stamens* scarcely exerted; filaments and corolla bearded at the point of insertion or attachment; anthers connivent, bearded. *Ovary* glabrous; style slightly longer than the stamens, recurved at the tip; stigma broad, two-lobed. *Capsule* ovoid, compressed; seeds exceedingly numerous and minute.—*J. D. H.*

Fig. 1, part of calyx and gynæceum; 2, part of the corolla, showing the three lower lobes with the two intermediate, crested folds and the stamens; 3, style and stigma; 4, cross section of ovary:—*all enlarged.*

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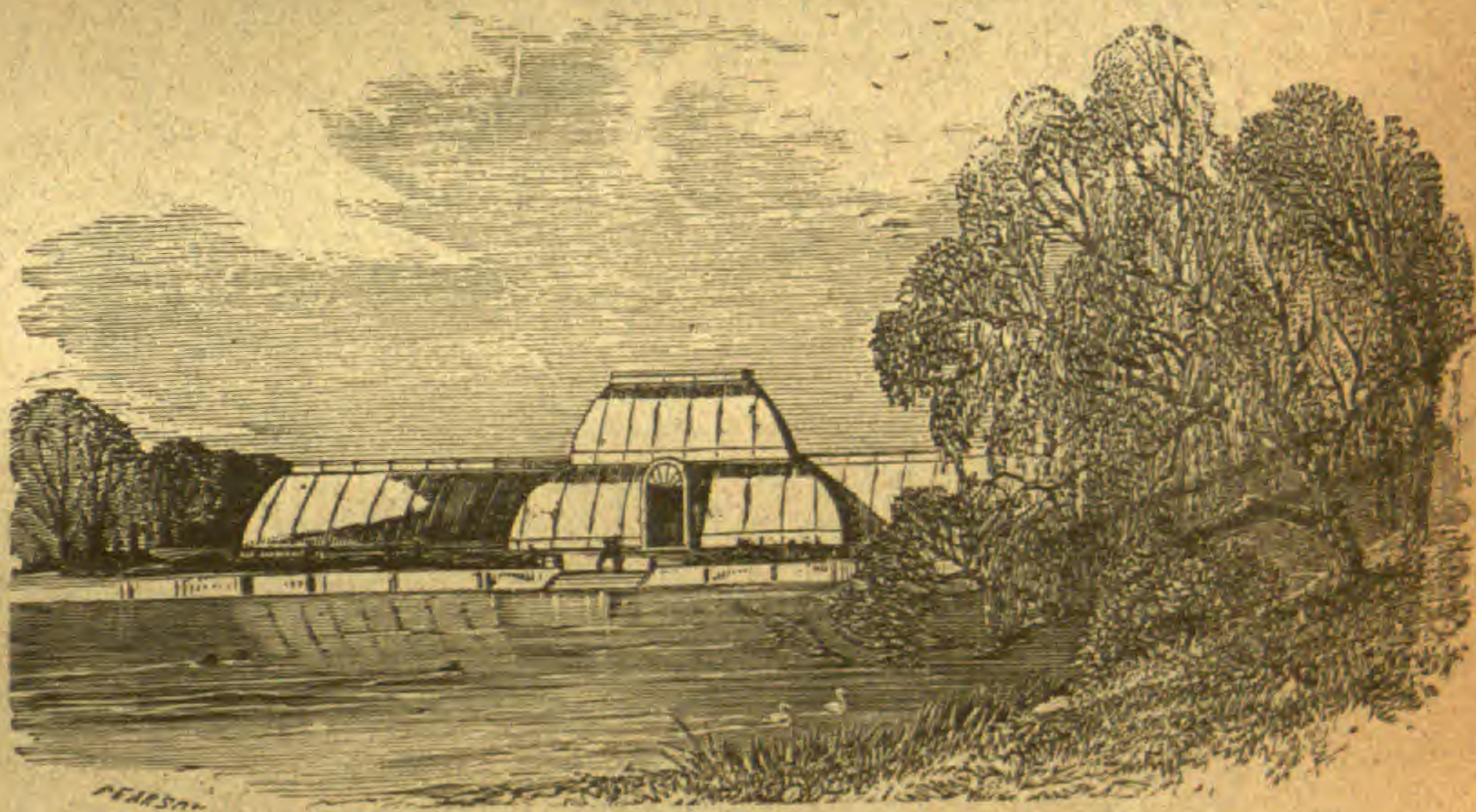
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TAB. 7912.

SENECIO TANGUTICUS.

Native of Western China.

Nat. Ord. COMPOSITÆ.—Tribe SENECTIONIDÆÆ.

Genus SENECIO, Linn.; (*Benth. et Hook. f. Gen. Plant.* vol. ii. p. 446.)

SENECIO (Synotis) *tanguticus*; herba elata, superne ramosa, glabrescens, caule tereti robusto, foliis amplis 5-7-poll. longis, inferioribus longe petiolatis late ovatis deltoideisve subdigitatim pinnatifido-lobatis et laceris v. subbipinnatifidis pinnis lobisve argute profunde que serratis basi truncatis cordatis v. acutis, supra saturate viridibus subtus pallidis, petiolo lamina brevior dilatata semiamplexicauli, capitulis numerosissimis suberectis oliganthus in paniculam amplam pyramidatam dispositis, pedicellis brevibus, bracteis parvis, involucri anguste tubulosi $\frac{1}{3}$ poll. longi basi 3-4-bracteolati bracteis 3-4 anguste linearibus obtusis herbaceis viridibus glabris fl. radii sæpius 3-4 raro 0, corollæ tubo elongato, ligula $\frac{1}{2}$ poll. longa anguste linearia apice 3-crenata, fl. disci ad 3 tubo elongato lobis 5 revolutis, antheris anguste linearibus breviter caudatis flavo-brunneis, pappo copioso molli albo, achæniis parvis oblongis glabris.

S. tanguticus, Maxim. in *Bull. Acad. Pétersb.* xxvii. (1881) p. 486, et *Mél. Biol.* xi. 244.

S. Henryi, Hemsl. in *Journ. Linn. Soc. Bot.* vol. xxiii. (1888) p. 452.

It is difficult to find something to say that is specially applicable to a given species in a genus numbering upwards of a thousand species, but *Senecio tanguticus* belongs to a comparatively small section, characterized by having a very small number of flowers, rarely only one, in each head. Without close examination, the flower-heads of *S. tanguticus* might be taken for separate flowers, with three or four petals each.

A dried specimen of *S. tanguticus* was first sent to Kew in 1886, by Dr. A. Henry, who collected it near Patung, in the Province of Hupeh; and he subsequently sent numerous specimens from various other localities in the same Province. In 1887, Kew received specimens of the same species, collected by the Rev. E. Faber, at an elevation of four thousand feet, on Mount Omei, in the Province of Szechuen. Mr. Hemsley, failing to identify these specimens, from the description of *S. tanguticus* of Maximowicz, described it under the name of *S. Henryi*. Since then Kew has received an authentic

specimen of *S. tanguticus*, and it was Dr. Henry himself, as I am informed by Mr. Hemsley, who first recognized the identity of the two.

Mr. Wilson, collector for Messrs. James Veitch & Sons, subsequently sent home seed of this handsome herbaceous plant, and our plate was prepared from successfully cultivated examples raised at Coombe Wood in 1902. Judging from the vigorous plant, between six and seven feet high, sent to Kew by Messrs. Veitch, *S. tanguticus* is a very striking object, suitable both for mixed planting and grouping.

It may be added that since the publication of Forbes' and Hemsley's Enumeration of the Chinese Compositæ ("Journal of the Linnæan Society," vol. xxiii.) in 1888, the number of known Chinese species of *Senecio* has been raised from sixty-three to nearly 150. Many of them are very pretty, and some of a highly ornamental character.

Descr.—A tall, stout, glabrous or glabrescent, leafy herb, six to seven feet high, branching upwards. *Stem* as thick as the thumb below, terete, green; branches erect. *Leaves* five to seven inches broad and long, lower long-petioled, broadly ovate or deltoid, pinnatifidly lobed or sub-pinnatifid, lobes linear-lanceolate, acuminate, acutely, rather distantly coarsely irregularly serrate, dark green above, paler beneath, base truncate or broadly sub-cordate, sinus rounded; petiole of lower leaves very long, base dilated and semi-amplexicaul. *Heads* in erect, very many-flowered, pyramidal panicles six to seven inches long, terminating the branches; bracts small, green, lanceolate; pedicels one-sixth of an inch long. *Involucre* narrow, cylindric, one-third of an inch long, calyculate with short, subulate bracts at the base; bracts three or four, linear, tips rounded. *Ray-flowers* three or four, rarely absent; ligule half an inch long, linear, three-toothed, four- to five-nerved, golden-yellow. *Disk-flowers* three or four, lobes revolute. *Anthers* linear, exserted, pale brown; style-arms revolute. *Pappus* copious, soft, white. *Achene* short, glabrous.—*J. D. H.*

Fig. 1, capitulum; 2, ray-flower; 3, pappus hair; 4, disk-flower; 5, stamens; 6, style-arms:—all enlarged; 7, reduced view of upper part of plant.



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TAB. 7913.

DRABA GILLIESII.

Native of Chili.

Nat. Ord. CRUCIFERÆ.—Tribe ALYSSINÆ.

Genus DRABA, Linn.; (*Benth. et Hook. f. Gen. Plant.* vol. i. p. 74.)

DRABA (Leucodrabra) *Gilliesii*; perennis, molliter substellatim pubescens, caule pedali erecto basi ramoso folioso, foliis 1-1½-poll. longis sessilibus v. semiamplexicaulibus patulis ovatis oblongisve acutis undulatis remote dentatis infimis nunc breviter petiolatis læte viridibus, racemis elongatis laxè multifloris, floribus ½-¾ poll. latis longe pedicellatis, petalis ⅓ poll. longis oblongis apice rotundatis, petalis sepalis multo majoribus albis, ovario laxè stellatim pubescente, stylo elongato filiformi, siliculis ½-⅔ poll. longis ellipsoideis planis acutis stylo persistente terminatis tortis, seminibus oblongis ⅓ poll. longis compressis pallide castaneis.

D. Gilliesii, *Hook. et Arn. in Hook. Bot. Misc.* vol. iii. (1833) p. 137. *Walp. Rep.* vol. i. p. 157. *Hook. f. Fl. Antarct.* vol. ii. p. 236. *C. Gay, Fl. Chil.* vol. i. p. 154. *Reiche, Flora de Chile*, vol. i. (1896) p. 112.

D. araucana, *Phil. in Anal. Univ. Chil.* 1872, p. 672.

D. Davilæ, *Phil. l.c.*

D. rosulata, *Phil. in Linnæa*, vol. xxviii. (1856) p. 669.

D. stolonifera, *Barn. ex C. Gay, l.c.* p. 155.

The foregoing synonymy is that of the "Index Kewensis," but I have not succeeded in ascertaining on whose authority the reductions were made, and I have not been able to examine the specimens critically. I had hoped to get the views of Dr. E. Gilg, of Berlin, who is engaged on a monograph of the Andine species of *Draba*, on this point; but as no reply has been received, he was probably from home when the application reached Berlin. In Reiche's recent "Flora de Chile" (vol. i. p. 112), however, *D. stolonifera*, Barn., *D. rosulata*, Phil., and *D. colchaguensis*, Phil., are reduced to *D. Gilliesii*. On the other hand, *D. araucana*, Phil., and *D. Davilæ*, Phil., are treated as distinct species; the former described as differing from *D. Gilliesii* in having flat pods, and the latter in having numerous stems from the same root. *D. Gilliesii*, as represented in the accompanying plate, is an interesting example of cultivation, being nearly three times the size of the wild specimens, and a really attractive plant.

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Draba is one of the few genera amongst the higher orders of flowering plants that is well represented through nearly 140 degrees of latitude. This is, of course, in the New World. Throughout, excepting the low countries of Central America, *Draba* is frequent, at low elevations in the north temperate regions, at high elevations in the tropical and south temperate, the genus having its maximum number of species in the Andes. In the Old World, on the contrary, the genus *Draba* is confined to the north temperate zone, bounded on the south by the Mediterranean in Europe, and the Himalaya in Asia.

Draba Gilliesii was discovered by Dr. Gillies in the Cordillera of Cumbre, at about eight thousand feet elevation, and has been collected at various other localities, always at a great elevation, of the Chilean chain. It varies very much in habit, according to locality. The specimen figured was presented to the Royal Gardens, Kew, in 1902, by A. K. Bulley, Esq., of Ness, Neston. It flowered in the Alpine House in March, 1903.

Descr.—A perennial tufted, laxly stellately hairy herb, one to ten inches high, of various habit and leafage. *Stem* stout or slender, simple or branched, leafy. *Leaves* sessile, coarsely toothed, half an inch to one and a half inch long, lower or radical linear or ovate-oblong, cauline ovate-cordate, more irregularly toothed. *Racemes* short or long, few- or many-flowered, erect, pedicels three-quarters of an inch to one and a half inch long, slender, spreading. *Flowers* one half to three-fourths of an inch in diameter in large states of the plant, much smaller in others, white. *Sepals* oblong, obtuse, laxly stellately hairy. *Petals* obovate-spathulate. *Filaments* glabrous; anthers rather small, oblong. *Capsules* elliptic-oblong or oblong-lanceolate, acuminate, with the persistent style, strongly compressed and twisted. *Seeds* very small.—*J. D. H.*

Fig. 1, flower with petals removed; 2 and 3, anthers; 4, gynæceum and disk:—all enlarged; 5, fruit, *nat size*.

Note.—Since the foregoing was set up, a reply has been received from Dr. Gilg, who makes the synonymy the same as ours, with the addition of *D. colchaguensis*, Phil.



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IRIS BUCCHARICA.

Native of Bokhara.

Nat. Ord. IRIDÆ.—Tribe MORÆÆ.

Genus IRIS, Linn. (*Benth. et Hook. f. Gen. Plant.* vol. iii. p. 686.)

IRIS (Juno) *bucharica*; ex affinitate *I. orchioidei* (B. M. t. 7111) et forsan hujus species mere varietas, bulbo subgloboso, caule erecto 1-2 ped. alto internodiis distinctis, foliis 7-11 lanceolatis acute acuminatis usque ad 1 ped. longis sed sæpe brevioribus arcuatis nitidis, spathis in axillis foliorum solitariis 1-floris vix acutis haud inflatis, floribus breviter pedunculatis albido-luteis circiter $2\frac{1}{2}$ poll. diametro, perianthii tubo elongato, limbi segmentis omnibus longe unguiculatis, exterioribus lamina oblonga apice rotundata recurva cristata crista aurantiaca, interioribus parvis arcte deflexis trilobulatis lobis lateralibus obtusis intermedio acutissimo, styli cristis oblique ovatis interdum in margine exteriori irregulariter 1-lobulatis.

I. bucharica, Foster in *Gard. Chron.* 1902, vol. i. pp. 385-387, fig. 135; 1903, vol. i. p. 251. *Journ. Hort.* ser. 3, vol. xlv. p. 260-261.

This pretty *Iris* is one of a series of four which Sir Michael Foster, one of the first authorities on the genus, says might well be regarded as varieties of one species, namely, *orchioides*, Carr. in *Rev. Hort.* 1880, p. 337, fig. 68 (B. M. t. 7111). But he argues that as they present distinctive characters, which, from a gardener's standpoint, constitute species, they may as well be accepted as such. This may be a convenient course so long as there are only the four to deal with; but, judging from very scanty material, there is considerable individual variation, and I am not quite certain that our plant is exactly his *I. bucharica*. He himself says that one of the four of this series, the one known as *I. orchioides cærulea*, was referred by Regel to *I. caucasica*, Hoffm., and I find that Regel (*Gartenflora*, t. 800) figures a plant exceedingly like ours, especially in the three-lobed deflexed inner petals or standards, as *I. caucasica*.

The plant here figured was purchased from Messrs. Van Tubergen, Dutch Nurserymen, and it flowered in the Alpine House at Kew in March of the present year. Sir Michael Foster obtained his from the same source,

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as well as the closely allied, though very differently coloured *I. warleyensis*, described and figured in the same place, and which will shortly be figured in this Magazine. He describes the standards of *I. bucharica* in the following words: "small, pure white, extended horizontally, with a canaliculate claw expanding into a broader, flat, distinctly mucronate blade." On the other hand, the figure in the "Journal of Horticulture" cited above, has distinctly lobed standards.

Descr.—Closely allied to *I. orchioides* and *I. caucasica*, and having a nearly globose bulb. *Stem* erect, one to two feet high; internodes distinct. *Leaves* seven to eleven, lanceolate, acuminate, acute, lower ones nine to twelve inches long, shorter upwards, curved, shining. *Spathes* solitary in the axils of the leaves, one-flowered, scarcely acute, not inflated. *Flowers* shortly peduncled, yellow and white, about two and a half inches across. *Perianth-tube* elongated. *Petals* all having long claws; the three outer (falls) with an oblong, rounded, pendulous, crested blade; the three inner (standards) much smaller, protruding between the outer, pendulous, three-lobed; lateral lobes rounded, central one acuminate.—*W. Botting Hemsley.*

Figs. 1 and 2, anthers; 3, stigmatic surface:—*enlarged*; 4, entire plant, *reduced*.



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ALOE CAMERONI.

Native of Eastern Tropical Africa.

Nat. Ord. LILIACEÆ.—Tribe ALOINEÆ.

Genus ALOE, *Linn.*; (*Benth. et Hook. f. Gen. Plant.* vol. iii. p. 776.)

ALOE *Cameroni*; frutex caulescens, erectus, omnino glaber (stirps depicta caule simplici circiter bipedali), foliis sparsis patenti-recurvis angustis lanceolatis 9–12 poll. longis infra medium circiter $1\frac{1}{2}$ poll. latis acutis concavo-convexis plano-convexisve circiter 3–4 lin. crassis viridibus margine remote breviterque spinoso-dentatis spinis basi latis apice incurvis, inflorescentia axillari simplici suberecta cum pedunculo elongato circiter pedali, bracteis scariosis basi latis acute acuminatis pedicellis brevioribus, pedicellis $1\frac{1}{2}$ –2 lin. longis, floribus rubro-luteis ad apicem pedunculi confertis pendulis cum staminibus exsertis circiter bipollicaribus, perianthii tubo fere cylindrico leviter curvato infra medium leviter constricto, limbi lobis oblongis apice tantum leviter recurvis obtusis vel rotundatis, ovario obscure verruculoso, stylo breviter exserto.

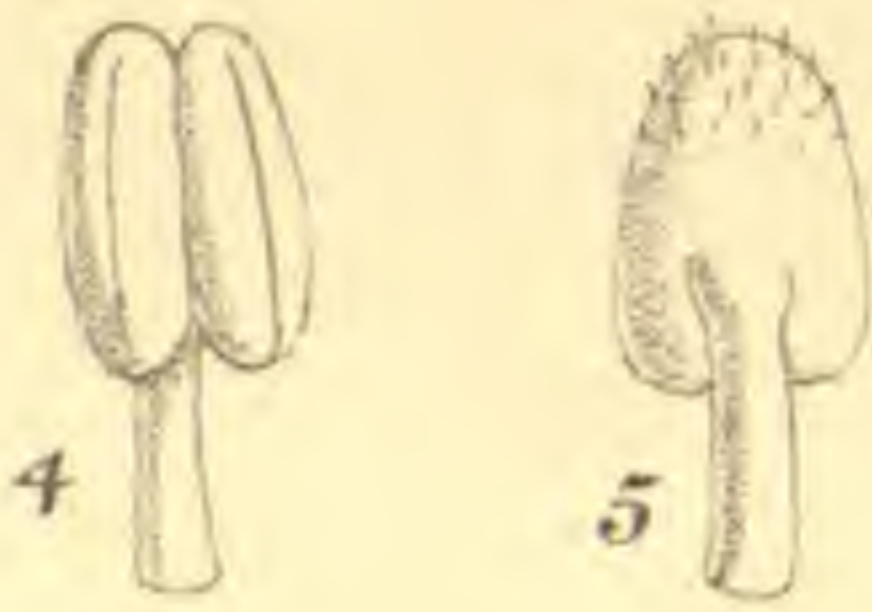
Aloe *Cameroni*, *Hemsl.*A. macrosiphon, *Kew Hand-list of Tender Monocotyledons* (1897), p. 173, non *Baker Fl. Trop. Afr.* vol. vii. p. 459.

It is not without some misgivings that I have described this *Aloe* as a new species, but being unable to identify it with any of the fifty species described by Mr. J. G. Baker in the "Flora of Tropical Africa" (vol. vii. pp. 454-469), I must perforce give it a name. There is always a risk in dealing with a single species of a large and critical genus such as the present, especially as many, probably most, of the species are imperfectly known. The plant from which our drawing was made was sent to the Royal Botanic Gardens, Kew, in 1894, by Mr. K. J. Cameron, of the African Lakes Corporation, and was received in 1895, and flowered in February of the present year. In a letter to the Director, Mr. Cameron says, "At the request and with the assistance of Mr. Scott Elliot [whose travels in E. and W. tropical Africa and Madagascar are well known to botanists], I have selected the following plants from our garden at Mandala." Then follows a list. In consequence, perhaps, of Mr. Scott Elliot's action in connection with sending the plants in question, it was assumed before it flowered, that this *Aloe* was the same as one

which he collected between Urundi and Karagwe, in German East Africa. This has been described by Mr. Baker (*Fl. Trop. Afr.*, vol. vii. p. 459) under the name of *A. macrosiphon*. The specimen consists of a crumpled, imperfect leaf, the upper part of an inflorescence, and a few old flowers; and although the species is closely allied to *A. Cameroni*, Hemsl., the material is sufficient to prove that it is specifically different. The most prominent differences are the very much larger bracts and longer pedicels.

Descr.—An erect shrub with an unbranched stem about two feet high when the drawing was made. *Leaves* separated by short but distinct internodes, spreading, recurved, narrow-lanceolate or almost linear, nine to twelve inches long, about one and a half inch broad below the middle, acute, concavo-convex or plano-convex, one-third to a half inch thick, green, margin furnished with rather distant, spinous teeth having a broad base and an incurved tip. *Inflorescence* axillary, unbranched, sub-erect, including the elongated peduncle about a foot long. *Bracts* small, scarious, broad at the base, sharply acuminate, shorter than the pedicels. *Pedicels* about one-sixth of an inch long. *Flowers* almost cinnabar red, passing into yellow towards the top, including the exserted stamens two inches long, crowded at the top of the peduncle, pendulous. *Perianth-tube* nearly cylindrical, slightly curved, slightly constricted below the middle; lobes oblong, obtuse, recurved at the tip. *Ovary* obscurely warted; style shortly exserted.—*W. Botting Hemsley*.

Fig. 1, a flower; 2 and 3, anthers; 4, gynæceum:—*all slightly enlarged*.



PSYCHOTRIA CAPENSIS.

Native of South Africa.

Nat. Ord. RUBIACEÆ.—Tribe PSYCHOTRIÆ.

Genus PSYCHOTRIA, Linn.; (*Benth. et Hook. f. Gen. Plant.* vol. ii. p. 123.)

PSYCHOTRIA (*Mapouria*) *capensis*; frutex compactus, paucipedalis, fere undique glaber, ramulis teretibus, internodiis foliis multo brevioribus, foliis magnitudine ac circumscriptione variabilibus coriaceis petiolatis oblongis lanceolatis oblanceolatis obovatis ellipticisve cum petiolo interdum elongato usque ad 6-7 poll. longis sed sæpius 2-4 poll. longis obtusis vel rotundatis basi semper cuneatis margine integerrimis venis inconspicuis, stipulis amplis subcoriaceis ovato-rotundatis intus pubescentibus brunneis cito deciduis, floribus fragrantibus luteis pentameris vix semipoll. diametro in cymas parvas densas terminales breviter pedunculatas dispositis, pedicellis floribus brevioribus parce puberulis, calycis minuti limbo ad annulum fimbrillatum reducto, corollæ infundibularis tubo sursum leviter dilatato vix 3 lin. longo fauce barbato, limbi lobis ovatis tubo fere dimidio brevioribus vix acutis leviter recurvis, staminibus breviter exsertis, fructu globoso circiter 2½ lin. diametro 2-spermo, seminibus albumine insigniter ruminato.

Psychotria capensis, *Vatke in Æster. Bot. Zeitschr.* vol. xxv. (1875) p. 230

Grumilea capensis, *Sond. in Harv. & Sond. Fl. Cap.* vol. iii. p. 21.

Logania capensis, *Eckl. in S. Afr. Quart. Journ.* vol. i. (1830), p. 371.

Grumilea globosa, *Hochst. in Flora*, vol. xxvii. (1844), p. 554.

As limited in Bentham and Hooker's "Genera Plantarum," the genus *Psychotria* numbers between five and six hundred species, spread over nearly all tropical and subtropical regions, including Polynesia; but other botanists have variously extended and restricted it. The late Dr. Baillon, for instance, reduced (*Hist. Pl.* vol. vii. p. 280) *Palicourea*, *Cephælis*, and several other genera, to it, bringing up the total number of species to upwards of eight hundred. For this unwieldy agglomeration he used the earlier Linnean name *Uragoga*. Schumann, on the other hand (*Engler & Prantl. Natürl Pflanzenf.* vol. iv. pp. 111-120) treats *Psychotria*, *Uragoga*, *Mapouria*, *Grumilea*, &c., as distinct genera. A middle course is, perhaps, the best. *Grumilea*, as a genus, stands upon the ruminated albumen, which is well developed in the species figured. But the disadvantages of being unable to deter-

mine the genus in the absence of seeds are obvious, especially where the species are so numerous.

Psychotria capensis is apparently a common shrub in South-eastern Africa, ranging from Somerset, Bathurst, and Albany northward to Durban and Inanda. The history of its introduction is unknown, but there is a specimen in the Herbarium which flowered at Kew in April, 1858. Mr. W. Watson, the Curator, to whom the Magazine is indebted for much valuable information concerning the plants figured, notes that it has been cultivated for many years in the Temperate House, where it flowers freely in spring. Its compact habit and fragrant flowers are its greatest attractions.

Descr.—A dwarf, compact shrub, glabrous in nearly all parts. *Branches* terete, with internodes much shorter than the leaves. *Leaves* very variable in size and outline, coriaceous, petiolate, oblong, lanceolate, oblanceolate, obovate or elliptical, including the sometimes elongated petiole six to seven inches long, but usually two to four, obtuse or rounded, always cuneate at the base, quite entire, veins inconspicuous; stipules large, thick, ovate, or nearly round, hairy within, brown, very deciduous. *Flowers* sweet-scented, yellow, pentamerous, about half inch across, arranged in small, dense, terminal, shortly-stalked cymes. *Pedicels* shorter than the flowers, slightly puberulous. *Calyx-limb* reduced to a fringed rim. *Corolla-tube* slightly widened upwards, straight, scarcely three lines long, bearded at the top within; lobes ovate, about half as long as the tube, scarcely acute, slightly recurved. *Stamens* slightly protruded. *Style* scarcely as long as the stamens. *Fruit* globose, about one-fifth of an inch in diameter, two-seeded; seeds having conspicuously ruminated albumen.—*W. Botting Hemsley.*

Fig. 1, a flower; 2, gynæceum; 3, upper two-thirds of corolla laid open, showing the attachment of the stamens and the hairy throat; 4 and 5, anthers; 6, cluster of fruit; 7, cross section of a fruit and seed:—all except 6 enlarged.

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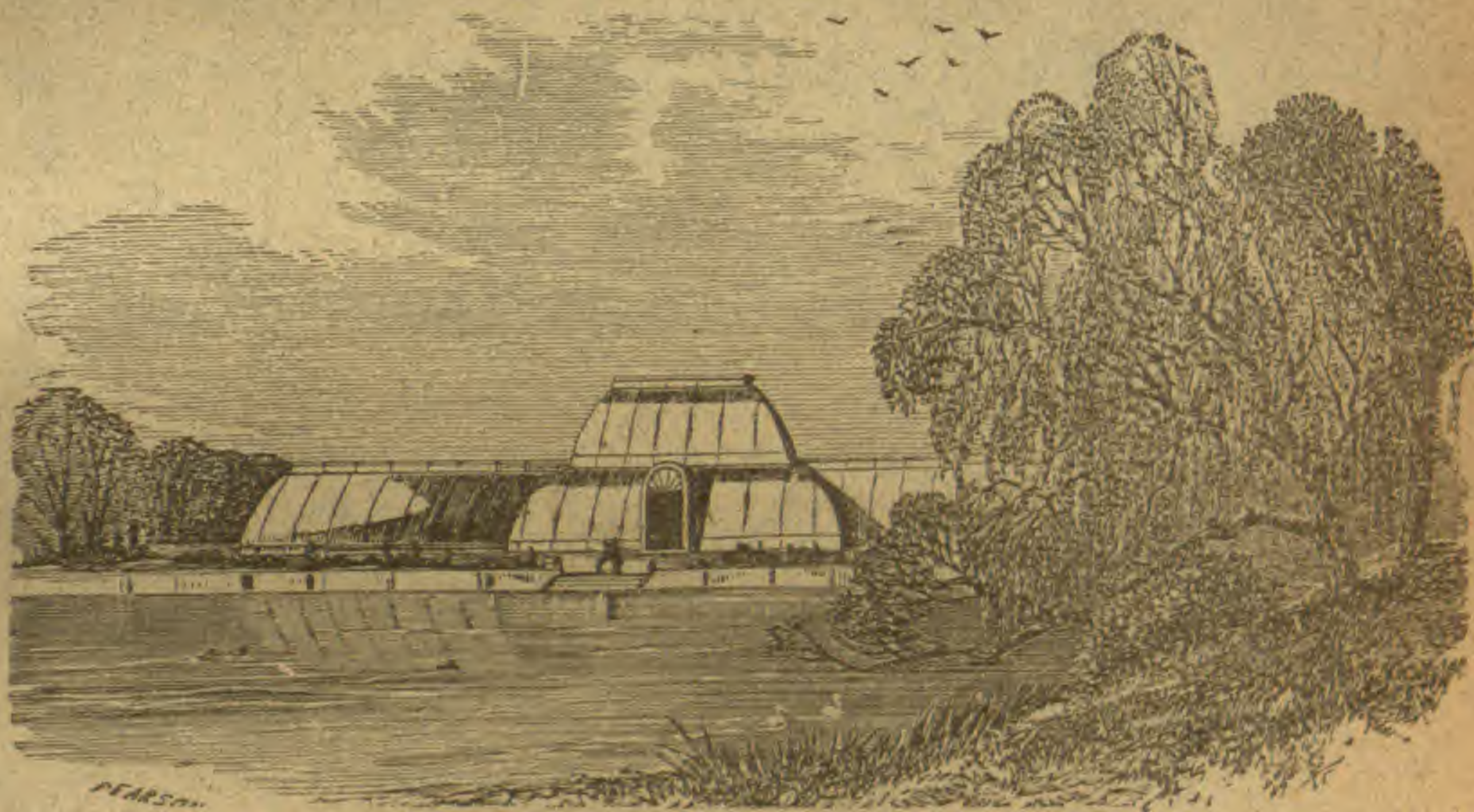
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TAB. 7917.

ARECA? MICHOLITZII.

Native of New Guinea.

Nat. Ord. PALMÆ.—Tribe ARECÆ.

Genus ARECA, Linn.; (*Benth. et Hook. f. Gen. Plant.* vol. iii. p. 883.)

ARECA? *Micholitzii*; palma parva, dum juvenis florens; stirps huc depicta inter 5 et 6 ped. alta (interdum usque ad 9 ped. alta, fide *Micholitz*), caudice gracili circiter 1½ poll. diametro levi glabro annulato, internodiis 1-2-pollicaribus, basi valde attenuato supra terram omnino radicibus aereis sustentato, foliis glabris petiolatis pinnatisectis apice furcatis circiter 3½ ped. longis, segmentis nunc 5 vel 7 duobus superioribus alte confluentibus exceptis alternis nunc 6 vel 8 oppositis pauci-vel pluriplicatis costatis que basi latis discretis inferioribus falcato-oblongis acuminatis integris cæteris quadrato-oblongis pluri-vel multifidis apicibus sub-acutis, petioli vagina elongata turgida inflorescentiam juvenilem vestiente, petiolo supra vaginam subtrigono, spathis evolutis in axillis foliorum delapsorum solitariis simplicibus cymbiformibus 8-9 poll. longis levibus glabris nitidis flavo-viridibus intus argenteo-nitidis longitudinaliter multistriatis breviter valideque stipitatis apice rotundatis ante dehiscentiam ventre leviter concavis cito deciduis, spathis secundariis ad bracteas parvas vel minimas reductis, spadice monoico arrecto simpliciter ramoso circiter 1 ped. longo 9 poll. lato pallide viridi undique minute lepidoto ramis sæpius circiter 8 distichis divaricatis crassis compressis flexuosis continuis sursum gradatim attenuatis (nec subito fere filiformibus ut in speciebus nonnullis *Arecæ genuinæ*), bracteis bracteolisque minutis vel obsoletis, floribus sessilibus subdistichis in ramorum dimidio inferiore ternis quorum 2 exterioribus ♂ intermedio ♀ in dimidio superiore geminatis utroque ♂, floribus ♂ glabris eburneis 3-4 lin. longis articulatis inferioribus juxta ♀ positis ante spathæ dehiscentiam expansis cito deciduis, calyce minuto tridentato, petalis 3 valvatis crassis oblongo-ovatis obtusis, staminibus 6 petalis paullo brevioribus, pistillodio oblongo trifurco, floribus ♀ glabris viridibus, sepalis 3 crassis coriaceis late ovatis obtusis circiter 4 lin. longis arcte imbricatis, petalis 3 sepalis similibus tenuioribus arcte imbricatis, staminodiis 6 minutis e basi lata subito acuminatis, ovario oblongo glabro uniloculari uniovulato, stigmate sessili, ovulo basilari, fructu ignoto.

A. *Micholitzii*, *Sander, Cat. Pl.* 1895, p. 46. *Kew Bulletin, Additional Series*, vol. iv. (1900), p. 40 (*absque descriptione*).

This palm was discovered in New Guinea by Mr. Micholitz, collector for Messrs. Sander & Co., of St. Albans, and it was advertised for sale in 1895, when a plant was acquired for the Royal Botanic Gardens, Kew. It flowered in March of the present year, but it has produced no fruit. In reply to our inquiries, Messrs. Sander report that they received only a few seeds and the plants are all dispersed,

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and they could give no particulars beyond Mr. Micholitz's note that it was very distinct and ornamental, and the tallest stems he had seen were about nine feet high. Until fruit and seed are known, the genus of this palm must remain doubtful; but it will probably prove generically distinct from *Areca*. A detailed description is given above, from which it will be seen that it differs in several particulars from the typical species of *Areca*, such as *A. Catechu*, L. and *A. triandra*, Roxb., and it is still further removed from the section *Balanocarpus*. It is one of the comparatively few palms of which the stem or caudex is entirely supported by aerial roots from a very early stage of growth, if not actually from the first stage after germination.

Descr.—A small palm, glabrous in all parts, flowering when quite young. *Stem* slender, not known to exceed nine or ten feet in height, as figured here, between five and six feet high, and one and a half inch in diameter, tapering at the base, and entirely supported above ground by aerial roots, banded, unarmed; internodes one to two inches long. *Leaves* glabrous, petiolate, pinnatisect, forked at the apex, about three and a half feet long; segments either five or seven and alternate, except the uppermost confluent pair, or six or eight and opposite, usually four- to eight-ribbed and folded, broad at the base, distinctly separated or contiguous, lower ones falcate-oblong, acuminate, entire, the rest quadrate-oblong, about four- to eight-rid, the tips acute; petiole having an elongated, turgid sheath usually enclosing a young inflorescence, somewhat trigonous above the sheath. *Spathes* solitary in the axils of fallen leaves, shortly and stoutly stalked, simple, boat-shaped, eight to nine inches long, outside smooth, shining, yellow-green, inside silvery, shining, striated longitudinally, rounded at the tip, slightly concave on the upper side before opening, falling away almost directly after opening; secondary spathes reduced to small or minute bracts. *Spadix* monœcious, ascending, simply branched, about a foot long and nine inches across, pale green, studded with minute scales; branches usually about eight, in two rows, spreading, thick, compressed, zigzag, gradually tapering upwards (not almost thread-like as in some of the genuine species of *Areca*); bracts and

bracteoles very small or obsolete. *Flowers* glabrous, sessile, in two rows, clustered in threes in the lower part of the branches, the lateral male, the central female, in pairs in the upper part of the branches, both male. *Male flowers* ivory-white, one-quarter to one-third of an inch long, the lower ones opening before the spathe; calyx minute, three-toothed; petals three, valvate, thick, oblong-ovate, obtuse; stamens six, shorter than the petals; pistillode oblong, trifurcate. *Female flowers* larger, green, or yellow-green; sepals three, thick, coriaceous, broadly ovate, obtuse, about one-third of an inch long, closely imbricate; petals three, similar to the sepals but thinner, closely imbricate; staminodes six, minute, broad at the base, and abruptly acuminate; ovary oblong, glabrous, one-celled; stigma sessile; ovule solitary, basal. *Fruit* unknown.—*W. B. H.*

Fig. 1, a female flower and two lateral male flowers; 2, a male flower; 3, a section of the same, showing the pistillode and some of the stamens; 4, a female flower in a more advanced stage attached to the branch; 5, section of a female flower showing three staminodes; 6, gynæceum, with a portion of the wall of the ovary removed, showing the solitary basal ovule:—*all enlarged.*



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COTYLEDON (*Echeveria*) PULVINATA.*Native of Mexico.*

Nat. Ord. CRASSULACEÆ.

Genus COTYLEDON, *Linn.*; (*Benth. et Hook. f. Gen. Plant.* vol. i. p. 659.)

COTYLEDON (*Echeveria*) *pulvinata*; fruticulus pedalis, robustus, carnosus, pluricaulis v. a basi ramosus, caulibus ramisque divaricatis $\frac{1}{3}$ - $\frac{1}{2}$ poll. crassis primum dense argenteo-velutinis demum ferrugineis, internodiis brevibus, foliis patulis 2-3 poll. longis sessilibus spathulato-obovatis oblongisque obtusis crasse carnosis utrinque convexis densissime argenteo-velutinis pilis demum retrorsis pallide viridibus, floribus $\frac{3}{4}$ -pollicaribus in ramulos simplices elongatos foliosos ascendentes dispositis spicatum racemosis velutinis, bracteis foliaceis inferioribus pollicaribus, pedicellis brevibus crassis, calycis segmentis ovato-lanceolatis acutis erectis viridibus, corolla calyce duplo longiore urceolato-campanulato rubro-aurantiaco, tubo brevi, segmentis oblongo-lanceolatis acuminatis apicibus recurvis dorso obtuse carinatis marginibus pallidis, staminibus corolla triente brevioribus, antheris lineari-oblongis apiculatis, disci glandulis depressis lunatis, ovarii carpellis oblongo-ovoideis teretibus in stylos breves inclusos attenuatis, stigmatibus capitellatis.

C. pulvinata, *Hook. f.**Echeveria pulvinata*, *Rose, ined.*

Cotyledon pulvinata differs from the majority of its congeners in its branching habit, scattered leaves, spiciform raceme and clothing of velvety, silvery, white hairs, which turn brown on the branches, and are reflexed in age on the leaves. It has slight claims to be placed in the genus *Echeveria* of De Candolle, which is reduced to *Cotyledon* in the "Genera Plantarum," but this rests only on the costate corolla-lobes, for it has not the foliaceous sepals upon which mainly the genus was established. But I understand that Dr. J. N. Rose and Dr. N. L. Britton are engaged on a revision of the whole of the North American *Crassulaceæ*, and that they propose considerable generic alterations by the creation of several new ones. Therefore I will not further discuss the question of generic limits here.

The plant figured was received at Kew in 1900 from the United States National Museum, Washington, and it flowered in the Succulent House in March of the present year.

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Descr.—A small, very stout, fleshy shrub, seven to eight inches high (in the specimen figured), branching below and upwards, sometimes from the root; covered densely with a silvery, velvety tomentum, which becomes rusty on the stems, and retrorse on the foliage. *Leaves* two to three inches long, sessile, sub-rosulate towards the tips of the spreading branches, spathulately obovate or oblong, obtuse, thickly fleshy, convex on both surfaces, nerveless, pale green. *Flowers* three-fourths of an inch long, erect or inclined, disposed in a spiciform raceme terminating an elongate, ascending, stout, leafy branch, orange-red. *Bracts* leaf-like, the lower an inch long, the upper gradually smaller. *Pedicels* very short and stout. *Calyx* about half as long as the corolla, green; segments ovate-lanceolate, acute, erect. *Corolla* urceolately campanulate, tube short; segments oblong-lanceolate, acuminate, dorsally velvety and obtusely keeled, margins nearly glabrous, pale, tips spreading or recurved. *Stamens* about one-third shorter than the corolla-segments; anthers linear-oblong, apiculate. *Disk-glands* lunate. *Carpels* narrowly ovoid, terete, narrowed into short, subulate styles; stigmas capitellate.—
J. D. H.

Fig. 1, flower; 2, segment of corolla and stamens; 3, glands of disk and pistil:—*all enlarged*; 4, reduced view of whole plant.



LYSIMACHIA CRISPIDENS.

Native of Central China.

Nat. Ord. PRIMULACEÆ.—Tribe LYSIMACHIEÆ.

Genus LYSIMACHIA, Linn.; (*Benth. et Hook. f. Gen. Plant.* vol. ii. p. 635.)

LYSIMACHIA crispidens; herba perennis, nunc subscaposa, scapis numerosis gracilibus, nunc, ut in figura, caule ramoso vere foliato, undique glaberrima, 5-10 poll. alta, foliis crassiusculis subcarnosis margine crispato-dentatis undulatis rubro tinctis radicalibus rosulatis obovato-spathulatis vel interdum fere orbicularibus 1-3 poll. longis deorsum attenuatis vel interdum subpetiolatis caulinis interdum nonnullis radicalibus similibus sæpius omnibus multo minoribus bracteiformibus alternis ovatis vel lanceolatis sessilibus semiamplexicaulibus sursum gradatim minoribus, floribus numerosissimis in axillis bractearum solitariis longe graciliterque pedicellatis nutantibus roseis 6-9 lin. diametro, pedicellis bracteis longioribus post anthesin arcuatim recurvis, calycis segmentis fere liberis ovato-lanceolatis corollæ tubum excedentibus acutis paucidenticulatis, corollæ tubo brevi cylindrico lobis obovatis rotundatis denticulatis, staminibus inclusis filamentis medio connatis, antheris pilis paucis instructis, gynæceo glabro, stylo stamina vix æquante stigmatate parvo capitato, capsula globosa glabra 5-valvi valvis calycis segmentis oppositis brevioribus, seminibus parvis circiter 20-25 angulatis minute punctatis.

Lysimachia crispidens, *Hemsl. in Journ. Linn. Soc. Bot.* vol. xxvi. (1889) p. 50, pl. 1.

Stimpsonia crispidens, *Hance in Journ. Bot.* vol. xviii. (1880), p. 234.

Lysimachia, *Chrysosplenium*, and several other genera represented in the British Flora by two or three species, have attained their maximum development in China, where the species are numerous and highly diversified. Of *Lysimachia* alone thirty-five Chinese species are enumerated in the work cited above, including thirteen previously undescribed, and since then twenty-five additional new species have been recorded from the same country, making a total of sixty species! They present a great variety in habit, foliage, and flowers. Specially remarkable are: *L. paridiformis*, Franch. (*Bot. Mag.* t. 7226); *L. insignis*, Hemsl. (*Hook. Ic. Pl.* t. 2634); *L. pterantha*, Hemsl. (*Journ. Linn. Soc.* vol. xxvi. p. 56, t. 2); *L. involucrata*, Hemsl. (*Journ. Linn. Soc.* vol. xxix. t. 31), and *L. alpestris*, Champ., the last having rosulate leaves, resembling those of a *Drosera*. The genus *Lysimachia* numbers upwards of one hundred species, and it has a wide range in the northern hemisphere,

and it is also represented in South America, South Africa, Australia, and the Pacific Islands, including six species in the Hawaiian group. Some of the last are shrubs five to eight feet high.

L. crispidens, Hemsl., was first collected by Mr. T. Watters, near Ichang, Hupeh, and described by Dr. Hance, who erroneously referred it to the genus *Stimpsonia*. It has since been collected in the same Province by Dr. A. Henry and Mr. E. H. Wilson, Collector for Messrs. James Veitch & Sons. The plant figured was raised from seed sent home by Mr. Wilson. It is a very pretty and highly floriferous plant, which has not yet, so far as I am aware, reached its best under cultivation. Judging rather from the wild specimens than those cultivated, it ought to have a future in European gardens.

Descr.—A perennial herb, sometimes sub-scapose with numerous slender scapes, sometimes with a branched stem (as in the plant figured) bearing true leaves, glabrous throughout, five to six inches high. *Leaves* rather thick, and somewhat fleshy, margin crisply toothed, undulate, tinged with red; radical ones rosulate, obovate, spatulate, or sometimes nearly orbicular, one to three inches long, tapering downwards or sub-petiolate; cauline sometimes like the radical in the lower part of the stem, but usually all smaller and bract-like, alternate, ovate, or lanceolate, sessile, more or less stem-clasping, and gradually smaller upwards. *Flowers* numerous, solitary in the axils of the bracts, on long, slender pedicels, rose-pink, half to three-quarters of an inch in diameter. *Pedicels* longer than the bracts, strongly recurved in fruit. *Calyx-segments* ovate-lanceolate, longer than the corolla-tube, acute, few-toothed. *Corolla-tube* short, cylindrical; lobes obovate-oblong, minutely toothed. *Stamens* included in the corolla; filaments connate to the middle; anthers having a few hairs near the tips. *Ovary* glabrous; style scarcely equalling the stamens; stigma small, capitate. *Capsule* small, globose, five-valved, valves opposite to and shorter than the calyx-lobes. *Seeds* about twenty to twenty-five, very small, angular, minutely punctate.—*W. B. H.*

Fig. 1, gynæceum and part of calyx; 2, part of corolla and three stamens; 3, androecium; 4 a stamen showing inner face of anther:—all enlarged.



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TULIPA PRÆSTANS.

Native of Bokhara.

Nat. Ord. LILIACEÆ.—Tribe TULIPEÆ.

Genus TULIPA, Linn.; (*Benth. et Hook. f. Gen. Plant.* vol. iii. p. 818.)

TULIPA *præstans*; species ex affinitate *T. Kaufmannianæ*, Regel, a qua differt foliis puberulis petalis basi immaculatis ovario staminibus longiore.

T. præstans? *Mast. in Gard. Chron.* 1903, vol. i. p. 324, f. 126.

T. præstans, *Hoog, loc. cit.* p. 364. *Journ. Hort. 3rd Series*, vol. xxxiv. p. 335.

The genus *Tulipa* is now illustrated in the Magazine by thirty plates, mostly of distinct species. In 1805 a figure (t. 839) was given of *T. suaveolens*, Roth, then and now generally recognized as the Duc van Thol tulip of the Dutch, the origin of which was unknown. The late Dr. E. Regel, who was a specialist in tulips, first recorded *T. suaveolens* (*Acta Horti Petropolitani*, vol. ii. (1873), p. 455) as a native of the South of Europe; but he subsequently received specimens from his son Albert of the plant here figured, from Bokhara, and at once came to the conclusion that it was the wild state of *T. suaveolens*, Roth. Among the specimens sent he distinguished three varieties (*Act. Hort. Petrop.* vol. viii. (1884), p. 650), but the cultivation of bulbs from the same source caused him to modify his views, and he combined the varieties under the name of *Tulipa suaveolens* var. *sylvestris*.

Following the appearance in the *Gardener's Chronicle* of an uncoloured figure, cited above, of *T. præstans*, Mr. John Hoog contributed a concise history of the plant and its affinities. He agrees with other writers in identifying *T. suaveolens*, Roth, with the Duc Van Thol tulip, having himself examined Roth's herbarium specimens still preserved in the State Museum of Oldenburg. But he regards *T. præstans* as specifically distinct from that species; a view ultimately shared, it seems, by the late Dr. E. Regel, who was prevented by bad health from publishing it as a new species. Mr. Hoog gives the following description

of *T. præstans*, which he considers neither complete nor final:—

“*Bulb* rounded, about one inch in diameter, with a particularly thick, leathery skin, the latter being almost glabrous inside. *Peduncle* varying in height from a few inches to one and a half feet, covered, as well as the leaves, with minute, closely set, white hairs, and bearing from one to many flowers. *Flower-segments* all uniform in shape, pointed, and of a peculiar light, scarlet-vermilion colour.” Botanically, he says, it is perhaps nearest *T. Kaufmanniana*, Regel. This is figured in the Magazine (tab. 6887), and is very variable in colour, but not including scarlet and vermilion shades.

I must confess that I cannot follow the late Dr. E. Regel and Mr. Hoog in regarding *T. præstans* as a tulip specifically distinct from *T. suaveolens*, and “more deserving of a specific name than any other;” but then I am not an expert in tulips. Still it doubtless ranks high among the early-flowering kinds.

The plant here figured was purchased by Kew from Messrs. Van Tubergen (J. Hoog), and it flowered in the Alpine House in March of the present year.

It may be useful to give the corrections here of two errors in the names of tulips figured in the Magazine, due, in part, it may be added, to conflicting views at different periods. Tab. 6635, to which the name *T. Borszczowi* is given, is *T. Kolpakowskiana*, Regel; and that figured under the latter name (t. 6710) is *T. Ostrowskiana*, Regel, as explained by him (*Gartenflora*, vol. xxxiii. p. 355). *T. Borszczowi*, or, as Regel himself afterwards wrote it, *Borsczowi*, is a very distinct species, of which no figure has yet appeared in the Magazine.—*W. B. H.*

Fig. 1, portion of leaf showing the hairs; 2, androecium and gynæceum; 3, front view of a stamen; 4, back view of the same; 5, gynæceum:—*all enlarged.*



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LISSOCHILUS PURPURATUS.

Native of Tropical Africa.

Nat. Ord. ORCHIDÆ.—Tribe VANDEÆ.

Genus LISSOCHILUS, R. Br.; (*Benth. et Hook. f. Gen. Plant.* vol. iii. p. 536.)

LISSOCHILUS, *purpuratus*; herba terrestris, tuberosa, glabra, foliis hysteranthiis, tuberibus reniformibus iis *Solani tuberosi* similibus in catenas fere tripedales dispositis (*Barter*), foliis lanceolatis 1-2-ped. longis medio usque ad 2 poll. latis acutis plicatis circiter 7-nervis, nervis secundariis numerosissimis, scapis plantarum vetustarum numerosis erectis 2-4½ ped altis, parte florente 9-15 poll. longa, basi dense vaginatis vaginis sursum gradatim remotioribus minoribusque supremis bracteiformibus acutis, floribus roseo-purpureis circiter 1½ poll. diametro, pedicello cum ovario 9-18 lin. longo, bracteis membranaceis linearibus acutis pedicello brevioribus marcescentibus, sepalis petalisque similibus concoloribus roseis anguste oblongis vix acutis undulatis, labello trilobato lobis lateralibus brevioribus rotundatis pallidis intermedio purpureo ovato-oblongo supra 3-carinato carinis cristato-undulatis atropurpureis, calcare brevi obtuso.

L. purpuratus, *Lindl. in Journ. Linn. Soc.* vol. vi. (1862), p. 133. *Reichb. f. in Flora*, 1865, p. 188; *Otia Bot. Hamb.* vol. ii. pp. 75, 114. *Rolfe in Fl. Trop. Afr.* vol. vii. p. 79.

Limodorum cristatum, *Sw. in Schrad. Neues Journ.* vol. i. p. 36; *Lindl. Gen. & Sp. Orch.* p. 185.

Limodorum articulatum, *Schum. & Thonn. Beskr. Guin. Pl.* p. 399.

Eulophia articulata, *Lindl. Gen. & Sp. Orch.* p. 181

Galeandra longibracteata, *Lindl. in Journ. Linn. Soc.* vol. vi. p. 133.

Eulophia longibracteata, *Durand & Schinz, Conspect. Fl. Afr.* vol. v. p. 22.

Lissochilus and *Eulophia*, established by R. Brown, mainly on characters of the lip, the one smooth the other crested, now number between them about one hundred and fifty tropical African species, and, altogether, nearly three hundred species, very difficult to allocate between the two proposed genera. Mr. Rolfe (*Fl. Trop. Afr.* vol. vii. p. 70), notes that *Lissochilus* "approaches *Eulophia* very closely, but the majority of the species are very easily separated by the small spreading or reflexed petals [sepals], and the broad, often differently coloured petals." And he retains *purpuratus* in *Lissochilus*, though it is not one of those easily separated from *Eulophia*, as it has similar sepals and petals and a crested lip. However, as *Lissochilus* is the older genus there is no question of a transfer here.

L. purpuratus, Lindl., appears to be very common in Upper Guinea, W. tropical Africa, and it has also been collected by Dr. Schweinfurth in British East Africa, and in the Congo Free State by J. Dybowski. The plant figured was sent from Abyssinia to Kew by A. B. Wylde, Esq., author of "Modern Abyssinia," with a note that it "grows anywhere above seven thousand feet." But considering that this plant inhabits the lowlands of western tropical Africa, it is very probable that this note was intended for some other plant sent at the same time.

L. purpuratus, Lindl., should not be confused with *L. Krebsii*, var. *purpurata*, H. N. Ridley (*Gard. Chron.* 1885, vol. ii. p. 102; *Warner's Orchid Album*, vol. vi. pl. 259), a native of South Africa.

Descr.—A terrestrial, tuberous, glabrous herb, "forming large clumps" (Dr. Rowland). *Tubers* "similar to those of a kidney potato, produced in chains nearly a yard long" (Barter). *Leaves* lanceolate, one to two feet long, and as much as two inches broad in the middle, acute, plicate, about seven-nerved, with numerous secondary nerves. *Scapes* numerous in old plants, erect, two to four and a half feet high, flowering-part from nine to fifteen inches long, closely sheathed at the base; sheaths smaller, and more distant upward; uppermost ones bract-like, acute. *Flowers* rose and purple, about one and a half inch in diameter; pedicels, including ovary, three-quarters to one and a half inch long. *Bracts* membranous, linear, acute, shorter than the pedicels, soon shrivelling. *Sepals* and *petals* similar in shape and colour, narrow-oblong, scarcely acute, wavy, rose-pink. *Labellum* three-lobed; lateral lobes short, rounded, paler coloured; intermediate lobe much larger, purple, ovate-oblong, with three crested, longitudinal, dark purple ridges. *Spur* short, obtuse.—*W. B. H.*

Fig. 1, labellum and column; 2, anther-case; 3 and 4, pollinia:—*all enlarged.*

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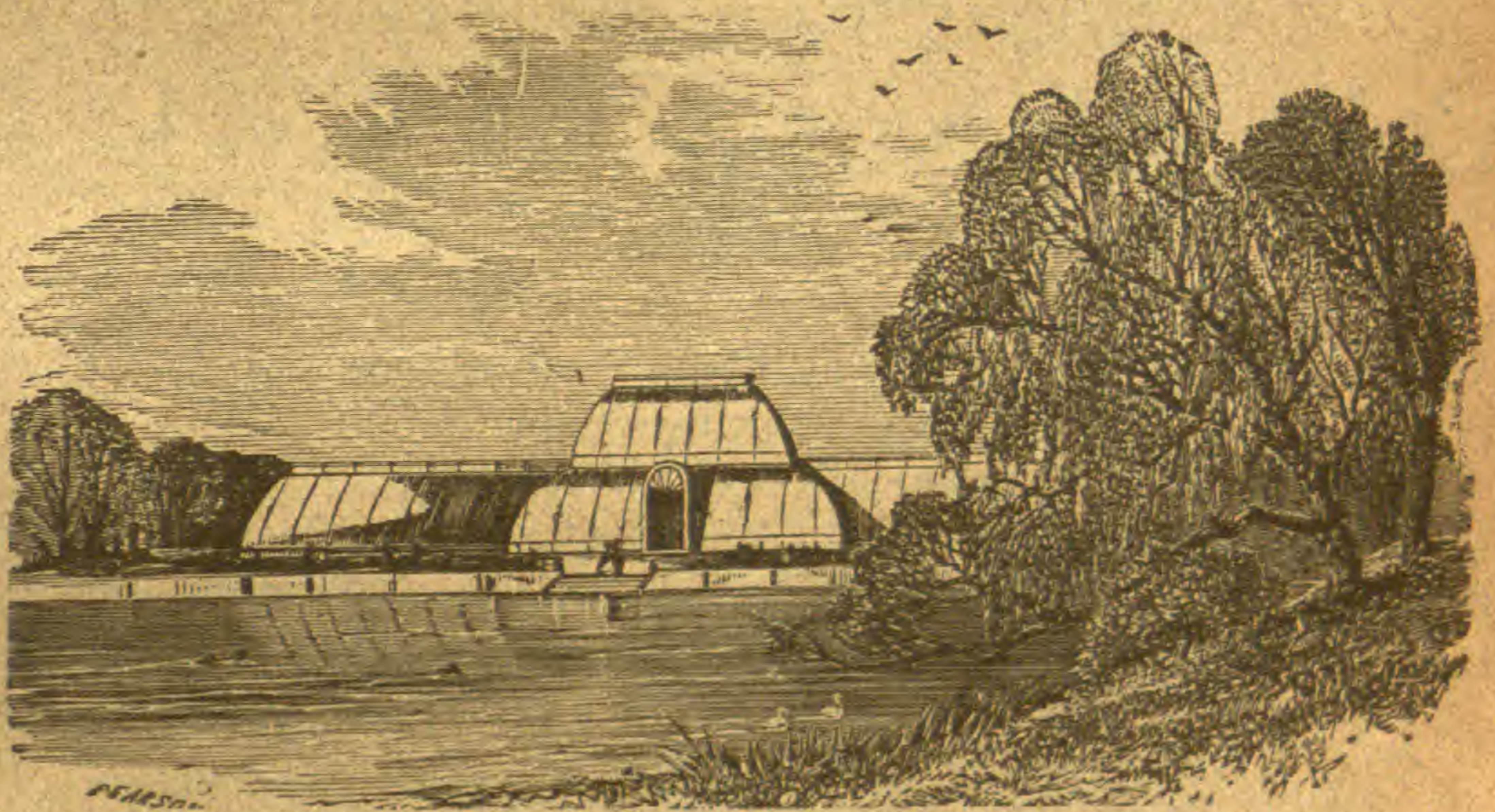
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CLERODENDRON CEPHALANTHUM.

Native of Zanzibar Island.

Nat. Ord. VERBENACEÆ.

Genus CLERODENDRON, Linn.; (*Benth. et Hook. f. Gen. Plant.* vol. ii. p. 1155.)

CLERODENDRON *cephalanthum*; frutex ope petiolorum alte scandens, undique glaber vel cito glabrescens, petiolis nonnullis incrassatis induratis spiniformibus recurvis armatus; planta in horto Kewensi culta caulibus pluribus fere 20 ped. longis usque ad $\frac{1}{2}$ poll. diametro cavis, foliis oppositis vel interdum alternis distincte petiolatis tenuibus demum coriaceis ovato-lanceolatis vel oblongo-lanceolatis usque ad 10 poll. longis sed sæpius minoribus acuminatis subobtusis basi cuneatis vel rotundatis, venis primariis lateralibus utrinque 3 vel 4 subtus elevatis, petiolis nonnullis medio abscissis auctis persistentibus, floribus dense cymosocapitatis albo-roseis cum staminibus exsertis 4-5 poll. longis brevissime pedicellatis, inflorescentiis sæpius terminalibus interdum 9-10 poll. diametro, additis nonnullis lateralibus minoribus, bracteis bracteolisque parvis lanceolatis ovatisve, calycis roseo-purpurei lobis oblongo-lanceolatis apiculatis tubo longioribus 4-5 lin. longis, corollæ albæ tubo gracillimo apicem versus curvato 3-3 $\frac{1}{2}$ poll. longo, limbi lobis oblongis leviter recurvis inæqualibus 6-9 lin. longis, staminibus longe exsertis, filamentis filiformibus rubris, stylo stamina æquante.

C. cephalanthum, Oliver in *Hook. Ic. Pl.* t. 1559. *Gard. Chron.* 1888, vol. i. p. 652.

C. capitatum var. *cephalanthum*, Baker in *Dyer Fl. Trop. Afr.* vol. v. p. 305.

This handsome climbing shrub was brought to Kew by Sir John Kirk from the Island of Zanzibar, in 1886, and it grows vigorously and flowers freely in the Palm House. There are flowering specimens in the Herbarium from this source bearing the dates, May 9th, 1888, and June 19th, 1889; and the inflorescence here figured was produced in March of the present year. It is of only medium dimensions, as our space is insufficient to show the largest ones. Though not so brilliantly coloured as some of its congeners, *Clerodendron cephalanthum* is a very showy object where it has space to develop. Mr. J. G. Baker, in the place cited above, treats it as a variety of *C. capitatum*, Schum. & Thonn. (*Bot. Mag.* t. 4355), and it has very slender claims to specific rank; but from a horticultural standpoint it is quite distinct from typical *capitatum*. It climbs, in part at least, by means of the modified petioles of some of the leaves. During development, the lower

half of the petiole thickens, and the upper part at length disarticulates, carrying the blade with it. The hardened lower part persists in the form of a rigid, woody, recurved spine.

Tropical Africa is the centre of the greatest concentration of the genus *Clerodendron*, no less than seventy species being already on record therefrom. Noteworthy among the African species in cultivation are *C. Thomsonæ*, Balf., and *C. macrosiphon*, Hook. f. (Bot. Mag. t. 6695); the latter is another of Sir John Kirk's numerous introductions.

Descr.—A tall shrub, climbing by means of modified petioles, glabrous or nearly so, some of the branches armed with the spine-like, persistent petioles. *Stems* as much as twenty feet long, and half an inch thick, hollow between the nodes. *Leaves* distinctly stalked, thin, at length somewhat coriaceous, ovate-lanceolate or oblong-lanceolate, as much as ten inches long, but usually smaller, acuminate, somewhat obtuse, cuneate or rounded at the base; primary lateral veins three or four on each side. *Flowers* densely cymose-capitate; cymes terminal, sometimes with lateral, smaller ones. *Bracts* and *bracteoles* small and inconspicuous. *Calyx* showy, about nine lines long, red, with oblong-lanceolate lobes. *Corolla* white; tube very slender, three to three and a half inches long, curved near the top; lobes of the limb oblong, unequal, slightly recurved, six to nine lines long. *Stamens* exserted; filaments filiform, red.—*W. B. H.*

Fig. 1, a young corolla laid open, showing the position of the stamens in the bud; 2, ovary; 3 upper part of style and stigma:—*all enlarged.*



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IMPATIENS FALCIFER.

Native of the Sikkim Himalaya.

Nat. Ord. GERANIACEÆ.—Tribe BALSAMINEÆ.

Genus IMPATIENS, Linn.; (*Benth. et Hook. f. Gen. Plant.* vol. i. p. 277.)

IMPATIENS falcifer; herba annua, 1-2 pedalis, glaberrima, caule decumbente ramoso terete folioso, foliis 1-4 poll. longis alternis sessilibus et petiolatis ovatis ovato-oblongisve acutis acuminatisve serratis basi acutis, marginibus minute ciliolatis eglandulosis, nervis 6-8-jugis, petiolo $\frac{1}{6}$ -1 poll. longo, glandulis stipularibus minutis pulvinatis, pedunculis axillaribus $\frac{1}{4}$ - $\frac{1}{2}$ poll. longis solitariis 1-rarissime 2-floris medio bracteolatis basi ebracteatis fructu deflexis, bracteolis setaceis v. lanceolatis viridibus, floribus ringentibus 1-1 $\frac{1}{2}$ poll. longis aureis vexillo loboque falciformi alarum sanguineo maculatis, sepalis 2 $\frac{1}{7}$ - $\frac{1}{4}$ poll. longis ovatis ovato-rotundatisve apiculatis viridibus, vexillo erecto galeæformi costa dorso incrassato apice mucronato, alarum lobo basilari parvo rotundato integro v. lobulato, distali multo majore bilobulato lobulis divaricatis laterale lineari-oblongo recurvo falcato terminali amplo oblongo apice rotundato, auricula dorsali 0, labelli parvi limbo infundibulari in calcar $\frac{1}{2}$ -1 poll. longum rectum v. incurvum attenuato, filamentis linearibus, antheris minutis, capsulis 1-1 $\frac{3}{4}$ poll. longis pendulis, linearibus cylindræis, seminibus $\frac{1}{12}$ - $\frac{1}{8}$ poll. longis oblongis rugulosis funiculo carnosulo.

I. falcifer, *Hook. f.*I. serrata, *Benth. partim, Hook. f. & Thoms. in Journ. Linn. Soc.* vol. iv. (1860) p. 136. *Hook. f. Fl. Brit. Ind.* vol. i. p. 473. *Herb. Ind. Or. Hook. f. & Thoms.* n. 88.

Impatiens falcifer belongs to a group of the genus with axillary, simple or forked, one to three-flowered peduncles, which are bracteate usually in the middle, or when forked on one of the pedicels, and pendulous, very slender, elongate capsules. Of this group there are several North Indian species, including *I. scabrida*, DC. (*I. tricornu*, Lindl.; *Bot. Mag.* t. 4051). Its nearest ally is *I. serrata*, Benth. in *Wall. Cat.* n. 4771, also a Sikkim plant, growing at similar elevations, which is so similar in habit, foliage, inflorescence, and capsule that it is impossible to distinguish them without the flower. The description of the latter in the "Flora of British India" includes both. The chief differences between them are, that in *I. serrata* the flowers are white, the sepals lanceolate and acuminate, and the distal lobe of the wings quite entire. The condition of the flowers of Wallich's specimens of *I. serrata* in the

Linnæan Herbarium is so bad, that it was with great difficulty that I determined their structure. The Sikkim specimens were distributed under No. 89, those of *I. falcifer* are numbered 88.

I. falcifer is a rather common species in pastures and shaded places of the Sikkim Himalaya, at elevations of eight to ten thousand feet. The figure here given is from plants raised at Kew from seeds received by the writer in 1902 from Major Prain, Superintendent of the Royal Botanic Gardens, Calcutta, which flowered in a frame in May of the present year, but failed to ripen seed.

Descr.—A weak, glabrous, usually decumbent, branched annual, one to two feet high or long. *Leaves* one to four inches long, alternate, sessile, or petioled, ovate, or ovate-lanceolate, serrate, acuminate, base acute, or narrowed into a petiole an inch long or shorter; margins minutely ciliolate, eglandular; stipular glands minute, pulvinate. *Peduncles* solitary, simple, one-flowered, and bracteolate in the middle, never at the base, very rarely forked and two-flowered, with a bracteole on one or more of the pedicels, deflexed in fruit. *Flowers* ringent, one to one and a half inches long, golden-yellow, spotted with blood-red on the standard, and on the falcate lobule of the distal lobe of the lip. *Sepals* two, one-seventh to one-fourth of an inch long, broadly ovate, or sub-orbicular, cuspidate, green. *Standard* erect, galeate, trapezoid when spread out, mucronate. *Wing-petal* with a small basal lobe, and a large, spreading distal of two divaricate lobules; a lower lobule linear-oblong, falcately recurved, and a much larger, oblong terminal one, rounded at the tip. *Lip* with a small, funnel-shaped limb, narrowed into a straight, slender, incurved or straight spur, one half to one inch long. *Capsule* one to one and three-quarters of an inch long, slender, strict, terete, pendulous. *Seeds* small, testa rugose.—*J. D. H.*

Fig. 1, portion of stem and petiole with stipulary gland; 2, portion of leaf-margin; 3, sepal; 4, wing-petal; 5, young capsule:—*all enlarged.*



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FENDLERA RUPICOLA.

Native of South-western North America.

Nat. Ord. SAXIFRAGACEÆ.—Tribe HYDRANGEÆ.

Genus FENDLERA, *Engelm. & A. Gr.*; (*Benth. et Hook. f. Gen. Plant.* vol. i. p. 643.)

FENDLERA *rupicola*; frutex erectus, dense ramosus, 3-6 ped. altus, ramis rigidissimis cortice striato, foliis in ramulis lateralibus confertis oppositis subsessilibus rigide coriaceis deciduis lineari-lanceolatis majoribus circiter pollicaribus acutis trinerviis supra scaberulis subtus sericeis floribus albis $1\frac{1}{4}$ - $1\frac{1}{2}$ poll. diametro solitariis vel tenuis ramulis brevibus lateralibus terminantibus, pedicellis brevibus puberulis ebracteolatis, calycis pubescentis 4-fidi segmentis ovatis subobtusis valvatis, petalis 4 perigynis imbricatis extus puberulis ciliolatis ovato-spathulatis unguiculatis venosis circiter 9 lin. longis deciduis, staminibus 8 uniseriatis cum petalis insertis erectis, filamentis petaloideis apice bicurvis lobis linearibus acutis erectis ultra antheram productis antheris introrsis, ovario semi-supero glabro 4-loculari, loculis multiovulatis, stylo pubescenti, capsula fere omnino supera crustacea vel fere lignosa oblongo-ovoidea 5-7 lin. longa septicide 4-valvi, valvis mucronatis, loculis oligospermis, seminibus in loculis paucis pendulis imbricatis oblongis $2\frac{1}{2}$ - $3\frac{1}{4}$ lin. longis, testa crassa laxa dorso basique alato, embryo parvo recto angustissimo $1-1\frac{1}{4}$ lin. longo $\frac{1}{6}$ lin. lato in albuminis axe posito, cotyledonibus radícula supera longioribus.

F. rupicola, *Engelm. & A. Gray in Smithson, Contrib.* vol. iii. (*Pl. Wright*, vol. i.) p. 77, t. 5, et vol. v. (*Pl. Wright*, vol. ii.) p. 64. *Coulter, Man. Bot. Rocky Mts.* p. 95. *Greene in Bull. Torr. Bot. Club*, vol. viii. (1881), p. 25. *Rev. Hort.* 1891, p. 42, f. 12, et 1899, p. 129, f. 44. *Garden & Forest*, vol. ii. (1889), p. 112, f. 98.

Fendlera is a genus of two known species, the second being *F. utahensis*, Greene (*Whipplea utahensis*, S. Wats.) in the publication cited above. Both, as Prof. Greene states, grow on the dry, sunburnt rocks of the interior desert region of the south-west—that is of Texas, New Mexico, Arizona, and Utah. This information gives some clue to the treatment they should receive under cultivation. All writers who are familiar with *F. rupicola* in a wild condition, describe it as a very attractive, highly floriferous shrub, and Prof. Greene says of it: “A beautiful shrub of the mountains of Texas and New Mexico putting forth in May a profusion of large white or rose-coloured flowers, which give it the aspect of a small peach-tree.”

According to Prof. C. S. Sargent (*Garden & Forest*, vol. ii. (1889), p. 112, f. 98) it had already, at that date, been some years in cultivation in the Arnold Arboretum, where it was quite hardy, flowered profusely, and ripened

seed. He describes the petals as bluish white, associated with conspicuous, yellow stamens.

With regard to its introduction into European gardens, the date usually given is 1888; but there is a specimen in the Kew Herbarium, from the garden of Mr. Max Leichtlin, of Baden Baden, received through Mr. Gumbleton, of Cork, in 1852. As will be seen, all our references to horticultural publications are of a later date. Mr. Ed. André, writing in 1899, says "that it succeeds well at Lacroix, in Touraine, where it was covered with flowers every spring." It has been in cultivation at Kew for some years, and it flowered last May, when the drawing was made. The plant is growing against the south wall of the Orchid House, and is bearing a few more flowers now in mid-October.

There is also a second plant in the Arboretum, four to five feet high and three feet through; but it has, I believe, never flowered, and has much deteriorated during the two last wet seasons.

Descr.—An erect, densely branched shrub, three to six feet high, with very rigid branches and striated bark. *Leaves* usually clustered on short, lateral branchlets, opposite, nearly sessile, rigidly coriaceous, linear-lanceolate, the largest about an inch long, acute, three-nerved, scabrid above, silky beneath. *Flowers* white, with yellow anthers, one and a quarter to one and a half inches in diameter, solitary, or in threes, on the lateral branchlets; pedicels very short, slightly hairy, bractless. *Calyx* pubescent, deeply four-lobed; segments ovate, somewhat obtuse, valvate. *Petals* four, perigynous, imbricate, slightly hairy on the outside and ciliolate, ovate-spathulate, distinctly clawed, veined, about nine lines long, deciduous. *Stamens* eight, erect; filaments petaloid, with two narrow, acute, apical lobes overtopping the anther. *Ovary* glabrous at the top, four-celled; cells containing many ovules; style hairy. *Capsule* almost wholly, superior, crustaceous, or almost woody, oblong-ovoid or conical, five to seven lines long, septically four-valved; valves mucronate; cells several-seeded. *Seeds* oblong, with a loose-celled, thick testa, winged dorsally and at the base; embryo small, straight, in the centre of the albumen.—*W. B. H.*

Fig. 1, flower from which the petals have been removed; 2, ventral view of a stamen; 3, dorsal view of the same; 4, pistil:—*all enlarged.*



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SPHÆROCODON OBTUSIFOLIUM.

Native of Tropical Africa.

Nat. Ord. ASCLEPIADACEÆ.—Tribe MARSDENIÆ.

Genus SPHÆROCODON, Linn. (*Benth. et Hook. f. Gen. Plant.* vol. ii. p. 772.)

SPHÆROCODON, *obtusifolium*; planta lignosa caudice nano incrassato perenni, caulibus annuis (vel interdum perennis?) nunc (hospitorum absentia?) suberectis vel vagantibus nunc volubilibus subsimplicibus florentibus 1-3 ped. longis pubescentibus, internodiis foliis sæpius brevioribus (fere semper in exemplariis agrestibus), foliis distincte petiolatis molliter chartaceis circumscriptione variabilibus ellipticis ovato-oblongis ovatis vel obovato-oblongis sæpius $1\frac{1}{2}$ -3 poll. longis plus minusve acuminatis vel utrinque rotundatis præcipue subtus secus venas paucas primarias pubescentibus, cymis umbelliformibus ad nodos solitariis breviter pedunculatis 5-15 floris pubescentibus, bracteis minutis, floribus rubro-purpureis 6-8 lin. diametro pendulis, pedicellis gracilibus 4-8 lin. longis, calycis pubescentis segmentis lineari-lanceolatis acutis circiter 2 lin. longis, corollæ campanulatæ puberulæ lobis deltoideis acutis tubo paullo brevioribus demum recurvis, coronæ squamis 5 parvis glanduliformibus tubo stamineo supra basin adnatis, staminibus basi corollæ affixis filamentis in tubum connatis, antheris erectis, polliniis in quoque loculo solitariis caudiculis gracillimis, fructu ignoto.

S. *obtusifolium*, *Benth. in Hook. Ic. Pl.* vol. xii. p. 78, t. 1190. N. E. Brown in *Fl. Trop. Afr.* vol. iv. p. 412. *Hiern in Cat. Afr. Pl. Welw.* vol. i. p. 692. *K. Schum. in Engl. Pfl. Ost. Afr. C.* p. 326, et in *Engl. & Prantl, Pflanzenf.* vol. iv. pars 2, p. 283, fig. 85.

S. *natalense*, *Benth. in Hook. Ic. Pl.* vol. xii. p. 79.

S. *caffrum*, *Schlechter in Journ. Bot.* 1895, p. 339.

Tylophora caffra, *Meisn. in Hook. Lond. Journ. Bot.* vol. ii. (1843), p. 542—*errore*, 442.

Gongronema Welwitschii, *K. Schum. in Engl. Bot. Jahrb.* vol. xvii. p. 145.

Sphærocodon is a somewhat obscure African genus, of which the fruit is unknown. A second species, *S. melananthus*, N. E. Brown, is recorded from W. tropical Africa. *S. obtusifolium*, Benth., inhabits both western and eastern regions, ranging in the east from Nile Land to Natal.

The plant figured was raised from seed sent to Kew from Namasi, Nyasa Land, in 1897, by Mr. Kenneth J. Cameron, who also sent a dried specimen at the same time. The cultivated plant is so much more vigorous than the wild, and the flowers so much larger, that they might be taken for different species. All the wild specimens are

dwarf in stature, and sub-erect in habit; but the cultivated plant shows a tendency to twining, insomuch as some of the branches twine around each other. It is possible that it has lost the twining habit so common in the *Asclepiadaceæ* through changes in environment in some of the districts where it has been collected.

Descr.—A perennial, woody plant, with a dwarf, thick stock, which produces annual (sometimes perennial?) flowering stems of sub-erect or twining habit. *Stems* one to three feet long, pubescent; internodes usually shorter than the leaves, at least in the wild specimens. *Leaves* petiolate, soft and papery in texture, very variable in outline, from oval to oblong or ovate, mostly from one and a half to three inches long, acuminate, or rounded at both ends, more or less hairy, especially along the veins on the under surface. *Cymes* or false umbels solitary at the joints, shortly stalked, five- to fifteen-flowered, pubescent; bracts very small. *Flowers* purple-red, six to eight lines in diameter, pendulous on slender pedicels. *Calyx* pubescent; segments linear-lanceolate, acute, about two lines long. *Corolla* campanulate, puberulous; lobes deltoid, acute, somewhat shorter than the tube, at length recurved. *Coronal scales* five, small, gland-like, adnate to the middle of the staminal-tube. *Stamens* attached to the base of the corolla; filaments connate in a tube. *Anthers* erect; pollen-masses solitary in each cell, with slender caudicles. *Fruit* unknown.—*W. B. H.*

Fig. 1, an unexpanded flower; 2, corona and gynæceum; 3, pollinia:—all enlarged.



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IRIS GRACILIPES.

Native of Japan.

Nat. Ord. IRIDACEÆ.—Tribe MORÆÆ.

Genus IRIS, Linn.; (*Benth. et Hook. f. Gen. Plant.* vol. iii. p. 686.)

IRIS (*Evansea*) *gracilipes*; cæspitosa, subscaposa, gracilis, 6–12 poll. alta, rhizomate gracili ramoso, caulibus sterilibus brevissimis, foliis, absque paucis inferioribus minoribus, membranaceis 3–5 tenuibus linearibus interdum latiusculis 6–12 poll. longis acutissimis circiter 6-nerviis cum intermediis tenuioribus, caulibus floriferis folia caulorum sterilium vix excedentibus 2-vel 3-foliatis 2-vel 3-floris, foliis 2–3 poll. longis, pedunculis gracillimis, floribus in spathis brevibus tenuissimis solitariis sessilibus erectis purpureis vel lilacinis circiter 2 poll. diametro, perianthii tubo brevissimo, limbi segmentis exterioribus oblongis apice emarginatis recurvis medio albis purpureo-striatis luteo-cristatis, interioribus minoribus concoloribus, styli cristis concoloribus fimbriato-dentatis.

I. *gracilipes*, *A. Gray Bot. Jap. in Mem. Amer. Acad.* n.s. vol. vi. p. 412. *Franch. et Savat. Enum. Pl. Jap.* pars ii. p. 41. *Honzo Zufu*, vol. xxiii. p. 11, fig. dextr. *Baker, Handb. Irid.* p. 22.

I. *sibirica*, *Somoku Zusetsu*, vol. ii. p. 10 (11 *Jap.*), non Linn.

This elegant little *Iris* belongs to the small section or sub-genus *Evansea*, distinguished among the rhizomatous series by having a distinct crest on the lower part of the blade and claw of the outer segments of the perianth. Mr. Baker, in his "Handbook of the Irideæ," enumerates eight species, all of which, except the North American *I. lacustris*, Nutt., are, or have been, in cultivation. They are:—*I. nepalensis*, D. Don. (*Sweet's British Flower Garden*, series 2, t. 11); *I. speculatrix*, Hance (*Bot. Mag.* t. 6306); *I. cristata*, Ait. (*Bot. Mag.* t. 412); *I. Milesii*, Foster (*Bot. Mag.* t. 6889); *I. tectorum*, Maxim. (*Bot. Mag.* t. 6118), and *I. japonica*, Thunb., syn. *I. chinensis*, Curt. (*Bot. Mag.* t. 373). With the exception of *I. cristata*, a native of the Eastern States of North America, all the species named inhabit Asia, ranging from the North-west Himalaya to China and Japan.

I. gracilipes is in cultivation both at Kew and Cambridge. Kew procured it from Mr. Max Leichtlin in September, 1902, and it flowered in pots in a cold frame, and also in an open bed during last spring. Mr. R. I.

Lynch sent flowering specimens from Cambridge in April, without any information of their origin. It is one of the most graceful species of the genus, and merits attention where the larger, more showy ones would be out of place. There are several Japanese, not specially localized specimens in the Kew Herbarium, including one of Gray's type; but there is a note that the species grows in humid situations.

Descr.—A tufted, slender herb, six to twelve inches high, with a slender, branching rootstock. *Stems* of two kinds, flowerless and flowering; the former very short, and bearing from three to five narrow, thin leaves, six to twelve inches long, very acute, six-nerved, with secondary, thinner nerves. *Scapes* or flowering stems about the same height, bearing two or three short leaves, and about the same number of flowers. *Spathes* one-flowered, on very slender peduncles. *Flowers* sessile, erect, purple or lilac, about two inches in diameter. *Falls* oblong, notched at the tip, recurved, white in the middle, striped with purple, and yellow-crested. *Standards* smaller, self-coloured. *Style-crests* of the same colour, irregularly fringe-toothed.—
W. B. H.

Figs. 1 and 2, ventral and dorsal views of an anther; 3, a style-crest:—*all enlarged.*

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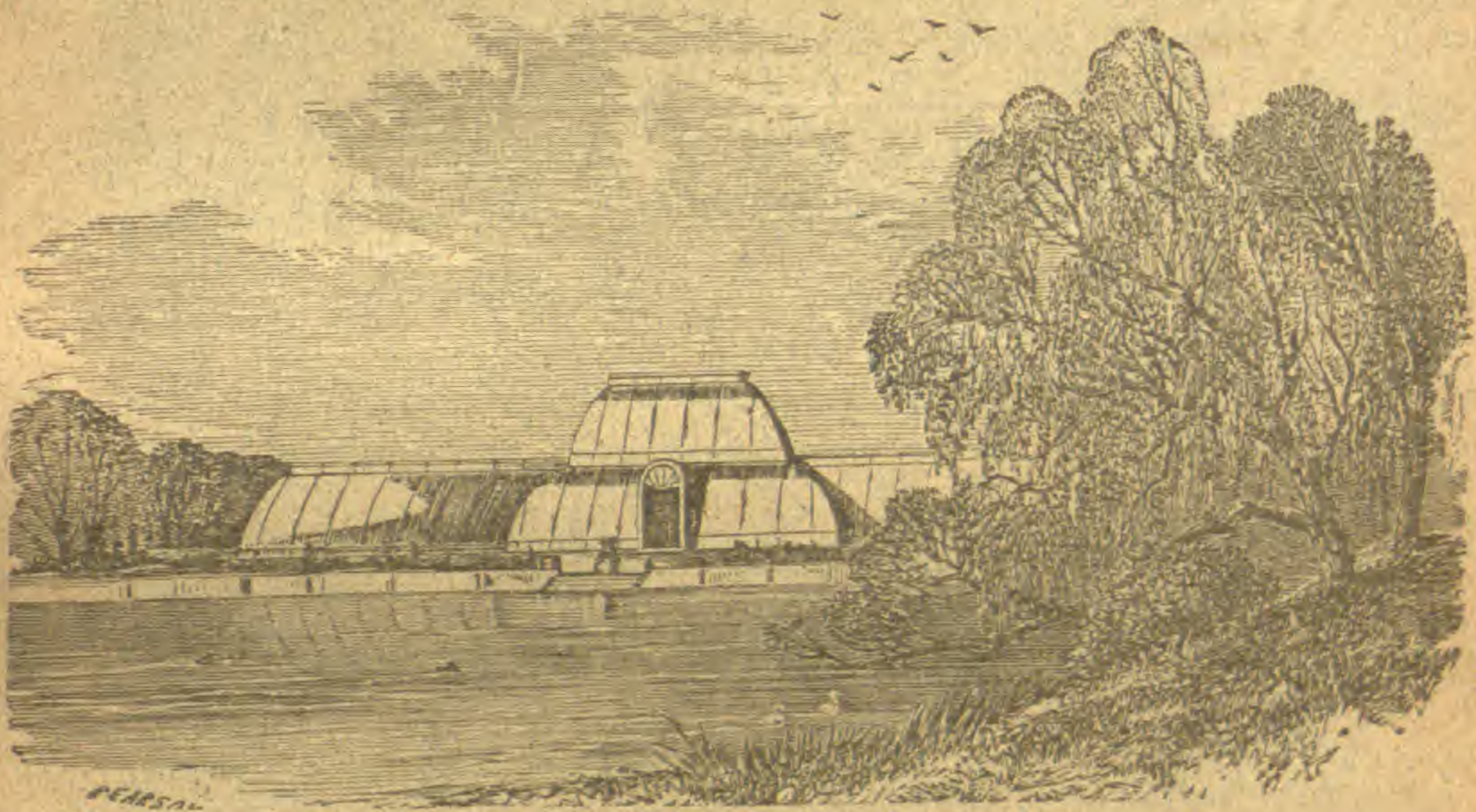
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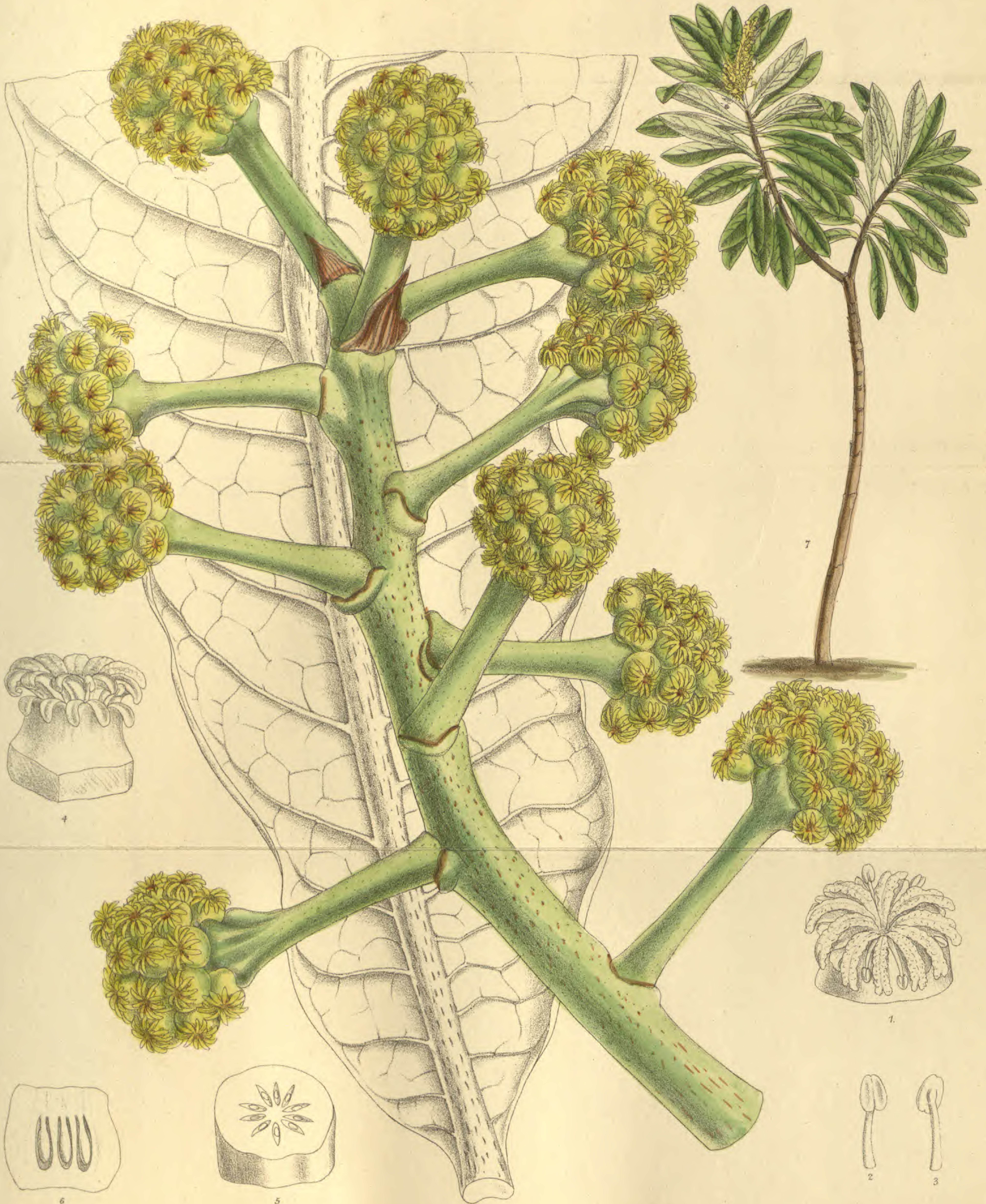
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TAB. 7927.

MERYTA DENHAMI.

Native of New Caledonia and New Hebrides.

Nat. Ord. ARALIACEÆ.

Genus MERYTA, *Forst.*; (*Benth. et Hook. f. Gen. Plant. vol. i. p. 940.*)

MERYTA *Denhami*; arbor parva, dioica, trunco gracili sæpius simplici interdum furcato vel pauci ramoso (specimen in horto kewensi cultum ♀ circiter 17 ped. altum, trunco supra medium furcato basi 3 poll. diametro, foliis maximis 3½ ped. longis), foliis alternis coriaceis glabris dimorphis vel heteromorphis, iis plantarum omnino juvenilium linearibus 6-12 poll. longis 4-6 lin. latis, iis plantarum adultarum distincte petiolatis ligulatis lanceolatis vel oblanceolatis 1½-4 ped. longis 2-9 poll. latis grosse undulato-crenatis apice acutis, vel rotundatis deorsum attenuatis, costa crassa, venis primariis lateralibus prominentibus in crenas excurrentibus, petiolo compresso-tereti, inflorescentiis ♀ capitato-paniculatis folia fere æquantibus in axillis foliorum superiorum subsessilibus, ramis crassis carnosis, capitulis multifloris subglobosis 1¼-1½ poll. diametro pedunculatis, pedunculis crassis 1½-2 poll. longis basi bractea ampla acuminata membranacea cito decidua instructis, floribus ♀ sessilibus vel arcte confertis ima basi connatis flavo-virentibus, calycis limbo obsoleto, petalis circiter 10 (7-12) ligulatis recurvis quam stylis vix longioribus, staminibus imperfectis 10, ovario 10-(7-12-) loculari, stylis late stigmatosis sulcatis undulatis recurvis, ovulis in loculis solitariis ab apice loculorum pendulis, fructu ignoto.

M. Denhami, *Seem. Bonplandia*, vol. x. 1862, p. 295.

Aralia reticulata, *Hort.*

There are specimens of *Meryta Denhami* in the Kew Herbarium, from a plant which flowered in the Palm House in 1860, accompanied by drawings and a brief description of the floral structure by A. A. Black, then, and for too brief a period thereafter, Curator. He found the parts of the flower varying from five to nine, and we have found them from seven to twelve in the same inflorescence. It was introduced to Kew by William Grant Milne, a gardener who was on Captain Denham's Expedition to the South Sea. He collected it in the Isle of Pines, New Caledonia, in 1853, and what appears to be the same species has since been collected by Archdeacon Comins in the island of Santa Maria, Banks's Group, Northern New Hebrides, where it attains a height of thirty feet or more, with leaves one to two feet long.

Apparently all the plants in cultivation were raised from
DECEMBER 1ST, 1903.

Milne's introduction, and only the female is known. According to Seemann, in the publication cited above, it flowered at Kew again in 1862, and it has often flowered since in the Palm House, and more recently in the warm end of the Temperate House.

There are also flowering specimens in the Herbarium, and a photograph of the plant from the Botanic Garden, Cork, sent by Professor Hartog in 1890. Mr. Watson notes that it is propagated from eyes, and that it is used as a stock on which *Aralia Veitchii* and several other stove species are grafted.

Descr.—A small, dioecious tree. *Trunk* slender, usually simple, sometimes forked or sparingly branched; the female specimen here figured, cultivated at Kew, about seventeen feet high, with a trunk three inches in diameter at the base, and leaves as much as three feet and a half long. *Leaves* alternate, coriaceous, glabrous, very variable in size and shape; of quite young plants linear, six to twelve inches long, and a third to half an inch wide; of flowering plants strap-shaped, lanceolate or oblanceolate, one and a half to four feet long, two to nine inches broad, coarsely undulate-crenate, acute or rounded at the tip, tapering to the base; midrib thick; primary lateral veins running out at the crenatures; petiole stout, compressed. *Female flowers* capitate, in panicles two or three feet long, springing from the axils of the upper leaves. *Branches* of the panicles and the peduncles thick and fleshy. *Flowers* sessile, densely crowded, connate at the very base only, yellow-green. *Calyx-limb* obsolete. *Petals* usually about ten, ligulate or oblong, recurved, persistent, scarcely longer than the styles. *Stamens* ten, imperfect. *Ovary* usually ten-celled; ovules solitary, pendulous. *Fruit* unknown.—
W. B. H.

Fig. 1, a female flower containing imperfect stamens; 2 and 3, stamens from the same; 4, another view of a female flower; 5, cross section of an ovary; 6, tangential section of the same; 7, reduced sketch of plant:—all enlarged, except 7, which is about one-fortieth of the natural size.



AGAPETES MOOREI.

Native of Sikkim.

Nat. Ord. VACCINIACEÆ.—Tribe THIBAUDIÆ.

Genus AGAPETES, G. Don; (*Benth. et Hook. f. Gen. Plant.* vol. ii. p. 571.)

AGAPETES *Moorei*; species fruticosa ad aspectu *A. setigeræ* et *A. verticillatæ* simillima, sed calycis tubo supra ovarium producto et staminum structura distinctissima; planta depicta caudice incrassato terete 4-poll. diametro, caulibus 3 erectis rigidis $2\frac{1}{2}$ ped. altis pauciramosis, ramis brevibus graciliusculis, foliis nunc subverticillatis nunc sparsis sæpe quinatis (verticillis in apicibus innovationum singulis), brevissime petiolatis crassis coriaceis glabris vel cito glabrescentibus oblongo-lanceolatis $2-3\frac{1}{2}$ poll. longis apiculatis basi rotundatis vel subcordatis, costa valida, venis inconspicuis, floribus coccineis vel rubro-aurantiacis circiter sesquipollicaribus pendulis 6-9 in racemos axillares subterminales et laterales dispositis, racemis quam foliis brevioribus, pedunculis pedicellis calycibusque molliter breviterque pubescentibus, pedicellis 3-4 lin. longis bracteis parvis acutis cito deciduis basi suffultis, calycis 5-6 lin. longi tubo supra ovarium manifeste producto, lobis deltoideis vix acutis, corolla subcylindrica circiter $1\frac{1}{4}$ poll. longa fere ad medium 5-loba, lobis angustis acutis recurvis vel revolutis intus flavis extus minute puberulis, staminibus 10 exsertis a corolla liberis, filamentis liberis planis prope basin insigniter geniculatis quam antheris longioribus parte antheris adnata apicem versus attenuata parce puberula, antheris dorsifixis adglutinatis basi facie 1-calcaratis parte superiore tubifera libera, ovario 5-loculari vel spurie 10-loculari, loculis multiovulatis, stylo glabro basi geniculato disco parvo annulato cincto stamina paullo superante apice vix incrassato, capsula ignota.

A. *Moorei*, *Hemsl.*

This handsome shrub was sent to Kew last March by Mr. F. W. Moore, Keeper of the Glasnevin Botanic Garden, to be named, with the information that it was imported with *Cirrhopetalum Rothschildianum*, O'Brien. But the habitat of the latter is somewhat obscure, being described (*Gard. Chron.* 1895, vol. ii. p. 608) as "somewhere beyond Darjeeling." However, there is little doubt that it is a native of Sikkim. We have much pleasure in giving the name of that eminent horticulturist to one of the numerous gems of his successful cultivation.

In foliage it strongly resembles *Agapetes setigera*, D. Don, a species introduced in 1837, but in floral structure it is more closely related to *A. buxifolia*, Nutt. (*Bot. Mag.* t. 5012).

At least two other very showy species of this genus had previously been figured in the Magazine, namely,

A. macrantha, Benth. & Hook. f. (t. 4566), and *A. pulcherrima*, Benth. & Hook. f. = *A. variegata*, D. Don (t. 4303); both under *Thibaudia*.

Mr. Moore obtained his plant of *A. Moorei* in 1900, and he cultivates it in a cool orchid house.

Descr.—A handsome shrub, closely resembling the old *A. setigera*, but very different in the structure of the flowers. *Caudeæ* of the plant figured four inches in diameter, and bearing three slender, stiff stems two and a half feet high. *Branches* slender and stiff, glabrous or soon glabrescent. *Leaves* alternately sub-verticillate, and scattered, usually in fives at the tips of the annual growths, shortly petiolate, thick, coriaceous, glabrous or nearly so, oblong-lanceolate, two to three and a half inches long, apiculate, rounded or somewhat cordate at the base; midrib thick; veins inconspicuous. *Flowers* scarlet or orange-red, about one and a half inch long, in short, axillary or sub-terminal racemes. *Racemes* six- to nine-flowered, shorter than the leaves; peduncles, pedicels and calyx softly pubescent. *Pedicels* three to four lines long, furnished at the base with small, acute bracts, which fall away early. *Calyx* five to six lines long; tube distinctly produced above the ovary; lobes deltoid, sub-acute. *Corolla* nearly cylindrical, about one and a quarter inch long, five-lobed almost to the middle; lobes narrow, acute, revolute, yellow within, obscurely puberulous on the outside. *Stamens* ten, exserted, free from the corolla; filaments free, flat, with a remarkable knee-like bend near the base, longer than the anthers, slightly puberulous on the back of the part attached to the anthers; anthers dorsifixed, slightly connate, and produced below the attachment in the form of a spur; the upper slender, tubular part free. *Ovary* spuriously ten-celled; cells containing many ovules; style glabrous, bent near the base similarly to the stamens, slightly exceeding the latter, and surrounded at the base by a small, ring-like disk. *Capsule* unknown.—*W. B. H.*

Fig. 1, longitudinal section of an ovary with a portion of the calyx and base of style; 2, three stamens, showing the geniculate, glabrous filaments; 3, two anthers, showing the basal spurs and the oblique, apical pores; 4, apex of style; 5, cross section of an ovary, showing that it is spuriously ten-celled:—*all enlarged.*



ECHIDNOPSIS SOMALENSIS.

Native of Somaliland.

Nat. Ord. ASCLEPIADACEÆ.—Tribe STAPELIEÆ.

Genus ECHIDNOPSIS, *Hook. f.*; (*Benth. et Hook. f. Gen. Plant.* vol. ii. p. 781.)

ECHIDNOPSIS *somalensis*; frutex nanus (planta depicta semipedalis) carnosus aphyllus, cereiformis, glaber, caulibus ramisque viridibus cylindricis $\frac{1}{2}$ –1 poll. diametro 6–8-sulcatis tessellatis inermibus, floribus subsessilibus solitariis vel 2 vel 3 aggregatis 4–5 lin. diametro atropurpureis luteo-punctatis puberulis vel papillosis, calycis lobis ovatis acutis circiter $\frac{1}{2}$ lin. longis, corollæ hemisphærico-rotatæ lobis ovatis incurvis vel demum patentibus acutis, coronæ exterioris lobis angustis curvatis apice breviter recurvis intus canaliculatis glabris, coronæ interioris lobis deltoideis obtusis antheris incumbentibus.

E. *somalensis*, *N. E. Brown in Fl. Trop. Afr.* vol. iv. p. 477.

The genus *Echidnopsis* was founded on a cultivated plant of *E. cereiformis*, *Hook. f.* (*Bot. Mag.* t. 5930), which is very similar to the present species in habit, but it has bright yellow flowers. The stems, too, are longer, but that may be due to age, and more flexible. *E. cereiformis* was originally recorded as a native of South Africa, but it is now known to inhabit Eritrea, Abyssinia and Somaliland; possibly Socotra also. *E. Bentii*, *N. E. Brown* (*Bot. Mag.* t. 7760), a native of tropical Arabia, has somewhat larger, crimson flowers. About half-a-dozen species are now known from Eastern Tropical Africa, and the genus is also represented in Arabia and the island of Socotra.

The plant figured was cultivated by Mr. R. I. Lynch, Curator of the Cambridge Botanic Garden. It was also among the plants collected and presented to Kew by Mrs. Lort Philips and Miss Edith Cole; and Cambridge obtained it from the same source.

Descr.—A dwarf, fleshy, leafless shrub, resembling a small, columnar *Cereus*, glabrous, except the flowers; the plant figured, about six inches high. *Stems* and branches green, cylindrical, half to one inch in diameter, six- to eight-furrowed, tessellated, unarmed. *Flowers* nearly sessile, solitary, or two or three in a cluster, four to five

lines in diameter, dark purple spotted with yellow, minutely papillose or puberulous. *Calyx-lobes* ovate, acute, about half a line long. *Corolla* almost rotate when fully expanded; lobes ovate, at first incurved, afterwards spreading, acute. *Lobes of the outer corona* narrow, sub-erect, incurved, tips shortly recurved. *Lobes of the inner corona* deltoid, obtuse, incumbent on the anthers.—*W. B. H.*

Fig. 1, a portion of a branch; 2, a flower-bud; 3, a partially expanded flower; 4, coronas and genitalia; 5, pollen:—*all enlarged.*



RESTREPIA ANTENNIFERA.

Native of Colombia.

Nat. Ord. ORCHIDÆ.—Tribe EPIDENDRÆ.

Genus RESTREPIA, H. B. K.; (*Benth. et Hook. f. Gen. Plant.* vol. iii. p. 491.)

RESTREPIA *antennifera*; species ex affinitate *A. striatæ*, Rolfe (*Bot. Mag.* t. 7233) sed robustior floribus folia vix excedentibus, caulibus cæspitosis 6-8 poll. altis vaginis amplis membranaceis albidis inconspicue striatis vestitis, foliis crasse coriaceis oblongo-ovalibus 2-3 poll. longis, floribus 1-3 tenuiter pedicellatis circiter 2½ poll. longis purpureo-striatis, sepalo dorsali e basi latiuscula in filum apice leviter incrassatum producto incurvo, lateralibus laminam oblongo-lanceolatam apice emarginatam labello duplo majorem formantibus, petalis sepalo dorsali similibus sed fere dimidio minoribus, labello oblongo apice emarginato lobis lateralibus ad aristas parvas basilares recurvatas redactis, columna clavata incurva.

R. *antennifera*, H. B. K., *Nov. Gen. et Sp.* vol. i. p. 367, t. 94. *Poir. in Lam. Encycl. Meth. Suppl.* vol. iv. p. 672, t. 991. *Lindl. Gen. et Sp. Orch.* p. 14. *Reichb. f. in Bonplandia*, 1855, p. 70. *Rolfe Orch. Rev.* 1894, p. 237. *Non Bot. Mag.* t. 6288, quæ eadem ac R. *maculata*, Lindl.

The genus *Restrepia* was founded in 1815, on the present species, which was the only one known for many years. Now nearly forty species have been described. For a long time *R. maculata*, Lindl., was cultivated and figured in various publications, including this Magazine (t. 6288), under the name of *R. antennifera*. Mr. Rolfe detected the error, and rectified it in the publication cited above. *R. maculata*, Lindl., with which it has been confused, has spotted, not striped flowers.

R. antennifera was discovered by Humboldt's expedition near Pasto, at an elevation of upwards of nine thousand feet, and it has since been collected in the Province of Ocaña (Schlim, 738) at about the same elevation.

All three of the species mentioned in this connection are at the present time in cultivation at Kew.

Descr.—Similar to *R. striata*, Rolfe (*Bot. Mag.* t. 7233), but a more robust plant with flowers scarcely, if at all, overtopping the leaves. *Stems* clustered, six to eight inches high, clothed with membranous, dirty-white sheaths. *Leaves* thick, coriaceous, oblong-oval, two to three inches long. *Flowers* one to three on each stem, slenderly

stalked, about two and a half inches across, striped with dark purple on a whitish ground. *Dorsal sepal* almost filiform from a broad base, thickened at the tip, incurved. *Lateral sepals* conjoined in an oblong blade, notched at the tip, and twice as large as the labellum. *Petals* similar to the dorsal sepal, but only about half the size. *Labellum* oblong, notched at the tip; lateral lobes reduced to small, basal, recurved awns. *Column* club-shaped, incurved.—
W. B. H.

Fig. 1, column and labellum; 2, column; 3, anther-cap; 4 and 5, pollen :
—*all enlarged.*



COTYLEDON UNDULATA.

Native of South Africa.

Nat. Ord. CRASSULACEÆ.

Genus COTYLEDON, Linn.; (*Benth. et Hook. f. Gen. Plant.* vol. i. p. 659.)

COTYLEDON (§ Paniculatæ) *undulata*; species adhuc imperfecte cognita, *C. orbiculatæ*, Linn. (*Bot. Mag.* t. 321) affinis, a qua differt foliis obovato-spathulatis apice rotundatis vel fere truncatis grosse undulato-crenatis cuspidatisque; frutex erectus, carnosus, albo-farinosus, caule subsimplici cum inflorescentia circiter 3-pedali, foliis oppositis, internodiis brevibus vel brevissimis, crassis carnosis $3\frac{1}{2}$ –5 poll. longis maximis supra medium $2\frac{1}{2}$ poll. latis margine in parte superiore interdum rubrescente, pedunculis 12–18 poll. longis nudis vel foliis paucis parvis ovatis subacutis infra medium instructis, floribus subdichotomo-cymosis longe pedicellatis pendulis circiter $1\frac{1}{2}$ poll. longis luteo-rubris, calycis segmentis parvis deltoideis subacutis, corollæ tubo cylindrico lobis duplo longioribus, lobis acutis recurvis, staminibus vix exsertis, carpellis 5 glabris, stylis stamina vix æquantibus.

C. undulata, *Haw. Suppl. Pl. Succ.* (1819), p. 20 (“Plantæ Kewenses solum juveniles”); *Revis Pl. Succ.* (1821) p. 20 (“Simulat *C. orbicularem*, at longe humilior, foliis incipientibus apice magis undulatis cuspidatisque”). *DC. Prod.* vol. iii. p. 396 (sine florum descriptione). *Harv. & Sond. Fl. Cap.* vol. ii. 377 (“probably a form of *C. orbiculata*”). *Schönland & E. G. Baker in Journ. Bot.* 1902, pp. 13 et 17, t. 431.

Cotyledon foliis latis undulatis, &c., *Burm. Rar. Afr. Pl. Dec.* p. 44, t. 19, fig. 2?

As the above references and quotations show, *Cotyledon undulata* was first partially described by Haworth in 1819, from young plants at Kew; but he adds nothing of importance to that description in 1821, although a flowering specimen in his herbarium, now at Oxford, is labelled: “Kew, June, 1820.” A drawing of his specimen, by Miss M. Smith, with a copy of all the writing on the sheet on which it is mounted, is in the Kew Herbarium; and in the collection of old Kew drawings there is a fine, bold, coloured figure of this species dated: “Kew, May 23rd, 1825.” The drawing is endorsed: “Raised from seeds in 1817, received from Mr. Bowie from the Cape of Good Hope.”

Apparently Haworth never described the flowers of *C. undulata*, but there is no doubt that his specimen and the old Kew drawing represent the same species. And there is little doubt that our plant is the same species, though the flowers are purple in the original drawing, the segments of

the perianth more revolute, and the stamens distinctly exerted; all of which may, perhaps, be accounted for by the advanced stage of the inflorescence. But the South African species of *Cotyledon* are generally badly defined, as is fully exemplified by Baker and Schönland's paper in the *Journal of Botany*, cited above; the one working with the advantage of Haworth's types before him, and the other in South Africa with living plants under observation, they were still unable to define the limits of the species allied to *C. orbiculata*, Lindl., and could only suggest, in many instances, that certain specimens and figures represented the same species.

Haworth cites, in the first instance, Burman's *Cotyledon foliis latis sinuosis*, &c. (*Rariorum Africanarum Plantarum Decades*, p. 44, t. 19, fig. 2) as synonymous with his *C. undulata*; but he subsequently cited it with the sign of interrogation. Lamarck (*Encycl.* vol. ii. p. 142) founded his *C. mucronata* on the same figure. Schönland and Baker, Jun. (*Journ. Bot.* 1902, p. 15), regard *C. mucronata* as distinct from *C. undulata*, and describe a specimen from Graaf Reinet as belonging to the former. Burman's figure was evidently drawn from a plant bearing an inflorescence in a very advanced stage; but I think myself, judging from the variation in the colour and position of the flowers at different stages of development, that *C. undulata* and *C. mucronata* may be the same.

C. orbiculata was figured in the Magazine (t. 321) as long ago as 1795, and it is recorded by Aiton (*Hort. Kew.* ed. 1, vol. ii. p. 106) as having been introduced by a Mr. Bentick in 1690.

A century ago these showy and easily cultivated succulent shrubs were much in favour, and they certainly deserve more attention than they get at the present time. Curtis wrote of *C. orbiculata* that it flowered freely and grew rapidly.

Our plate was prepared from a specimen received from Mr. R. I. Lynch, Curator of the Cambridge Botanic Garden.

It may be added that *C. gibbiflora*, Moc. & Sessé, a Mexican species of the section *Echeveria*, having foliage similar to that of our plant, is sometimes met with under the name of *C. undulata*.

Descr.—A succulent, erect shrub, two to three feet high, the young parts covered with a white meal. *Leaves* opposite, crowded, very thick and fleshy, obovate-spathulate, three and a half to five inches long, the largest two and a half inches broad above the middle, rounded at the top or almost truncate, usually undulate-crenate above the middle with a terminal cusp; margin often red in the older leaves. *Peduncles* twelve to eighteen inches long, naked or bearing a few small, ovate, somewhat acute leaves below the middle. *Flowers* borne in paniculate cymes about six inches in diameter, one and a half inch long, yellow and orange-red, pendulous. *Pedicels* usually shorter than the flowers. *Calyx-lobes* small, deltoid, sub-acute. *Corolla-tube* cylindrical, twice as long as the recurved, acute lobes. *Stamens* scarcely overtopping the recurved corolla-lobes. *Carpels* five (ripe ones not seen) glabrous; styles scarcely as long as the stamens.—*W. B. H.*

Fig. 1, a petal and three stamens; 2 and 3, anthers; 4, gynæceum; 5, a young plant about one-sixth of the natural size:—all the other figures enlarged.

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